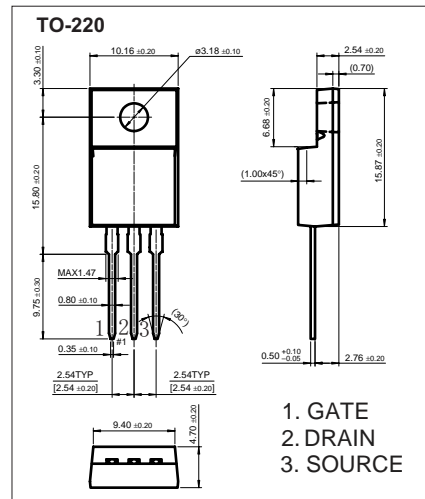


IRF3205

Features

- Advanced Process Technology
- Ultra Low On-Resistance
- Dynamic dv/dt Rating
- Fast Switching
- Fully Avalanche Rated



Absolute Maximum Ratings Ta = 25

Parameter	Symbol	Rating	Unit
Continuous Drain Current, V _{GS} @ 10V, T _c = 25	I _D	110	A
Continuous Drain Current, V _{GS} @ 10V, T _c = 100	I _D	80	
Pulsed Drain Current*1	I _{DM}	390	
Power Dissipation	P _D	200	W
Linear Derating Factor		1.3	W/
Linear Derating Factor	V _{GS}	± 20	V
Avalanche Current *1	I _{AR}	62	A
Repetitive Avalanche Energy *1	E _{AR}	20	mJ
Peak Diode Recovery dv/dt *2	dv/dt	5	V/ns
Junction-to-Case	R _{JC}	0.75 (Max)	/W
Case-to-Sink, Flat, Greased Surface	R _{CS}	0.5	
Junction-to-Ambient	R _{JA}	62 (Max)	
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to + 175	

*1 Repetitive rating; pulse width limited by max. junction temperature.

*2 I_{SD} 62A, di/dt 207A/μs, V_{DD} V_{(BR)DSS}, T_J 175



IRF3205

Electrical Characteristics Ta = 25

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	V _{DSS}	V _{GS} = 0V, I _D = 250μA	55			V
Static Drain-to-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 62A*1			8.0	m
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.0		4.0	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} = 55V, V _{GS} = 0V			25	μA
		V _{DS} = 44V, V _{GS} = 0V, T _J = 150			250	
Gate-to-Source Forward Leakage	I _{GSS}	V _{GS} = 20V			100	nA
Gate-to-Source Reverse Leakage		V _{GS} = -20V			-100	
Total Gate Charge	Q _g	I _D = 62A			146	nC
Gate-to-Source Charge	Q _{gs}	V _{DS} = 44V			35	
Gate-to-Drain ("Miller") Charge	Q _{gd}	V _{GS} = 10V,*1			54	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 28V I _D = 62A R _G = 4.5 V _{GS} = 10V *1		14		ns
Rise Time	t _r			101		
Turn-Off Delay Time	t _{d(off)}			50		
Fall Time	t _f			65		
Internal Drain Inductance	L _D	Between lead, 6mm (0.25in.) from package and center of die contact		4.5		nH
Internal Source Inductance	L _S			7.5		
Input Capacitance	C _{iss}	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz		3247		pF
Output Capacitance	C _{oss}			781		
Reverse Transfer Capacitance	C _{rss}			211		
Reverse Recovery Time	t _{rr}	T _J = 25 , I _F = 62A		69	104	ns
Reverse Recovery Charge	Q _{rr}	di/dt = 100A/μs*1		143	215	nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by L _S +L _D)				
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.			110	A
Pulsed Source Current (Body Diode) *2	I _{SM}				390	
Diode Forward Voltage	V _{SD}	T _J = 25 , I _S = 62A, V _{GS} = 0V*1			1.3	V

*1 Pulse width 400μs; duty cycle 2%.

*2 Repetitive rating; pulse width limited by max. junction temperature.

