IRF Series Data Sheet

The IRF Data Sheet describes 32 devices, 28 N-Channel and 4 P-Channel, all contained in the TO-204AA or TO-204AE package. This data sheet is arranged to show common tabular and graphical information between devices.

Absolute maximum ratings and parametric data are presented in tabular format with devices grouped according to generically shared parameters. For each parametric rating, devices are categorized by N and P channel and listed in alpha-numeric order. The conditions specified for a given parametric test are provided in the right hand column of each table.

Graphical information is grouped by devices in alpha-numeric order. Where the information is device specific, we have assigned a numeric character for the graph and an alpha character to a given device. (See Table A below). Where graphs are polarity specific as in figures 10, 12, 14 and 15, we have indicated N-Channel or P-Channel. The Thermal Impedance Graph (Fig. 11) is the only exception where a graph is common to both N-Channel and P-Channel devices since the thermal impedance is only dependent on the die size and package.

In Table A below, a legend is provided cross referencing the part number to its assigned alpha code. A given device will retain this alpha code for each device specific graph.

Table A

DEVICE	ALPHA DESIGNATION	DEVICE	ALPHA DESIGNATION
IRF034	a	IRF460	q
IRF044	b	IRFAC30	r
IRF054	c	IRFAC40	s
IRF130	d	IRFAE30	t
IRF140	e	IRFAE40	u
IRF150	f	IRFAE50	v
IRF230	g	IRFAF30	w
IRF240	h	IRFAF40	x
IRF250	i	IRFAF50	y
IRF330	j	IRFAG30	z
IRF340	k	IRFAG40	aa
IRF350	l	IRFAG540	bb
IRF360	m	IRF9130	cc
IRF430	n	IRF9140	dd
IRF440	o	IRF9230	ee
IRF450	p	IRF9240	ff

HEXFET, Mil-Qualified

TO3/HEXFET/N-Channel

Part Numbers			Hexfet Cross Reference	Voltage	Current T_C = 25°C (A)	MIL-S-19500	Qualification	Case Style
JEDEC	JANTX	JANTXV						
2N6756	JANTX2N6756	JANTXV2N6756	IRF130	100V	14.0	/542	19500-488-81	**TO-204AA** TO-3
2N6758	JANTX2N6758	JANTXV2N6758	IRF230	200V	9.0	/542	19500-488-81	
2N6760	JANTX2N6760	JANTXV2N6760	IRF330	400V	5.5	/542	19500-488-81	
2N6762	JANTX2N6762	JANTXV2N6762	IRF430	500V	4.5	/542	19500-489-81	
2N6764	JANTX2N6764	JANTXV2N6764	IRF150	100V	38.0	/543	19500-490-81	
2N6766	JANTX2N6766	JANTXV2N6766	IRF250	200V	30.0	/543	19500-490-81	
2N6768	JANTX2N6768	JANTXV2N6768	IRF350	400V	14.0	/543	19500-960-82	
2N6770	JANTX2N6770	JANTXV2N6770	IRF450	500V	12.0	/543	19500-960-82	

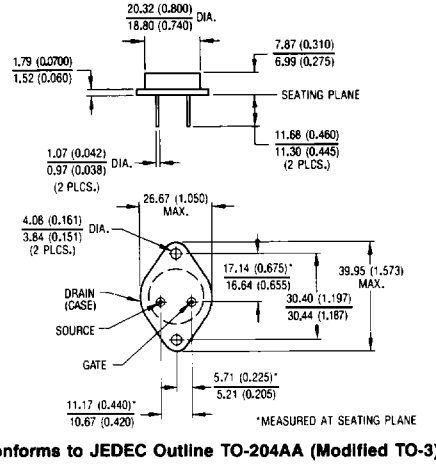
TO3/HEXFET/P-Channel

2N6804	JANTX2N6804	JANTXV2N6804	IRF9130	-100V	-12.0	/562	19500-811-86	
2N6806	JANTX2N6806	JANTXV2N6806	IRF9230	-200V	-6.5	/562	19500-811-86	

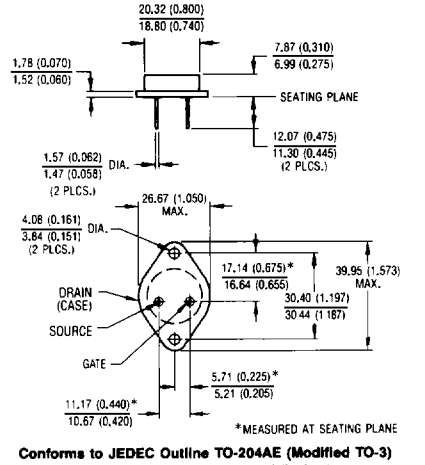
FOR OTHER GOVERNMENT/SPACE QUALIFIED PRODUCTS REFER TO SECTION E.

RADIATION HARDENED

For Radiation Hardened HEXFETs contained in the TO-204AA/TO-204AE package outline, refer to the RAD HARD SECTION Pages H-1 to H-74.



Conforms to JEDEC Outline TO-204AA (Modified TO-3)
Dimensions in Millimeters and (Inches)

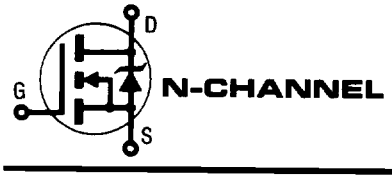


Conforms to JEDEC Outline TO-204AE (Modified TO-3)
Dimensions in Millimeters and (Inches)

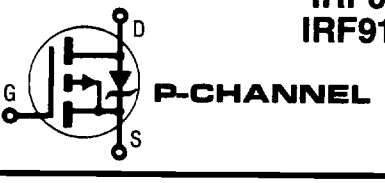
INTERNATIONAL RECTIFIER IOR

REPETITIVE AVALANCHE AND dv/dt RATED
HEXFET® TRANSISTORS IRF SERIES

IRF034 THRU IRFAG50
IRF9130 THRU IRF9240



N-CHANNEL



P-CHANNEL

Description

The HEXFET® technology is the key to International Rectifier's advanced line of power MOSFET transistors. The efficient geometry and unique processing of this latest "State of the Art" design achieves: very low on-state resistance combined with high transconductance; superior reverse energy and diode recovery dv/dt capability.

The HEXFET transistors also feature all of the well established advantages of MOSFETs such as voltage control, very fast switching, ease of paralleling and temperature stability of the electrical parameters.

They are well suited for applications such as switching power supplies, motor controls, inverters, choppers, audio amplifiers and high energy pulse circuits.

Features

- Repetitive Avalanche Ratings
- Dynamic dv/dt Rating
- Hermetically Sealed
- Simple Drive Requirements
- Ease of Paralleling

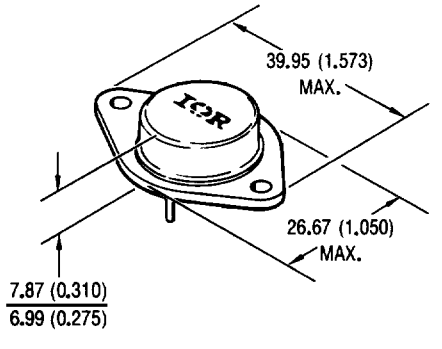
Product Summary N-Channel

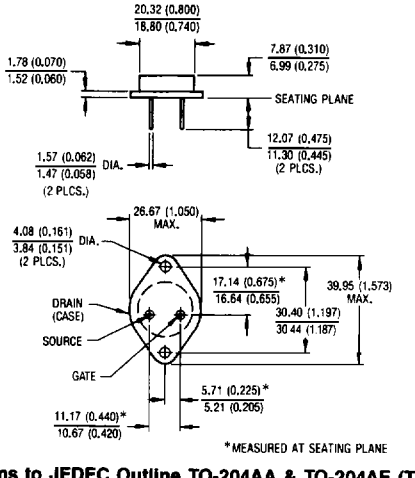
Characteristic	IRF034 thru IRFAG50	Units
BV_{DSS}	60 to 1000	V
$R_{DS(on)}$	0.022 to 6.5	Ω
I_D	1.5 to 45	A

Product Summary P-Channel

Characteristic	IRF9130 and IRF9240	Units
BV_{DSS}	-100 and -200	V
$R_{DS(on)}$	0.20 and 0.80	Ω
I_D	-6.5 and -18	A

CASE STYLE AND DIMENSIONS





Conforms to JEDEC Outline TO-204AA & TO-204AE (TO-3)
Dimensions in Millimeters and (Inches)

N-Channel — Absolute Maximum Ratings

Parameter		Part Number				Units
		IRF034	IRF044	IRF054	IRF130	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	25	44	45*	14	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	16	27	31	9.0	
I_{DM}	Pulsed Drain Current ①	100	176	220	56	
P_D @ T_C = 25°C	Max. Power Dissipation	75	125	150	75	W
	Linear Derating Factor	0.60	1.0	1.2	0.60	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	19	340	480	75	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	—	—	—	14	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	—	—	—	7.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	4.5	4.5	4.5	5.5	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

*Current limited by pin diameter

N-Channel — Absolute Maximum Ratings (continued)

Parameter		Part Number				Units
		IRF140	IRF150	IRF230	IRF240	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	28	38	9.0	18	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	20	24	6.0	11	
I_{DM}	Pulsed Drain Current ①	112	152	36	72	
P_D @ T_C = 25°C	Max. Power Dissipation	125	150	75	125	W
	Linear Derating Factor	1.0	1.2	0.6	1.0	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	250	150	54	450	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	28	38	9.0	18	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	12.5	15	7.5	12.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	5.5	5.5	5.0	5.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

Notes – See page I-34.

N-Channel — Absolute Maximum Ratings (continued)

Parameter		Part Number				Units
		IRF250	IRF330	IRF340	IRF350	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	30	5.5	10	14	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	19	3.5	6.0	9.0	
I_{DM}	Pulsed Drain Current ①	120	22	40	56	
P_D @ T_C = 25°C	Max. Power Dissipation	150	75	125	150	W
	Linear Derating Factor	1.2	0.6	1.0	1.2	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	200	1.7	5.7	11.3	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	30	5.5	10	14	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	15	—	—	15	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	5.0	4.0	4.0	4.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

N-Channel — Absolute Maximum Ratings (continued)

Parameter		Part Number				Units
		IRF360	IRF430	IRF440	IRF450	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	25	4.5	8.0	12	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	16	3.0	5.0	7.75	
I_{DM}	Pulsed Drain Current ①	100	18	32	48	
P_D @ T_C = 25°C	Max. Power Dissipation	300	75	125	150	W
	Linear Derating Factor	2.4	0.6	1.0	1.2	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	980	1.1	3.6	8.0	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	25	4.5	8.0	12	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	30	—	—	—	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	4.0	3.5	3.5	3.5	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

Notes – See page I-34.

N-Channel — Absolute Maximum Ratings (continued)

Parameter		Part Number				Units
		IRF460	IRFAC30	IRFAC40	IRFAE30	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	21	3.6	6.2	3.1	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	14	2.3	3.9	2.0	
I_{DM}	Pulsed Drain Current ①	84	14	25	12	
P_D @ T_C = 25°C	Max. Power Dissipation	300	75	125	75	W
	Linear Derating Factor	2.4	0.6	1.0	0.6	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	1200	180	570	100	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	21	3.6	6.2	3.1	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	30	7.5	12.5	7.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	3.5	3.0	3.0	2.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

N-Channel — Absolute Maximum Ratings (continued)

Parameter		Part Number				Units
		IRFAE40	IRFAE50	IRFAF30	IRFAF40	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	4.8	7.1	2.0	4.3	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	3.0	4.5	1.7	2.7	
I_{DM}	Pulsed Drain Current ①	19	28	8.0	17	
P_D @ T_C = 25°C	Max. Power Dissipation	125	150	75	125	W
	Linear Derating Factor	1.0	1.2	0.6	1.0	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	550	830	100	530	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	4.8	7.1	2.0	4.3	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	12.5	15	7.5	12.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	2.0	2.0	1.5	1.5	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

Notes – See page I-34.

N-Channel — Absolute Maximum Ratings (continued)

Parameter		Part Number				Units
		IRFAF50	IRFAG30	IRFAG40	IRFAG50	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	6.2	2.3	3.9	5.6	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	4.0	1.5	2.5	3.5	
I_{DM}	Pulsed Drain Current ①	25	9.2	16	22	
P_D @ T_C = 25°C	Max. Power Dissipation	150	75	125	150	W
	Linear Derating Factor	1.2	0.6	1.0	1.2	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	870	110	530	860	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	6.2	2.3	3.9	5.6	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	15	7.5	12.5	15	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	1.5	1.0	1.0	1.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

P-Channel — Absolute Maximum Ratings

Parameter		Part Number				Units
		IRF9130	IRF9140	IRF9230	IRF9240	
I_D @ V_{GS} = 0V, T_C = 25°C	Continuous Drain Current	-11	-18	-6.5	-11	A
I_D @ V_{GS} = 0V, T_C = 100°C	Continuous Drain Current	-7.0	-11	-4.0	-7.0	
I_{DM}	Pulsed Drain Current ①	-50	-72	-28	-44	
P_D @ T_C = 25°C	Max. Power Dissipation	75	125	75	125	W
	Linear Derating Factor	0.6	1.0	0.6	1.0	W/K ⑤
V_{GS}	Gate-to-Source Voltage	±20				V
E_{AS}	Single Pulse Avalanche Energy ② (See Fig. 12)	81	500	66	500	mJ
I_{AR}	Avalanche Current ① (See E_{AR})	-11	-18	-6.5	-11	A
E_{AR}	Repetitive Avalanche Energy ① (See Fig. 15)	7.5	12.5	7.5	12.5	mJ
dv/dt	Peak Diode Recovery dv/dt ③ (See Fig. 15)	-5.5	-5.5	-5.0	-5.0	V/ns
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150				°C
	Lead Temperature	300 (0.63 in. (1.6 mm) from case for 10s)				
	Weight	11.5 (typical)				g

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter			Part Number	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	N-Channel	IRF034	60	—	—	V	V_{GS} = 0V, I_D = 1.0 mA
			IRF044	60	—	—		
			IRF054	60	—	—		
			IRF130	100	—	—		
			IRF140	100	—	—		
			IRF150	100	—	—		
			IRF230	200	—	—		
			IRF240	200	—	—		
			IRF250	200	—	—		
			IRF330	400	—	—		
			IRF340	400	—	—		
			IRF350	400	—	—		
			IRF360	400	—	—		
			IRF430	500	—	—		
			IRF440	500	—	—		
			IRF450	500	—	—		
			IRF460	500	—	—		
			IRFAC30	600	—	—		
			IRFAC40	600	—	—		
			IRFAE30	800	—	—		
			IRFAE40	800	—	—		
			IRFAE50	800	—	—		
			IRFAF30	900	—	—		
			IRFAF40	900	—	—		
			IRFAF50	900	—	—		
			IRFAG30	1000	—	—		
			IRFAG40	1000	—	—		
			IRFAG50	1000	—	—		
		P-Channel	IRF9130	-100	—	—		V_{GS} = 0V, I_D = -1.0 mA
			IRF9140	-100	—	—		
			IRF9230	-200	—	—		
			IRF9240	-200	—	—		

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter			Part Number	Min.	Typ.	Max.	Units	Test Conditions
$\Delta BV_{DSS}/\Delta T_J$	Temperature Coefficient of Breakdown Voltage	N-Channel	IRF034	—	0.68	—	V/°C	Reference to 25°C, I_D = 1.0 mA
			IRF044	—	0.68	—		
			IRF054	—	0.68	—		
			IRF130	—	0.13	—		
			IRF140	—	0.13	—		
			IRF150	—	0.13	—		
			IRF230	—	0.29	—		
			IRF240	—	0.29	—		
			IRF250	—	0.29	—		
			IRF330	—	0.46	—		
			IRF340	—	0.46	—		
			IRF350	—	0.46	—		
			IRF360	—	0.46	—		
			IRF430	—	0.78	—		
			IRF440	—	0.78	—		
			IRF450	—	0.78	—		
			IRF460	—	0.78	—		
			IRFAC30	—	0.70	—		
			IRFAC40	—	0.70	—		
			IRFAE30	—	0.98	—		
			IRFAE40	—	0.98	—		
			IRFAE50	—	0.98	—		
			IRFAF30	—	1.2	—		
			IRFAF40	—	1.2	—		
			IRFAF50	—	1.2	—		
			IRFAG30	—	1.4	—		
			IRFAG40	—	1.4	—		
			IRFAG50	—	1.4	—		
		P-Channel	IRF9130	—	-0.087	—		Reference to 25°C, I_D = -1.0 mA
			IRF9140	—	-0.087	—		
			IRF9230	—	-0.20	—		
			IRF9240	—	-0.20	—		

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter			Part Number	Min.	Typ.	Max.	Units	Test Conditions
$R_{DS(on)}$	Static Drain-to-Source On-State Resistance ④	N-Channel	IRF034	—	—	0.050	Ω	I_D = 16A, V_{GS} = 10V
				—	—	0.058		I_D = 25A
			IRF044	—	—	0.028		I_D = 27A
				—	—	0.032		I_D = 44A
			IRF054	—	—	0.022		I_D = 31A
				—	—	0.025		I_D = 45A
			IRF130	—	—	0.18		I_D = 9.0A
				—	—	0.21		I_D = 14A
			IRF140	—	—	0.077		I_D = 20A
				—	—	0.089		I_D = 28A
			IRF150	—	—	0.055		I_D = 24A
				—	—	0.065		I_D = 38A
			IRF230	—	—	0.40		I_D = 6.0A
				—	—	0.49		I_D = 9.0A
			IRF240	—	—	0.18		I_D = 11A
				—	—	0.21		I_D = 18A
			IRF250	—	—	0.085		I_D = 19A
				—	—	0.090		I_D = 30A
			IRF330	—	—	1.00		I_D = 3.5A
				—	—	1.22		I_D = 5.5A
			IRF340	—	—	0.55		I_D = 6.0A
				—	—	0.63		I_D = 10A
			IRF350	—	—	0.300		I_D = 9.0A
				—	—	0.400		I_D = 14A
			IRF360	—	—	0.20		I_D = 16A
				—	—	0.23		I_D = 25A
			IRF430	—	—	1.50		I_D = 3.0A
				—	—	1.80		I_D = 4.5A
			IRF440	—	—	0.85		I_D = 5.0A
				—	—	0.98		I_D = 8.0A
			IRF450	—	—	0.400		I_D = 7.75A
				—	—	0.500		I_D = 12A
			IRF460	—	—	0.27		I_D = 14A
				—	—	0.31		I_D = 21A
			IRFAC30	—	—	2.2		I_D = 2.3A
				—	—	2.5		I_D = 3.6A
			IRFAC40	—	—	1.2		I_D = 3.9A
				—	—	1.4		I_D = 6.2A
			IRFAE30	—	—	3.2		I_D = 2.0A
				—	—	3.7		I_D = 3.1A
			IRFAE40	—	—	2.0		I_D = 3.0A
				—	—	2.3		I_D = 4.8A
			IRFAE50	—	—	1.2		I_D = 4.5A
				—	—	1.4		I_D = 7.1A
			IRFAF30	—	—	4.0		I_D = 1.7A
				—	—	4.6		I_D = 2.0A
			IRFAF40	—	—	2.5		I_D = 2.7A
				—	—	2.9		I_D = 4.3A
			IRFAF50	—	—	1.6		I_D = 4.0A
				—	—	1.85		I_D = 6.2A
			IRFAG30	—	—	5.6		I_D = 1.5A
				—	—	6.5		I_D = 2.3A
			IRFAG40	—	—	3.5		I_D = 2.5A
				—	—	4.0		I_D = 3.9A
			IRFAG50	—	—	2.0		I_D = 3.5A
				—	—	2.3		I_D = 5.6A
		P-Channel	IRF9130	—	—	0.3		I_D = −7.0A, V_{GS} = −10V
				—	—	0.35		I_D = −11A
			IRF9140	—	—	0.2		I_D = −11A
				—	—	0.23		I_D = −18A
			IRF9230	—	—	0.80		I_D = −4.0A
				—	—	0.92		I_D = −6.5A
			IRF9240	—	—	0.5		I_D = −7.0A
				—	—	0.58		I_D = −11A

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter			Part Number	Min.	Typ.	Max.	Units	Test Conditions
$V_{GS(th)}$	Gate Threshold Voltage	N-Channel	ALL	2.0	—	4.0	V	V_{DS} = V_{GS}, I_D = 250 mA
		P-Channel	ALL	-2.0	—	-4.0		V_{DS} = V_{GS}, I_D = -250 mA
g_{fs}	Forward Transconductance	N-Channel	IRF034	9.3	—	—	S (℧)	I_{DS} = 16A
			IRF044	17	—	—		I_{DS} = 27A
			IRF054	20	—	—		I_{DS} = 31A
			IRF130	4.6	—	—		I_{DS} = 9.0A
			IRF140	9.1	—	—		I_{DS} = 20A
			IRF150	9.0	—	—		I_{DS} = 24A
			IRF230	3.0	—	—		I_{DS} = 6.0A
			IRF240	6.1	—	—		I_{DS} = 11A
			IRF250	9.0	—	—		I_{DS} = 19A
			IRF330	2.9	—	—		I_{DS} = 3.5A
			IRF340	4.9	—	—		I_{DS} = 6.0A
			IRF350	6.0	—	—		I_{DS} = 9.0A
			IRF360	14	—	—		I_{DS} = 16A
			IRF430	2.7	—	—		I_{DS} = 3.0A $V_{DS} \geq 15V$
			IRF440	4.7	—	—		I_{DS} = 5.0A ④
			IRF450	5.5	—	—		I_{DS} = 7.75A
			IRF460	13	—	—		I_{DS} = 14A
			IRFAC30	2.4	—	—		I_{DS} = 2.3A
			IRFAC40	4.7	—	—		I_{DS} = 3.9A
			IRFAE30	2.5	—	—		I_{DS} = 2.0A
			IRFAE40	3.9	—	—		I_{DS} = 3.0A
			IRFAE50	5.9	—	—		I_{DS} = 4.5A
			IRFAF30	2.3	—	—		I_{DS} = 1.7A
			IRFAF40	3.6	—	—		I_{DS} = 2.7A
			IRFAF50	4.9	—	—		I_{DS} = 4.0A
			IRFAG30	2.1	—	—		I_{DS} = 1.5A
			IRFAG40	3.3	—	—		I_{DS} = 2.5A
			IRFAG50	5.2	—	—		I_{DS} = 3.5A
		P-Channel	IRF9130	3.0	—	—		I_{DS} = -7.0A ④
			IRF9140	6.2	—	—		I_{DS} = -11A $V_{DS} \geq -15V$
			IRF9230	2.0	—	—		I_{DS} = -4.0A
			IRF9240	4.0	—	—		I_{DS} = -7.0A
I_{DSS}	Zero Gate Voltage Drain Current	N-Channel	ALL	—	—	25	μA	V_{DS} = 0.8 x Max. Rating V_{GS} = 0V
		P-Channel	ALL	—	—	-25		
I_{DSS}	Zero Gate Voltage Drain Current	N-Channel	ALL	—	—	250		V_{DS} = 0.8 x Max. Rating V_{GS} = 0V, T_J = 125°C
		P-Channel	ALL	—	—	-250		
I_{GSS}	Gate-to-Source Leakage Forward	N-Channel	ALL	—	—	100	nA	V_{GS} = 20V
		P-Channel	ALL	—	—	-100		V_{GS} = -20V
I_{GSS}	Gate-to-Source Leakage Reverse	N-Channel	ALL	—	—	-100		V_{GS} = -20V
		P-Channel	ALL	—	—	100		V_{GS} = 20V

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
Q_g Total Gate Charge	N-Channel	IRF034	21	—	47	nC	I_D = 25A, V_{GS} = 10V, V_{DS} = 0.5 x Max. Rating, See Fig. 6 and 14
		IRF044	39	—	88		I_D = 44A
		IRF054	80	—	180		I_D = 45A
		IRF130	12	—	35		I_D = 14A
		IRF140	30	—	59		I_D = 28A
		IRF150	50	—	125		I_D = 38A
		IRF230	16	—	39		I_D = 9.0A
		IRF240	32	—	60		I_D = 18A
		IRF250	55	—	115		I_D = 30A
		IRF330	17	—	39		I_D = 5.5A
		IRF340	32	—	65		I_D = 10A
		IRF350	52	—	110		I_D = 14A
		IRF360	96	—	210		I_D = 25A
		IRF430	16	—	40		I_D = 4.5A
		IRF440	27.3	—	68.5		I_D = 8.0A
		IRF450	55	—	120		I_D = 12A
		IRF460	84	—	190		I_D = 21A
		IRFAC30	16	—	38		I_D = 3.6A
		IRFAC40	26	—	60		I_D = 6.2A
		IRFAE30	30	—	69		I_D = 3.1A
		IRFAE40	48	—	110		I_D = 4.8A
		IRFAE50	84	—	190		I_D = 7.1A
		IRFAF30	29	—	66		I_D = 2.0A
		IRFAF40	53	—	120		I_D = 4.3A
		IRFAF50	80	—	180		I_D = 6.2A
		IRFAG30	30	—	68		I_D = 2.3A
		IRFAG40	53	—	120		I_D = 3.9A
		IRFAG50	88	—	200		I_D = 5.6A
	P-Channel	IRF9130	15	—	29		I_D = −11A, V_{GS} = −10V, V_{DS} = 0.5 x Max Rating
		IRF9140	31	—	60		I_D = −18A
		IRF9230	8	—	31		I_D = −6.5A
		IRF9240	28	—	60		I_D = −11A

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
Q_{gs} Gate-to-Source Charge	N-Channel	IRF034	4.4	—	10	nC	I_D = 25A
		IRF044	6.7	—	15		I_D = 44A
		IRF054	20	—	45		I_D = 45A
		IRF130	2.5	—	10		I_D = 14A
		IRF140	2.4	—	12		I_D = 28A
		IRF150	8	—	22		I_D = 38A
		IRF230	3.0	—	5.7		I_D = 9.0A
		IRF240	2.2	—	10.6		I_D = 18A
		IRF250	8	—	22		I_D = 30A
		IRF330	2.0	—	6.0		I_D = 5.5A
		IRF340	2.2	—	10		I_D = 10A
		IRF350	5.0	—	18		I_D = 14A
		IRF360	11	—	28		I_D = 25A
		IRF430	2.0	—	6.0		I_D = 4.5A
		IRF440	2.0	—	12.5		I_D = 8.0A
		IRF450	5.0	—	19		I_D = 12A
		IRF460	12	—	27		I_D = 21A
		IRFAC30	2.0	—	4.6		I_D = 3.6A
		IRFAC40	3.6	—	8.3		I_D = 6.2A
		IRFAE30	3.1	—	7.1		I_D = 3.1A
		IRFAE40	5.3	—	12		I_D = 4.8A
		IRFAE50	6.6	—	15		I_D = 7.1A
		IRFAF30	3.2	—	7.2		I_D = 2.0A
		IRFAF40	4.8	—	11		I_D = 4.3A
		IRFAF50	7.5	—	17		I_D = 6.2A
		IRFAG30	2.5	—	6.3		I_D = 2.3A
		IRFAG40	5.3	—	12		I_D = 3.9A
		IRFAG50	8.8	—	20		I_D = 5.6A
	P-Channel	IRF9130	1.0	—	7.1		I_D = −11A
		IRF9140	3.7	—	13		I_D = −18A
		IRF9230	0.8	—	7.0		I_D = −6.5A
		IRF9240	3.0	—	15		I_D = −11A

V_{GS} = 10V
V_{DS} = 0.5 x Max. Rating
See Fig. 6 and 14

V_{GS} = −10V
V_{DS} = 0.5 x Max. Rating

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
Q_{gd} Gate-to-Drain ("Miller") Charge	N-Channel	IRF034	9.7	—	22	nC	I_D = 25A; V_{GS} = 10V; V_{DS} = 0.5 x Max. Rating; See Fig. 6 and 14
		IRF044	18	—	52		I_D = 44A
		IRF054	34	—	105		I_D = 45A
		IRF130	5.0	—	15		I_D = 14A
		IRF140	12	—	30.7		I_D = 28A
		IRF150	25	—	65		I_D = 38A
		IRF230	8.0	—	20		I_D = 9.0A
		IRF240	14	—	38		I_D = 18A
		IRF250	30	—	60		I_D = 30A
		IRF330	8.0	—	20		I_D = 5.5A
		IRF340	14	—	41		I_D = 10A
		IRF350	25	—	65		I_D = 14A
		IRF360	53	—	120		I_D = 25A
		IRF430	8.0	—	20		I_D = 4.5A
		IRF440	11	—	42		I_D = 8.0A
		IRF450	27	—	70		I_D = 12A
		IRF460	60	—	135		I_D = 21A
		IRFAC30	7.5	—	17		I_D = 3.6A
		IRFAC40	13	—	30		I_D = 6.2A
		IRFAE30	17	—	40		I_D = 3.1A
		IRFAE40	30	—	68		I_D = 4.8A
		IRFAE50	48	—	110		I_D = 7.1A
		IRFAF30	16	—	37		I_D = 2.0A
		IRFAF40	30	—	68		I_D = 4.3A
		IRFAF50	48	—	110		I_D = 6.2A
		IRFAG30	16	—	36		I_D = 2.3A
		IRFAG40	29	—	66		I_D = 3.9A
		IRFAG50	48	—	110		I_D = 5.6A
	P-Channel	IRF9130	2.0	—	21		I_D = −11A; V_{GS} = −10V; V_{DS} = 0.5 x Max. Rating
		IRF9140	7.0	—	35.2		I_D = −18A
		IRF9230	5.0	—	17		I_D = −6.5A
		IRF9240	4.5	—	38		I_D = −11A

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
$t_{d(on)}$ Turn-On Delay Time See Fig. 10	N-Channel	IRF034	—	—	21	ns	V_{DD} = 30V, I_D = 25A, R_G = 7.5Ω
		IRF044	—	—	23		V_{DD} = 30V, I_D = 44A, R_G = 9.1Ω
		IRF054	—	—	33		V_{DD} = 30V, I_D = 45A, R_G = 2.35Ω
		IRF130	—	—	35		V_{DD} = 50V, I_D = 14A, R_G = 7.5Ω
		IRF140	—	—	21		V_{DD} = 50V, I_D = 28A, R_G = 9.1Ω
		IRF150	—	—	35		V_{DD} = 50V, I_D = 38A, R_G = 2.35Ω
		IRF230	—	—	35		V_{DD} = 100V, I_D = 9.0A, R_G = 7.5Ω
		IRF240	—	—	20		V_{DD} = 100V, I_D = 18A, R_G = 9.1Ω
		IRF250	—	—	35		V_{DD} = 100V, I_D = 30A, R_G = 2.35Ω
		IRF330	—	—	30		V_{DD} = 200V, I_D = 5.5A, R_G = 7.5Ω
		IRF340	—	—	25		V_{DD} = 200V, I_D = 10A, R_G = 9.1Ω
		IRF350	—	—	35		V_{DD} = 200V, I_D = 14A, R_G = 2.35Ω
		IRF360	—	—	33		V_{DD} = 200V, I_D = 25A, R_G = 2.35Ω
		IRF430	—	—	30		V_{DD} = 250V, I_D = 4.5A, R_G = 7.5Ω
		IRF440	—	—	21		V_{DD} = 250V, I_D = 8.0A, R_G = 9.1Ω
		IRF450	—	—	35		V_{DD} = 250V, I_D = 12A, R_G = 2.35Ω
		IRF460	—	—	35		V_{DD} = 250V, I_D = 21A, R_G = 2.35Ω
		IRFAC30	—	—	17		V_{DD} = 300V, I_D = 3.6A, R_G = 7.5Ω
		IRFAC40	—	—	20		V_{DD} = 300V, I_D = 6.2A, R_G = 9.1Ω
		IRFAE30	—	—	23		V_{DD} = 400V, I_D = 3.1A, R_G = 7.5Ω
		IRFAE40	—	—	24		V_{DD} = 400V, I_D = 4.8A, R_G = 9.1Ω
		IRFAE50	—	—	32		V_{DD} = 400V, I_D = 7.1A, R_G = 2.35Ω
		IRFAF30	—	—	21		V_{DD} = 400V*, I_D = 2.0A, R_G = 7.5Ω
		IRFAF40	—	—	24		V_{DD} = 400V*, I_D = 4.3A, R_G = 9.1Ω
		IRFAF50	—	—	33		V_{DD} = 400V*, I_D = 6.2A, R_G = 2.35Ω
		IRFAG30	—	—	23		V_{DD} = 400V*, I_D = 2.3A, R_G = 7.5Ω
		IRFAG40	—	—	30		V_{DD} = 400V*, I_D = 3.9A, R_G = 9.1Ω
		IRFAG50	—	—	30		V_{DD} = 400V*, I_D = 5.6A, R_G = 2.35Ω
	P-Channel	IRF9130	—	—	60		V_{DD} = -50V, I_D = -11A, R_G = 7.5Ω
		IRF9140	—	—	35		V_{DD} = -50V, I_D = -18A, R_G = 9.1Ω
		IRF9230	—	—	50		V_{DD} = -100V, I_D = -6.5A, R_G = 7.5Ω
		IRF9240	—	—	35		V_{DD} = -100V, I_D = -11A, R_G = 9.1Ω

*Equipment Limitation

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
t_r Rise Time See Fig. 10	N-Channel	IRF034	—	—	110	ns	V_{DD} = 30V, I_D = 25A, R_G = 7.5Ω
		IRF044	—	—	130		V_{DD} = 30V, I_D = 44A, R_G = 9.1Ω
		IRF054	—	—	180		V_{DD} = 30V, I_D = 45A, R_G = 2.35Ω
		IRF130	—	—	80		V_{DD} = 50V, I_D = 14A, R_G = 7.5Ω
		IRF140	—	—	145		V_{DD} = 50V, I_D = 28A, R_G = 9.1Ω
		IRF150	—	—	190		V_{DD} = 50V, I_D = 38A, R_G = 2.35Ω
		IRF230	—	—	80		V_{DD} = 100V, I_D = 9.0A, R_G = 7.5Ω
		IRF240	—	—	152		V_{DD} = 100V, I_D = 18A, R_G = 9.1Ω
		IRF250	—	—	190		V_{DD} = 100V, I_D = 30A, R_G = 2.35Ω
		IRF330	—	—	40		V_{DD} = 200V, I_D = 5.5A, R_G = 7.5Ω
		IRF340	—	—	92		V_{DD} = 200V, I_D = 10A, R_G = 9.1Ω
		IRF350	—	—	190		V_{DD} = 200V, I_D = 14A, R_G = 2.35Ω
		IRF360	—	—	140		V_{DD} = 200V, I_D = 25A, R_G = 2.35Ω
		IRF430	—	—	40		V_{DD} = 250V, I_D = 4.5A, R_G = 7.5Ω
		IRF440	—	—	73		V_{DD} = 250V, I_D = 8.0A, R_G = 9.1Ω
		IRF450	—	—	190		V_{DD} = 250V, I_D = 12A, R_G = 2.35Ω
		IRF460	—	—	120		V_{DD} = 250V, I_D = 21A, R_G = 2.35Ω
		IRFAC30	—	—	20		V_{DD} = 300V, I_D = 3.6A, R_G = 7.5Ω
		IRFAC40	—	—	27		V_{DD} = 300V, I_D = 6.2A, R_G = 9.1Ω
		IRFAE30	—	—	32		V_{DD} = 400V, I_D = 3.1A, R_G = 7.5Ω
		IRFAE40	—	—	42		V_{DD} = 400V, I_D = 4.8A, R_G = 9.1Ω
		IRFAE50	—	—	68		V_{DD} = 400V, I_D = 7.1A, R_G = 2.35Ω
		IRFAF30	—	—	30		V_{DD} = 400V*, I_D = 2.0A, R_G = 7.5Ω
		IRFAF40	—	—	39		V_{DD} = 400V*, I_D = 4.3A, R_G = 9.1Ω
		IRFAF50	—	—	66		V_{DD} = 400V*, I_D = 6.2A, R_G = 2.35Ω
		IRFAG30	—	—	42		V_{DD} = 400V*, I_D = 2.3A, R_G = 7.5Ω
		IRFAG40	—	—	50		V_{DD} = 400V*, I_D = 3.9A, R_G = 9.1Ω
		IRFAG50	—	—	44		V_{DD} = 400V*, I_D = 5.6A, R_G = 2.35Ω
	P-Channel	IRF9130	—	—	140		V_{DD} = -50V, I_D = -11A, R_G = 7.5Ω
		IRF9140	—	—	85		V_{DD} = -50V, I_D = -18A, R_G = 9.1Ω
		IRF9230	—	—	100		V_{DD} = -100V, I_D = -6.5A, R_G = 7.5Ω
		IRF9240	—	—	85		V_{DD} = -100V, I_D = -11A, R_G = 9.1Ω

*Equipment Limitation

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
$t_{d(off)}$ Turn-Off Delay Time See Fig. 10	N-Channel	IRF034	—	—	53	ns	V_{DD} = 30V, I_D = 25A, R_G = 7.5Ω
		IRF044	—	—	81		V_{DD} = 30V, I_D = 44A, R_G = 9.1Ω
		IRF054	—	—	100		V_{DD} = 30V, I_D = 45A, R_G = 2.35Ω
		IRF130	—	—	60		V_{DD} = 50V, I_D = 14A, R_G = 7.5Ω
		IRF140	—	—	21		V_{DD} = 50V, I_D = 28A, R_G = 9.1Ω
		IRF150	—	—	170		V_{DD} = 50V, I_D = 38A, R_G = 2.35Ω
		IRF230	—	—	60		V_{DD} = 100V, I_D = 9.0A, R_G = 7.5Ω
		IRF240	—	—	58		V_{DD} = 100V, I_D = 18A, R_G = 9.1Ω
		IRF250	—	—	170		V_{DD} = 100V, I_D = 30A, R_G = 2.35Ω
		IRF330	—	—	80		V_{DD} = 200V, I_D = 5.5A, R_G = 7.5Ω
		IRF340	—	—	79		V_{DD} = 200V, I_D = 10A, R_G = 9.1Ω
		IRF350	—	—	170		V_{DD} = 200V, I_D = 14A, R_G = 2.35Ω
		IRF360	—	—	120		V_{DD} = 200V, I_D = 25A, R_G = 2.35Ω
		IRF430	—	—	80		V_{DD} = 250V, I_D = 4.5A, R_G = 7.5Ω
		IRF440	—	—	72		V_{DD} = 250V, I_D = 8.0A, R_G = 9.1Ω
		IRF450	—	—	170		V_{DD} = 250V, I_D = 12A, R_G = 2.35Ω
		IRF460	—	—	130		V_{DD} = 250V, I_D = 21A, R_G = 2.35Ω
		IRFAC30	—	—	53		V_{DD} = 300V, I_D = 3.6A, R_G = 7.5Ω
		IRFAC40	—	—	83		V_{DD} = 300V, I_D = 6.2A, R_G = 9.1Ω
		IRFAE30	—	—	120		V_{DD} = 400V, I_D = 3.1A, R_G = 7.5Ω
		IRFAE40	—	—	170		V_{DD} = 400V, I_D = 4.8A, R_G = 9.1Ω
		IRFAE50	—	—	78		V_{DD} = 400V, I_D = 7.1A, R_G = 2.35Ω
		IRFAF30	—	—	140		V_{DD} = 400V*, I_D = 2.0A, R_G = 7.5Ω
		IRFAF40	—	—	170		V_{DD} = 400V*, I_D = 4.3A, R_G = 9.1Ω
		IRFAF50	—	—	200		V_{DD} = 400V*, I_D = 6.2A, R_G = 2.35Ω
		IRFAG30	—	—	210		V_{DD} = 400V*, I_D = 2.3A, R_G = 7.5Ω
		IRFAG40	—	—	170		V_{DD} = 400V*, I_D = 3.9A, R_G = 9.1Ω
		IRFAG50	—	—	210		V_{DD} = 400V*, I_D = 5.6A, R_G = 2.35Ω
	P-Channel	IRF9130	—	—	140		V_{DD} = −50V, I_D = −11A, R_G = 7.5Ω
		IRF9140	—	—	85		V_{DD} = −50V, I_D = −18A, R_G = 9.1Ω
		IRF9230	—	—	100		V_{DD} = −100V, I_D = −6.5A, R_G = 7.5Ω
		IRF9240	—	—	85		V_{DD} = −100V, I_D = −11A, R_G = 9.1Ω

*Equipment Limitation

Notes – See page I-34.

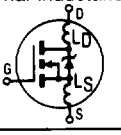
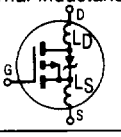
Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
t_f Fall Time See Fig. 10	N-Channel	IRF034	—	—	80	ns	V_{DD} = 30V, I_D = 25A, R_G = 7.5Ω
		IRF044	—	—	79		V_{DD} = 30V, I_D = 44A, R_G = 9.1Ω
		IRF054	—	—	100		V_{DD} = 30V, I_D = 45A, R_G = 2.35Ω
		IRF130	—	—	45		V_{DD} = 50V, I_D = 14A, R_G = 7.5Ω
		IRF140	—	—	105		V_{DD} = 50V, I_D = 28A, R_G = 9.1Ω
		IRF150	—	—	130		V_{DD} = 50V, I_D = 38A, R_G = 2.35Ω
		IRF230	—	—	40		V_{DD} = 100V, I_D = 9.0A, R_G = 7.5Ω
		IRF240	—	—	67		V_{DD} = 100V, I_D = 18A, R_G = 9.1Ω
		IRF250	—	—	130		V_{DD} = 100V, I_D = 30A, R_G = 2.35Ω
		IRF330	—	—	35		V_{DD} = 200V, I_D = 5.5A, R_G = 7.5Ω
		IRF340	—	—	58		V_{DD} = 200V, I_D = 10A, R_G = 9.1Ω
		IRF350	—	—	130		V_{DD} = 200V, I_D = 14A, R_G = 2.35Ω
		IRF360	—	—	99		V_{DD} = 200V, I_D = 25A, R_G = 2.35Ω
		IRF430	—	—	30		V_{DD} = 250V, I_D = 4.5A, R_G = 7.5Ω
		IRF440	—	—	51		V_{DD} = 250V, I_D = 8.0A, R_G = 9.1Ω
		IRF450	—	—	130		V_{DD} = 250V, I_D = 12A, R_G = 2.35Ω
		IRF460	—	—	98		V_{DD} = 250V, I_D = 21A, R_G = 2.35Ω
		IRFAC30	—	—	21		V_{DD} = 300V, I_D = 3.6A, R_G = 7.5Ω
		IRFAC40	—	—	30		V_{DD} = 300V, I_D = 6.2A, R_G = 9.1Ω
		IRFAE30	—	—	44		V_{DD} = 400V, I_D = 3.1A, R_G = 7.5Ω
		IRFAE40	—	—	44		V_{DD} = 400V, I_D = 4.8A, R_G = 9.1Ω
		IRFAE50	—	—	24		V_{DD} = 400V, I_D = 7.1A, R_G = 2.35Ω
		IRFAF30	—	—	47		V_{DD} = 400V*, I_D = 2.0A, R_G = 7.5Ω
		IRFAF40	—	—	44		V_{DD} = 400V*, I_D = 4.3A, R_G = 9.1Ω
		IRFAF50	—	—	57		V_{DD} = 400V*, I_D = 6.2A, R_G = 2.35Ω
		IRFAG30	—	—	60		V_{DD} = 400V*, I_D = 2.3A, R_G = 7.5Ω
		IRFAG40	—	—	50		V_{DD} = 400V*, I_D = 3.9A, R_G = 9.1Ω
		IRFAG50	—	—	60		V_{DD} = 400V*, I_D = 5.6A, R_G = 2.35Ω
	P-Channel	IRF9130	—	—	140		V_{DD} = -50V, I_D = -11A, R_G = 7.5Ω
		IRF9140	—	—	65		V_{DD} = -50V, I_D = -18A, R_G = 9.1Ω
		IRF9230	—	—	80		V_{DD} = -100V, I_D = -6.5A, R_G = 7.5Ω
		IRF9240	—	—	65		V_{DD} = -100V, I_D = -11A, R_G = 9.1Ω

*Equipment Limitation

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions	
L_D Internal Drain Inductance	N-Channel	All	—	5.0	—	nH	Measured from the drain lead, 6 mm (0.15 in.) from package to center of die.	Modified MOSFET symbol showing the internal inductances. 
L_S Internal Source Inductance			—	13	—		Measured from the source lead, 6 mm (0.25 in.) from package to source bonding pad.	
L_D Internal Drain Inductance	P-Channel	All	—	5.0	—	nH	Measured from the drain lead, 6 mm (0.15 in.) from package to center of die.	Modified MOSFET symbol showing the internal inductances. 
L_S Internal Source Inductance			—	13	—		Measured from the source lead, 6 mm (0.25 in.) from package to source bonding pad.	
C_{iss} Input Capacitance	N-Channel	IRF034	—	1300	—	pF	V_{GS} = 0V, V_{DS} = 25V f = 1.0 MHz See Fig. 5	
		IRF044	—	2400	—			
		IRF054	—	4600	—			
		IRF130	—	650	—			
		IRF140	—	1660	—			
		IRF150	—	3700	—			
		IRF230	—	600	—			
		IRF240	—	1300	—			
		IRF250	—	3500	—			
		IRF330	—	620	—			
		IRF340	—	1400	—			
		IRF350	—	2600	—			
		IRF360	—	4200	—			
		IRF430	—	610	—			
		IRF440	—	1300	—			
		IRF450	—	2700	—			
		IRF460	—	4300	—			
		IRFAC30	—	630	—			
		IRFAC40	—	1300	—			
		IRFAE30	—	950	—			
		IRFAE40	—	1700	—			
		IRFAE50	—	2800	—			
		IRFAF30	—	1000	—			
		IRFAF40	—	1500	—			
		IRFAF50	—	2700	—			
		IRFAG30	—	980	—			
		IRFAG40	—	1700	—			
		IRFAG50	—	2400	—			
	P-Channel	IRF9130	—	860	—		V_{GS} = 0V, V_{DS} = −25V f = 1.0 MHz See Fig. 5	
		IRF9140	—	1400	—			
		IRF9230	—	700	—			
		IRF9240	—	1200	—			

Notes – See page I-34.

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Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
C_{oss} Output Capacitance	N-Channel	IRF034	—	650	—	pF	V_{GS} = 0V, V_{DS} = 25V f = 1.0 MHz See Fig. 5
		IRF044	—	1100	—		
		IRF054	—	2000	—		
		IRF130	—	250	—		
		IRF140	—	550	—		
		IRF150	—	1100	—		
		IRF230	—	250	—		
		IRF240	—	400	—		
		IRF250	—	700	—		
		IRF330	—	200	—		
		IRF340	—	350	—		
		IRF350	—	680	—		
		IRF360	—	900	—		
		IRF430	—	135	—		
		IRF440	—	310	—		
		IRF450	—	600	—		
		IRF460	—	1000	—		
		IRFAC30	—	80	—		
		IRFAC40	—	160	—		
		IRFAE30	—	170	—		
		IRFAE40	—	230	—		
		IRFAE50	—	400	—		
		IRFAF30	—	200	—		
		IRFAF40	—	190	—		
		IRFAF50	—	500	—		
		IRFAG30	—	140	—		
		IRFAG40	—	250	—		
		IRFAG50	—	240	—		
	P-Channel	IRF9130	—	350	—		V_{GS} = 0V, V_{DS} = -25V f = 1.0 MHz See Fig. 5
		IRF9140	—	600	—		
		IRF9230	—	200	—		
		IRF9240	—	570	—		

Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
C_{rss} Reverse Transfer Capacitance	N-Channel	IRF034	—	100	—	pF	V_{GS} = 0V, V_{DS} = 25V f = 1.0 MHz See Fig. 5
		IRF044	—	230	—		
		IRF054	—	340	—		
		IRF130	—	44	—		
		IRF140	—	120	—		
		IRF150	—	200	—		
		IRF230	—	80	—		
		IRF240	—	130	—		
		IRF250	—	110	—		
		IRF330	—	75	—		
		IRF340	—	230	—		
		IRF350	—	250	—		
		IRF360	—	400	—		
		IRF430	—	65	—		
		IRF440	—	120	—		
		IRF450	—	240	—		
		IRF460	—	250	—		
		IRFAC30	—	15	—		
		IRFAC40	—	45	—		
		IRFAE30	—	80	—		
		IRFAE40	—	96	—		
		IRFAE50	—	200	—		
		IRFAF30	—	98	—		
		IRFAF40	—	72	—		
		IRFAF50	—	200	—		
		IRFAG30	—	50	—		
		IRFAG40	—	100	—		
		IRFAG50	—	80	—		
	P-Channel	IRF9130	—	125	—		V_{GS} = 0V, V_{DS} = −25V f = 1.0 MHz See Fig. 5
		IRF9140	—	200	—		
		IRF9230	—	40	—		
		IRF9240	—	81	—		

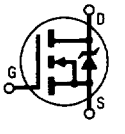
Notes – See page I-34.

Electrical Characteristics @ T_C = 25°C (Unless Otherwise Specified) continued

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
C_{DC} Drain-to-Case Capacitance	N-Channel	ALL	—	12	—	pF	V_{GS} = 0V, V_{DS} = 25V f = 1.0 MHz See Fig. 5
	P-Channel	ALL	—	12	—		V_{GS} = 0V, V_{DS} = -25V f = 1.0 MHz See Fig. 5

Notes – See page I-34.

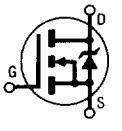
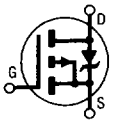
Source-Drain Diode Ratings and Characteristics

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
I_S Continuous Source Current (Body Diode)	N-Channel	IRF034	—	—	25	A	Modified MOSFET symbol showing the integral reverse p-n junction rectifier. 
		IRF044	—	—	44		
		IRF054	—	—	45*		
		IRF130	—	—	14		
		IRF140	—	—	28		
		IRF150	—	—	38		
		IRF230	—	—	9.0		
		IRF240	—	—	18		
		IRF250	—	—	30		
		IRF330	—	—	5.5		
		IRF340	—	—	10		
		IRF350	—	—	14		
		IRF360	—	—	25		
		IRF430	—	—	4.5		
		IRF440	—	—	8.0		
		IRF450	—	—	12		
		IRF460	—	—	21		
		IRFAC30	—	—	3.6		
		IRFAC40	—	—	6.2		
		IRFAE30	—	—	3.1		
		IRFAE40	—	—	4.8		
		IRFAE50	—	—	7.1		
		IRFAF30	—	—	2.8		
		IRFAF40	—	—	4.3		
		IRFAF50	—	—	6.2		
		IRFAG30	—	—	2.3		
		IRFAG40	—	—	3.9		
		IRFAG50	—	—	5.6		
	P-Channel	IRF9130	—	—	−11		
		IRF9140	—	—	−18		
		IRF9230	—	—	−6.5		
		IRF9240	—	—	−11		

*I_S current limited by pin diameter

Notes – See page I-34.

Source-Drain Diode Ratings and Characteristics (continued)

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
I_{SM}	Pulse Source Current (Body Diode) ①	N-Channel	IRF034	—	—	100	A	Modified MOSFET symbol showing the integral reverse p-n junction rectifier. 
			IRF044	—	—	176		
			IRF054	—	—	220		
			IRF130	—	—	56		
			IRF140	—	—	112		
			IRF150	—	—	152		
			IRF230	—	—	36		
			IRF240	—	—	72		
			IRF250	—	—	120		
			IRF330	—	—	22		
			IRF340	—	—	40		
			IRF350	—	—	56		
			IRF360	—	—	100		
			IRF430	—	—	18		
			IRF440	—	—	32		
			IRF450	—	—	48		
			IRF460	—	—	84		
			IRFAC30	—	—	14		
			IRFAC40	—	—	25		
			IRFAE30	—	—	12		
			IRFAE40	—	—	19		
			IRFAE50	—	—	28		
			IRFAF30	—	—	8.0		
			IRFAF40	—	—	17		
			IRFAF50	—	—	25		
			IRFAG30	—	—	9.2		
			IRFAG40	—	—	16		
			IRFAG50	—	—	22		
		P-Channel	IRF9130	—	—	-50		
			IRF9140	—	—	-72		
			IRF9230	—	—	-28		
			IRF9240	—	—	-44		

Notes – See page I-34.

Source-Drain Diode Ratings and Characteristics (continued)

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
V_{SD} Diode Forward Voltage	N-Channel	IRF034	—	—	1.8	V	I_S = 25A, T_J = 25°C, V_{GS} = 0V ④
		IRF044	—	—	2.5		I_S = 44A
		IRF054	—	—	2.5		I_S = 45A
		IRF130	—	—	1.5		I_S = 14A
		IRF140	—	—	1.5		I_S = 28A
		IRF150	—	—	1.8		I_S = 38A
		IRF230	—	—	1.4		I_S = 9.0A
		IRF240	—	—	1.5		I_S = 18A
		IRF250	—	—	1.9		I_S = 30A
		IRF330	—	—	1.4		I_S = 5.5A
		IRF340	—	—	1.5		I_S = 10A
		IRF350	—	—	1.7		I_S = 14A
		IRF360	—	—	1.8		I_S = 25A
		IRF430	—	—	1.4		I_S = 4.5A
		IRF440	—	—	1.5		I_S = 8.0A
		IRF450	—	—	1.7		I_S = 12A
		IRF460	—	—	1.8		I_S = 21A
		IRFAC30	—	—	1.6		I_S = 3.6A
		IRFAC40	—	—	1.1		I_S = 6.2A
		IRFAE30	—	—	1.8		I_S = 3.1A
		IRFAE40	—	—	1.8		I_S = 4.8A
		IRFAE50	—	—	1.8		I_S = 7.1A
		IRFAF30	—	—	1.8		I_S = 2.0A
		IRFAF40	—	—	1.8		I_S = 4.3A
		IRFAF50	—	—	1.8		I_S = 6.2A
		IRFAG30	—	—	1.8		I_S = 2.3A
		IRFAG40	—	—	1.8		I_S = 3.9A
		IRFAG50	—	—	1.8		I_S = 5.6A
	P-Channel	IRF9130	—	—	-4.7		I_S = -11A
		IRF9140	—	—	-4.2		I_S = -18A
		IRF9230	—	—	-6.0		I_S = -6.5A
		IRF9240	—	—	-4.6		I_S = -11A

Notes – See page I-34.

Source-Drain Diode Ratings and Characteristics (continued)

Parameter			Part Number	Min.	Typ.	Max.	Units	Test Conditions
t_{rr}	Reverse Recovery Time	N-Channel	IRF034	—	—	220	ns	I_F = 25A, T_J = 25°C, di/dt ≤ 100 A/μs, V_{DD} ≤ 50V
			IRF044	—	—	220		I_F = 44A
			IRF054	—	—	280		I_F = 45A
			IRF130	—	—	300		I_F = 14A
			IRF140	—	—	400		I_F = 28A
			IRF150	—	—	500		I_F = 38A
			IRF230	—	—	500		I_F = 9.0A
			IRF240	—	—	500		I_F = 18A
			IRF250	—	—	950		I_F = 30A
			IRF330	—	—	700		I_F = 5.5A
			IRF340	—	—	600		I_F = 10A
			IRF350	—	—	1200		I_F = 14A
			IRF360	—	—	1000		I_F = 25A
			IRF430	—	—	900		I_F = 4.5A
			IRF440	—	—	700		I_F = 8.0A
			IRF450	—	—	1600		I_F = 12A
			IRF460	—	—	580		I_F = 21A
			IRFAC30	—	—	810		I_F = 3.6A
			IRFAC40	—	—	940		I_F = 6.2A
			IRFAE30	—	—	800		I_F = 3.1A
			IRFAE40	—	—	1300		I_F = 4.8A
			IRFAE50	—	—	1600		I_F = 7.1A
			IRFAF30	—	—	730		I_F = 2.0A
			IRFAF40	—	—	1100		I_F = 4.3A
			IRFAF50	—	—	1500		I_F = 6.2A
			IRFAG30	—	—	470		I_F = 2.3A
			IRFAG40	—	—	1000		I_F = 3.9A
			IRFAG50	—	—	1200		I_F = 5.6A
		P-Channel	IRF9130	—	—	250		I_F = −11A
			IRF9140	—	170	280		I_F = −18A, T_J = 25°C, di/dt ≤ −100 A/μs ④, V_{DD} ≤ −50V
			IRF9230	—	—	400		I_F = −6.5A
			IRF9240	—	270	440		I_F = −11A

Notes – See page I-34.

Source-Drain Diode Ratings and Characteristics (continued)

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
Q_{RR} Reverse Recovery Charge	N-Channel	IRF034	—	—	9.6	μC	I_F = 25A, T_J = 25°C, di/dt ≤ 100 A/μs ④, V_{DD} ≤ 50V
		IRF044	—	—	1.6		I_F = 44A
		IRF054	—	—	2.2		I_F = 45A
		IRF130	—	—	3.0		I_F = 14A
		IRF140	—	—	2.9		I_F = 28A
		IRF150	—	—	2.9		I_F = 38A
		IRF230	—	—	6.0		I_F = 9.0A
		IRF240	—	—	5.3		I_F = 18A
		IRF250	—	—	9.0		I_F = 30A
		IRF330	—	—	6.2		I_F = 5.5A
		IRF340	—	—	5.6		I_F = 10A
		IRF350	—	—	11		I_F = 14A
		IRF360	—	—	16		I_F = 25A
		IRF430	—	—	7.0		I_F = 4.5A
		IRF440	—	—	8.9		I_F = 8.0A
		IRF450	—	—	14		I_F = 12A
		IRF460	—	—	8.1		I_F = 21A
		IRFAC30	—	—	4.2		I_F = 3.6A
		IRFAC40	—	—	8.0		I_F = 6.2A
		IRFAE30	—	—	3.6		I_F = 3.1A
		IRFAE40	—	—	8.5		I_F = 4.8A
		IRFAE50	—	—	13		I_F = 7.1A
		IRFAF30	—	—	3.0		I_F = 2.0A
		IRFAF40	—	—	6.7		I_F = 4.3A
		IRFAF50	—	—	11		I_F = 6.2A
		IRFAG30	—	—	1.7		I_F = 2.3A
		IRFAG40	—	—	5.6		I_F = 3.9A
		IRFAG50	—	—	8.4		I_F = 5.6A
	P-Channel	IRF9130	—	—	3.0		I_F = −11A, T_J = 25°C, di/dt ≤ −100 A/μs, V_{DD} ≤ −50V
		IRF9140	—	—	3.6		I_F = −18A
		IRF9230	—	—	4.0		I_F = −6.5A
		IRF9240	—	—	7.2		I_F = −11A
t_{on} Forward Turn-On Time	ALL	Intrinsic turn-on time is negligible. Turn-on speed is substantially controlled by L_S + L_D					

Notes – See page I-34.

Thermal Resistance and Case Style

Parameter			Part Number	Min.	Typ.	Max.	Units	Test Conditions
R_{thJC}	Junction-to-Case	N-Channel	IRF034	—	—	1.67	K/W ⑤	
			IRF044	—	—	1.0		
			IRF054	—	—	0.83		
			IRF130	—	—	1.67		
			IRF140	—	—	1.0		
			IRF150	—	—	0.83		
			IRF230	—	—	1.67		
			IRF240	—	—	1.0		
			IRF250	—	—	0.83		
			IRF330	—	—	1.67		
			IRF340	—	—	1.0		
			IRF350	—	—	0.83		
			IRF360	—	—	0.42		
			IRF430	—	—	1.67		
			IRF440	—	—	1.0		
			IRF450	—	—	0.83		
			IRF460	—	—	0.42		
			IRFAC30	—	—	1.67		
			IRFAC40	—	—	1.0		
			IRFAE30	—	—	1.67		
			IRFAE40	—	—	1.0		
			IRFAE50	—	—	0.83		
			IRFAF30	—	—	1.67		
			IRFAF40	—	—	1.0		
			IRFAF50	—	—	0.83		
			IRFAG30	—	—	1.67		
			IRFAG40	—	—	1.0		
			IRFAG50	—	—	0.83		
		P-Channel	IRF9130	—	—	1.67		
			IRF9140	—	—	1.0		
			IRF9230	—	—	1.67		
			IRF9240	—	—	1.0		

Notes – See page I-34.

Thermal Resistance and Case Style (continued)

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
R_{thCS} Case-to-Sink	N-Channel	IRF034	—	0.12	—	K/W ⑤	Mounting surface flat, smooth, and greased.
		IRF044	—	0.12	—		
		IRF054	—	0.12	—		
		IRF130	—	0.12	—		
		IRF140	—	0.12	—		
		IRF150	—	0.12	—		
		IRF230	—	0.12	—		
		IRF240	—	0.12	—		
		IRF250	—	0.12	—		
		IRF330	—	0.12	—		
		IRF340	—	0.12	—		
		IRF350	—	0.12	—		
		IRF360	—	0.12	—		
		IRF430	—	0.12	—		
		IRF440	—	0.12	—		
		IRF450	—	0.12	—		
		IRF460	—	0.12	—		
		IRFAC30	—	0.12	—		
		IRFAC40	—	0.12	—		
		IRFAE30	—	0.12	—		
		IRFAE40	—	0.12	—		
		IRFAE50	—	0.12	—		
		IRFAF30	—	0.12	—		
		IRFAF40	—	0.12	—		
		IRFAF50	—	0.12	—		
		IRFAG30	—	0.12	—		
		IRFAG40	—	0.12	—		
		IRFAG50	—	0.12	—		
	P-Channel	IRF9130	—	0.12	—		
		IRF9140	—	0.12	—		
		IRF9230	—	0.12	—		
		IRF9240	—	0.12	—		

Notes – See page I-34.

Thermal Resistance and Case Style (continued)

Parameter		Part Number	Min.	Typ.	Max.	Units	Test Conditions
R_{thJA} Junction-to-Ambient	N-Channel	IRF034	—	—	30	K/W ⑤	Typical socket mount
		IRF044	—	—	30		
		IRF054	—	—	30		
		IRF130	—	—	30		
		IRF140	—	—	30		
		IRF150	—	—	30		
		IRF230	—	—	30		
		IRF240	—	—	30		
		IRF250	—	—	30		
		IRF330	—	—	30		
		IRF340	—	—	30		
		IRF350	—	—	30		
		IRF360	—	—	30		
		IRF430	—	—	30		
		IRF440	—	—	30		
		IRF450	—	—	30		
		IRF460	—	—	30		
		IRFAC30	—	—	30		
		IRFAC40	—	—	30		
		IRFAE30	—	—	30		
		IRFAE40	—	—	30		
		IRFAE50	—	—	30		
		IRFAF30	—	—	30		
		IRFAF40	—	—	30		
		IRFAF50	—	—	30		
		IRFAG30	—	—	30		
		IRFAG40	—	—	30		
		IRFAG50	—	—	30		
	P-Channel	IRF9130	—	—	30		
		IRF9140	—	—	30		
		IRF9230	—	—	30		
		IRF9240	—	—	30		

Notes – See page I-34.

Thermal Resistance and Case Style (continued)

		Part Number	TO-204AA	TO-204AE
Case Style	N-Channel	IRF034		X
		IRF044		X
		IRF054		X
		IRF130	X	
		IRF140		X
		IRF150		X
		IRF230	X	
		IRF240		X
		IRF250		X
		IRF330	X	
		IRF340	X	
		IRF350	X	
		IRF360		X
		IRF430	X	
		IRF440	X	
		IRF450	X	
		IRF460		X
		IRFAC30	X	
		IRFAC40	X	
		IRFAE30	X	
		IRFAE40	X	
		IRFAE50	X	
		IRFAF30	X	
		IRFAF40	X	
		IRFAF50	X	
		IRFAG30	X	
		IRFAG40	X	
		IRFAG50	X	
		IRF9130	X	
	P-Channel	IRF9140	X	
		IRF9230	X	
		IRF9240	X	

Notes – See page I-34.

Notes:

① Repetitive rating; pulse width limited by max. junction temperature (See Figure 11)

② See Table 1 for individual devices conditions

③ See Table 1 for individual devices conditions

④ Pulse width ≤300 μs; duty cycle ≤2%

⑤ K/W = °C/W
W/K = W/°C

Table 1 — Notes ② and ③ for IRF034 to IRFAG50 — N-Channel IRF9130 to IRF9240 — P-Channel

Device	Note ②	Note ③
IRF034	@ V_{DD} = 25V, Starting T_J = 25°C, L ≥ 35 μH, R_G = 25Ω, Peak I_L = 25A	I_{SD} ≤ 25A, di/dt ≤ 200 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF044	@ V_{DD} = 25V, Starting T_J = 25°C, L ≥ 200 μH, R_G = 25Ω, Peak I_L = 44A	I_{SD} ≤ 44A, di/dt ≤ 250 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRF054	@ V_{DD} = 25V, Starting T_J = 25°C, L ≥ 280 μH, R_G = 25Ω, Peak I_L = 45A	I_{SD} ≤ 45A, di/dt ≤ 200 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRF130	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 570 μH, R_G = 25Ω, Peak I_L = 14A	I_{SD} ≤ 14A, di/dt ≤ 140 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF140	@ V_{DD} = 25V, Starting T_J = 25°C, L ≥ 480 μH, R_G = 25Ω, Peak I_L = 28A	I_{SD} ≤ 28A, di/dt ≤ 170 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRF150	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 160 μH, R_G = 25Ω, Peak I_L = 38A	I_{SD} ≤ 38A, di/dt ≤ 300 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRF230	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 1.0 mH, R_G = 25Ω, Peak I_L = 9.0A	I_{SD} ≤ 9.0A, di/dt ≤ 120 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF240	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 2.1 mH, R_G = 25Ω, Peak I_L = 18A	I_{SD} ≤ 18A, di/dt ≤ 160 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRF250	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 330 μH, R_G = 25Ω, Peak I_L = 30A	I_{SD} ≤ 30A, di/dt ≤ 190 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRF330	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 100 μH, R_G = 25Ω, Peak I_L = 5.5A	I_{SD} ≤ 5.5A, di/dt ≤ 90 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF340	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 100 μH, R_G = 25Ω, Peak I_L = 10A	I_{SD} ≤ 10A, di/dt ≤ 120 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRF350	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 100 μH, R_G = 25Ω, Peak I_L = 14A	I_{SD} ≤ 14A, di/dt ≤ 145 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRF360	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 2.8 mH, R_G = 25Ω, Peak I_L = 25A	I_{SD} ≤ 25A, di/dt ≤ 170 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω

Table 1 — (continued)

Device	Note ②	Note ③
IRF430	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 100 μH, R_G = 25Ω, Peak I_L = 4.5A	I_{SD} ≤ 4.5A, di/dt ≤ 75 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF440	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 100 μH, R_G = 25Ω, Peak I_L = 8.0A	I_{SD} ≤ 8.0A, di/dt ≤ 100 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRF450	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 100 μH, R_G = 25Ω, Peak I_L = 12A	I_{SD} ≤ 12A, di/dt ≤ 130 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRF460	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 4.9 mH, R_G = 25Ω, Peak I_L = 21A	I_{SD} ≤ 21A, di/dt ≤ 160 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRFAC30	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 25 mH, R_G = 25Ω, Peak I_L = 3.6A	I_{SD} ≤ 3.6A, di/dt ≤ 60 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRFAC40	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 27 mH, R_G = 25Ω, Peak I_L = 6.2A	I_{SD} ≤ 6.2A, di/dt ≤ 80 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRFAE30	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 20 mH, R_G = 25Ω, Peak I_L = 3.1A	I_{SD} ≤ 3.1A, di/dt ≤ 100 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRFAE40	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 45 mH, R_G = 25Ω, Peak I_L = 4.8A	I_{SD} ≤ 4.8A, di/dt ≤ 120 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRFAF30	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 47 mH, R_G = 25Ω, Peak I_L = 2.0A	I_{SD} ≤ 2.0A, di/dt ≤ 90 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRFAF40	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 54 mH, R_G = 25Ω, Peak I_L = 4.3A	I_{SD} ≤ 4.3A, di/dt ≤ 110 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRFAF50	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 43 mH, R_G = 25Ω, Peak I_L = 6.2A	I_{SD} ≤ 6.2A, di/dt ≤ 130 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRFAG30	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 40 mH, R_G = 25Ω, Peak I_L = 2.3A	I_{SD} ≤ 2.3A, di/dt ≤ 80 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω

I

Table 1 — (continued)

Device	Note ②	Note ③
IRFAG40	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 66 mH, R_G = 25Ω, Peak I_L = 3.9A	I_{SD} ≤ 3.9A, di/dt ≤ 100 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRFAG50	@ V_{DD} = 50V, Starting T_J = 25°C, L ≥ 52 mH, R_G = 25Ω, Peak I_L = 5.6A	I_{SD} ≤ 5.6A, di/dt ≤ 120 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 2.35Ω
IRF9130	@ V_{DD} = −25V, Starting T_J = 25°C, L ≥ 1.0 mH, R_G = 25Ω, Peak I_L = −11A	I_{SD} ≤ −11A, di/dt ≤ −140 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF9140	@ V_{DD} = −25V, Starting T_J = 25°C, L ≥ 2.3 mH, R_G = 25Ω, Peak I_L = −18A	I_{SD} ≤ −18A, di/dt ≤ −100 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω
IRF9230	@ V_{DD} = −50V, Starting T_J = 25°C, L ≥ 2.3 mH, R_G = 25Ω, Peak I_L = −6.5A	I_{SD} ≤ −6.5A, di/dt ≤ −120 A/μs, V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 7.5Ω
IRF9240	@ V_{DD} = −50V, Starting T_J = 25°C, L ≥ 6.2 mH, R_G = 25Ω, Peak I_L = −11A	I_{SD} ≤ −11A, di/dt ≤ −150 A/μs V_{DD} ≤ BV_{DSS}, T_J ≤ 150°C Suggested R_G = 9.1Ω