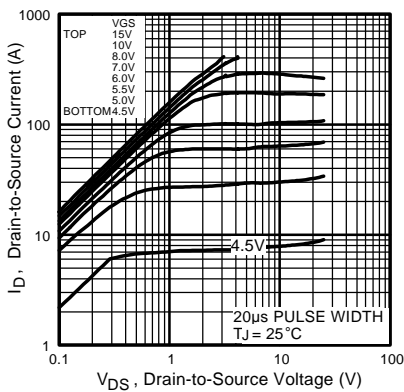


Fig 1. Typical Output Characteristics

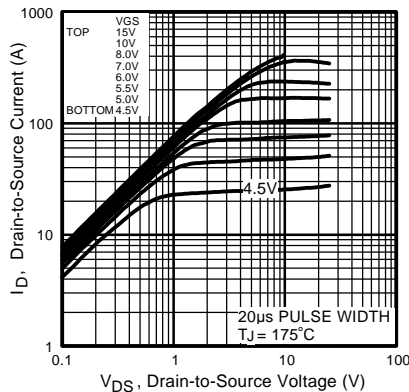


Fig 2. Typical Output Characteristics

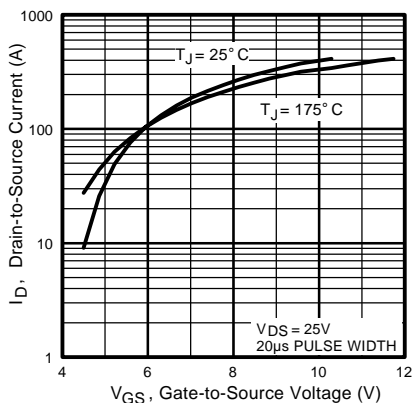


Fig 3. Typical Transfer Characteristics

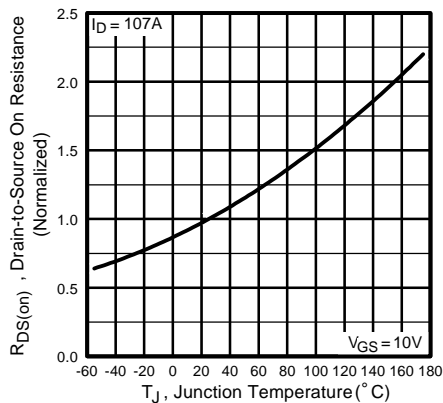


Fig 4. Normalized On-Resistance Vs. Temperature

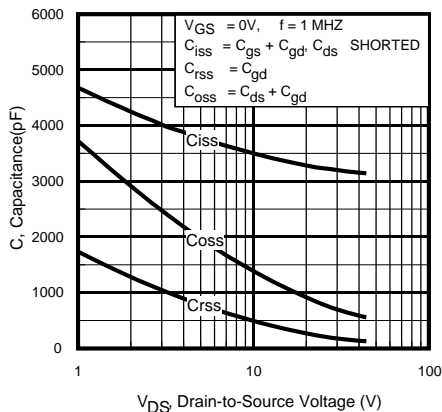


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

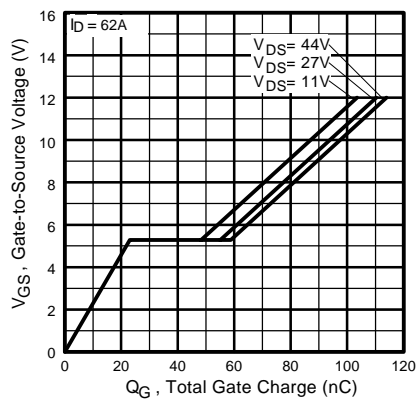