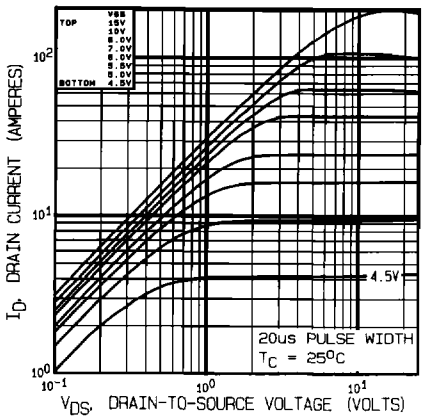


Fig. 1a – Typical Output Characteristics, T_C = 25°C
IRF034

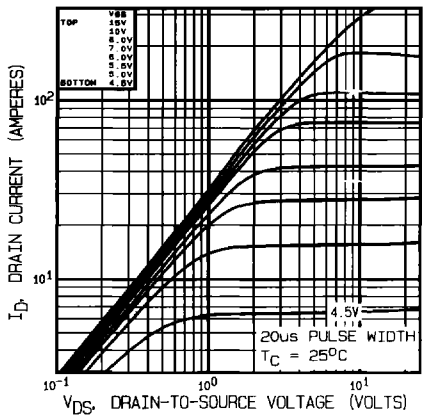


Fig. 1b – Typical Output Characteristics, T_C = 25°C
IRF044

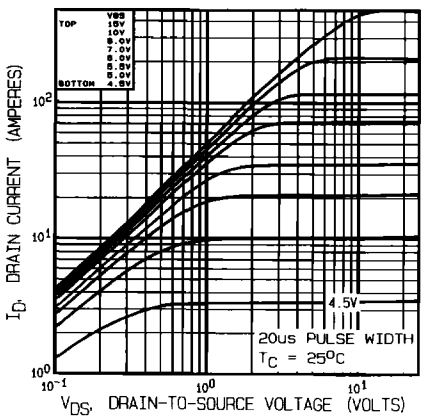


Fig. 1c – Typical Output Characteristics, T_C = 25°C
IRF054

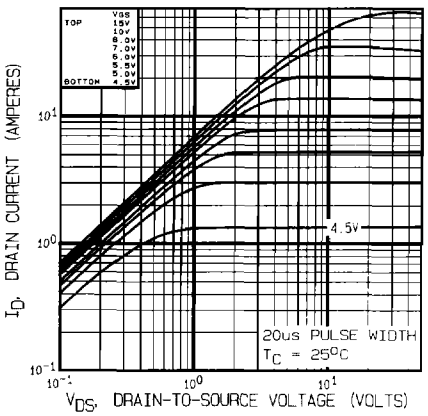


Fig. 1d – Typical Output Characteristics, T_C = 25°C
IRF130

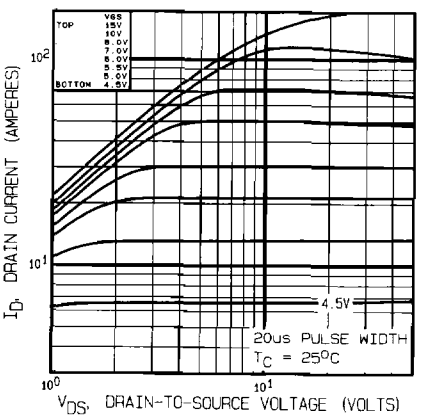


Fig. 1e – Typical Output Characteristics, T_C = 25°C
IRF140

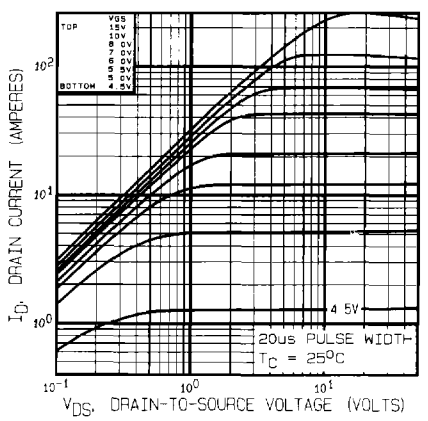


Fig. 1f – Typical Output Characteristics, T_C = 25°C
IRF150

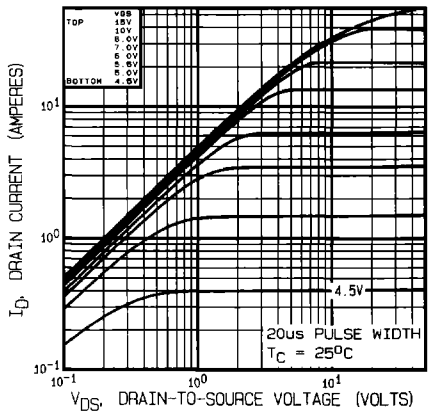


Fig. 1g – Typical Output Characteristics, T_C = 25°C
IRF230

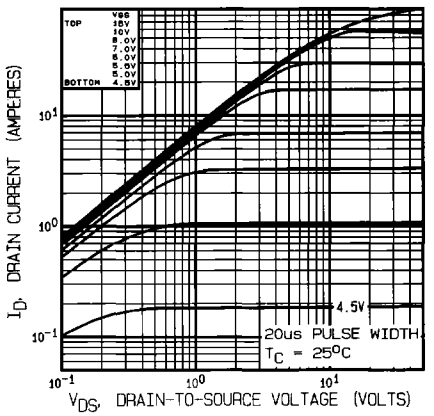


Fig. 1h – Typical Output Characteristics, T_C = 25°C
IRF240

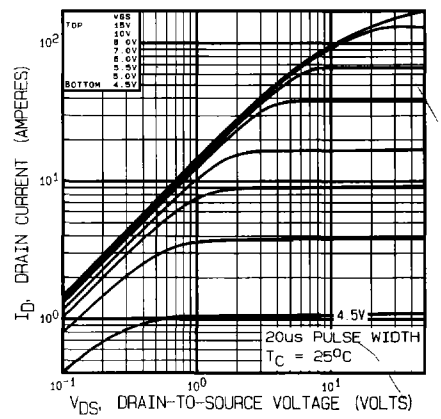


Fig. 1i – Typical Output Characteristics, T_C = 25°C
IRF250

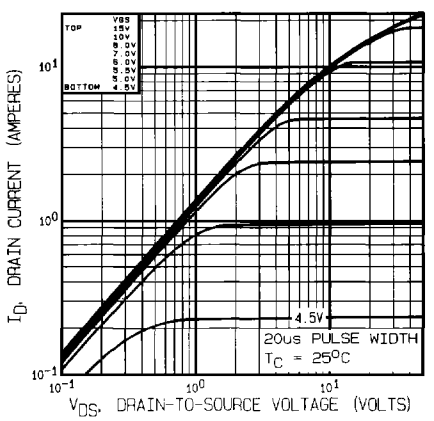


Fig. 1j – Typical Output Characteristics, T_C = 25°C
IRF330

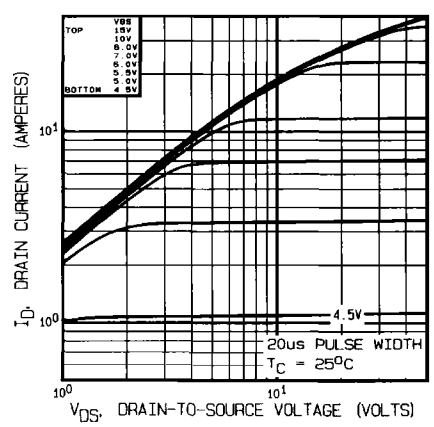


Fig. 1k – Typical Output Characteristics, T_C = 25°C
IRF340

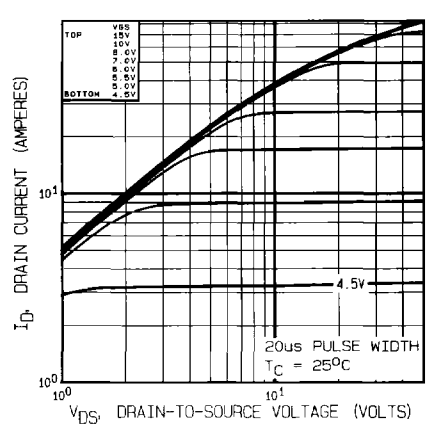


Fig. 1l – Typical Output Characteristics, T_C = 25°C
IRF350

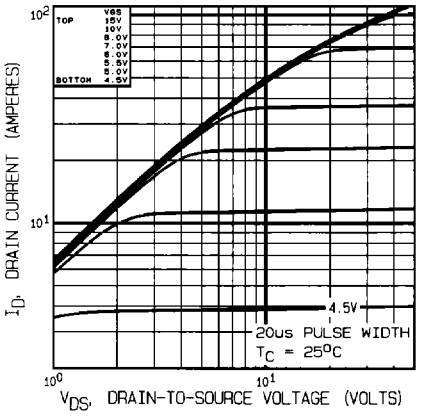


Fig. 1m – Typical Output Characteristics, T_C = 25°C
IRF360

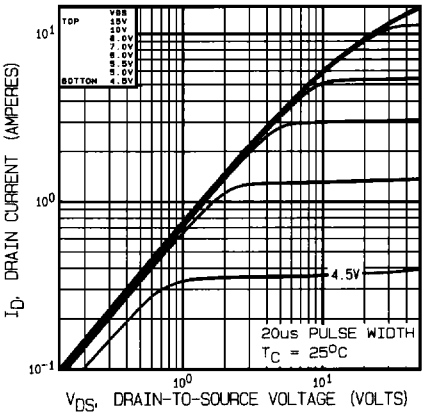


Fig. 1n – Typical Output Characteristics, T_C = 25°C
IRF430

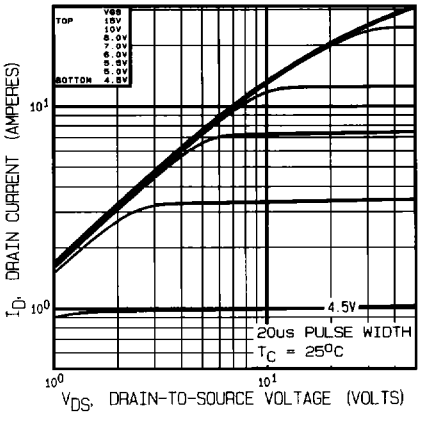


Fig. 1o – Typical Output Characteristics, T_C = 25°C
IRF440

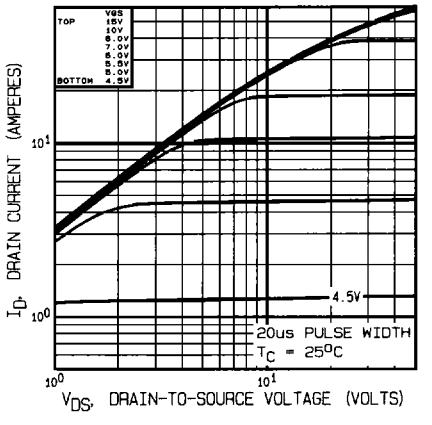


Fig. 1p – Typical Output Characteristics, T_C = 25°C
IRF450

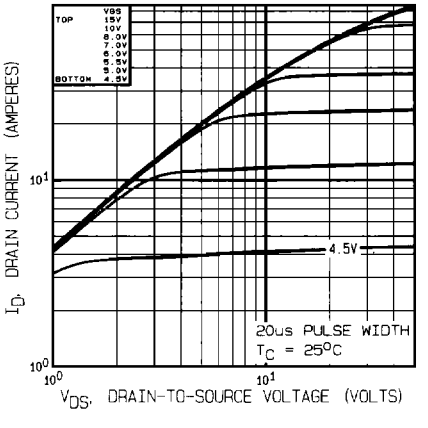


Fig. 1q – Typical Output Characteristics, T_C = 25°C
IRF460

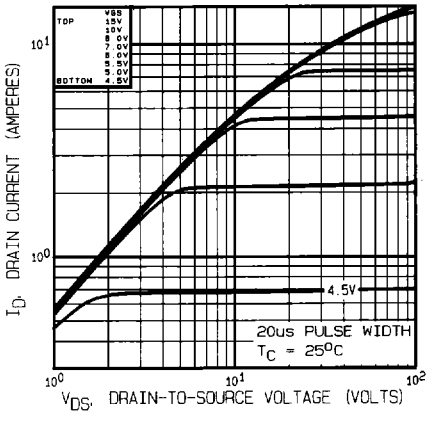


Fig. 1r – Typical Output Characteristics, T_C = 25°C
IRFAC30

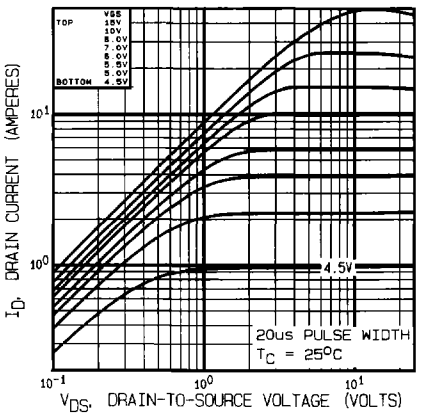


Fig. 1s – Typical Output Characteristics, T_C = 25°C
IRFAC40

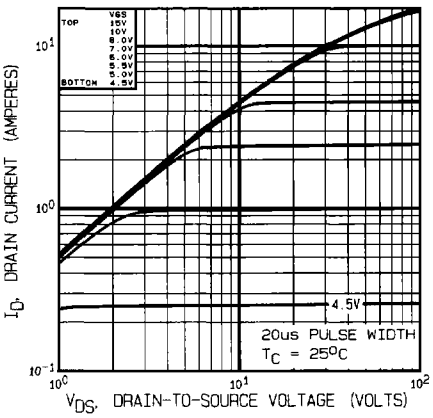


Fig. 1t – Typical Output Characteristics, T_C = 25°C
IRFAE30

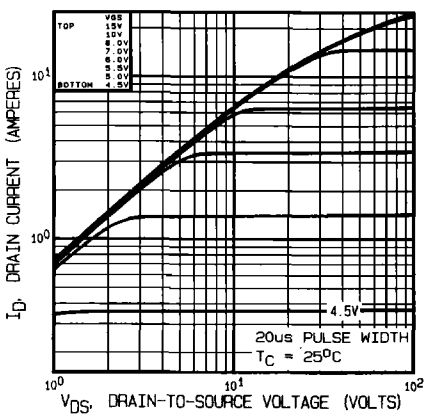


Fig. 1u – Typical Output Characteristics, T_C = 25°C
IRFAE40

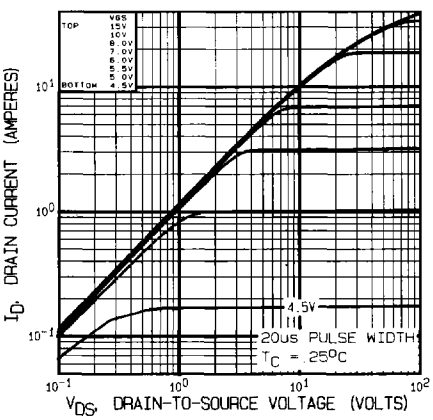


Fig. 1v – Typical Output Characteristics, T_C = 25°C
IRFAE50

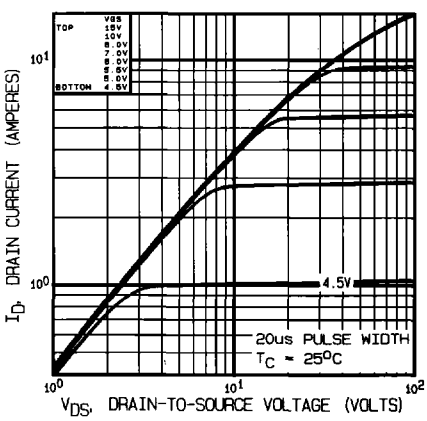


Fig. 1w – Typical Output Characteristics, T_C = 25°C
IRFAF30

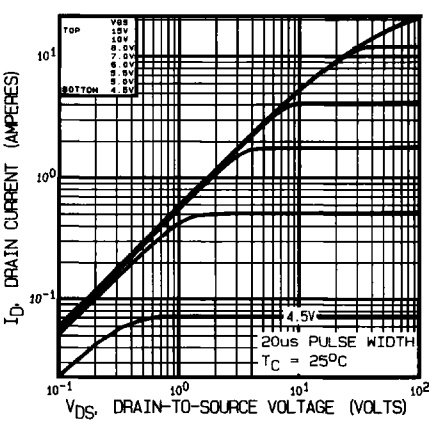


Fig. 1x – Typical Output Characteristics, T_C = 25°C
IRFAF40

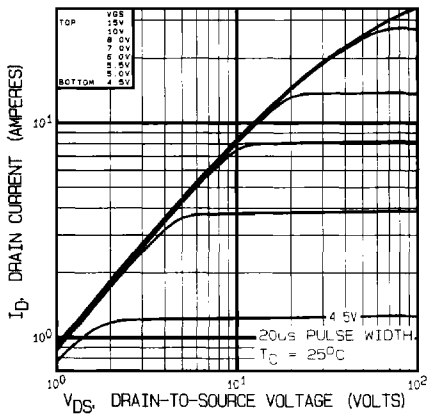


Fig. 1y – Typical Output Characteristics, T_C = 25°C
IRFAF50

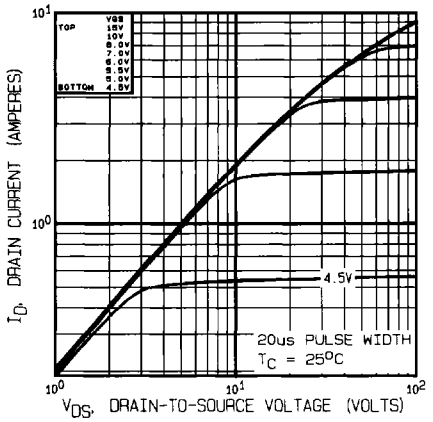


Fig. 1z – Typical Output Characteristics, T_C = 25°C
IRFAG30

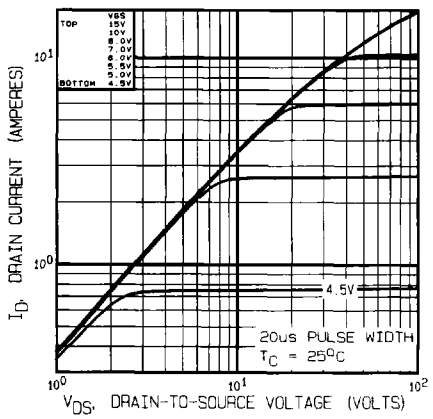


Fig. 1aa – Typical Output Characteristics, T_C = 25°C
IRFAG40

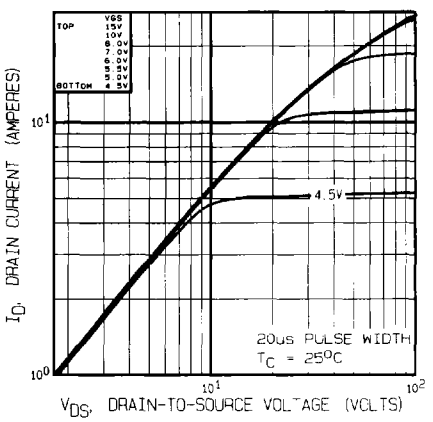


Fig. 1bb – Typical Output Characteristics, T_C = 25°C
IRFAG50

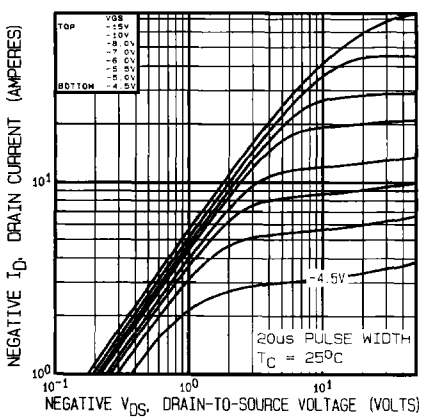


Fig. 1cc – Typical Output Characteristics, T_C = 25°C
IRF9130

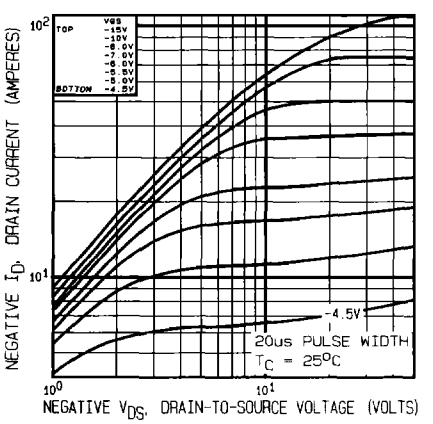


Fig. 1dd – Typical Output Characteristics, T_C = 25°C
IRF9140

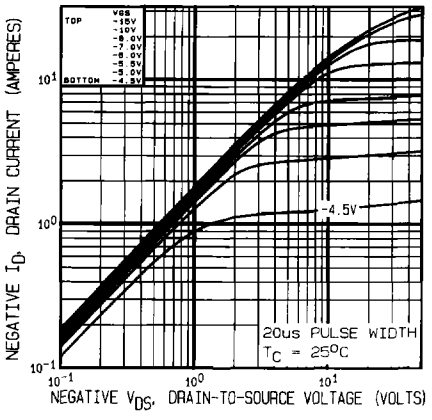


Fig. 1ee – Typical Output Characteristics, T_C = 25°C
IRF9230

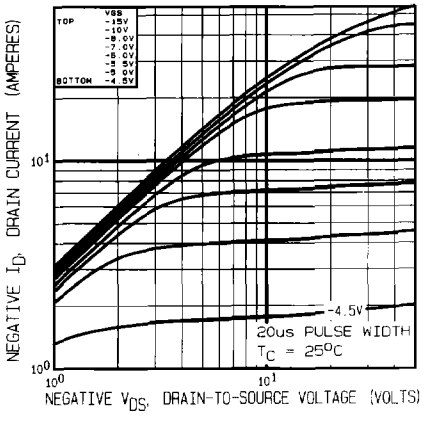


Fig. 1ff – Typical Output Characteristics, T_C = 25°C
IRF9240

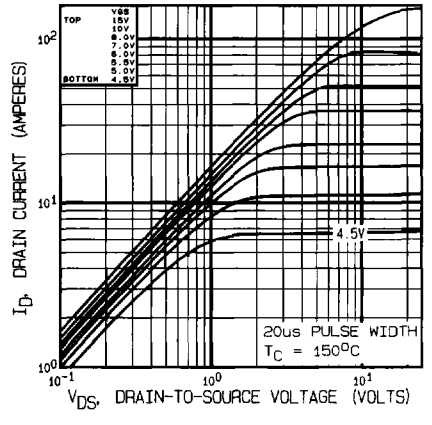


Fig. 2a – Typical Output Characteristics, T_C = 150°C
IRF034

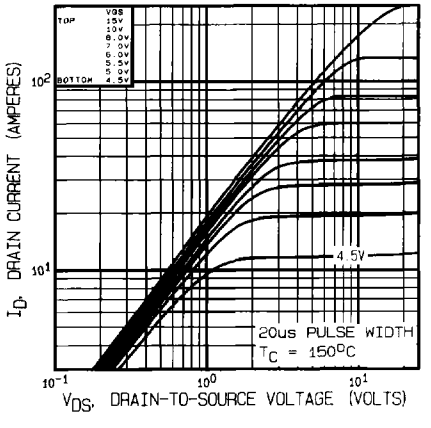


Fig. 2b – Typical Output Characteristics, T_C = 150°C
IRF044

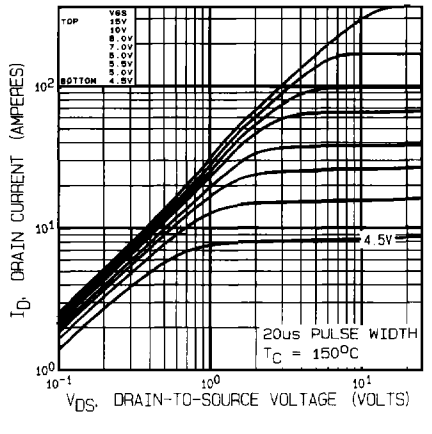


Fig. 2c – Typical Output Characteristics, T_C = 150°C
IRF054

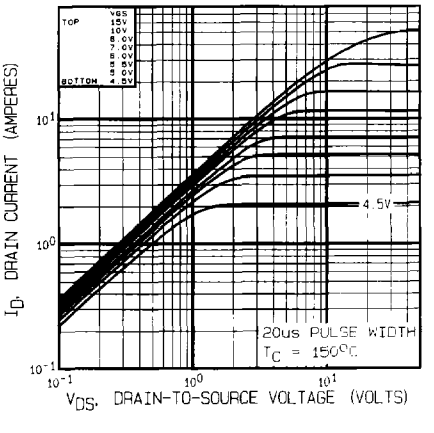


Fig. 2d – Typical Output Characteristics, T_C = 150°C
IRF130

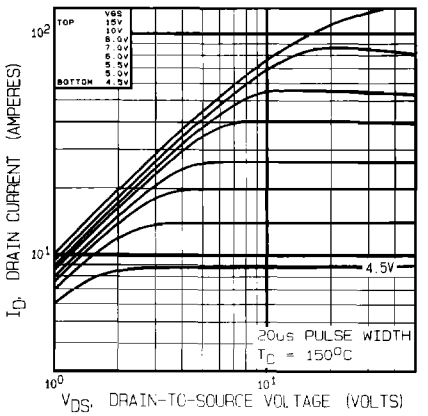


Fig. 2e – Typical Output Characteristics, T_C = 150°C
IRF140

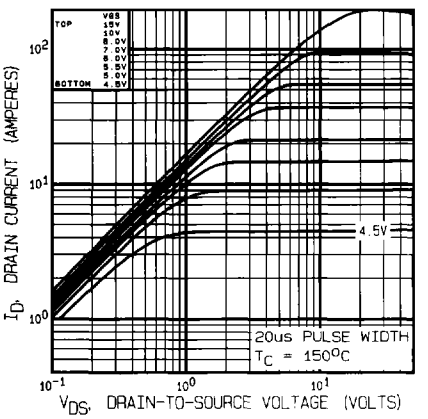


Fig. 2f – Typical Output Characteristics, T_C = 150°C
IRF150

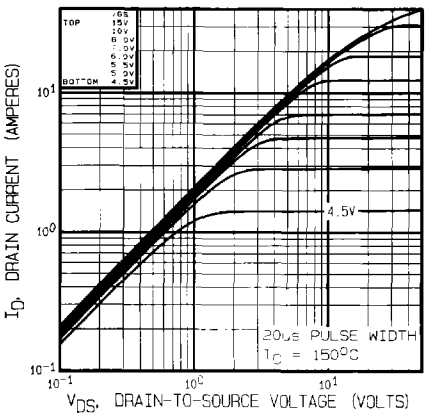


Fig. 2g – Typical Output Characteristics, T_C = 150°C
IRF230

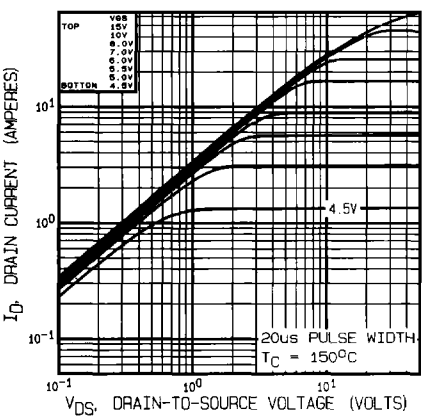


Fig. 2h – Typical Output Characteristics, T_C = 150°C
IRF240

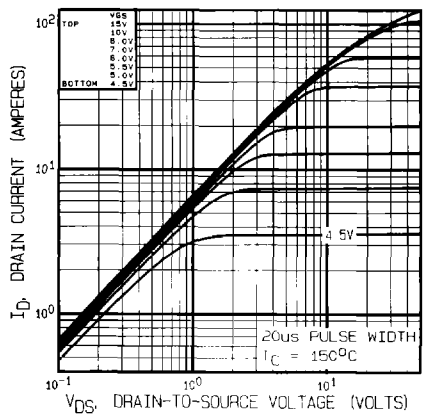


Fig. 2i – Typical Output Characteristics, T_C = 150°C
IRF250

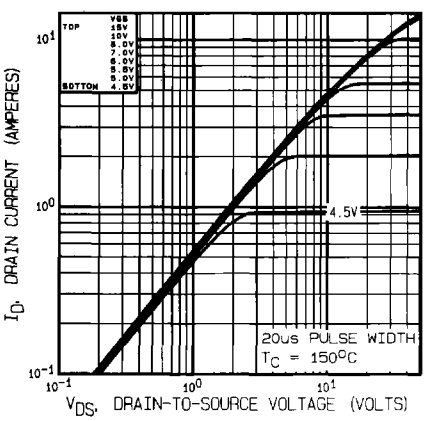


Fig. 2j – Typical Output Characteristics, T_C = 150°C
IRF330

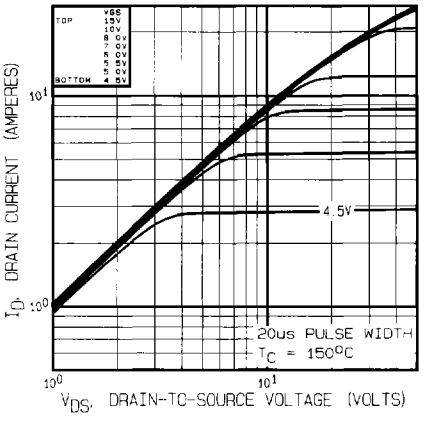


Fig. 2k – Typical Output Characteristics, T_C = 150°C
IRF340

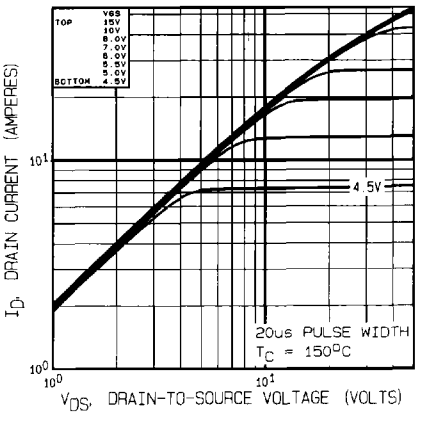


Fig. 2l – Typical Output Characteristics, T_C = 150°C
IRF350

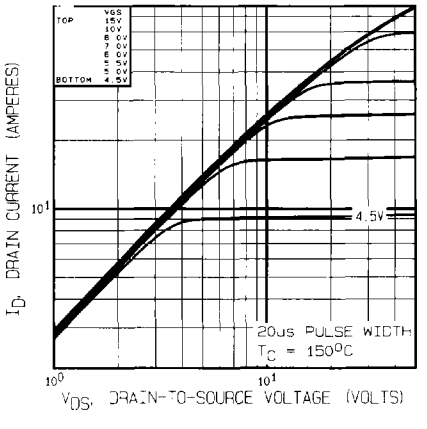


Fig. 2m – Typical Output Characteristics, T_C = 150°C
IRF360

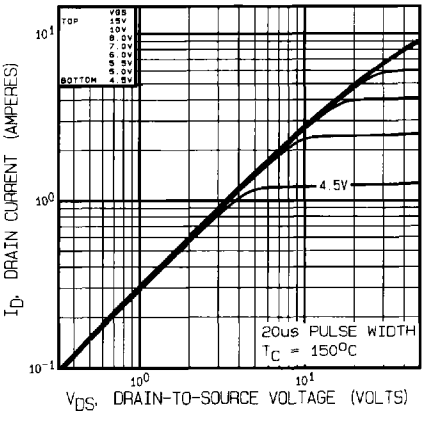


Fig. 2n – Typical Output Characteristics, T_C = 150°C
IRF430

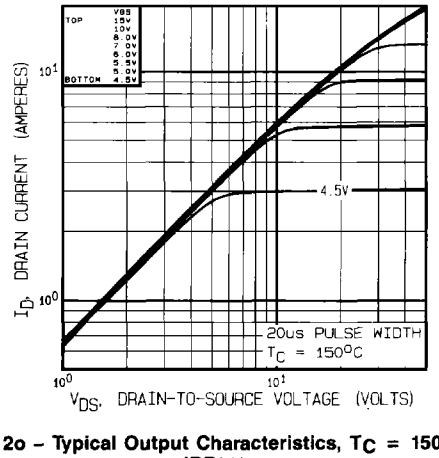


Fig. 2o – Typical Output Characteristics, T_C = 150OC
IRF440

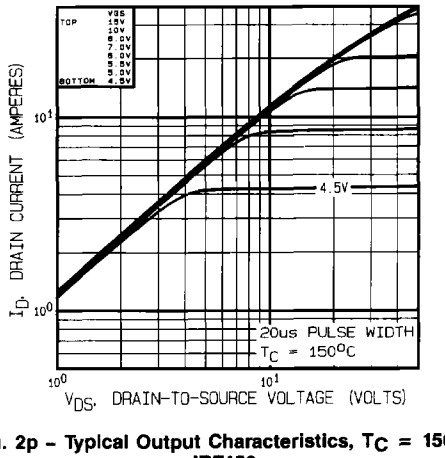


Fig. 2p – Typical Output Characteristics, T_C = 150°C
IRF450

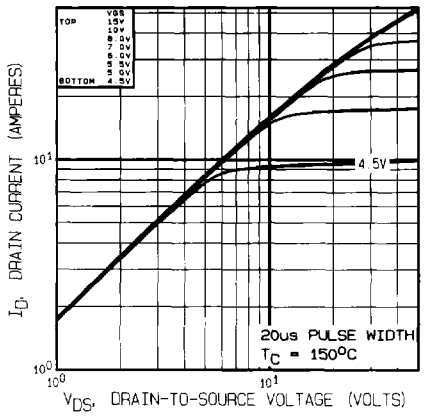


Fig. 2q – Typical Output Characteristics, T_C = 150°C
IRF460

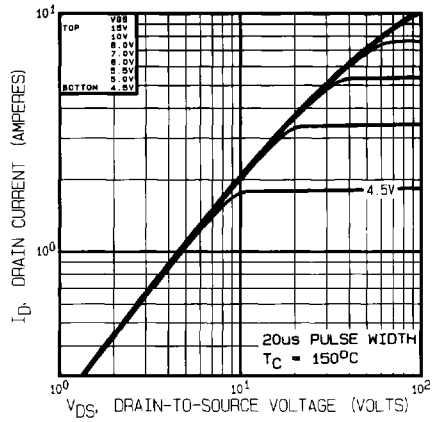


Fig. 2r – Typical Output Characteristics, T_C = 150°C
IRFAC30

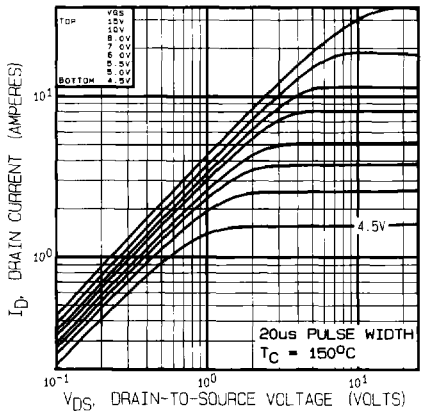


Fig. 2s – Typical Output Characteristics, T_C = 150°C
IRFAC40

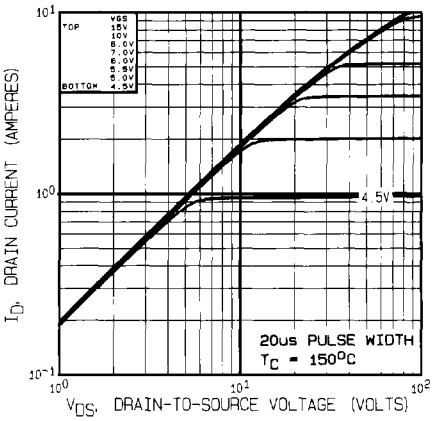


Fig. 2t – Typical Output Characteristics, T_C = 150°C
IRFAE30

I

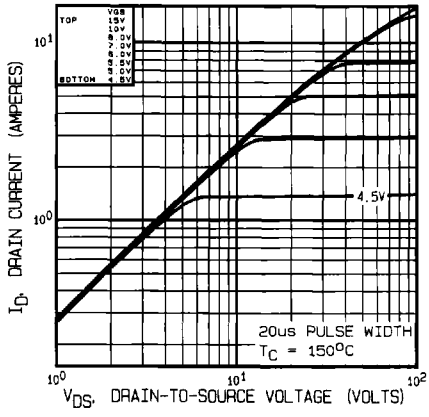


Fig. 2u – Typical Output Characteristics, T_C = 150°C
IRFAE40

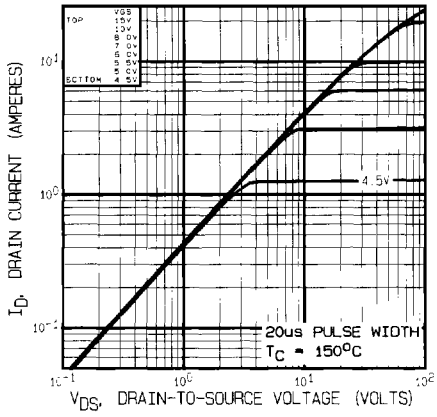


Fig. 2v – Typical Output Characteristics, T_C = 150°C
IRFAE50

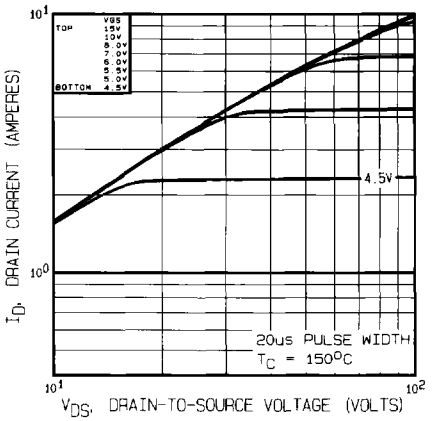


Fig. 2w – Typical Output Characteristics, T_C = 150°C
IRFAF30

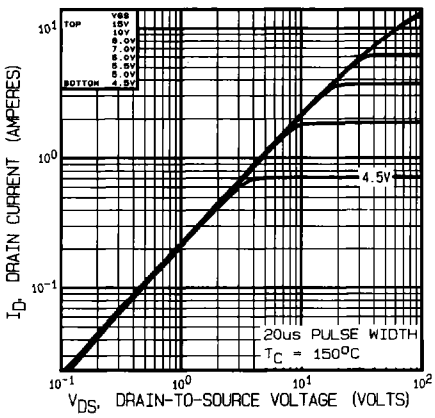


Fig. 2x – Typical Output Characteristics, T_C = 150°C
IRFAF40

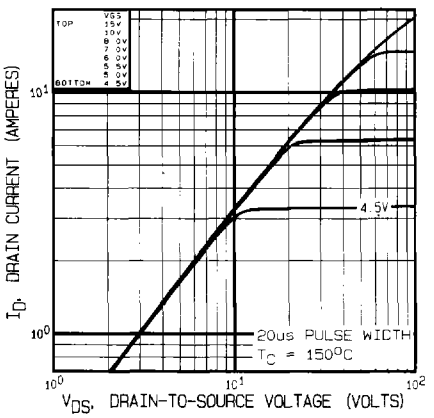


Fig. 2y – Typical Output Characteristics, T_C = 150°C
IRFAF50

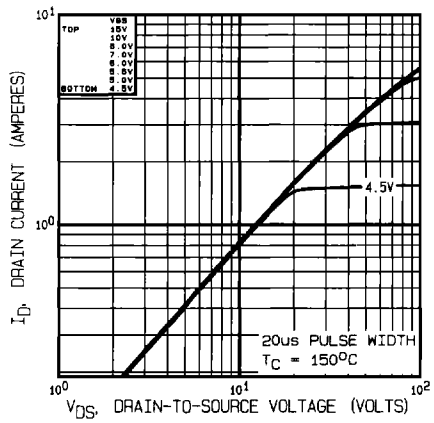


Fig. 2z – Typical Output Characteristics, T_C = 150°C
IRFAG30

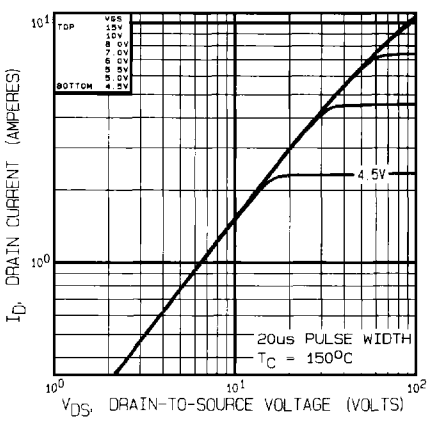


Fig. 2aa – Typical Output Characteristics, T_C = 150°C
IRFAG40

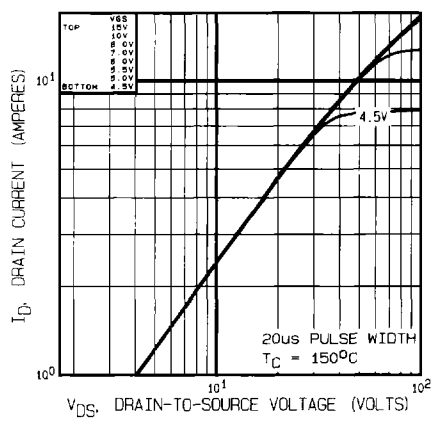


Fig. 2bb – Typical Output Characteristics, T_C = 150°C
IRFAG50

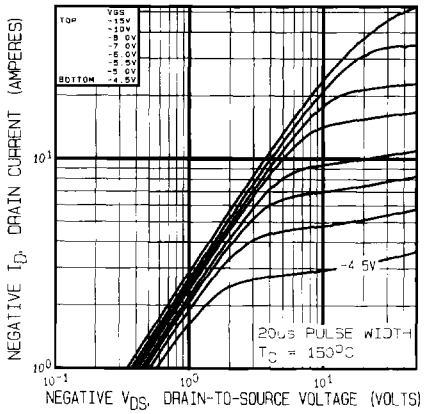


Fig. 2cc – Typical Output Characteristics, T_C = 150°C
IRF9130

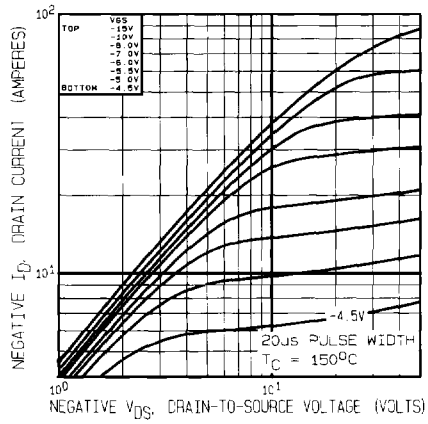


Fig. 2dd – Typical Output Characteristics, T_C = 150°C
IRF9140

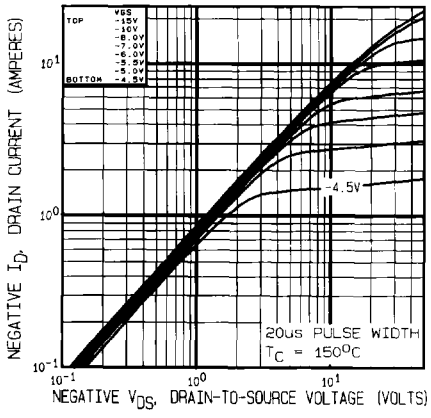


Fig. 2ee – Typical Output Characteristics, T_C = 150°C
IRF9230

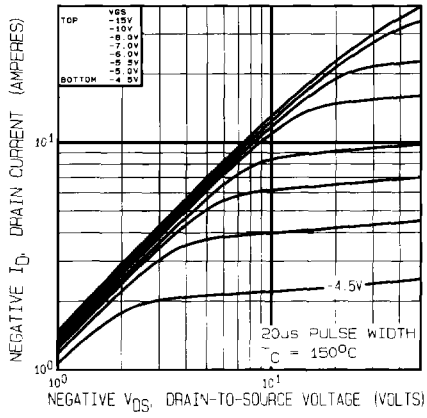


Fig. 2ff – Typical Output Characteristics, T_C = 150°C
IRF9240

I

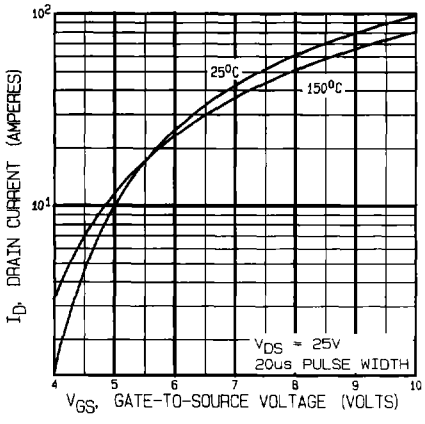


Fig. 3a – Typical Transfer Characteristics
IRF034

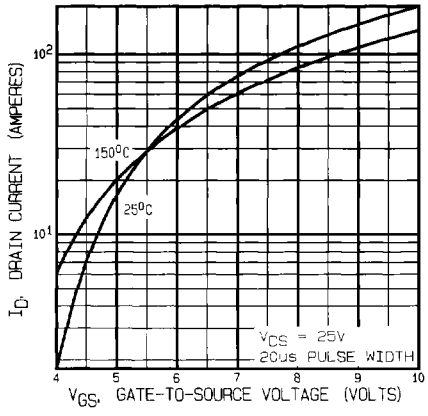


Fig. 3b – Typical Transfer Characteristics
IRF044

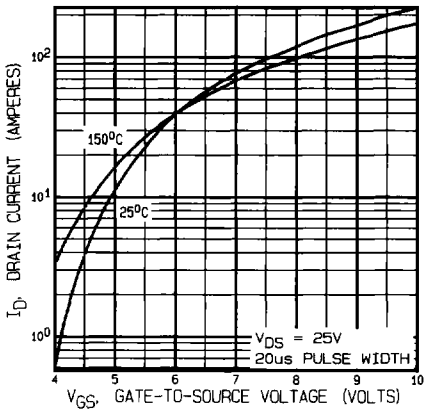


Fig. 3c – Typical Transfer Characteristics IRF054

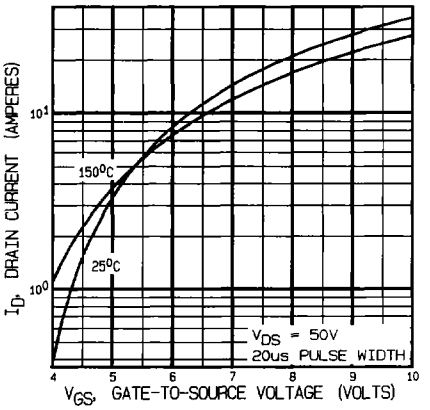


Fig. 3d – Typical Transfer Characteristics IRF130

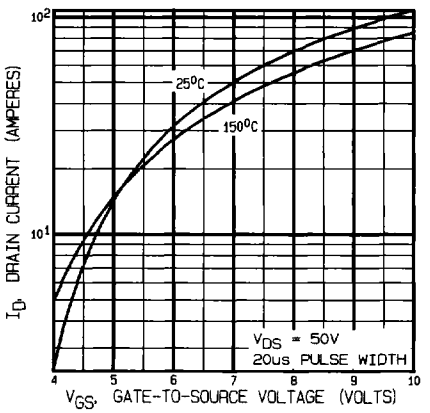


Fig. 3e – Typical Transfer Characteristics IRF140

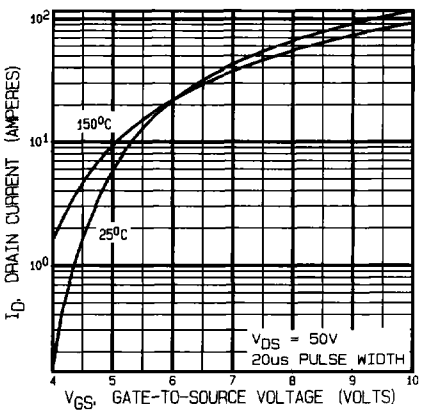


Fig. 3f – Typical Transfer Characteristics IRF150

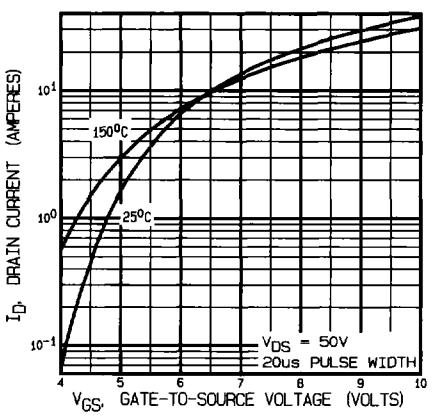


Fig. 3g – Typical Transfer Characteristics IRF230

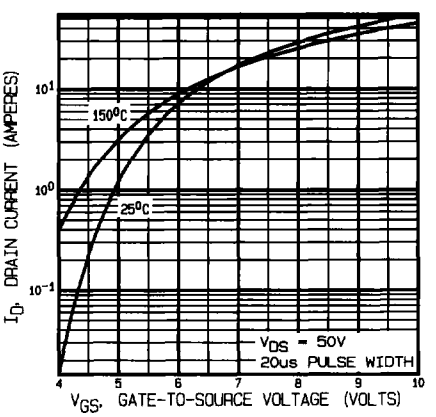


Fig. 3h – Typical Transfer Characteristics IRF240

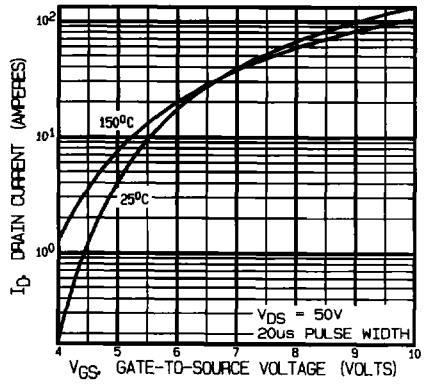


Fig. 3i – Typical Transfer Characteristics IRF250

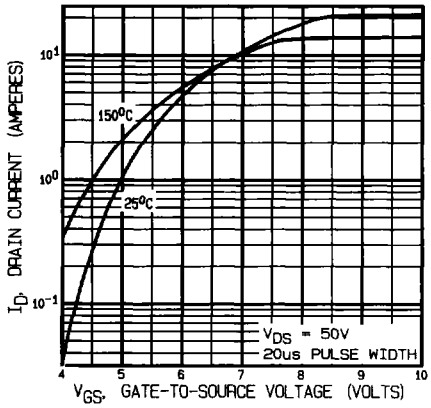


Fig. 3j – Typical Transfer Characteristics IRF330

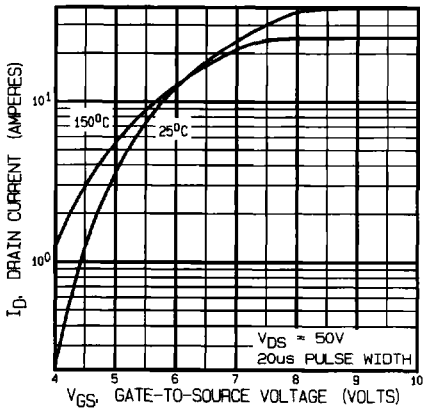


Fig. 3k – Typical Transfer Characteristics IRF340

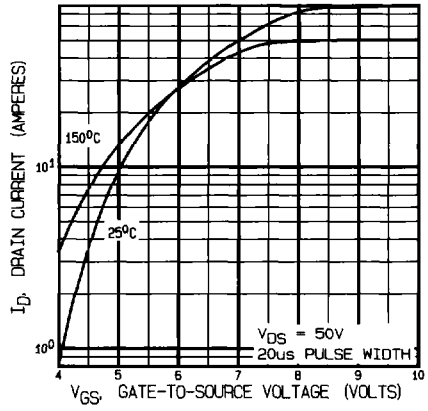


Fig. 3l – Typical Transfer Characteristics IRF350

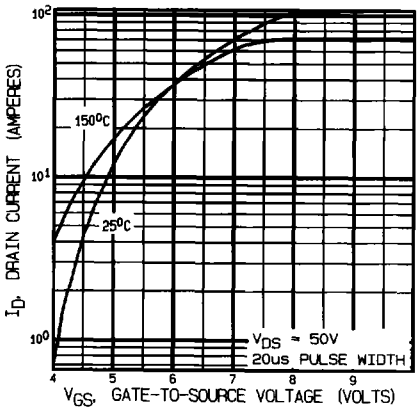


Fig. 3m – Typical Transfer Characteristics IRF360

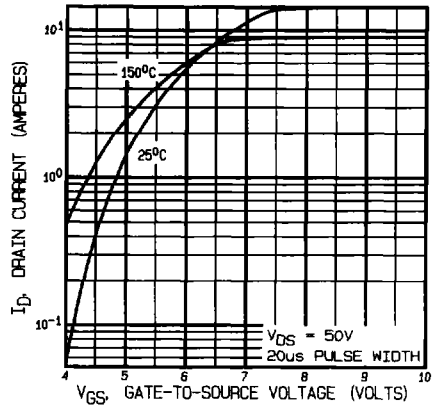


Fig. 3n – Typical Transfer Characteristics IRF430

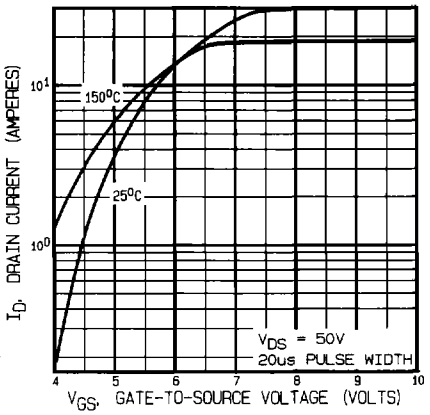


Fig. 3o – Typical Transfer Characteristics IRF440

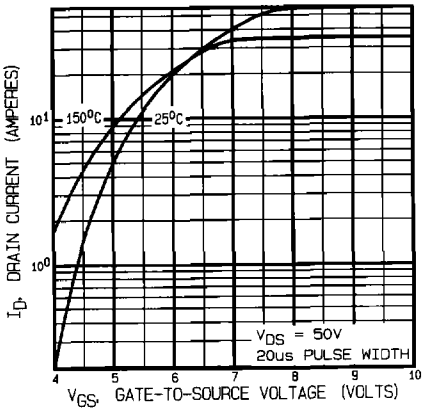


Fig. 3p – Typical Transfer Characteristics IRF450

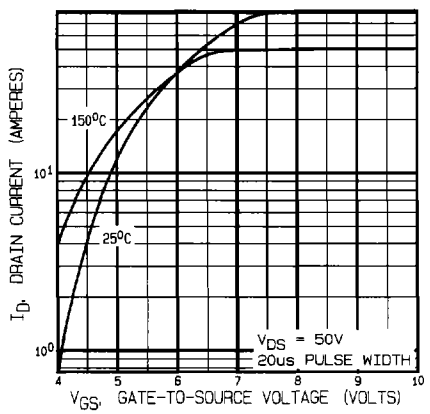


Fig. 3q – Typical Transfer Characteristics IRF460

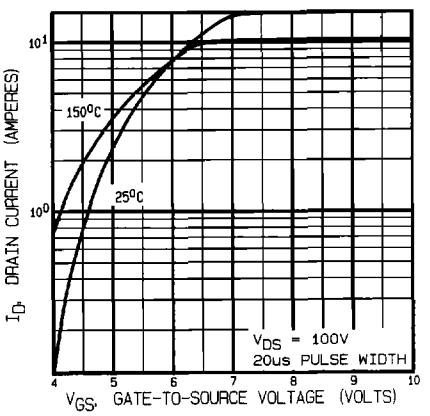


Fig. 3r – Typical Transfer Characteristics IRFAC30

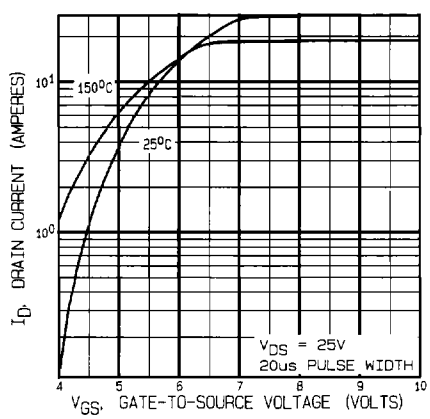


Fig. 3s – Typical Transfer Characteristics IRFAC40

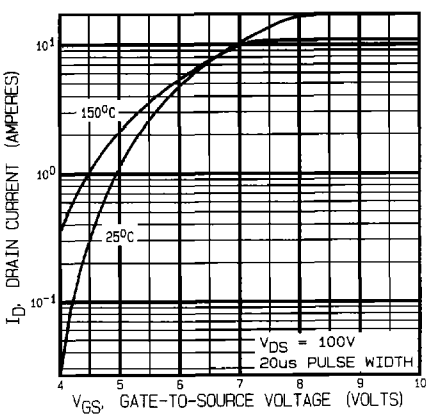


Fig. 3t – Typical Transfer Characteristics IRFAE30

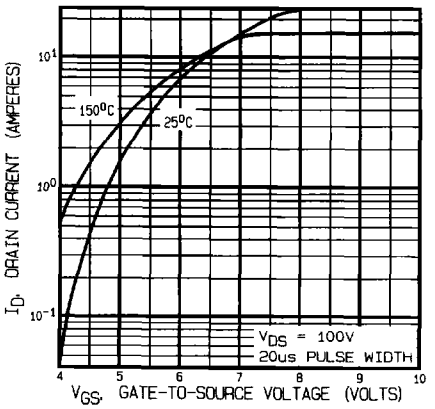


Fig. 3u – Typical Transfer Characteristics IRFAE40

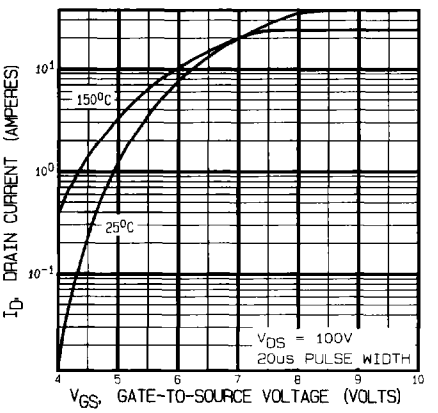


Fig. 3v – Typical Transfer Characteristics IRFAE50

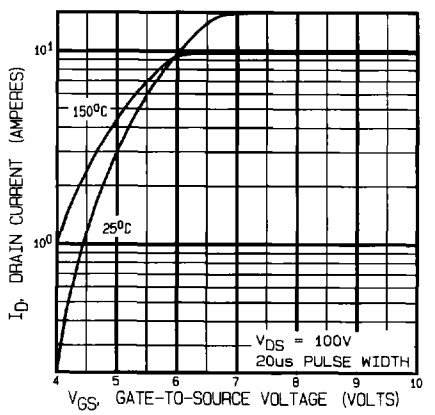


Fig. 3w – Typical Transfer Characteristics IRFAF30

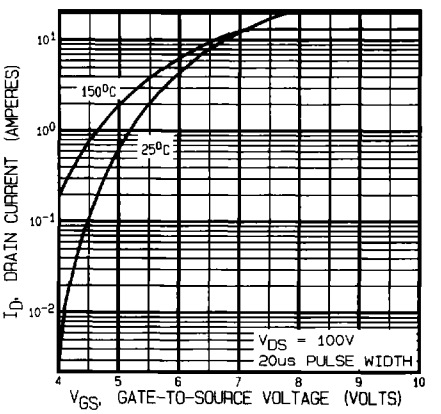


Fig. 3x – Typical Transfer Characteristics IRFAF40

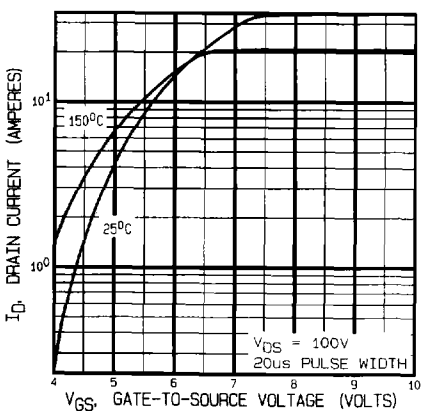


Fig. 3y – Typical Transfer Characteristics IRFAF50

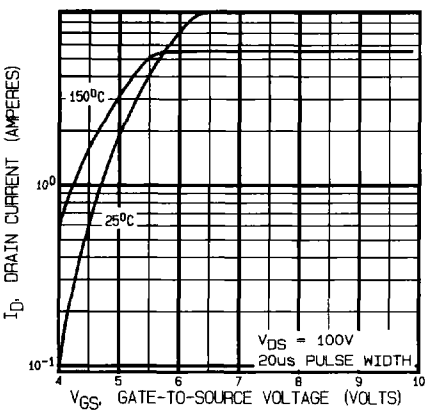


Fig. 3z – Typical Transfer Characteristics IRFAG30

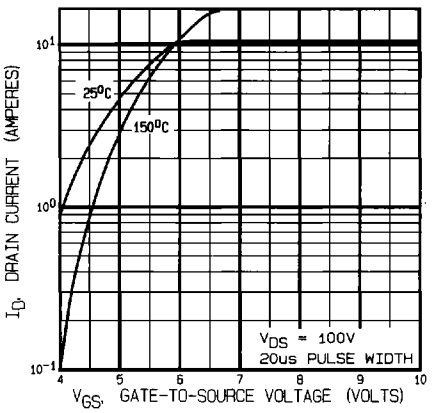


Fig. 3aa – Typical Transfer Characteristics
IRFAG40

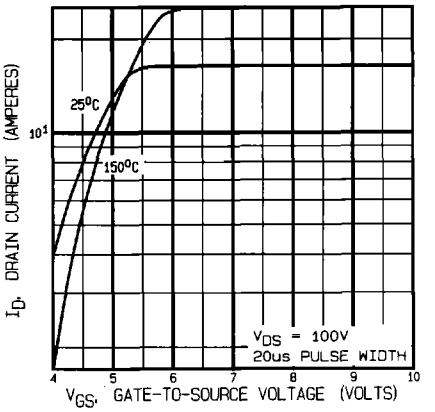


Fig. 3bb – Typical Transfer Characteristics
IRFAG50

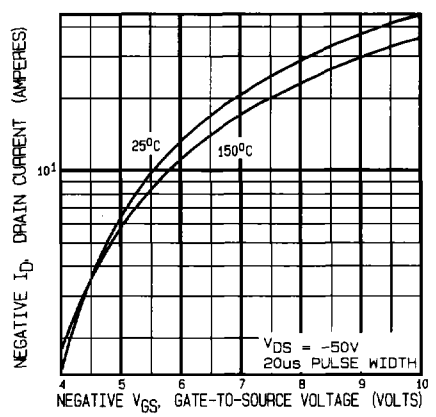


Fig. 3cc – Typical Transfer Characteristics
IRF9130

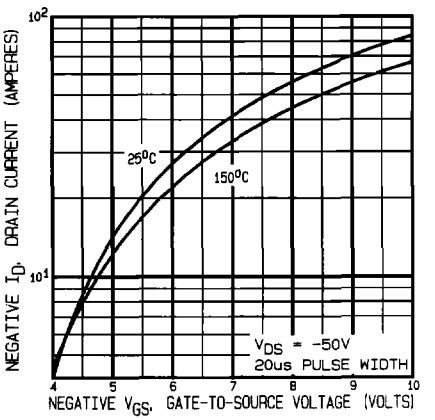


Fig. 3dd – Typical Transfer Characteristics
IRF9140

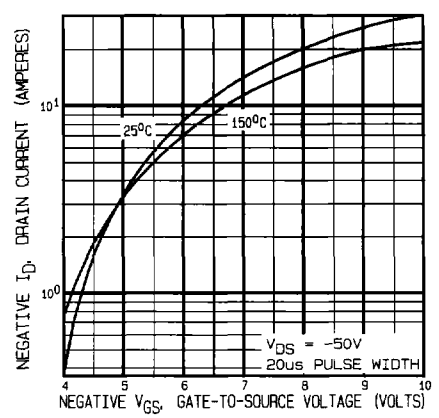


Fig. 3ee – Typical Transfer Characteristics
IRF9230

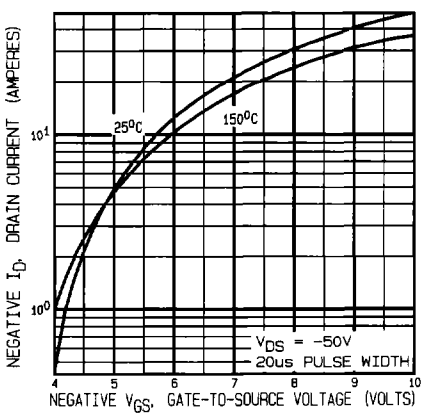


Fig. 3ff – Typical Transfer Characteristics
IRF9240

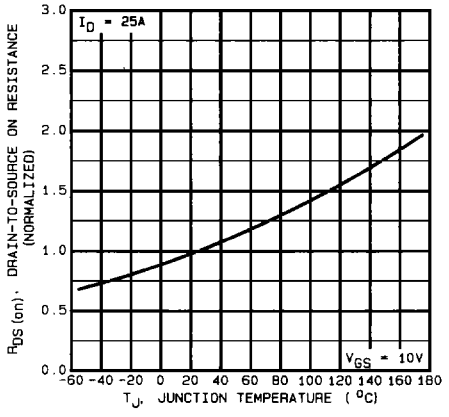


Fig. 4a – Normalized On-Resistance Vs. Temperature IRF034

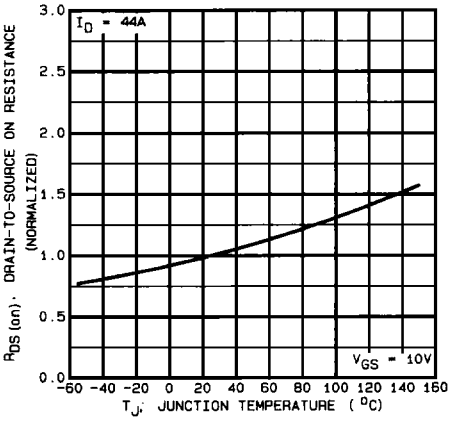


Fig. 4b – Normalized On-Resistance Vs. Temperature IRF044

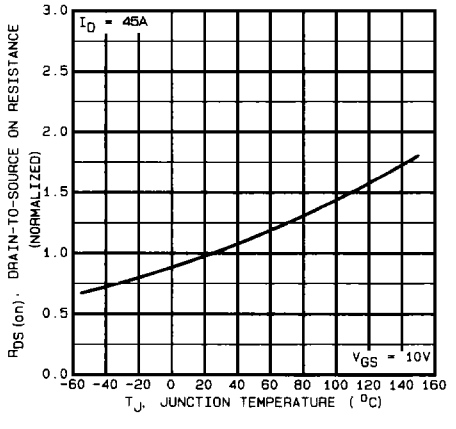


Fig. 4c – Normalized On-Resistance Vs. Temperature IRF054

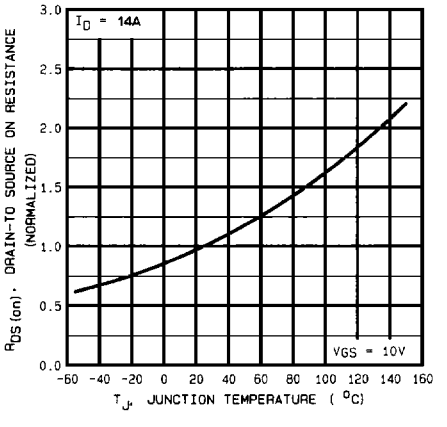


Fig. 4d – Normalized On-Resistance Vs. Temperature IRF130

I

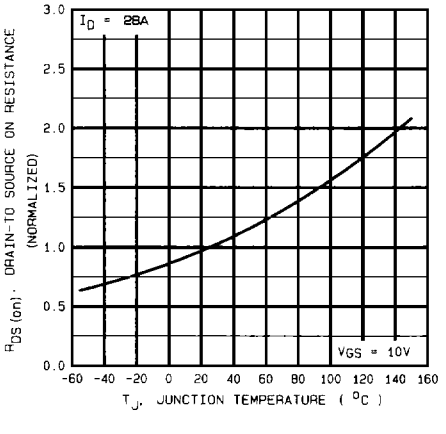


Fig. 4e – Normalized On-Resistance Vs. Temperature IRF140

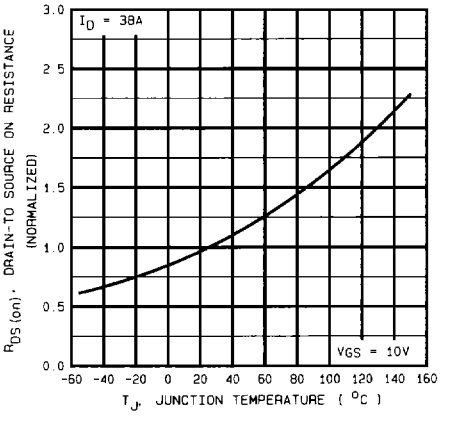


Fig. 4f – Normalized On-Resistance Vs. Temperature IRF150

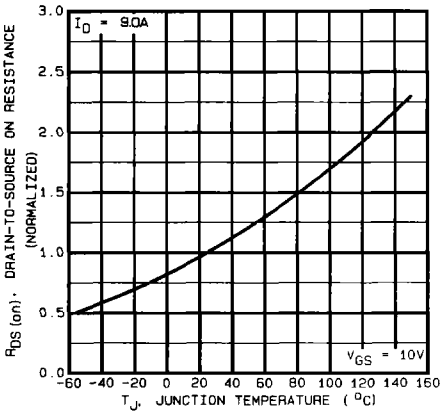


Fig. 4g – Normalized On-Resistance Vs. Temperature IRF230

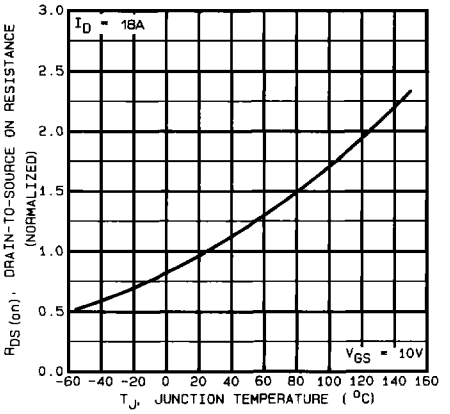


Fig. 4h – Normalized On-Resistance Vs. Temperature IRF240

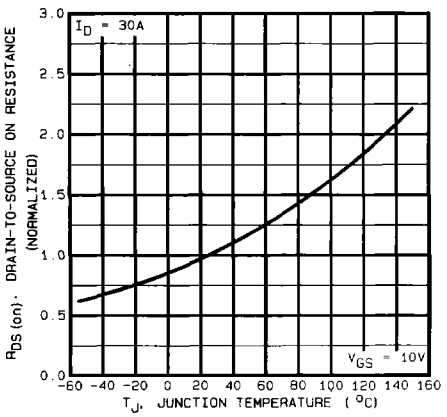


Fig. 4i – Normalized On-Resistance Vs. Temperature IRF250

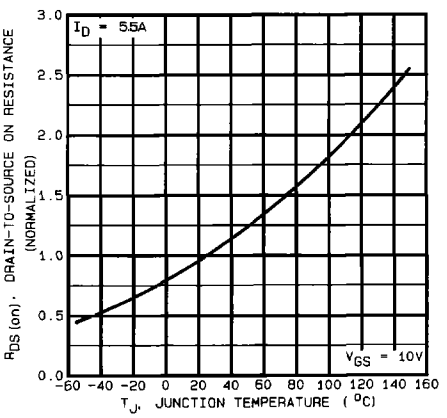


Fig. 4j – Normalized On-Resistance Vs. Temperature IRF330

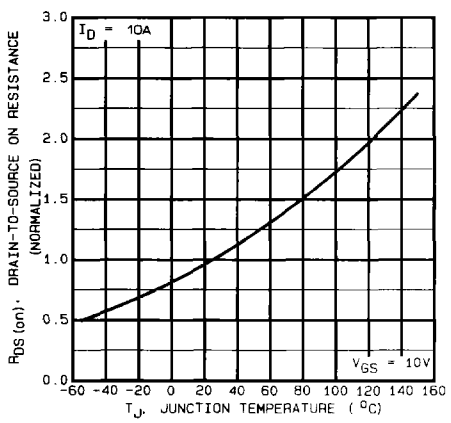


Fig. 4k – Normalized On-Resistance Vs. Temperature IRF340

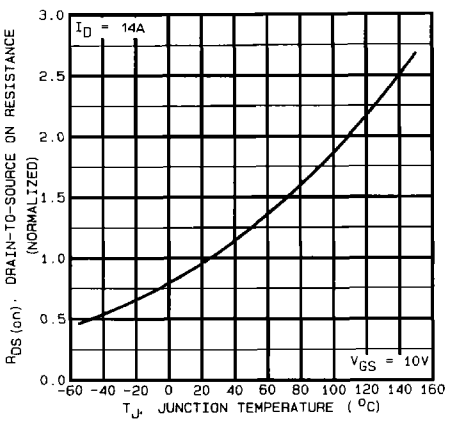


Fig. 4l – Normalized On-Resistance Vs. Temperature IRF350

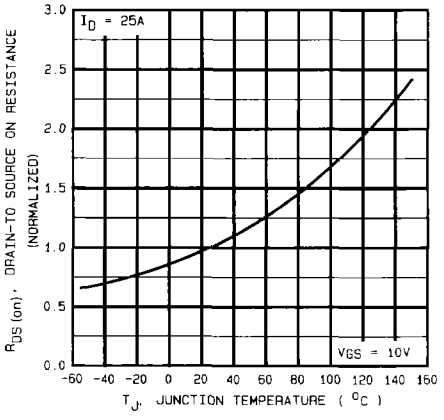


Fig. 4m – Normalized On-Resistance Vs. Temperature IRF360

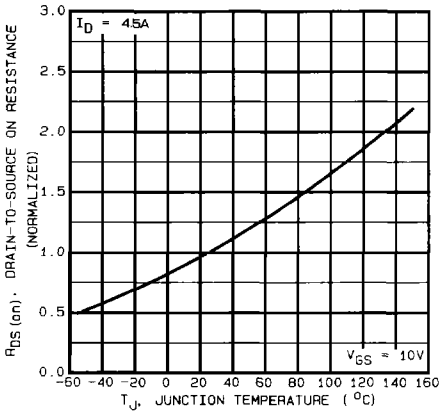


Fig. 4n – Normalized On-Resistance Vs. Temperature IRF430

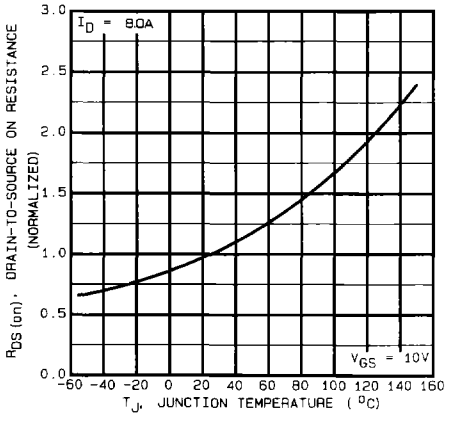


Fig. 4o – Normalized On-Resistance Vs. Temperature IRF440

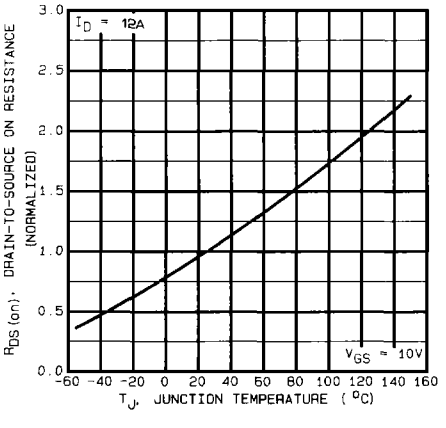


Fig. 4p – Normalized On-Resistance Vs. Temperature IRF450

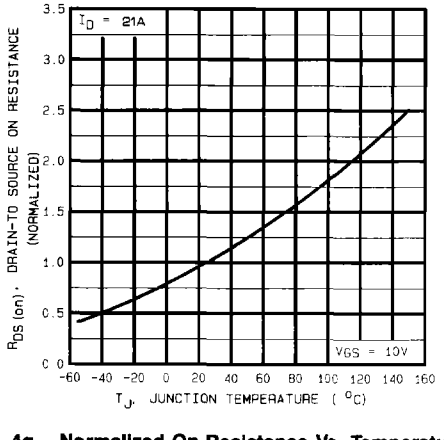


Fig. 4q – Normalized On-Resistance Vs. Temperature IRF460

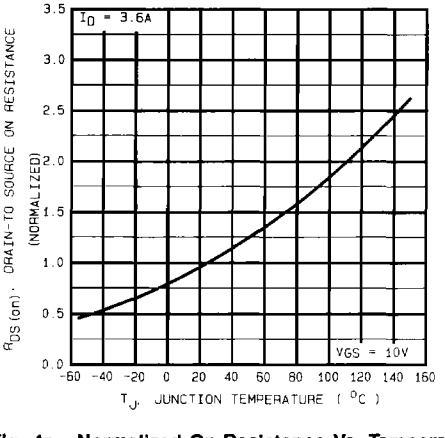


Fig. 4r – Normalized On-Resistance Vs. Temperature IRFAC30

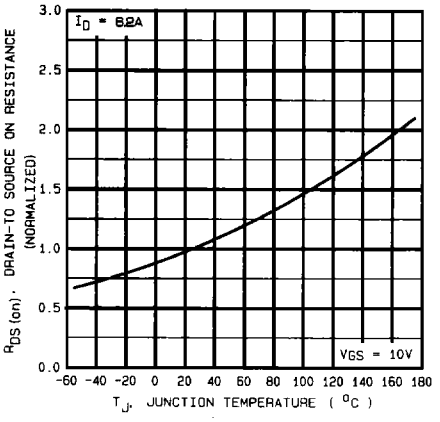


Fig. 4s – Normalized On-Resistance Vs. Temperature IRFAC40

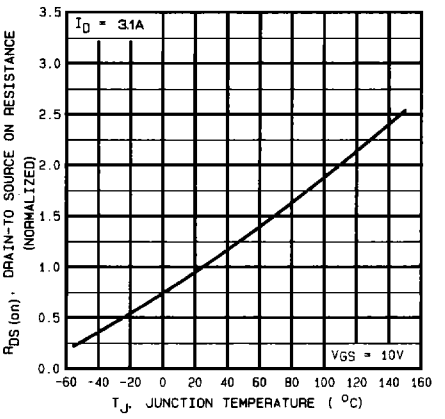