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

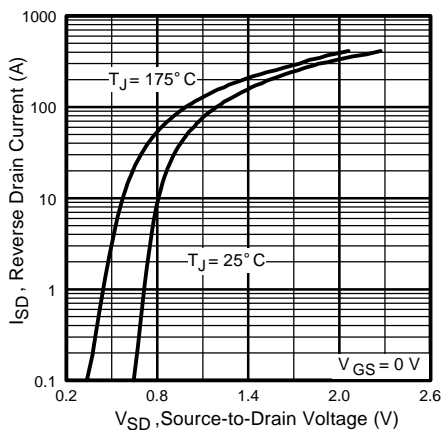


Fig 7. Typical Source-Drain Diode Forward Voltage

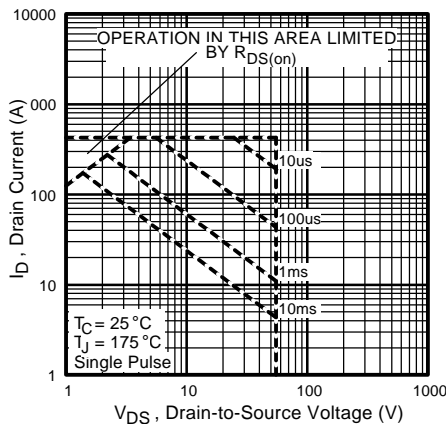


Fig 8. Maximum Safe Operating Area

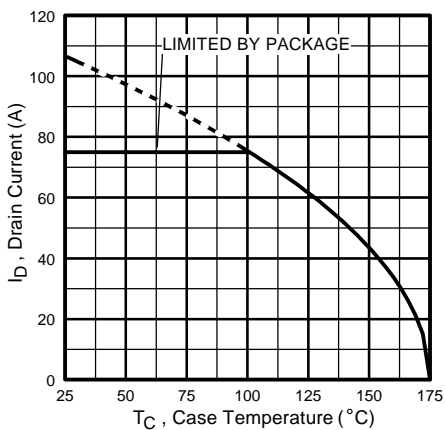


Fig 9. Maximum Drain Current Vs. Case Temperature

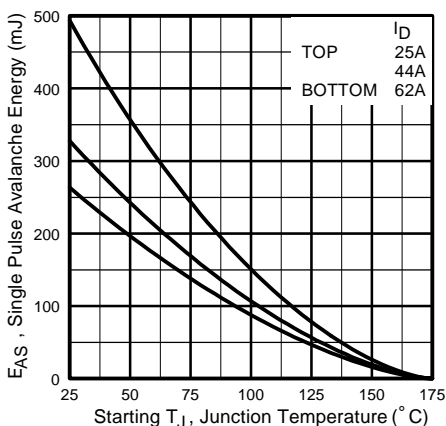


Fig 12c. Maximum Avalanche Energy Vs. Drain Current

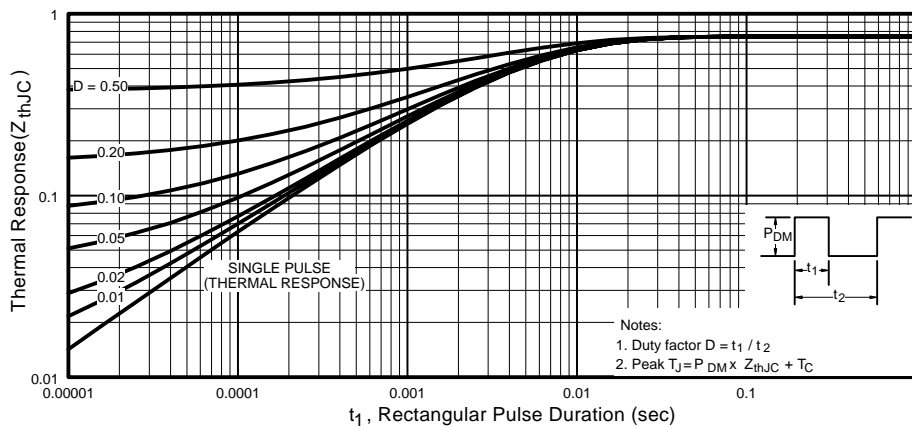


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case