Fig. 4t – Normalized On-Resistance Vs. Temperature IRFAE30

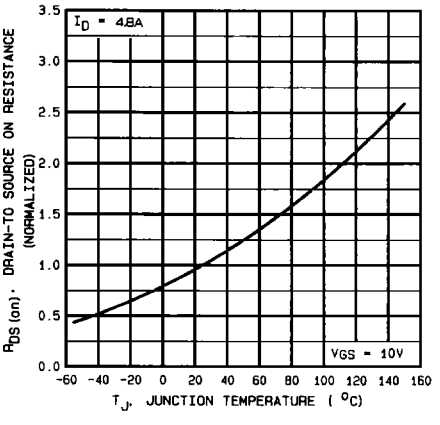


Fig. 4u – Normalized On-Resistance Vs. Temperature IRFAE40

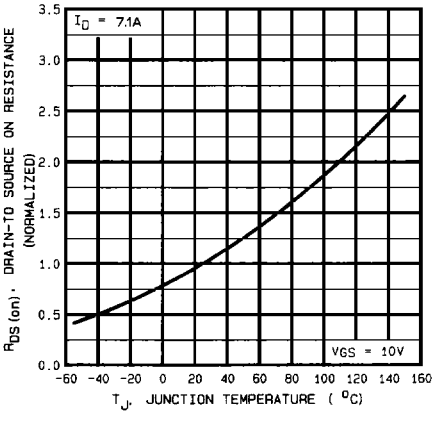


Fig. 4v – Normalized On-Resistance Vs. Temperature IRFAE50

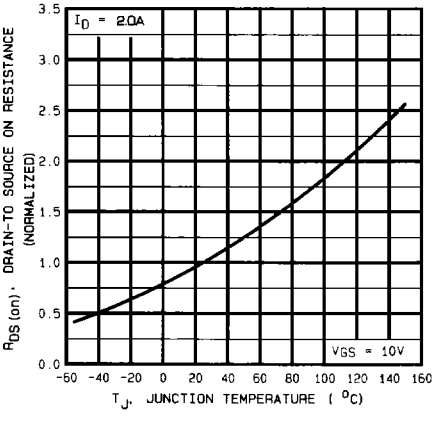


Fig. 4w – Normalized On-Resistance Vs. Temperature IRFAF30

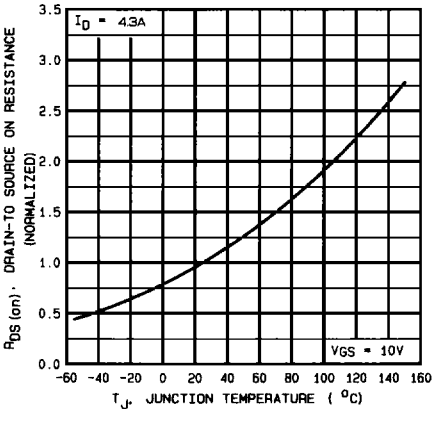


Fig. 4x – Normalized On-Resistance Vs. Temperature IRFAF40

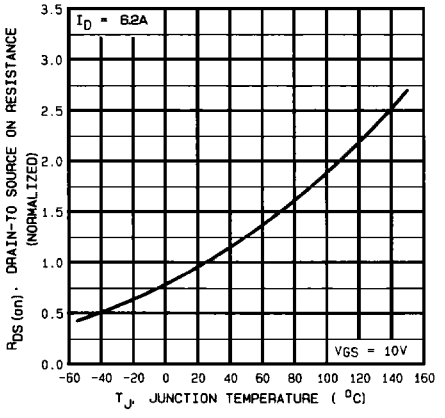


Fig. 4y – Normalized On-Resistance Vs. Temperature IRFAF50

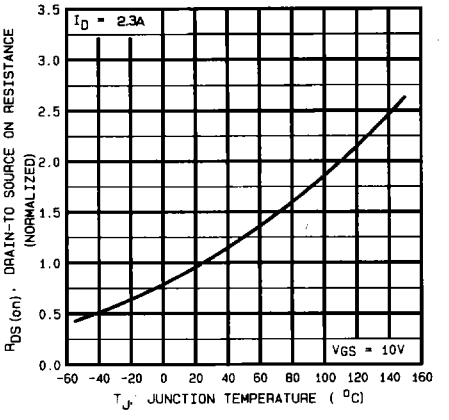


Fig. 4z – Normalized On-Resistance Vs. Temperature IRFAG30

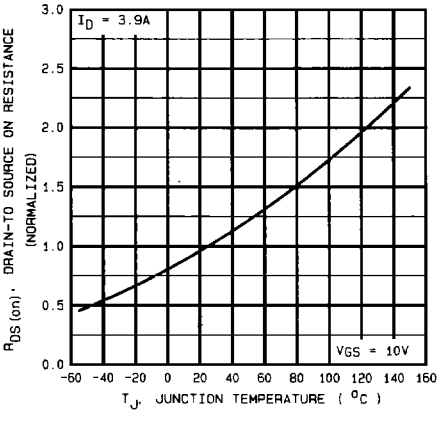


Fig. 4aa – Normalized On-Resistance Vs. Temperature IRFAG40

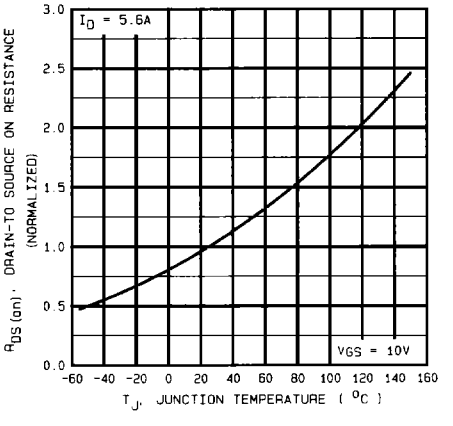


Fig. 4bb – Normalized On-Resistance Vs. Temperature IRFAG50

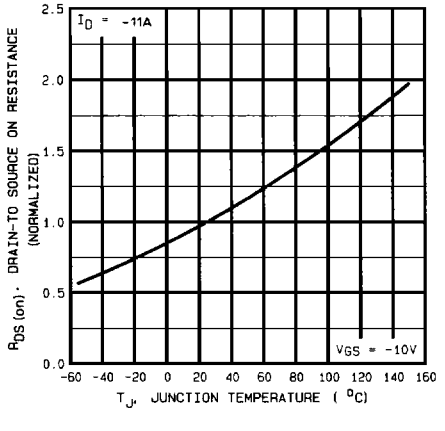


Fig. 4cc – Normalized On-Resistance Vs. Temperature IRF9130

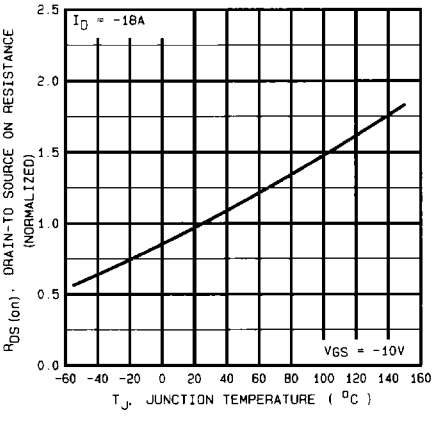


Fig. 4dd – Normalized On-Resistance Vs. Temperature IRF9140

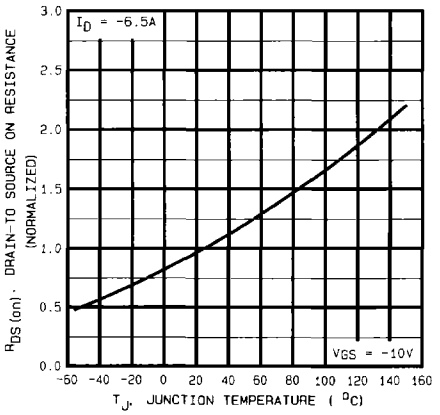


Fig. 4ee – Normalized On-Resistance Vs. Temperature IRF9230

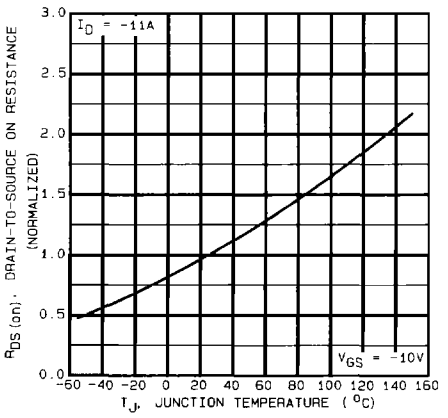


Fig. 4ff – Normalized On-Resistance Vs. Temperature IRF9240

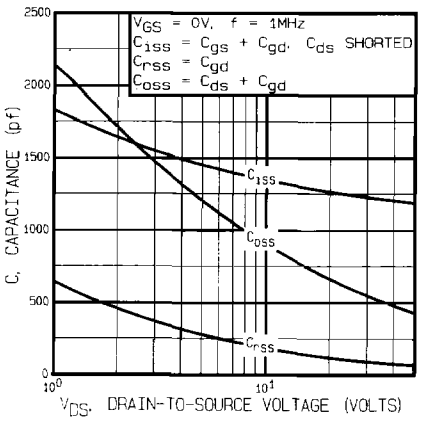


Fig. 5a – Typical Capacitance Vs. Drain-to-Source Voltage IRF034

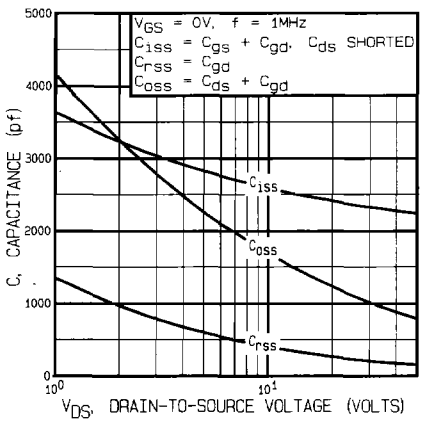


Fig. 5b – Typical Capacitance Vs. Drain-to-Source Voltage IRF044

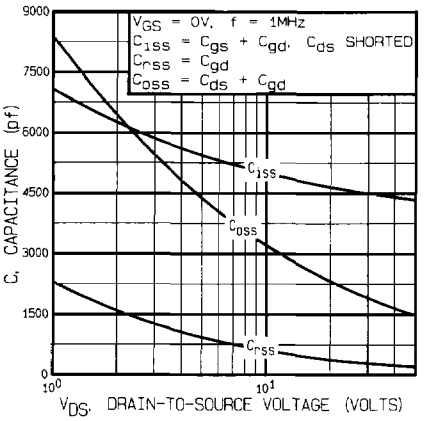


Fig. 5c – Typical Capacitance Vs. Drain-to-Source Voltage IRF054

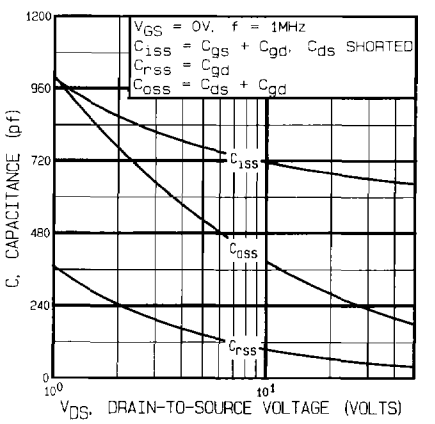


Fig. 5d – Typical Capacitance Vs. Drain-to-Source Voltage IRF130

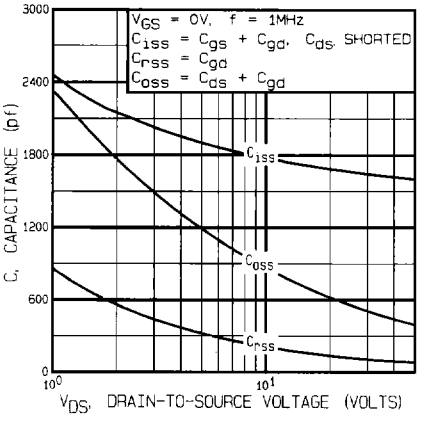


Fig. 5e – Typical Capacitance Vs. Drain-to-Source Voltage IRF140

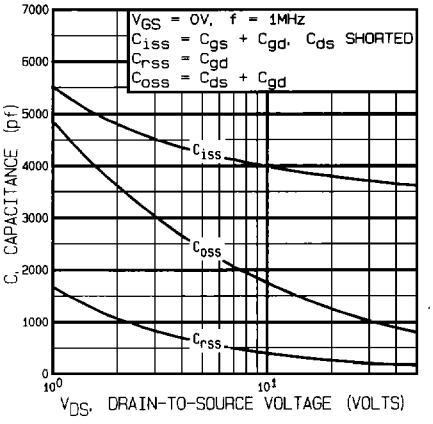


Fig. 5f – Typical Capacitance Vs. Drain-to-Source Voltage IRF150

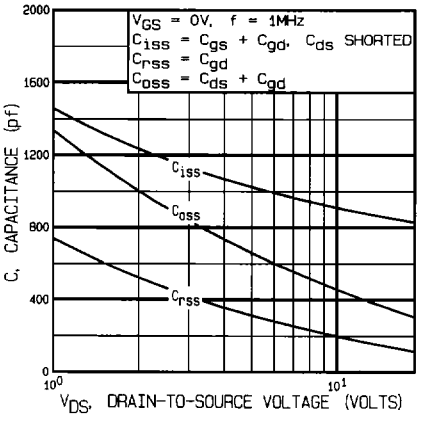


Fig. 5g – Typical Capacitance Vs. Drain-to-Source Voltage IRF230

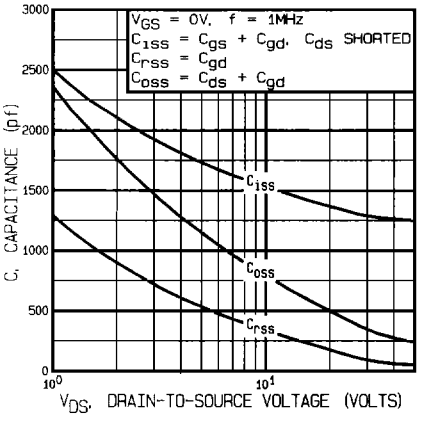


Fig. 5h – Typical Capacitance Vs. Drain-to-Source Voltage IRF240

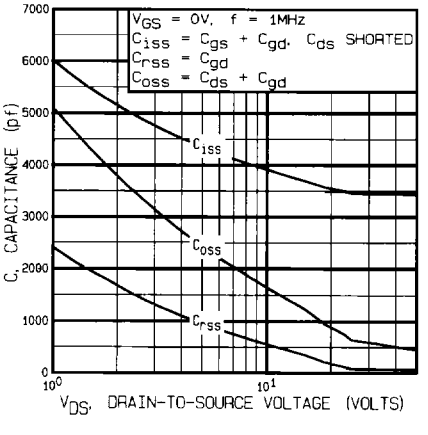


Fig. 5i – Typical Capacitance Vs. Drain-to-Source Voltage IRF250

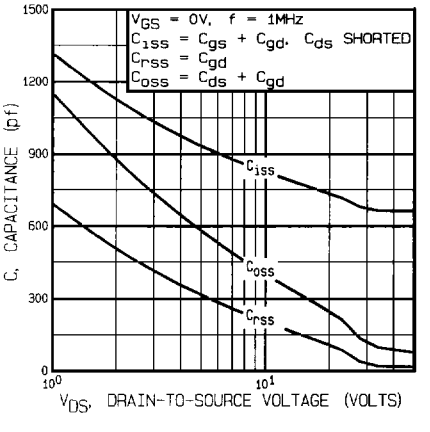


Fig. 5j – Typical Capacitance Vs. Drain-to-Source Voltage IRF330

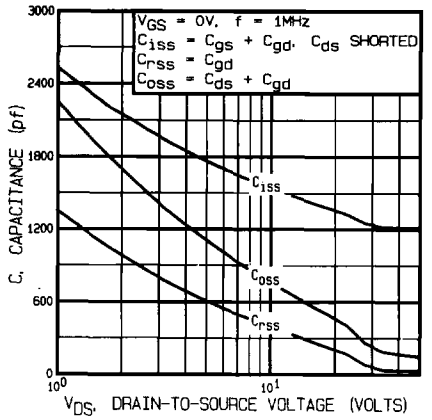


Fig. 5k – Typical Capacitance Vs. Drain-to-Source Voltage IRF340

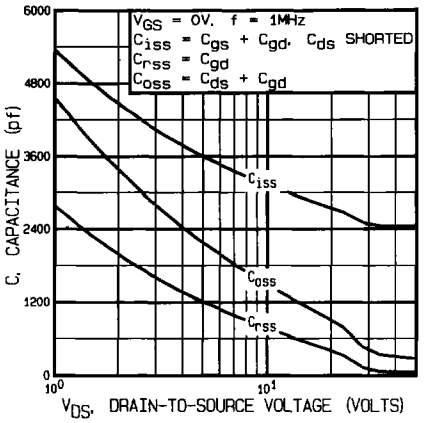


Fig. 5l – Typical Capacitance Vs. Drain-to-Source Voltage IRF350

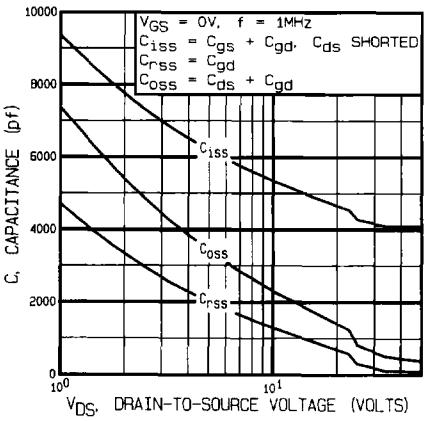


Fig. 5m – Typical Capacitance Vs. Drain-to-Source Voltage IRF360

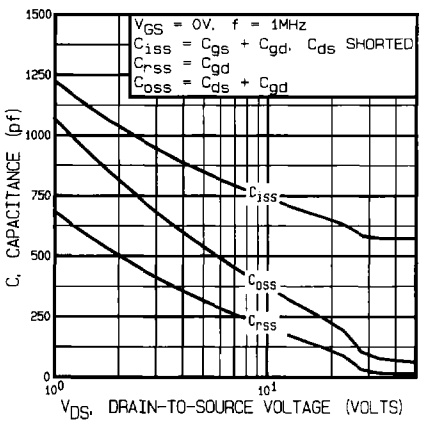


Fig. 5n – Typical Capacitance Vs. Drain-to-Source Voltage IRF430

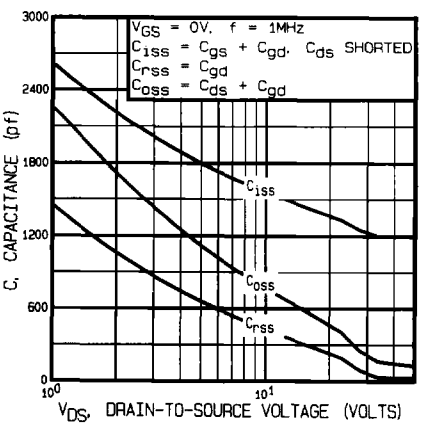


Fig. 5o – Typical Capacitance Vs. Drain-to-Source Voltage IRF440

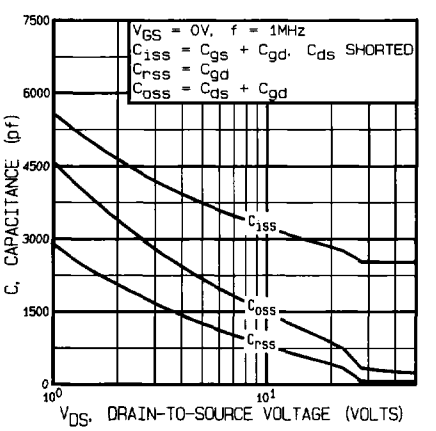


Fig. 5p – Typical Capacitance Vs. Drain-to-Source Voltage IRF450

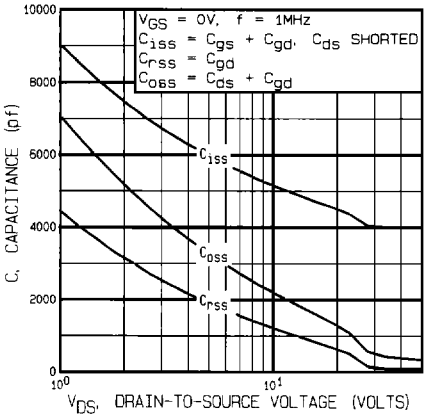


Fig. 5q – Typical Capacitance Vs. Drain-to-Source Voltage IRF460

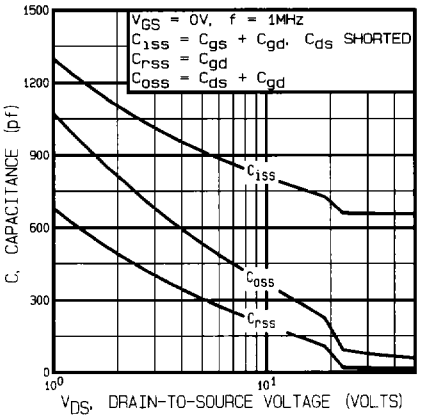


Fig. 5r – Typical Capacitance Vs. Drain-to-Source Voltage IRFAC30

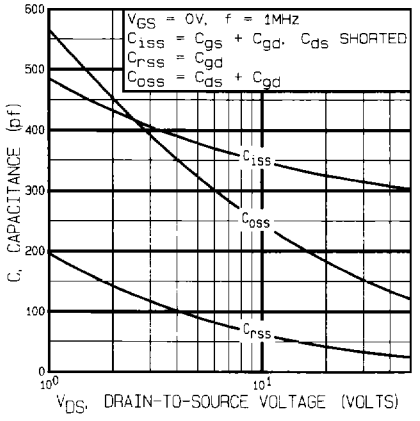


Fig. 5s – Typical Capacitance Vs. Drain-to-Source Voltage IRFAC40

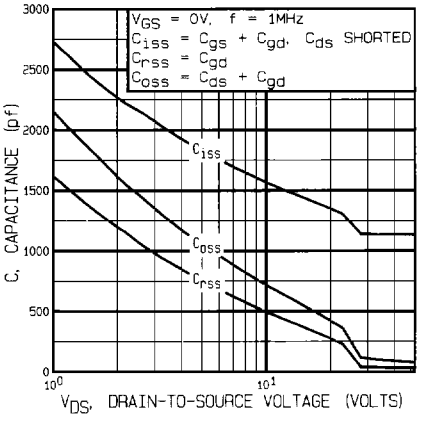


Fig. 5t – Typical Capacitance Vs. Drain-to-Source Voltage IRFAE30

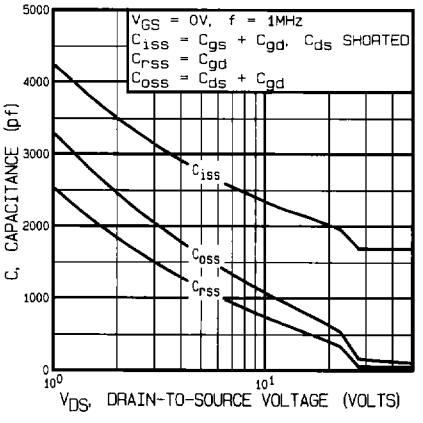


Fig. 5u – Typical Capacitance Vs. Drain-to-Source Voltage IRFAE40

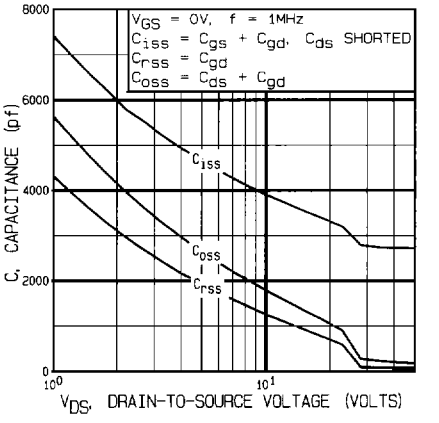


Fig. 5v – Typical Capacitance Vs. Drain-to-Source Voltage IRFAE50

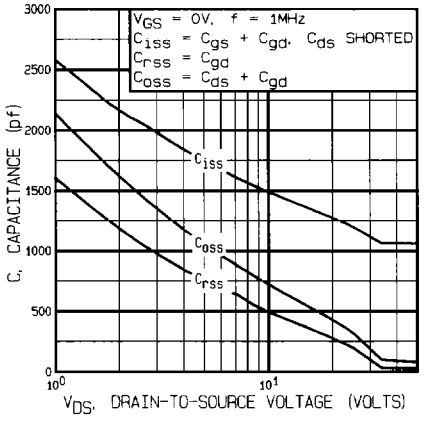


Fig. 5w – Typical Capacitance Vs. Drain-to-Source Voltage IRFAF30

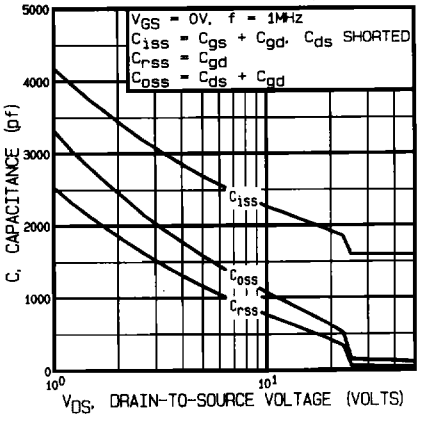


Fig. 5x – Typical Capacitance Vs. Drain-to-Source Voltage IRFAF40

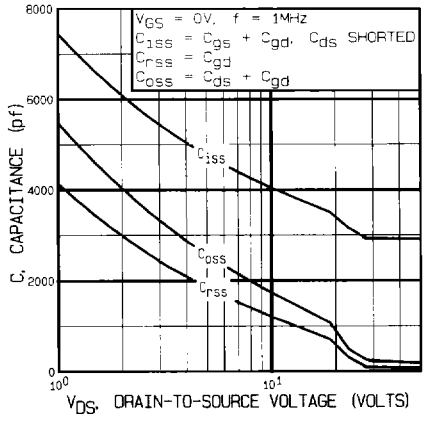


Fig. 5y – Typical Capacitance Vs. Drain-to-Source Voltage IRFAF50

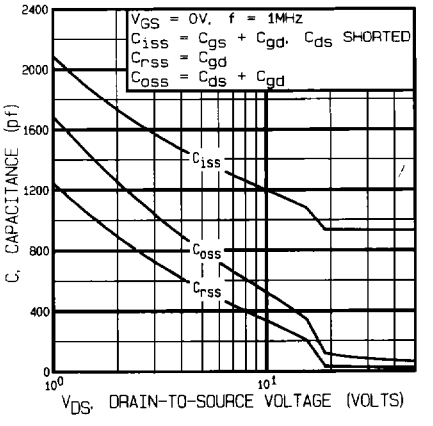


Fig. 5z – Typical Capacitance Vs. Drain-to-Source Voltage IRFAG30

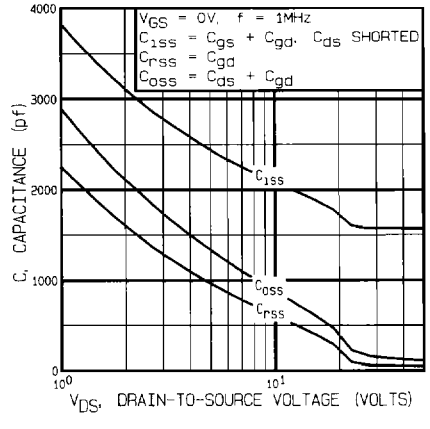


Fig. 5aa – Typical Capacitance Vs. Drain-to-Source Voltage IRFAG40

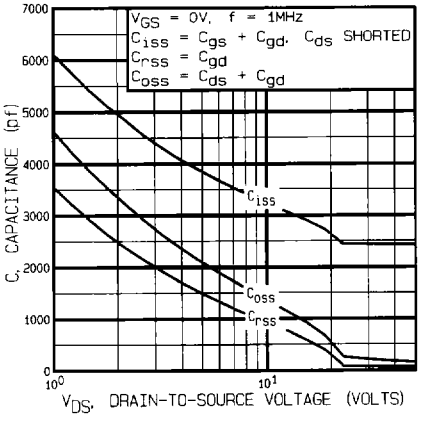


Fig. 5bb – Typical Capacitance Vs. Drain-to-Source Voltage IRFAG50

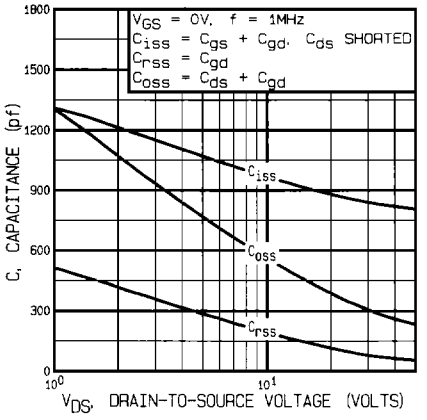


Fig. 5cc – Typical Capacitance Vs. Drain-to-Source Voltage
IRF9130

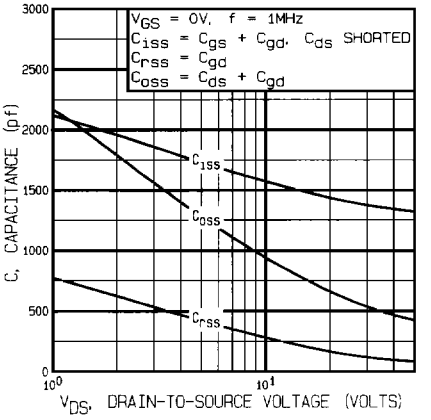


Fig. 5dd – Typical Capacitance Vs. Drain-to-Source Voltage
IRF9140

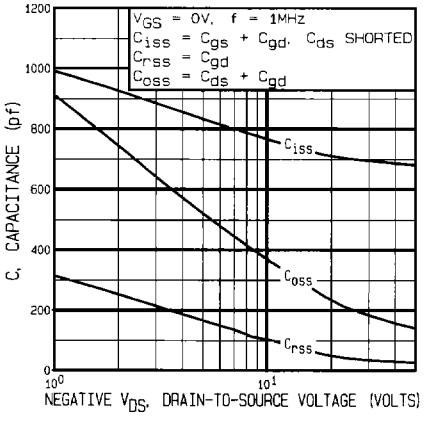


Fig. 5ee – Typical Capacitance Vs. Drain-to-Source Voltage
IRF9230

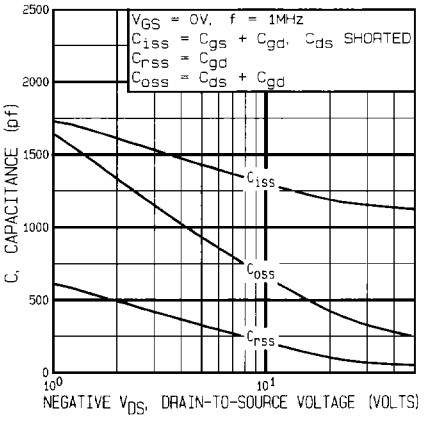


Fig. 5ff – Typical Capacitance Vs. Drain-to-Source Voltage
IRF9240

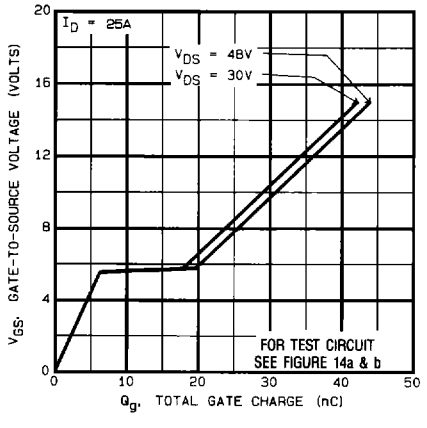


Fig. 6a – Typical Gate Charge Vs. Gate-to-Source Voltage
IRF034

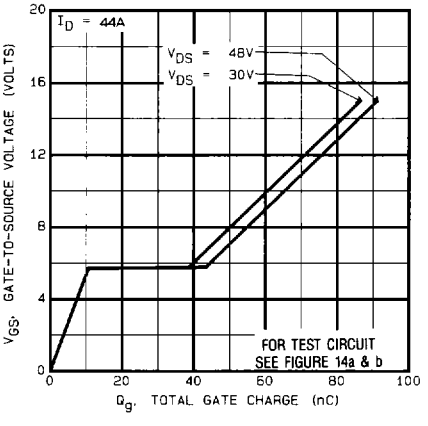


Fig. 6b – Typical Gate Charge Vs. Gate-to-Source Voltage
IRF044

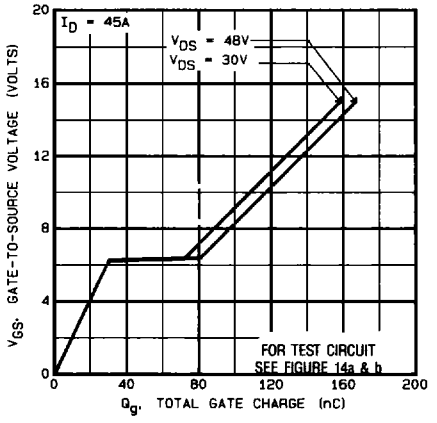


Fig. 6c – Typical Gate Charge Vs. Gate-to-Source Voltage IRF054

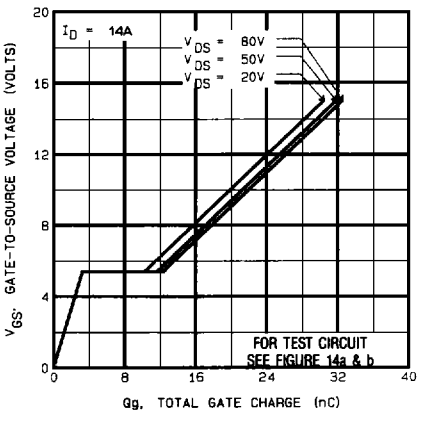


Fig. 6d – Typical Gate Charge Vs. Gate-to-Source Voltage IRF130

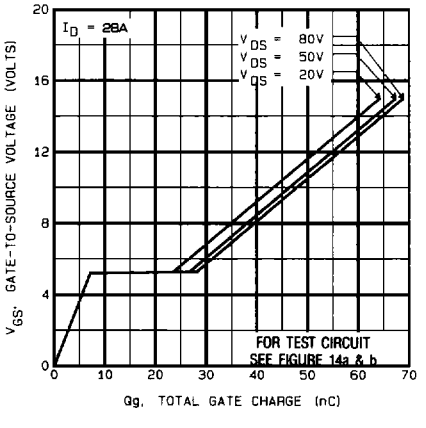


Fig. 6e – Typical Gate Charge Vs. Gate-to-Source Voltage IRF140

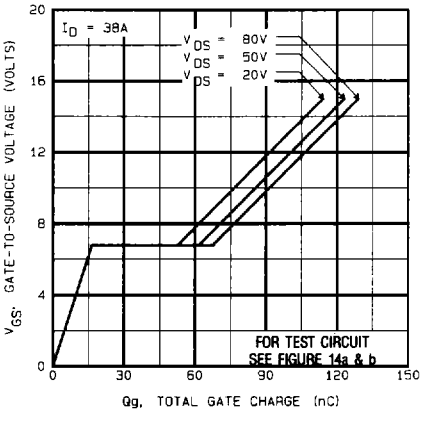


Fig. 6f – Typical Gate Charge Vs. Gate-to-Source Voltage IRF150

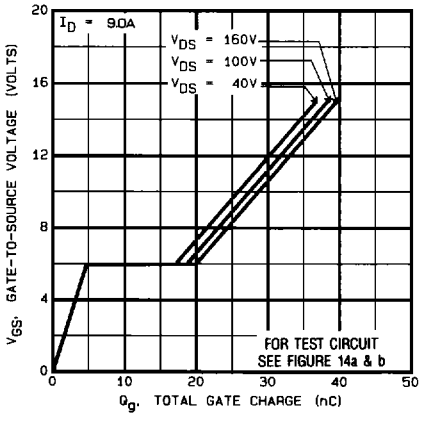


Fig. 6g – Typical Gate Charge Vs. Gate-to-Source Voltage IRF230

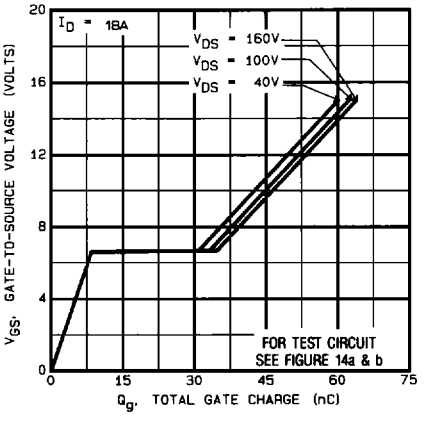


Fig. 6h – Typical Gate Charge Vs. Gate-to-Source Voltage IRF240

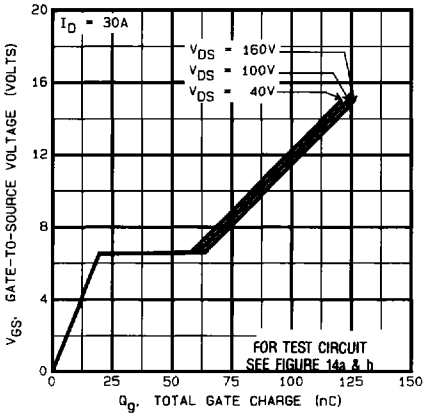


Fig. 6i – Typical Gate Charge Vs. Gate-to-Source Voltage IRF250

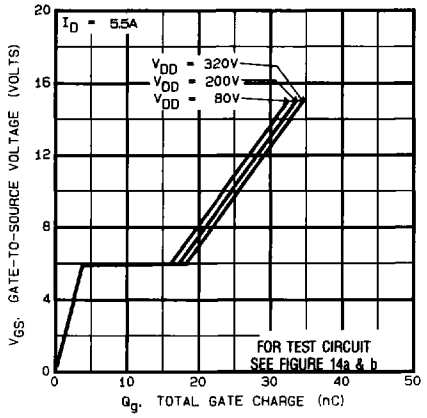


Fig. 6j – Typical Gate Charge Vs. Gate-to-Source Voltage IRF330

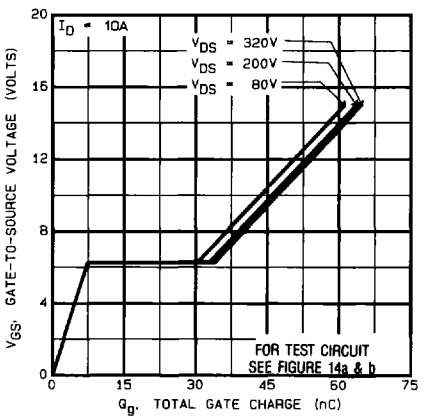


Fig. 6k – Typical Gate Charge Vs. Gate-to-Source Voltage IRF340

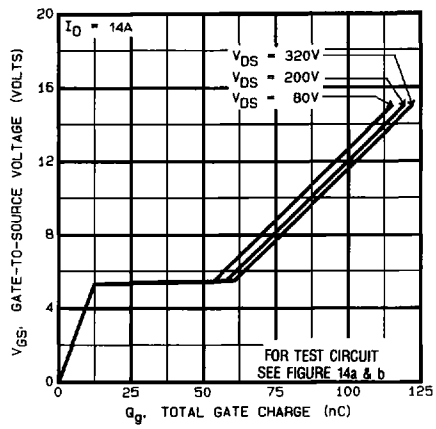


Fig. 6l – Typical Gate Charge Vs. Gate-to-Source Voltage IRF350

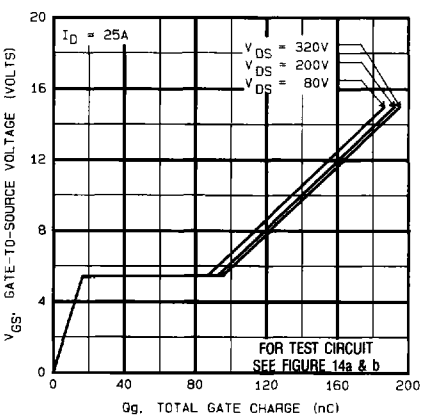


Fig. 6m – Typical Gate Charge Vs. Gate-to-Source Voltage IRF360

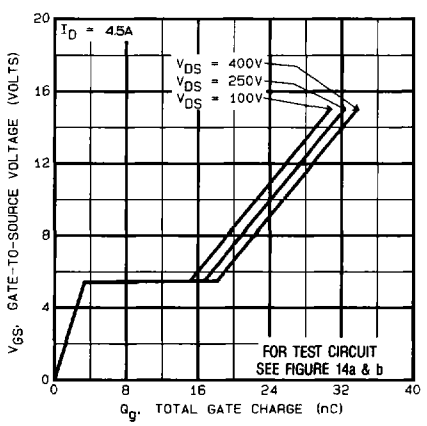


Fig. 6n – Typical Gate Charge Vs. Gate-to-Source Voltage IRF430

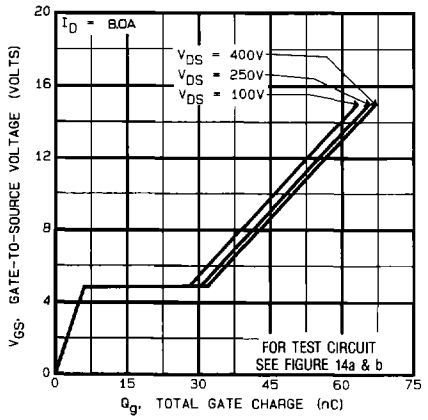


Fig. 6o – Typical Gate Charge Vs. Gate-to-Source Voltage IRF440

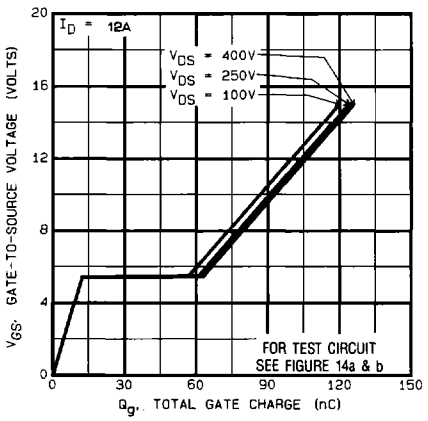


Fig. 6p – Typical Gate Charge Vs. Gate-to-Source Voltage IRF450

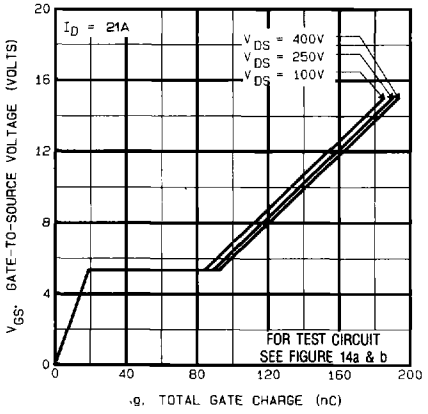


Fig. 6q – Typical Gate Charge Vs. Gate-to-Source Voltage IRF460

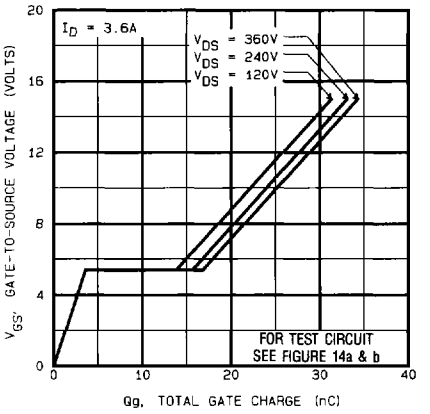


Fig. 6r – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAC30

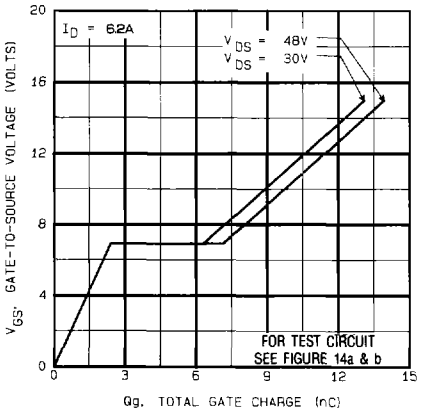


Fig. 6s – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAC40

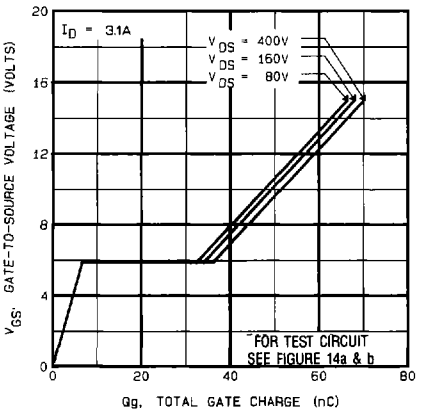


Fig. 6t – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAE30

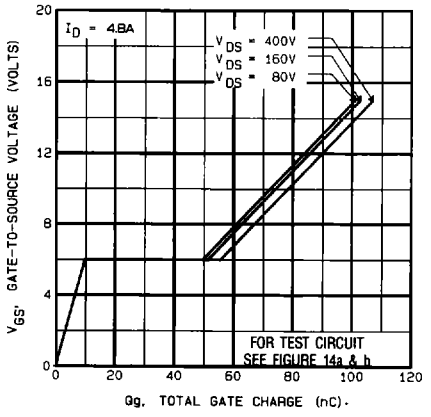


Fig. 6u – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAE40

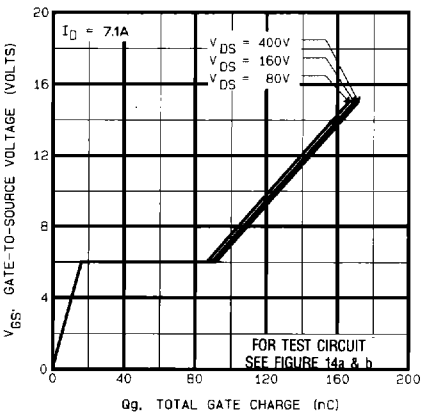


Fig. 6v – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAE50

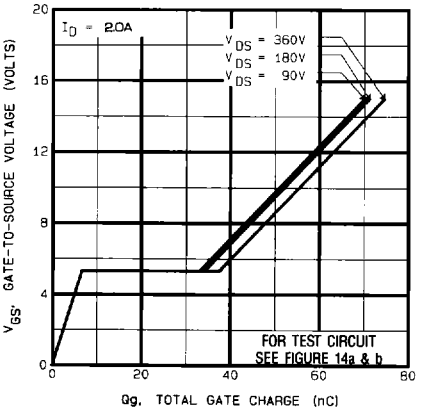


Fig. 6w – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAF30

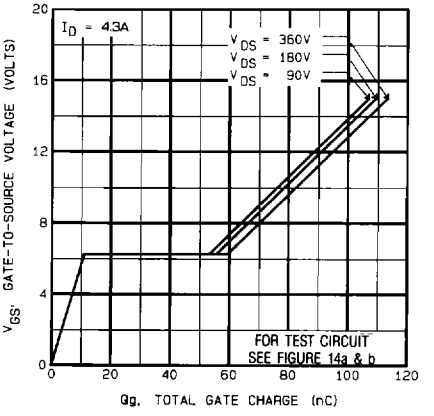


Fig. 6x – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAF40

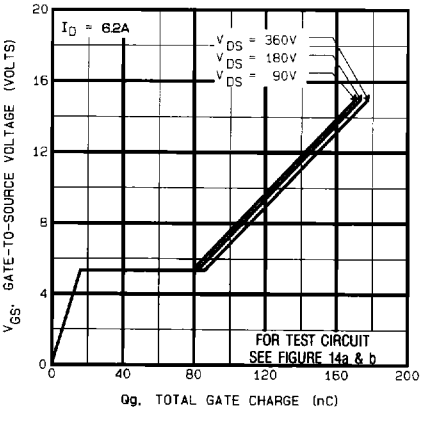


Fig. 6y – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAF50

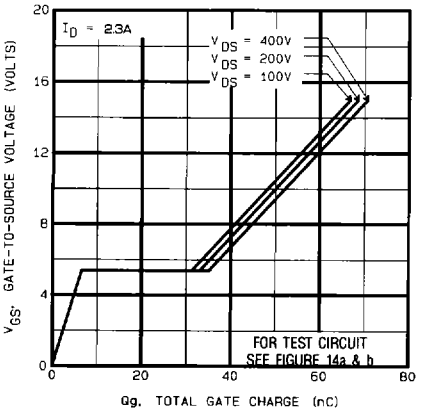


Fig. 6z – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAG30

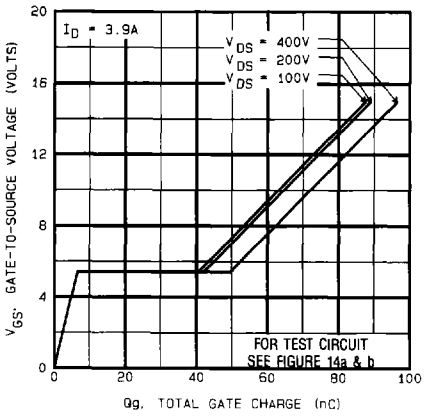


Fig. 6aa – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAG40

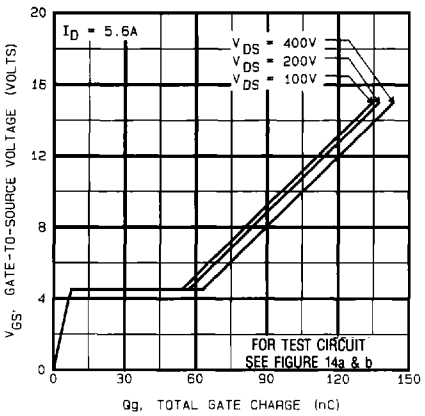


Fig. 6bb – Typical Gate Charge Vs. Gate-to-Source Voltage IRFAG50

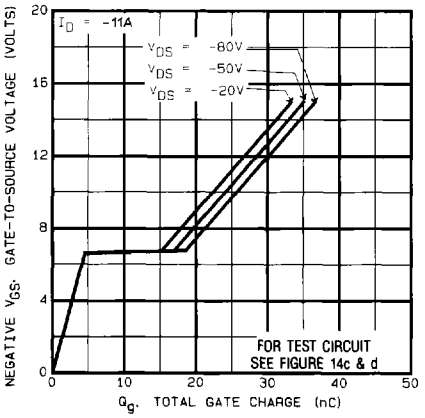


Fig. 6cc – Typical Gate Charge Vs. Gate-to-Source Voltage IRF9130

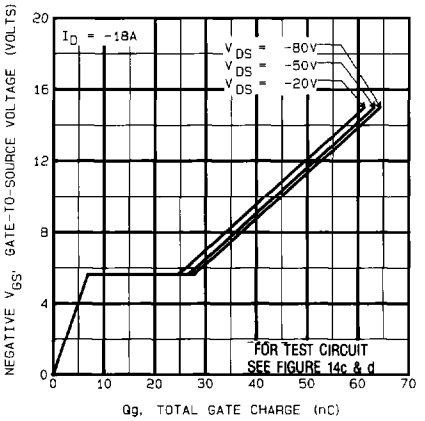


Fig. 6dd – Typical Gate Charge Vs. Gate-to-Source Voltage IRF9140

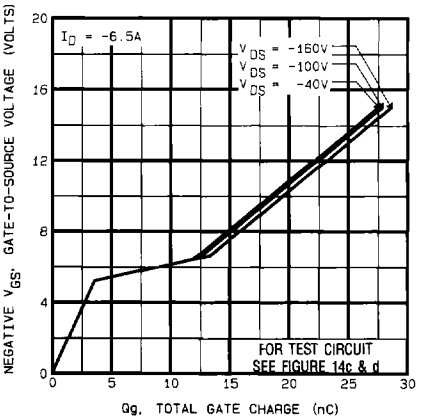


Fig. 6ee – Typical Gate Charge Vs. Gate-to-Source Voltage IRF9230

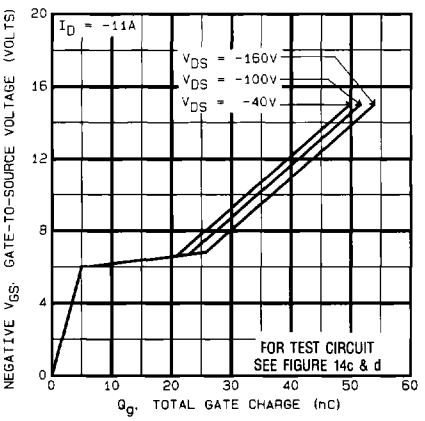


Fig. 6ff – Typical Gate Charge Vs. Gate-to-Source Voltage IRF9240

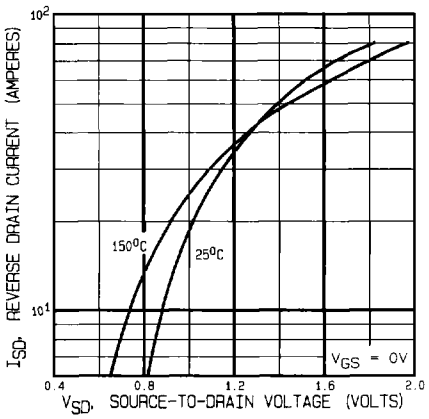


Fig. 7a – Typical Source-Drain Diode Forward Voltage IRF034

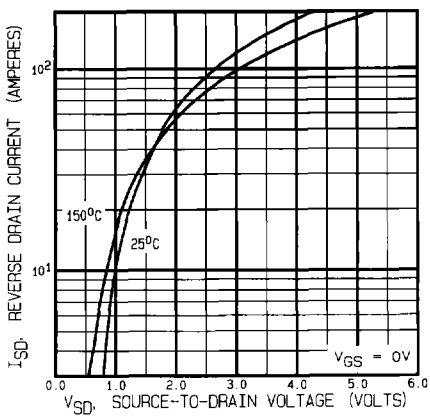


Fig. 7b – Typical Source-Drain Diode Forward Voltage IRF044

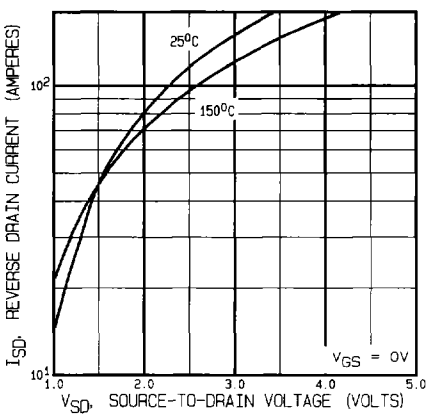


Fig. 7c – Typical Source-Drain Diode Forward Voltage IRF054

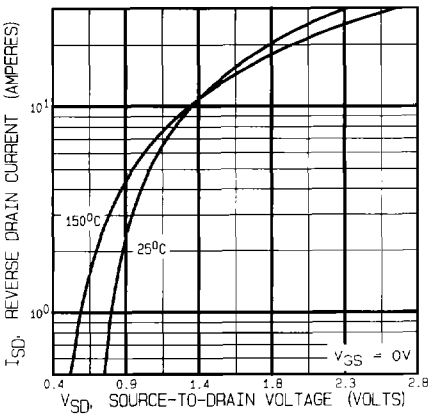


Fig. 7d – Typical Source-Drain Diode Forward Voltage IRF130

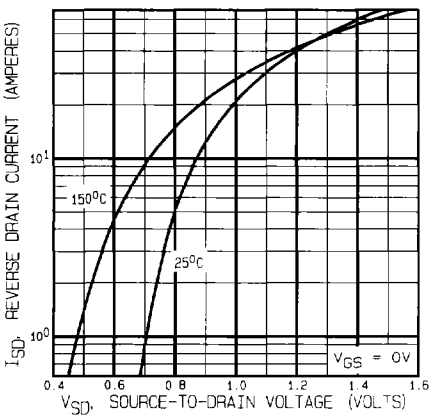


Fig. 7e – Typical Source-Drain Diode Forward Voltage IRF140

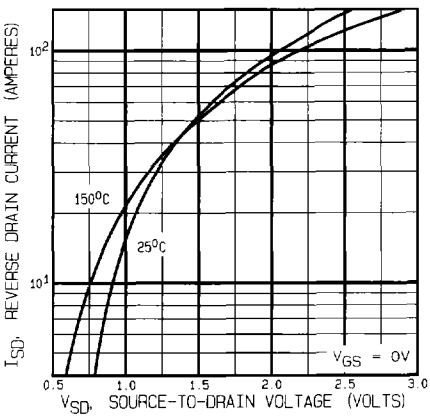


Fig. 7f – Typical Source-Drain Diode Forward Voltage IRF150

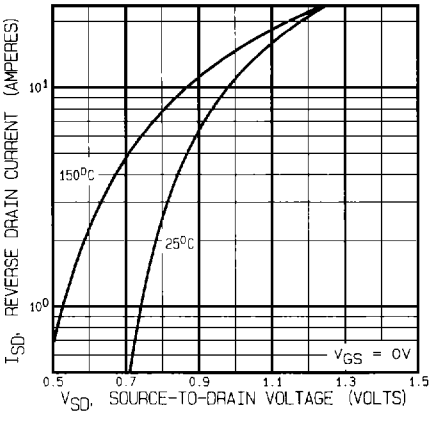


Fig. 7g – Typical Source-Drain Diode Forward Voltage IRF230

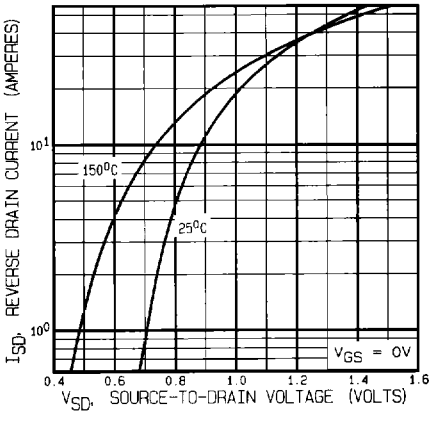


Fig. 7h – Typical Source-Drain Diode Forward Voltage IRF240

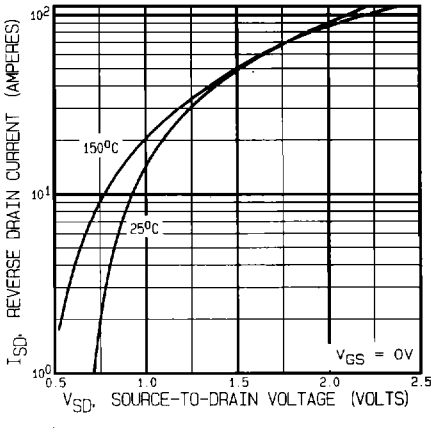


Fig. 7i – Typical Source-Drain Diode Forward Voltage IRF250

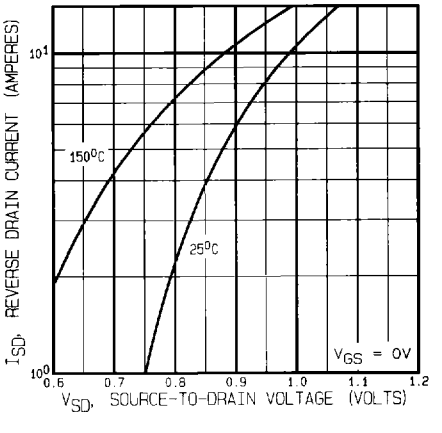


Fig. 7j – Typical Source-Drain Diode Forward Voltage IRF330

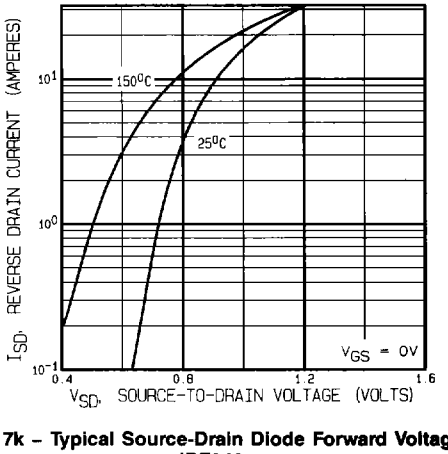


Fig. 7k – Typical Source-Drain Diode Forward Voltage IRF340

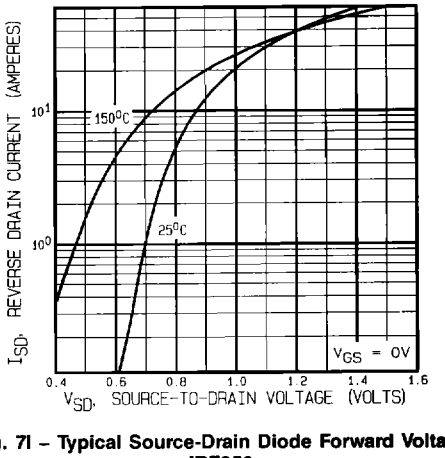


Fig. 7l – Typical Source-Drain Diode Forward Voltage IRF350

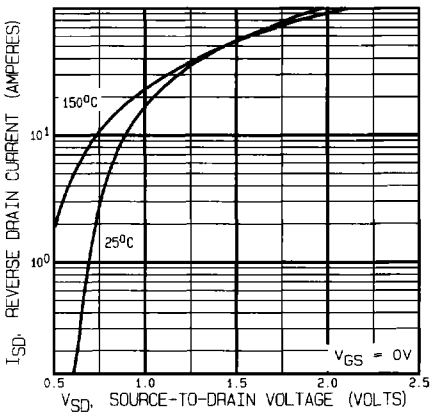


Fig. 7m – Typical Source-Drain Diode Forward Voltage IRF360

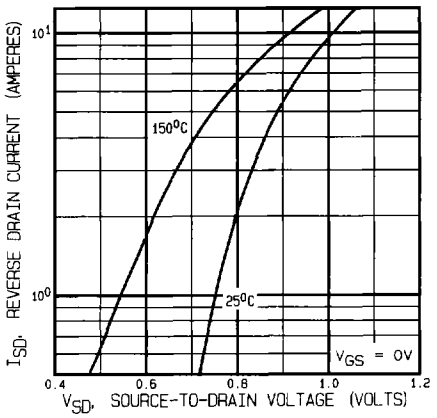


Fig. 7n – Typical Source-Drain Diode Forward Voltage IRF430

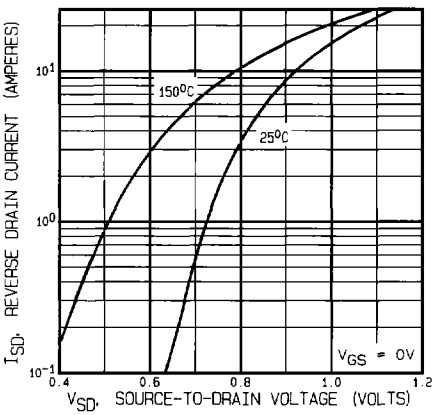


Fig. 7o – Typical Source-Drain Diode Forward Voltage IRF440

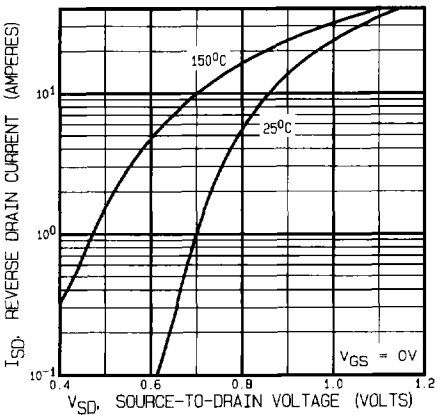


Fig. 7p – Typical Source-Drain Diode Forward Voltage IRF450

I

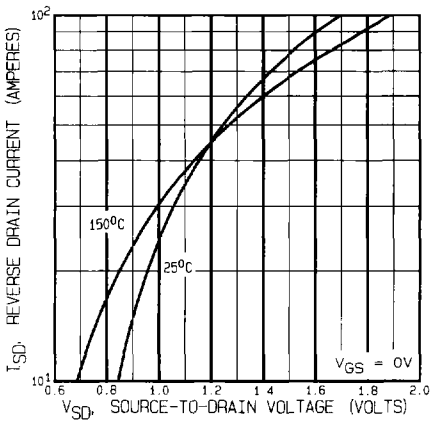


Fig. 7q – Typical Source-Drain Diode Forward Voltage IRF460

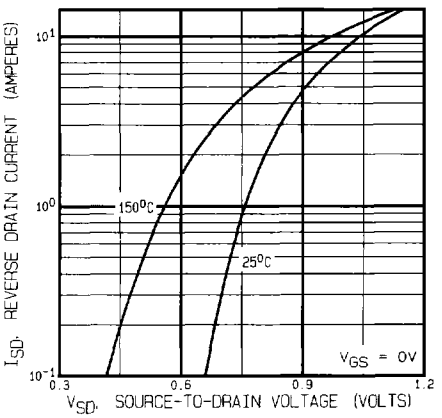


Fig. 7r – Typical Source-Drain Diode Forward Voltage IRFAC30

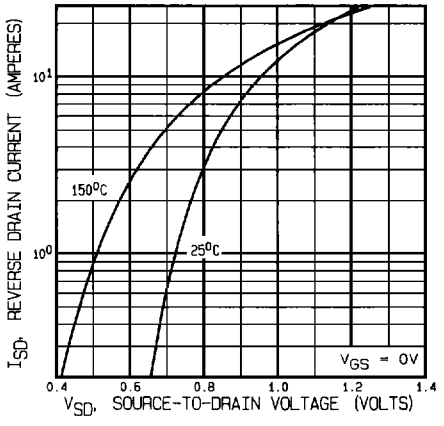


Fig. 7s – Typical Source-Drain Diode Forward Voltage
IRFAC40

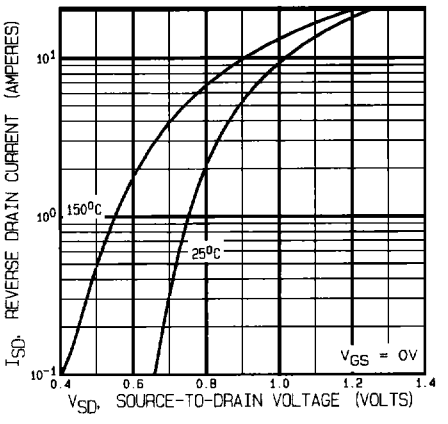


Fig. 7t – Typical Source-Drain Diode Forward Voltage
IRFAE30

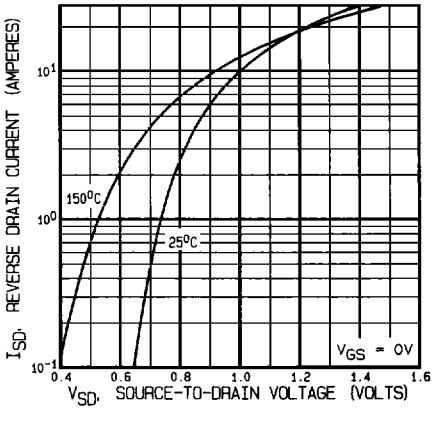


Fig. 7u – Typical Source-Drain Diode Forward Voltage
IRFAE40

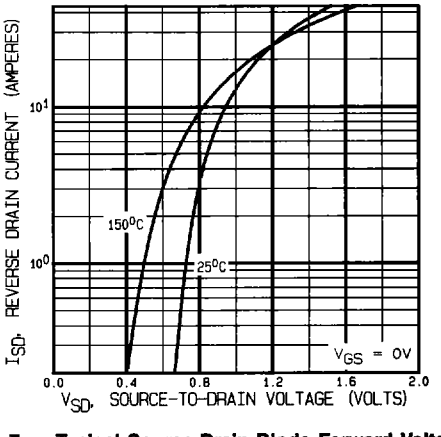


Fig. 7v – Typical Source-Drain Diode Forward Voltage
IRFAE50

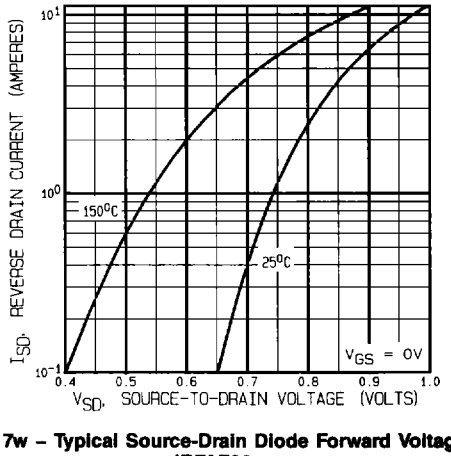


Fig. 7w – Typical Source-Drain Diode Forward Voltage
IRFAF30

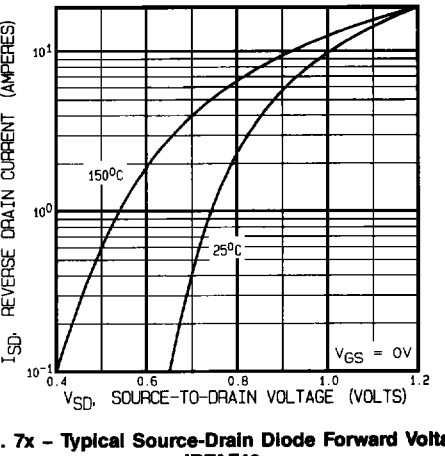


Fig. 7x – Typical Source-Drain Diode Forward Voltage
IRFAF40

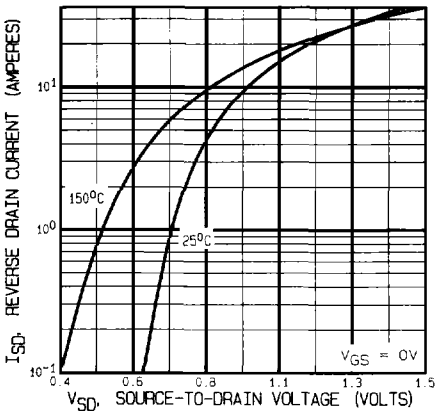


Fig. 7y – Typical Source-Drain Diode Forward Voltge
IRFAF50

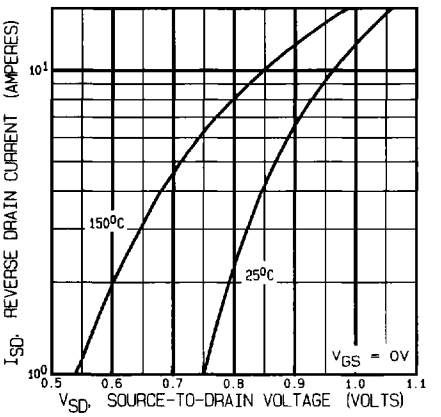


Fig. 7z – Typical Source-Drain Diode Forward Voltage
IRFAG30

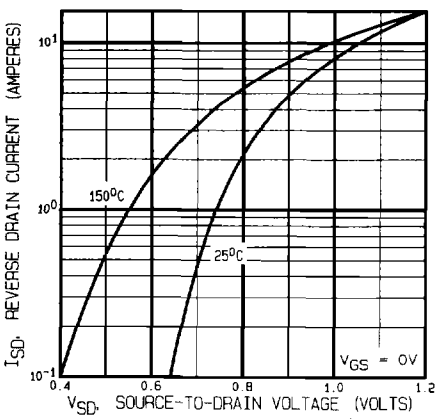


Fig. 7aa – Typical Source-Drain Diode Forward Voltage
IRFAG40

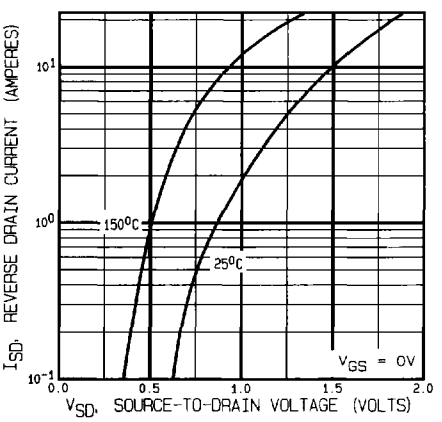


Fig. 7bb – Typical Source-Drain Diode Forward Voltage
IRFAG50

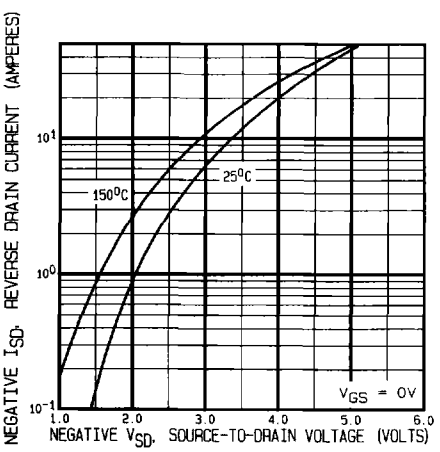


Fig. 7cc – Typical Source-Drain Diode Forward Voltage
IRF9130

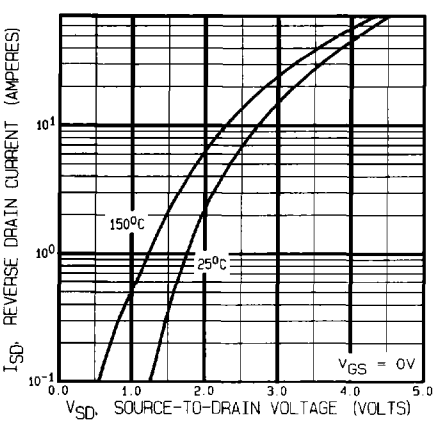


Fig. 7dd – Typical Source-Drain Diode Forward Voltage
IRF9140

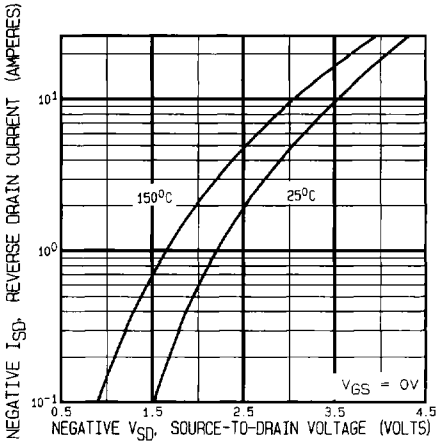


Fig. 7ee – Typical Source-Drain Diode Forward Voltage
IRF9230

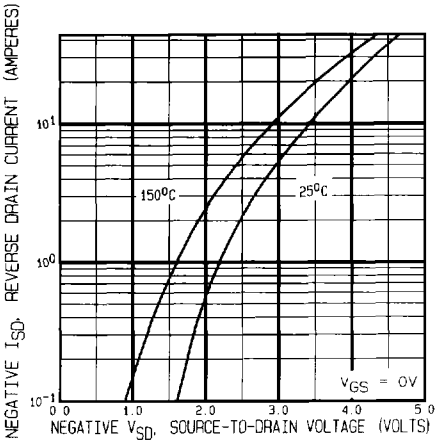


Fig. 7ff – Typical Source-Drain Diode Forward Voltage
IRF9240

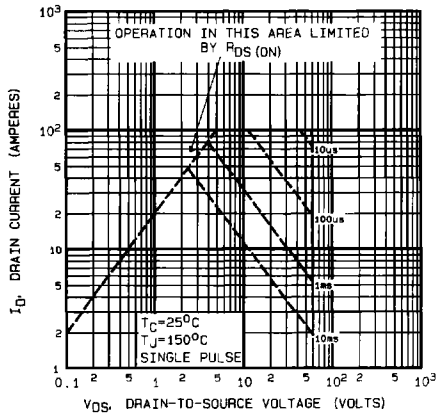


Fig. 8a – Maximum Safe Operating Area
IRF034

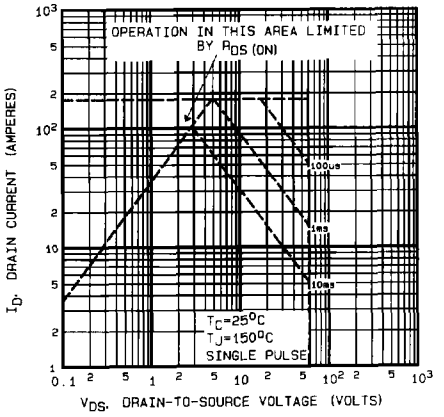


Fig. 8b – Maximum Safe Operating Area
IRF044

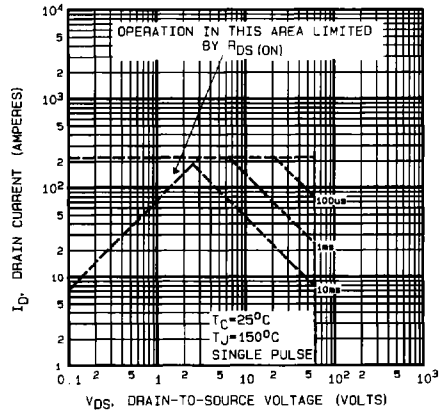


Fig. 8c – Maximum Safe Operating Area
IRF054

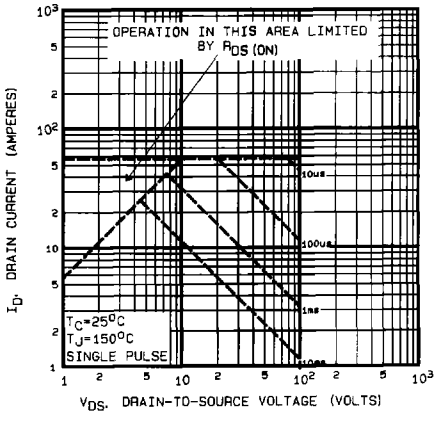


Fig. 8d – Maximum Safe Operating Area
IRF130

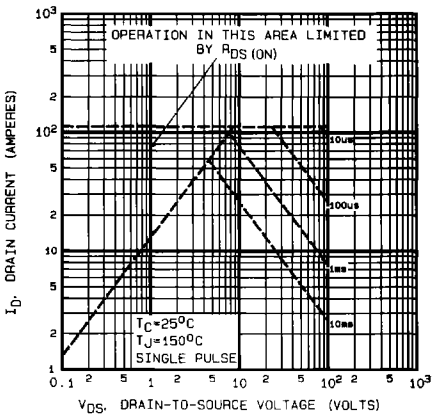


Fig. 8e – Maximum Safe Operating Area IRF140

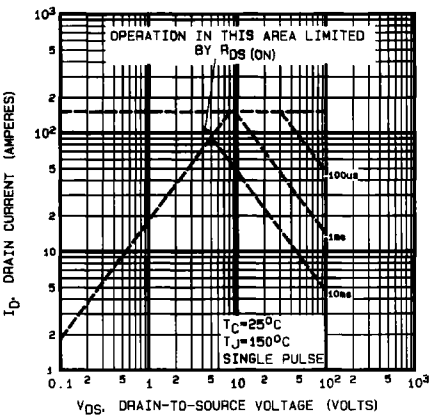


Fig. 8f – Maximum Safe Operating Area IRF150

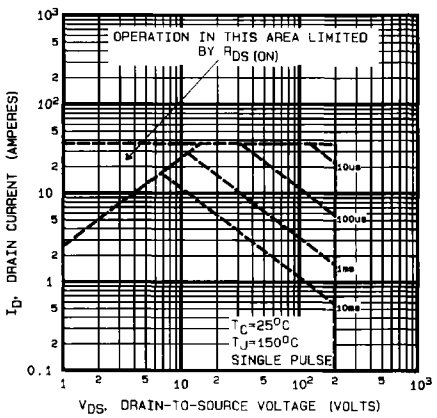


Fig. 8g – Maximum Safe Operating Area IRF230

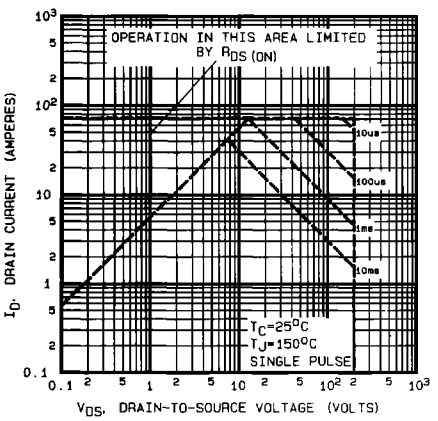


Fig. 8h – Maximum Safe Operating Area IRF240

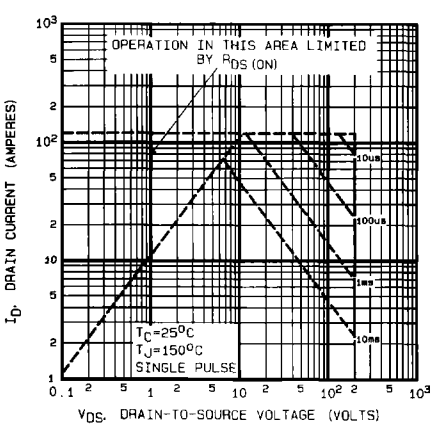


Fig. 8i – Maximum Safe Operating Area IRF250

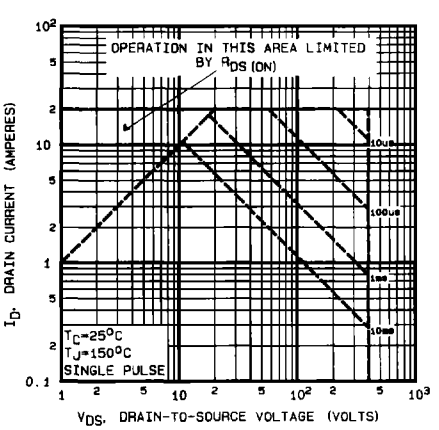


Fig. 8j – Maximum Safe Operating Area IRF330

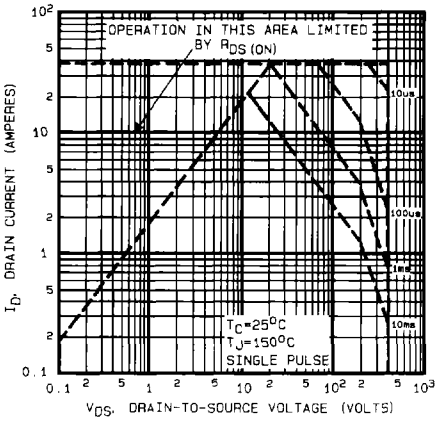


Fig. 8k – Maximum Safe Operating Area
IRF340

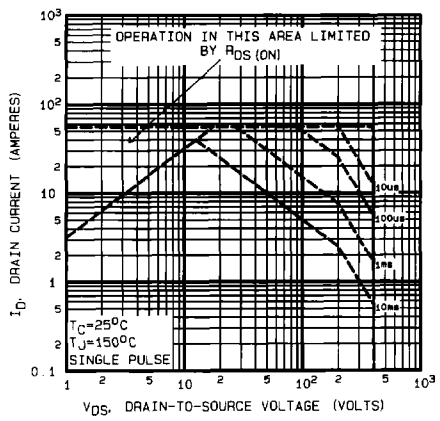


Fig. 8l – Maximum Safe Operating Area
IRF350

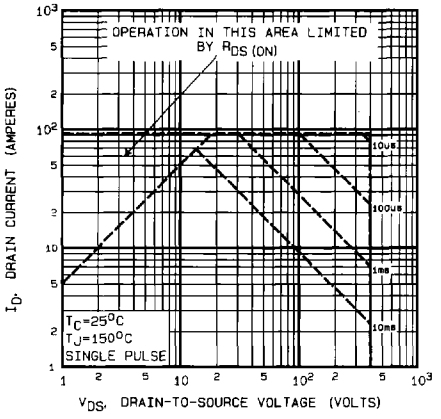


Fig. 8m – Maximum Safe Operating Area
IRF360

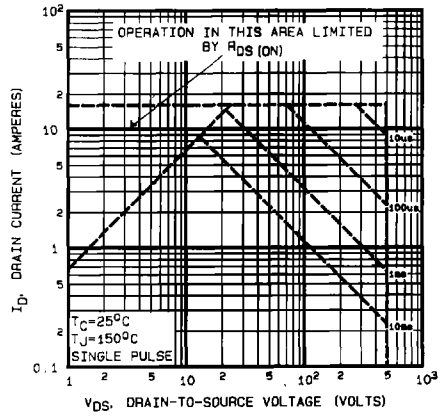


Fig. 8n – Maximum Safe Operating Area
IRF430

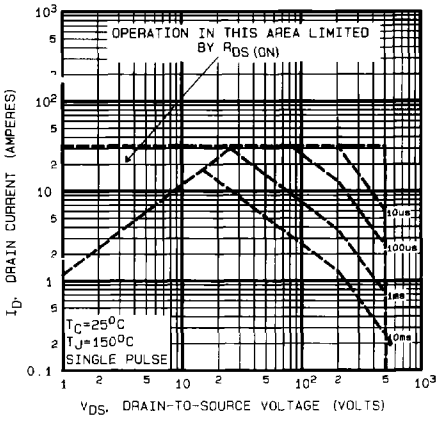


Fig. 8o. – Maximum Safe Operating Area
IRF440

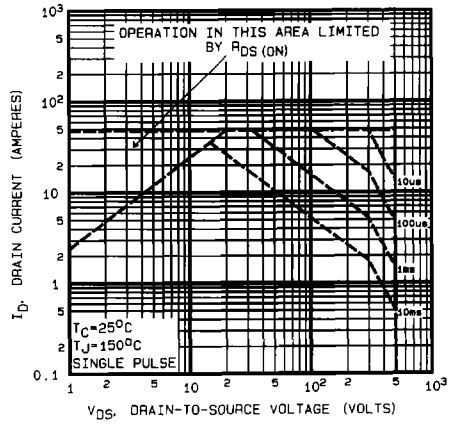


Fig. 8p – Maximum Safe Operating Area
IRF450

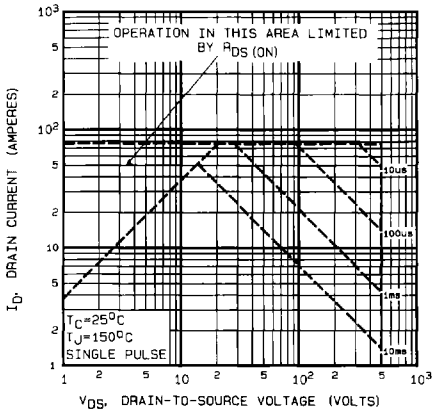


Fig. 8q – Maximum Safe Operating Area
IRF460

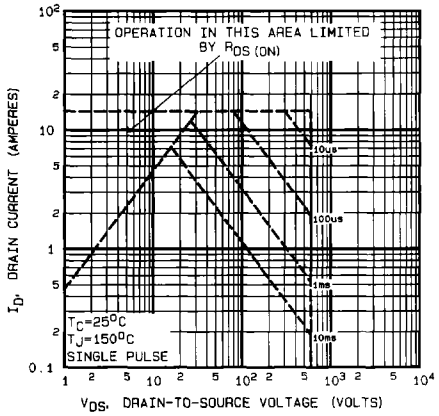


Fig. 8r – Maximum Safe Operating Area
IRFAC30

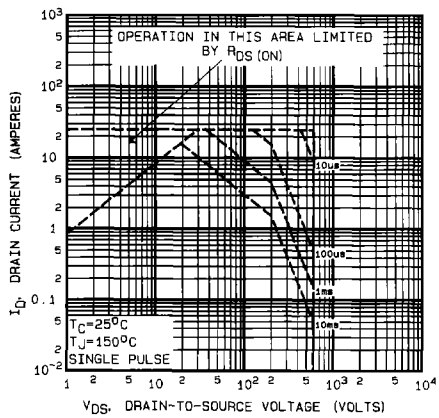


Fig. 8s – Maximum Safe Operating Area
IRFAC40

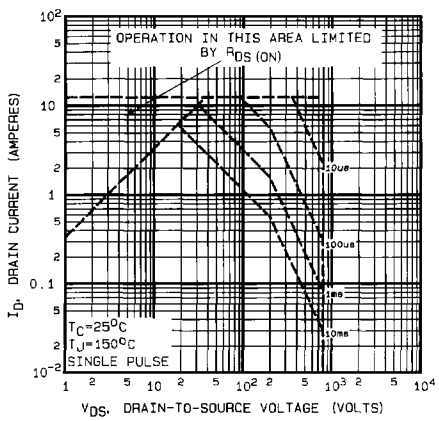


Fig. 8t – Maximum Safe Operating Area
IRFAE30

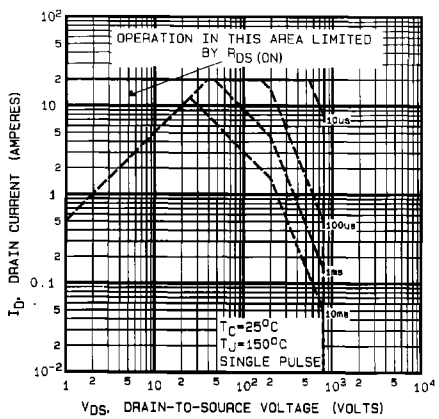


Fig. 8u – Maximum Safe Operating Area
IRFAE40

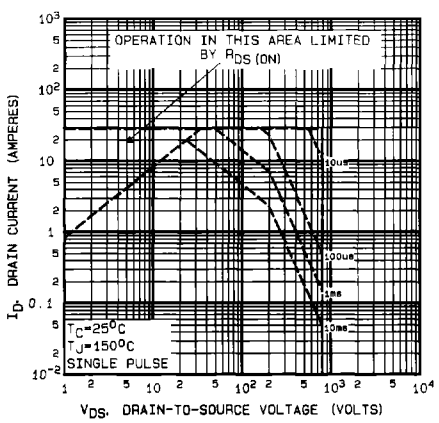


Fig. 8v – Maximum Safe Operating Area
IRFAE50

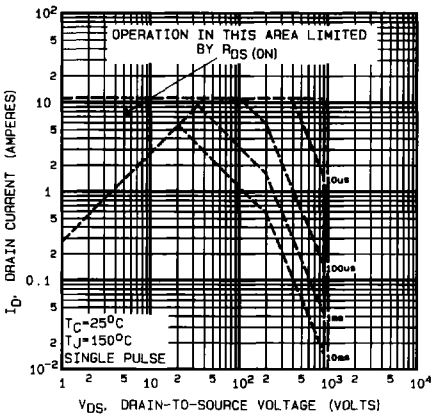


Fig. 8w – Maximum Safe Operating Area IRFAF30

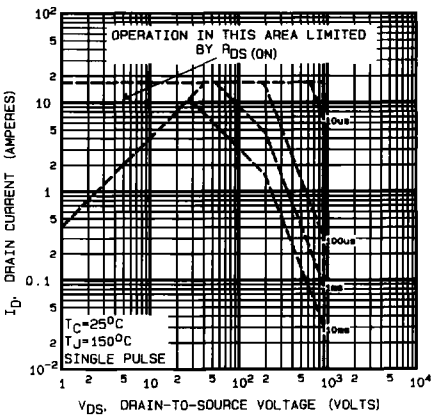


Fig. 8x – Maximum Safe Operating Area IRFAF40

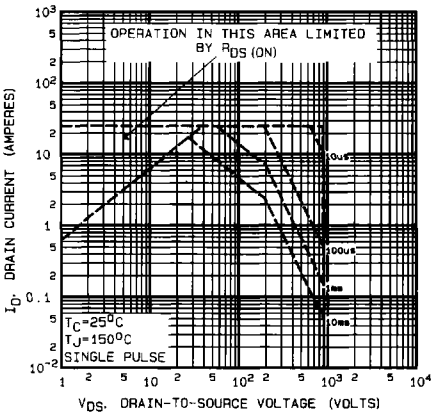


Fig. 8y – Maximum Safe Operating Area IRFAF50

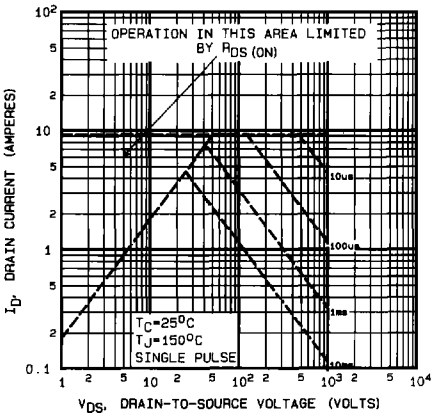


Fig. 8z – Maximum Safe Operating Area IRFAG30

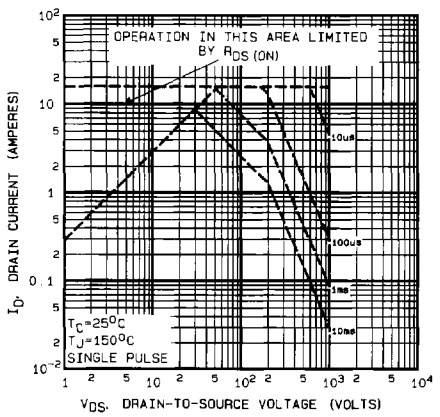


Fig. 8aa – Maximum Safe Operating Area IRFAG40

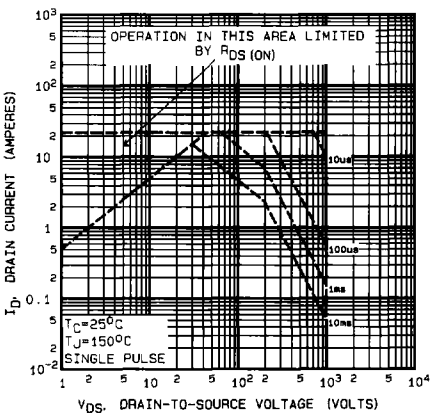


Fig. 8bb – Maximum Safe Operating Area IRFAG50

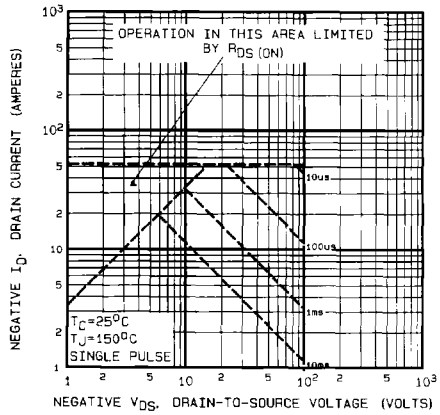


Fig. 8cc – Maximum Safe Operating Area IRF9130

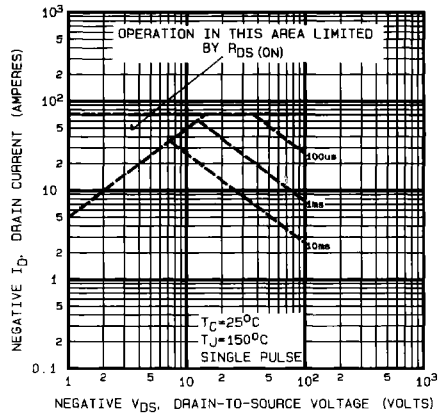


Fig. 8dd – Maximum Safe Operating Area IRF9140

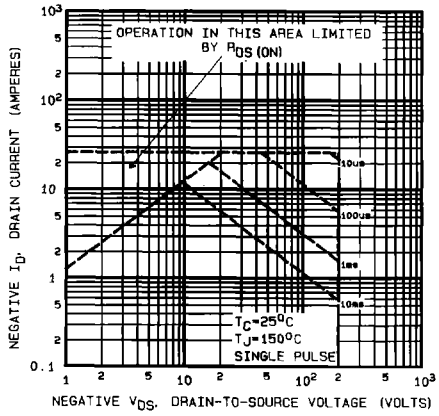


Fig. 8ee – Maximum Safe Operating Area IRF9230

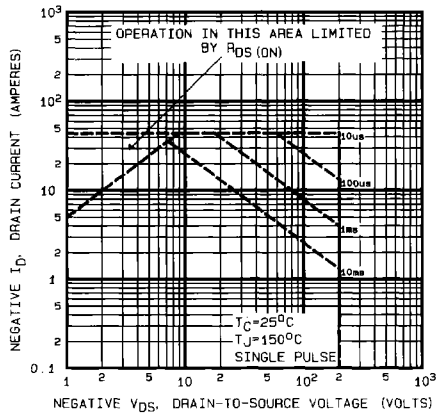


Fig. 8ff – Maximum Safe Operating Area IRF9240

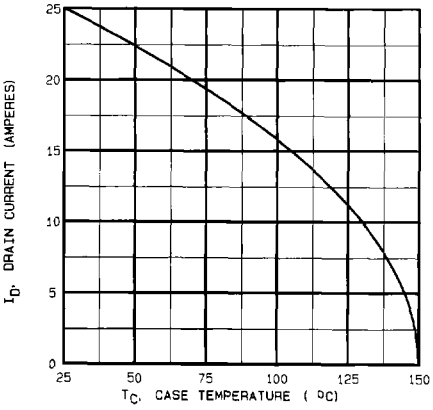


Fig. 9a – Maximum Drain Current Vs. Case Temperature IRF034

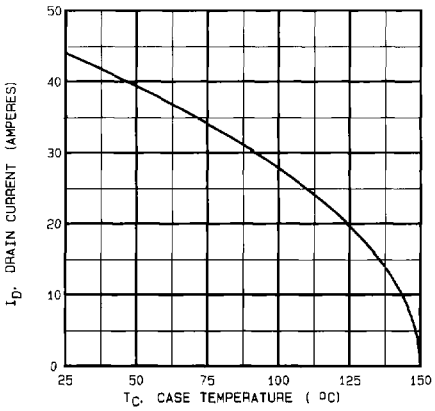


Fig. 9b – Maximum Drain Current Vs. Case Temperature IRF044

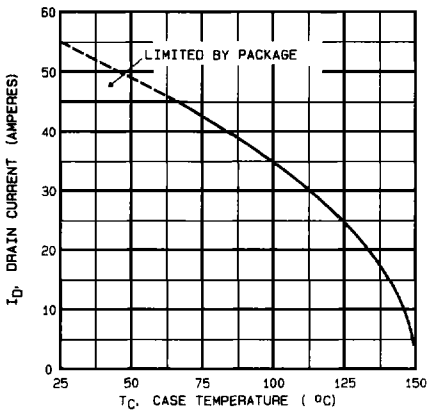


Fig. 9c – Maximum Drain Current Vs. Case Temperature IRF054

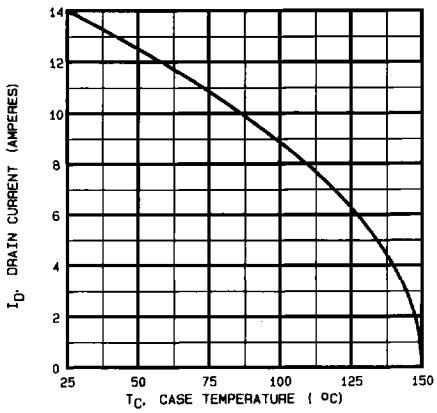


Fig. 9d – Maximum Drain Current Vs. Case Temperature IRF130

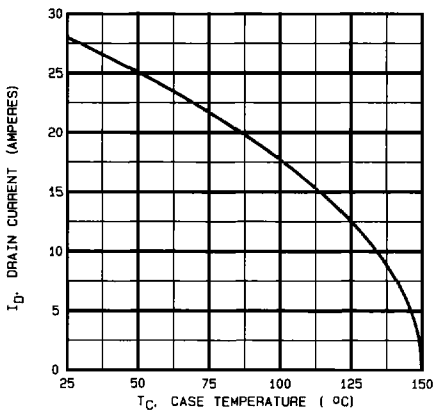


Fig. 9e – Maximum Drain Current Vs. Case Temperature IRF140

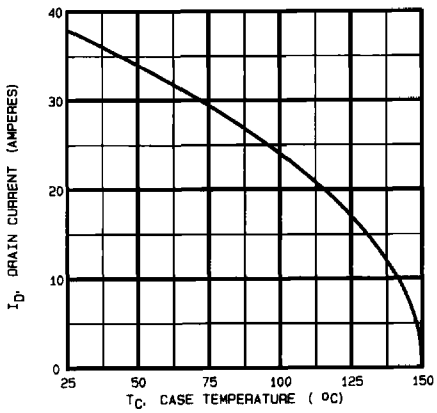


Fig. 9f – Maximum Drain Current Vs. Case Temperature IRF150

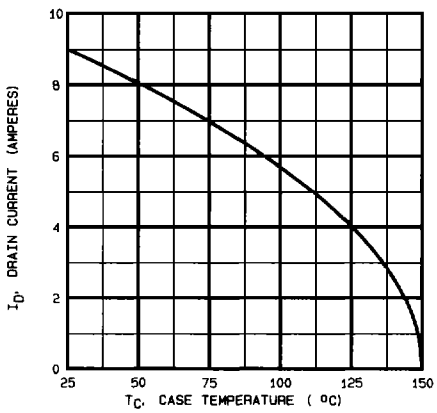


Fig. 9g – Maximum Drain Current Vs. Case Temperature IRF230

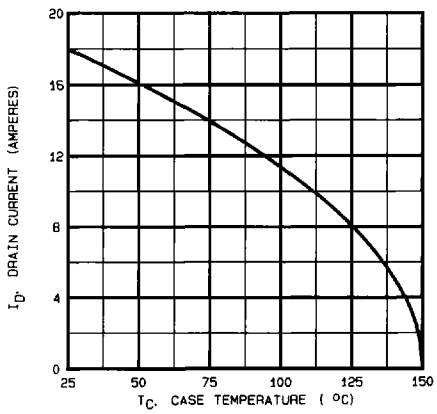


Fig. 9h – Maximum Drain Current Vs. Case Temperature IRF240

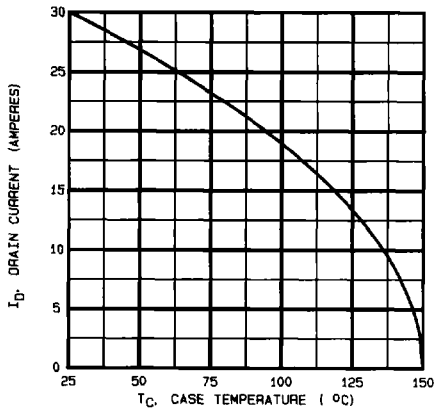


Fig. 9i – Maximum Drain Current Vs. Case Temperature IRF250

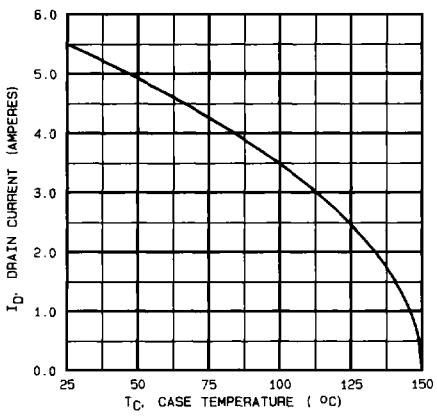


Fig. 9j – Maximum Drain Current Vs. Case Temperature IRF330

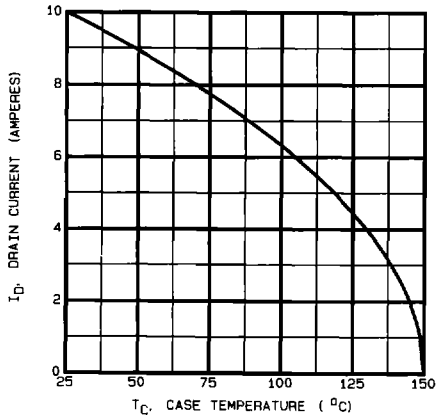


Fig. 9k – Maximum Drain Current Vs. Case Temperature IRF340

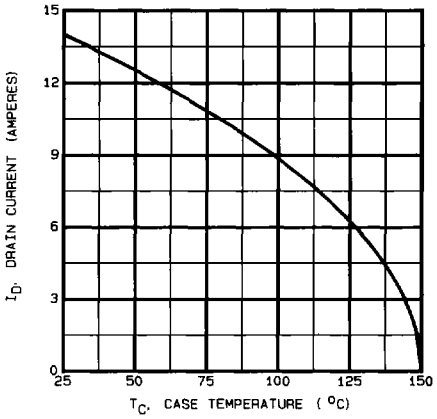


Fig. 9l – Maximum Drain Current Vs. Case Temperature IRF350

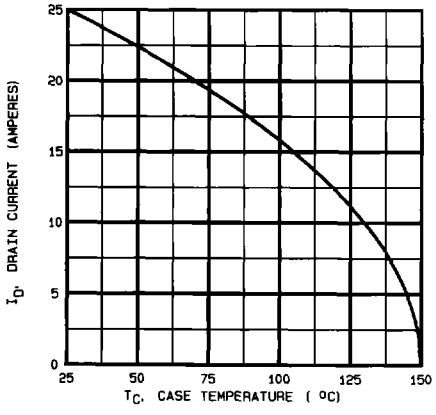


Fig. 9m – Maximum Drain Current Vs. Case Temperature IRF360

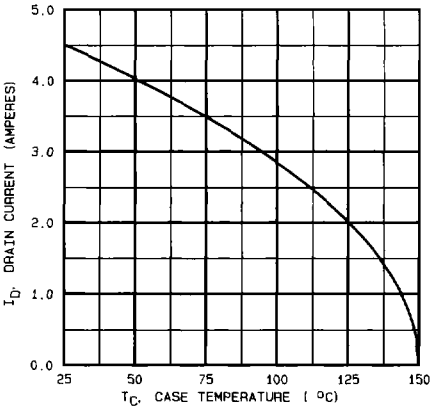


Fig. 9n – Maximum Drain Current Vs. Case Temperature IRF430

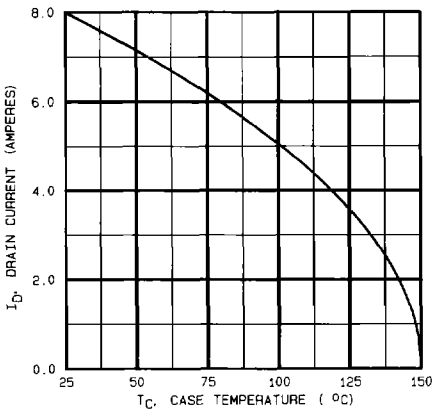


Fig. 9o – Maximum Drain Current Vs. Case Temperature IRF440

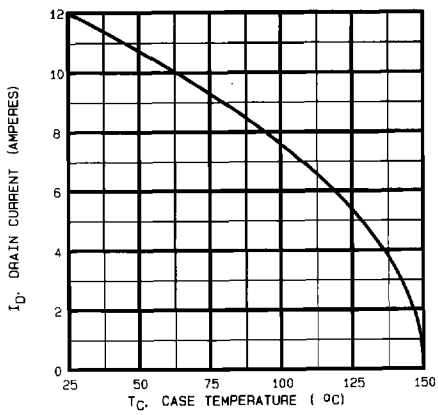


Fig. 9p – Maximum Drain Current Vs. Case Temperature IRF450

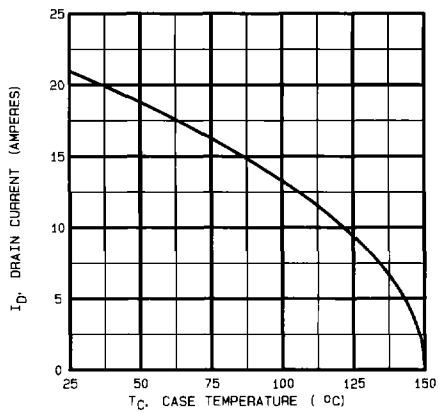


Fig. 9q – Maximum Drain Current Vs. Case Temperature IRF460

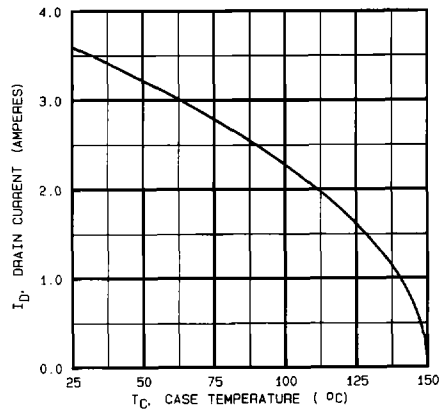


Fig. 9r – Maximum Drain Current Vs. Case Temperature IRFAC30

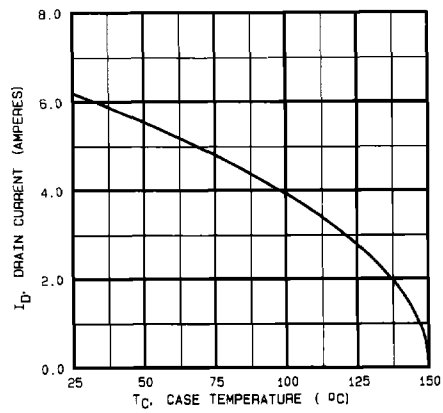


Fig. 9s – Maximum Drain Current Vs. Case Temperature IRFAC40

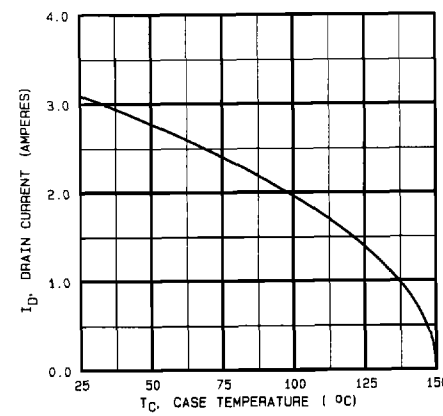


Fig. 9t – Maximum Drain Current Vs. Case Temperature IRFAE30

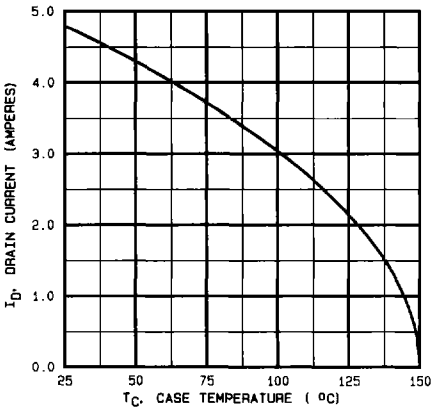


Fig. 9u – Maximum Drain Current Vs. Case Temperature IRFAE40

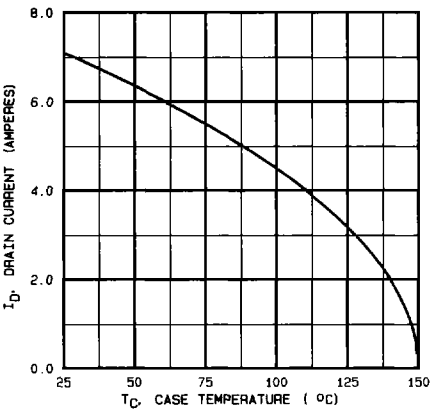


Fig. 9v – Maximum Drain Current Vs. Case Temperature IRFAE50

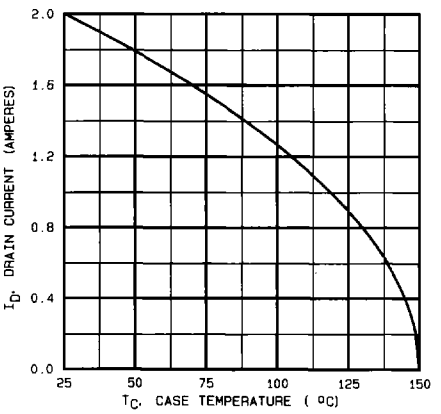


Fig. 9w – Maximum Drain Current Vs. Case Temperature IRFAF30

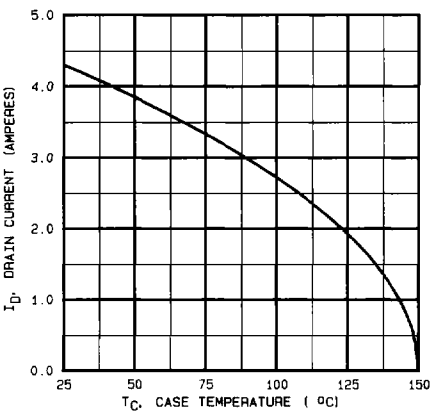


Fig. 9x – Maximum Drain Current Vs. Case Temperature IRFAF40

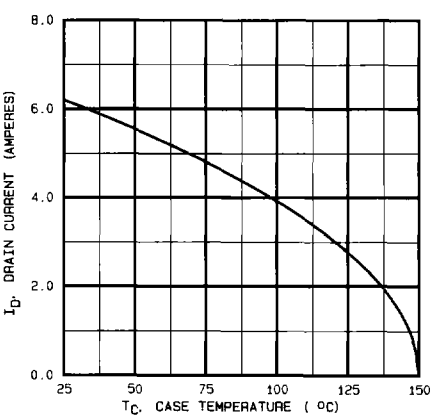


Fig. 9y – Maximum Drain Current Vs. Case Temperature IRFAF50

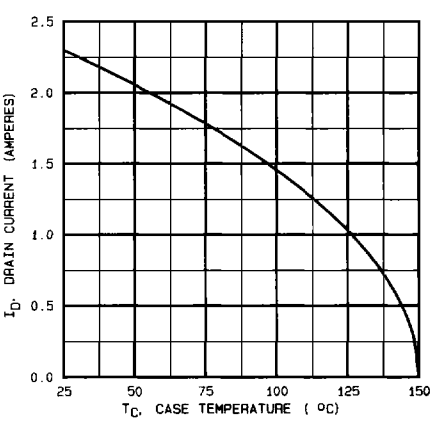


Fig. 9z – Maximum Drain Current Vs. Case Temperature IRFAG30

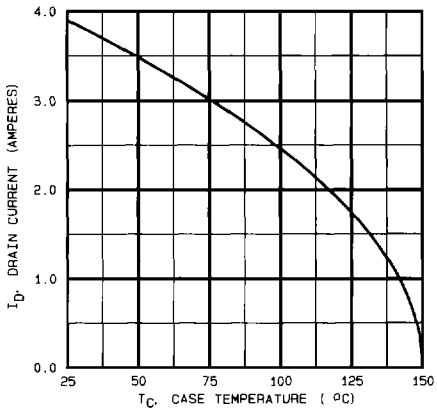


Fig. 9aa – Maximum Drain Current Vs. Case Temperature IRFAG40

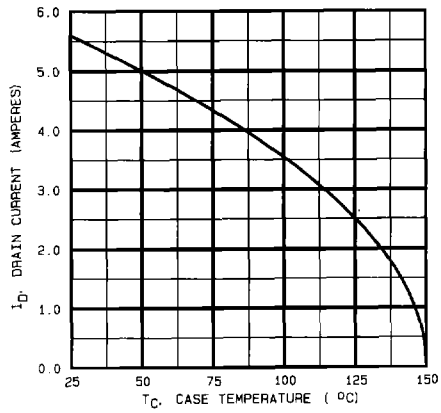


Fig. 9bb – Maximum Drain Current Vs. Case Temperature IRFAG50

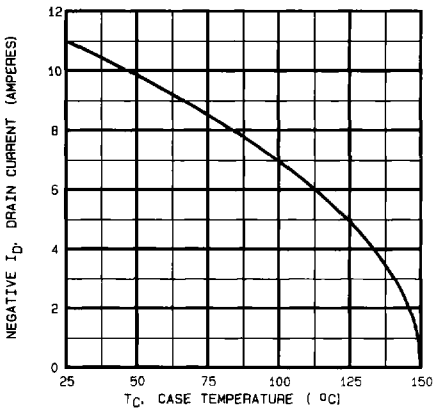


Fig. 9cc – Maximum Drain Current Vs. Case Temperature IRF9130

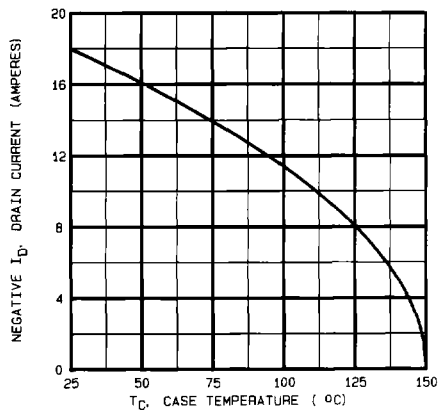


Fig. 9dd – Maximum Drain Current Vs. Case Temperature IRF9140

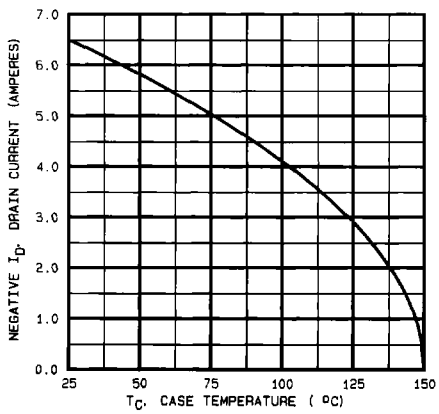


Fig. 9ee – Maximum Drain Current Vs. Case Temperature IRF9230

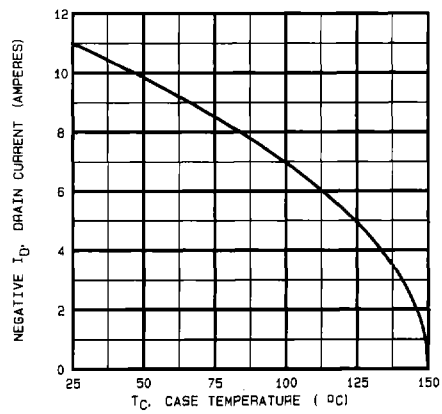


Fig. 9ff – Maximum Drain Current Vs. Case Temperature IRF9240

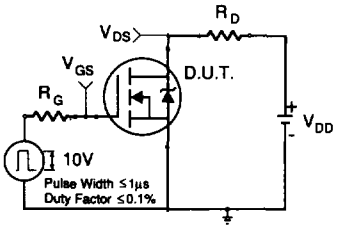


Fig. 10a – Switching Time Test Circuit N-Channel

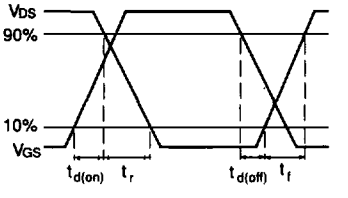


Fig. 10b – Switching Time Waveforms N-Channel

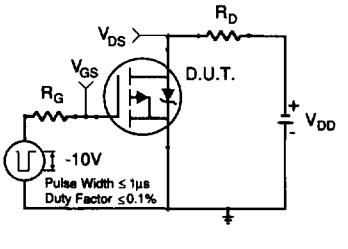


Fig. 10c – Switching Time Test Circuit P-Channel

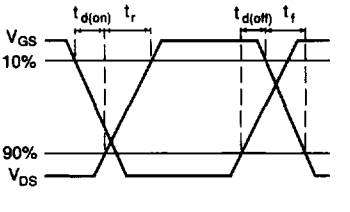


Fig. 10d – Switching Time Waveforms P-Channel

I

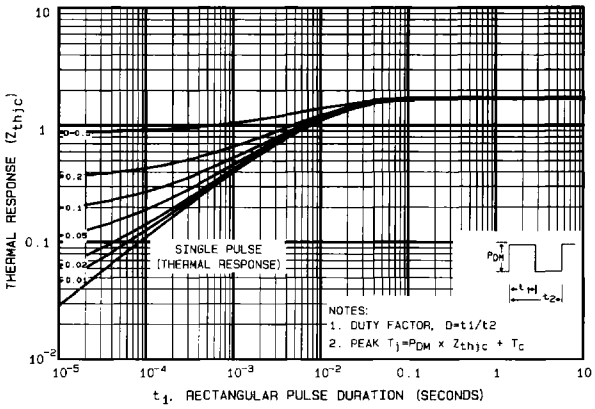


Fig. 11a – Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRF034, IRF130, IRF230, IRF330, IRF430, IRFAC30, IRFAE30, IRFAF30, IRFAG30, IRF9130 & IRF9230

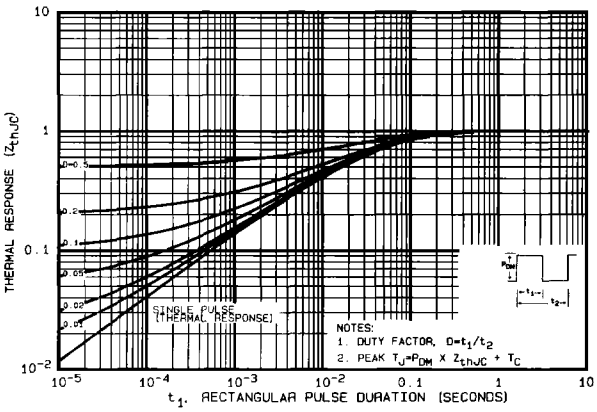


Fig. 11b – Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRF044, IRF140, IRF240, IRF340, IRF440, IRFAC40, IRFAE40, IRFAF40, IRFAG40, IRF9140 & IRF9240

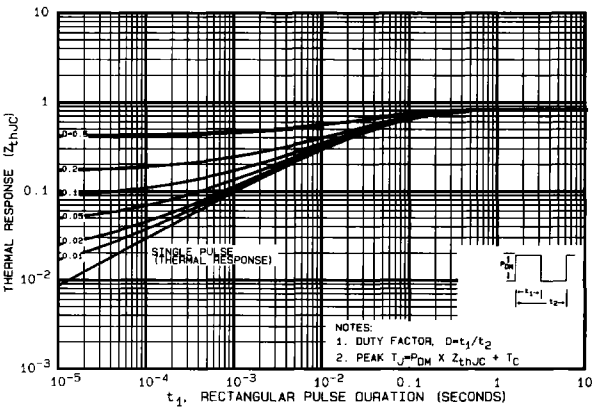


Fig. 11c – Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRF054, IRF150, IRF250, IRF350, IRF450, IRFAC50, IRFAE50, IRFAF50, & IRFAG50

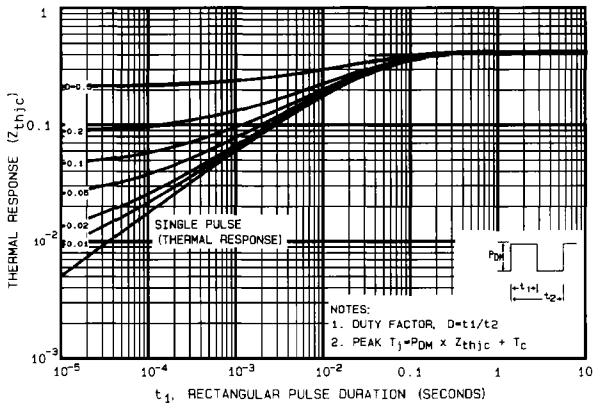


Fig. 11d – Maximum Effective Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration IRF360 & IRF460

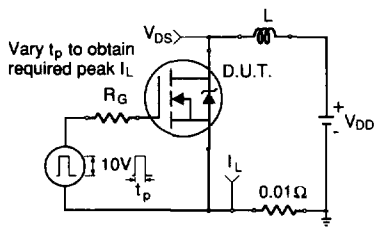


Fig. 12a – Unclamped Inductive Test Circuit N-Channel

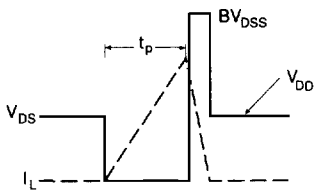


Fig. 12b – Unclamped Inductive Waveforms N-Channel

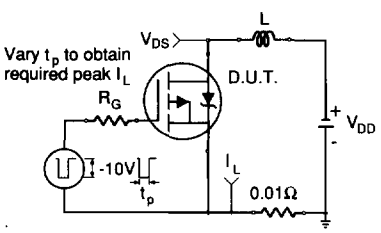


Fig. 12c – Unclamped Inductive Test Circuit P-Channel

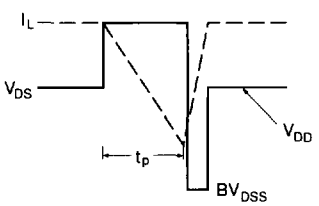


Fig. 12d – Unclamped Inductive Waveforms P-Channel

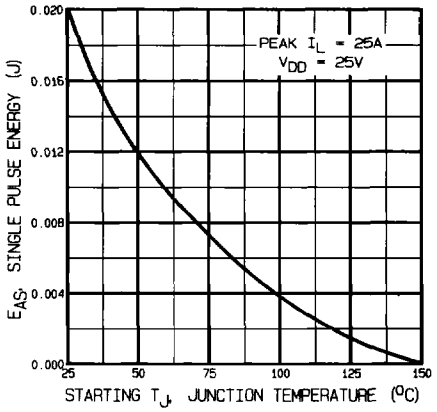


Fig. 13a – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF034

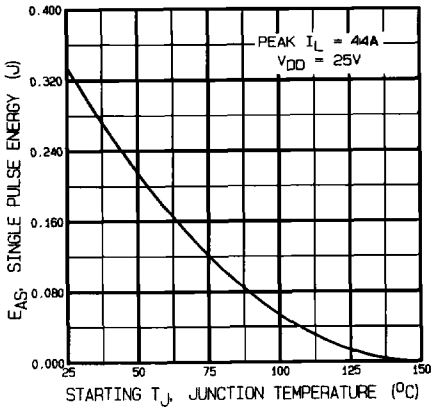


Fig. 13b – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF044

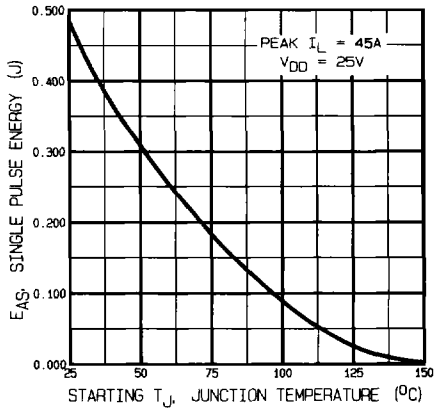


Fig. 13c – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF054

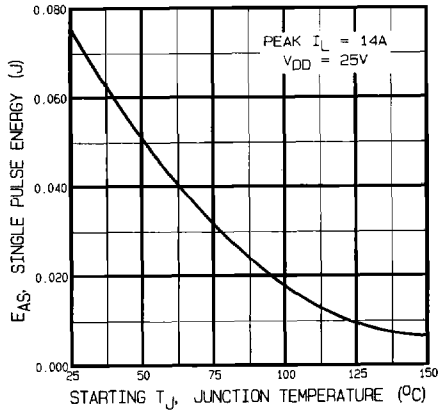


Fig. 13d – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF130

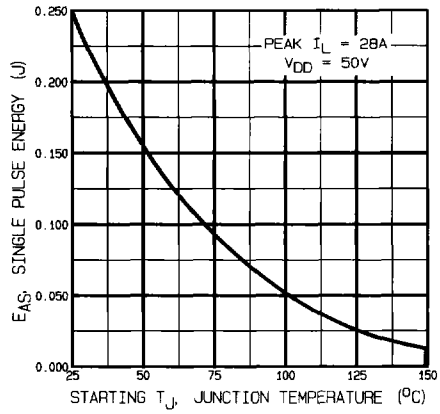


Fig. 13e – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF140

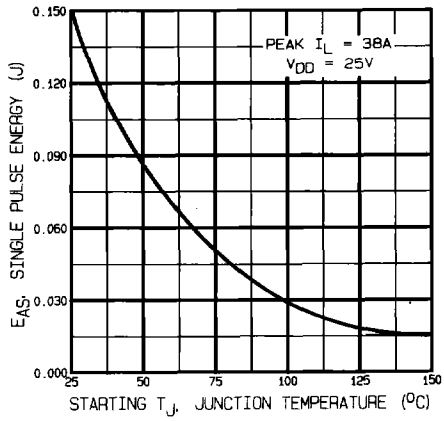


Fig. 13f – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF150

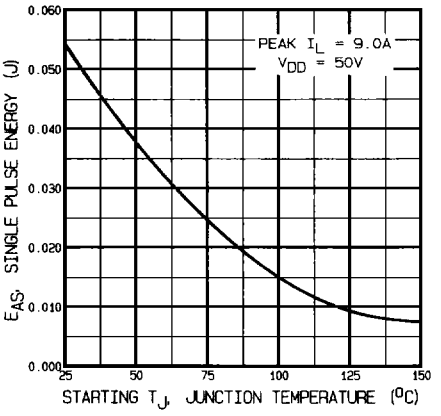


Fig. 13g – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF230

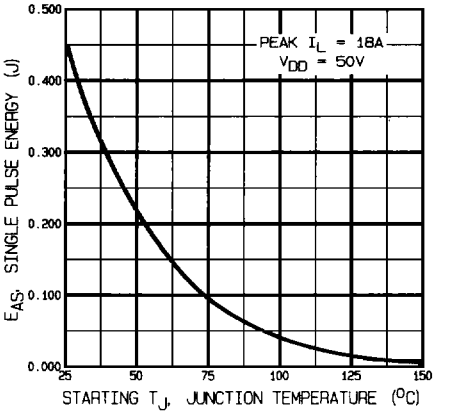


Fig. 13h – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF240

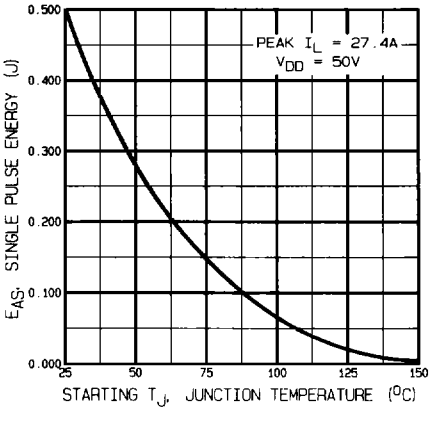


Fig. 13i – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF250

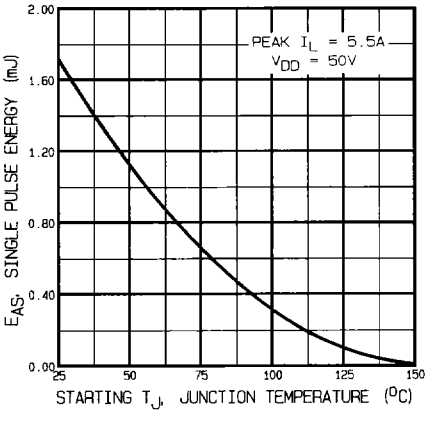


Fig. 13j – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF330

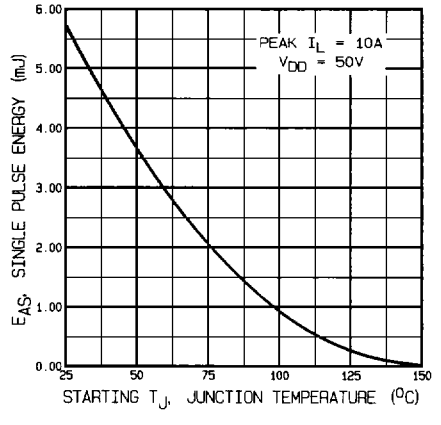


Fig. 13k – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF340

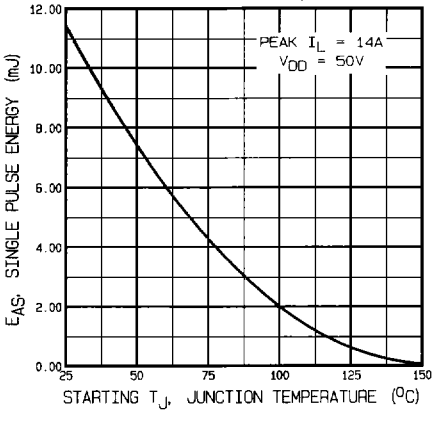


Fig. 13l – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF350

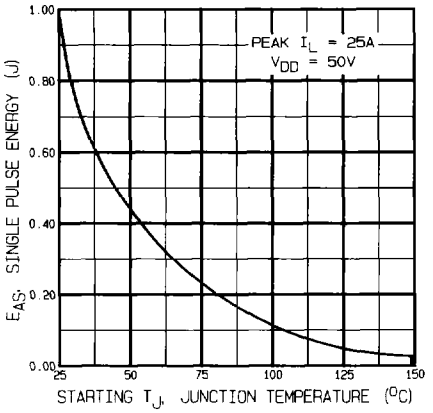


Fig. 13m – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF360

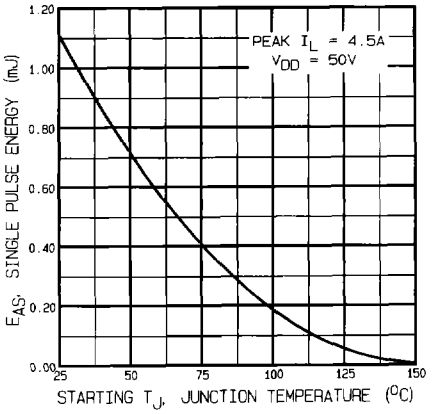


Fig. 13n – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF430

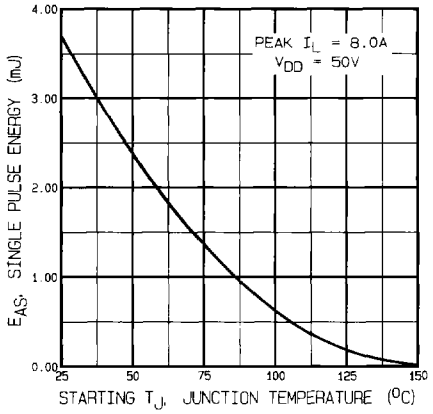


Fig. 13o – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF440

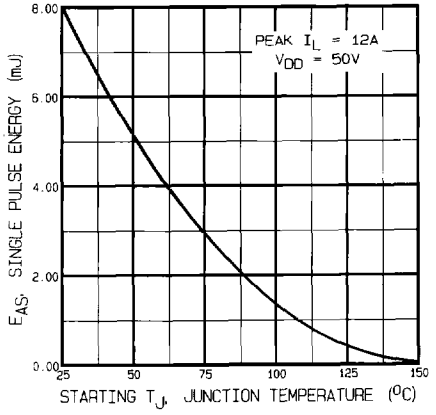


Fig. 13p – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF450

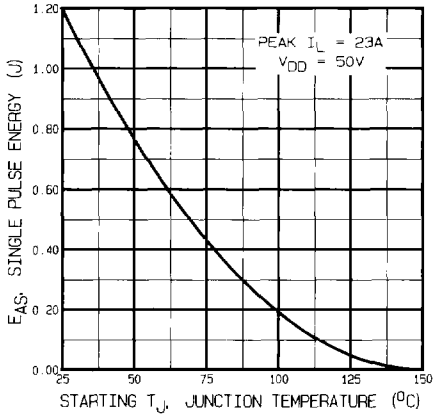


Fig. 13q – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF460

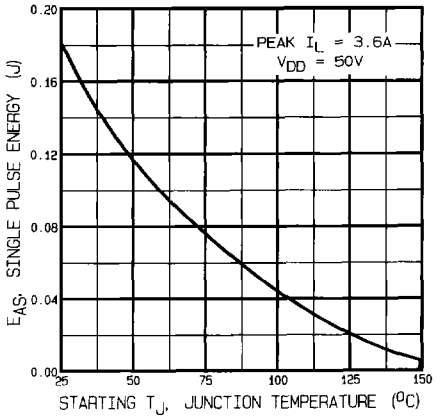


Fig. 13r – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAC30

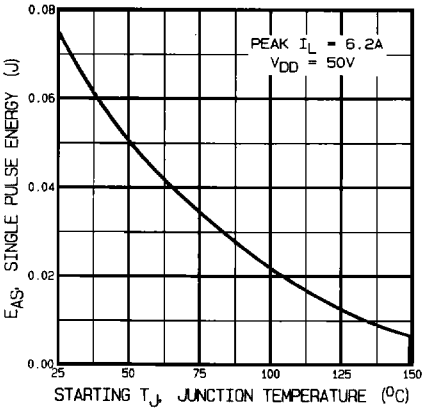


Fig. 13s – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAC40

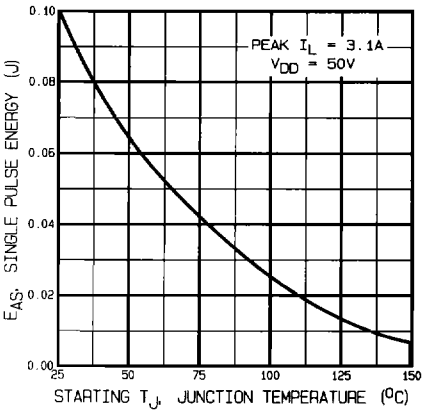


Fig. 13t – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAE30

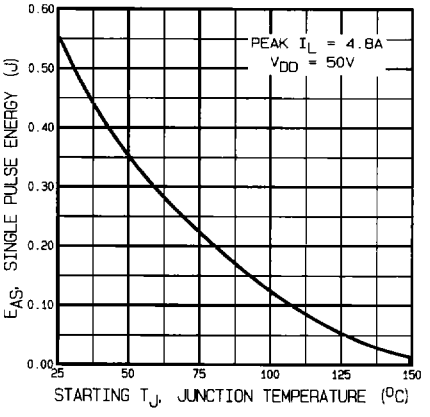


Fig. 13u – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAE40

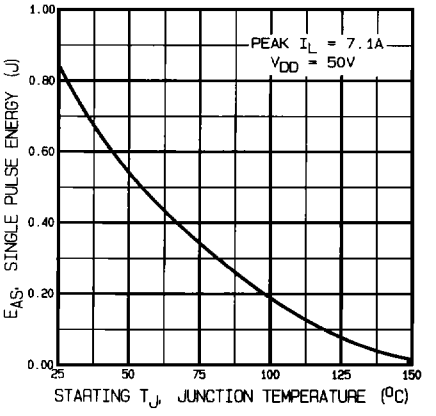


Fig. 13v – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAE50

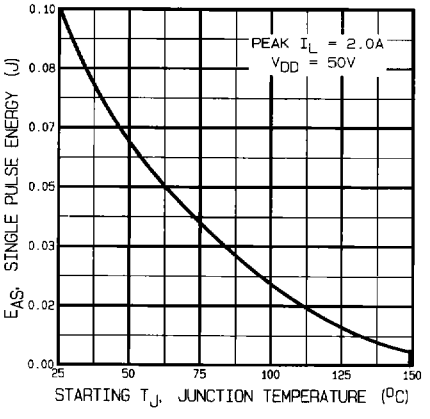


Fig. 13w – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAF30

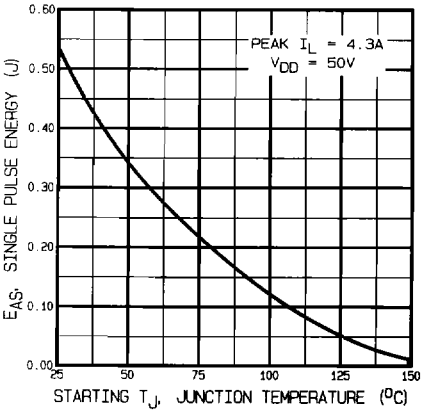


Fig. 13x – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAF40

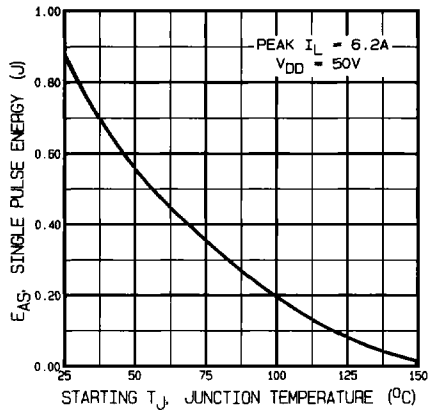


Fig. 13y – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAF50

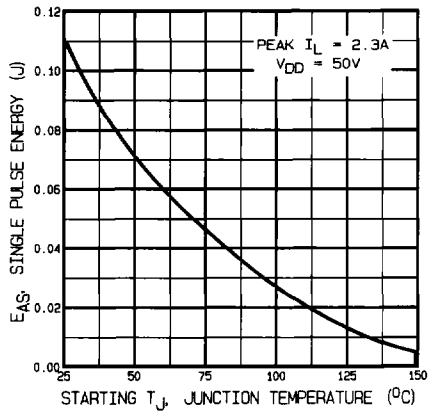


Fig. 13z – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAG30

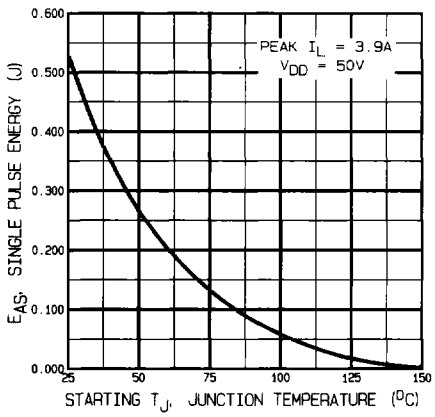


Fig. 13aa – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRFAG40

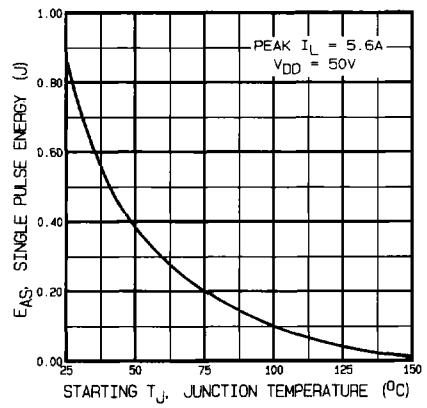


Fig. 13bb – Maximum Avalanche Energy Vs. Starting Junction Temperture, IRFAG50

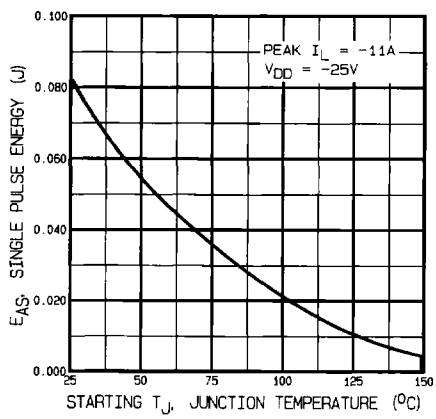


Fig. 13cc – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF9130

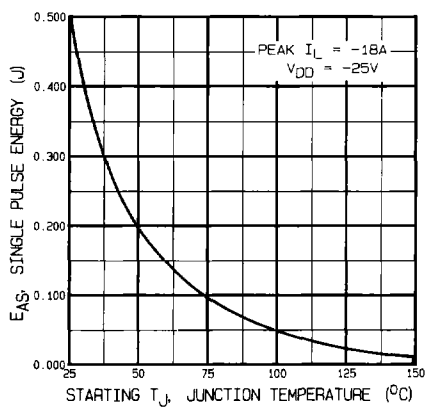


Fig. 13dd – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF9140

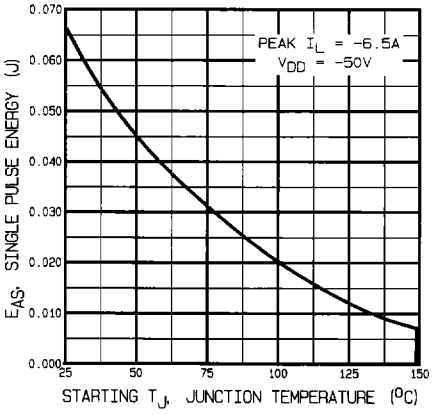


Fig. 13ee – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF9230

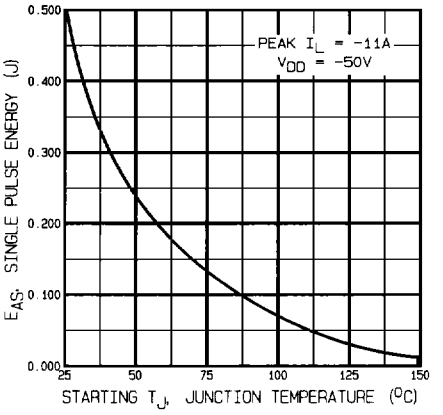


Fig. 13ff – Maximum Avalanche Energy Vs. Starting Junction Temperature, IRF9240

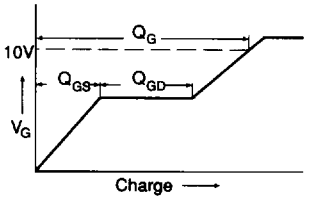


Fig. 14a – Basic Gate Charge Waveform N-Channel

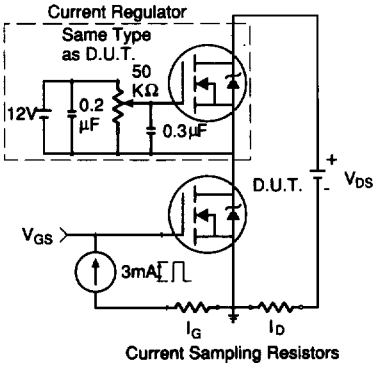


Fig. 14b – Basic Gate Charge Waveform N-Channel

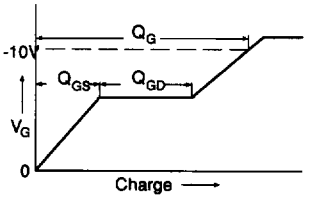


Fig. 14c – Gate Charge Test Circuit P-Channel

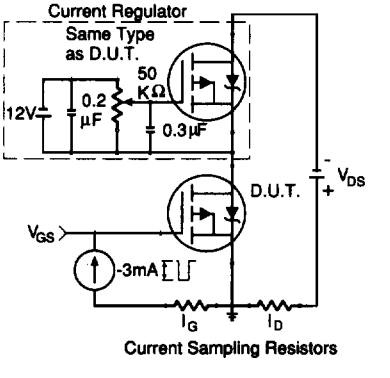


Fig. 14d – Basic Gate Charge Waveform P-Channel

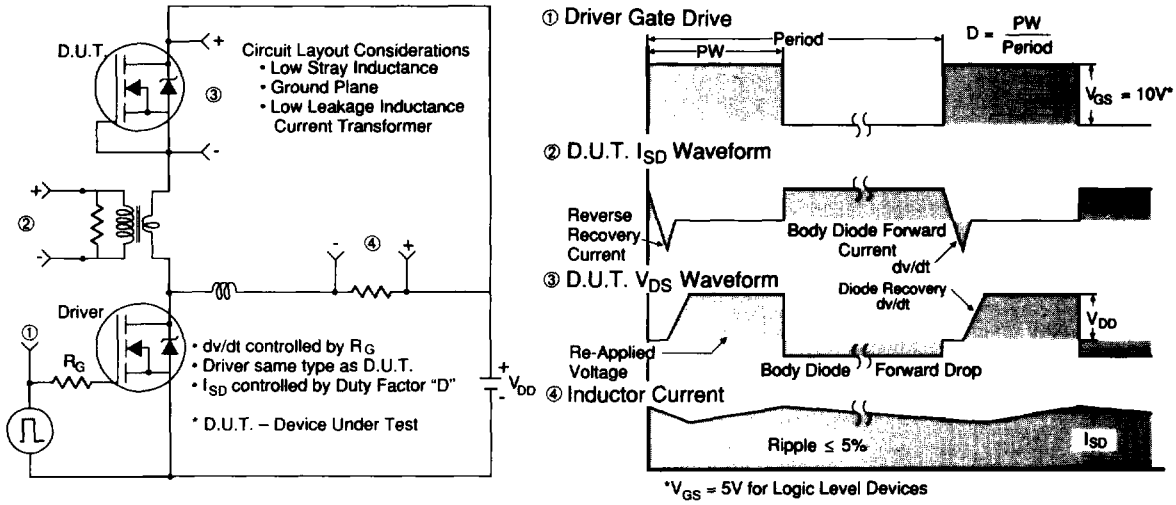


Fig. 15a – Peak Diode Recovery dv/dt Test Circuit
N-Channel

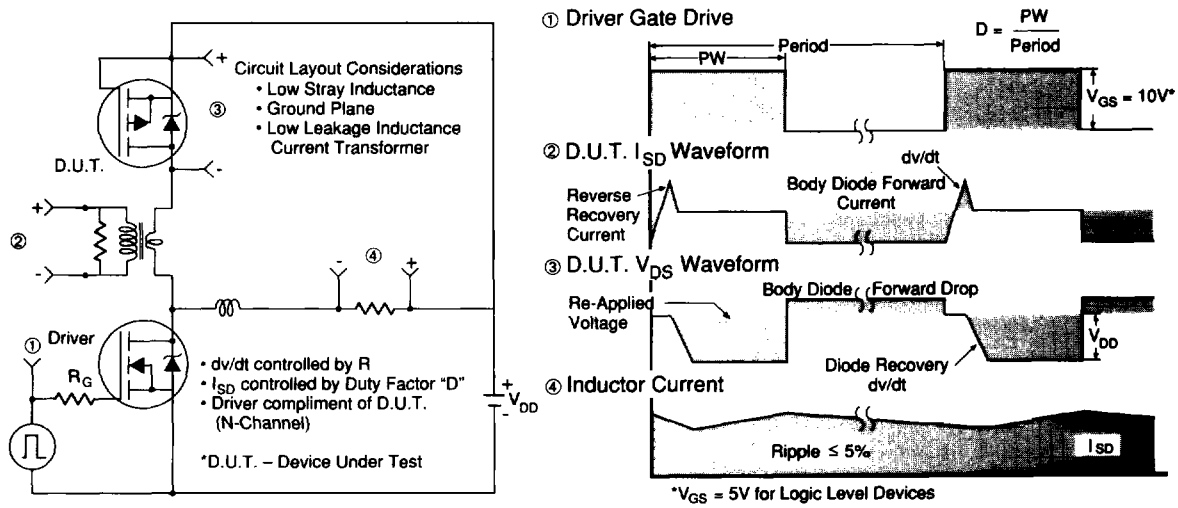


Fig. 15b – Peak Diode Recovery dv/dt Test Circuit
P-Channel