Elektronische Bauelemente

STT6602

N-Ch: 3.3A, 30V, $R_{DS(ON)}$ 65 mΩ
P-Ch: -2.3A, -30V, $R_{DS(ON)}$ 120 mΩ
N & P-Channel Enhancement Mode Mos.FET

RoHS Compliant Product
A suffix of "-C" specifies halogen and lead-free

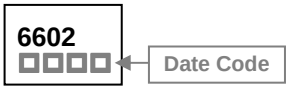
DESCRIPTION

The STT6602 uses advanced trench technology to provide excellent on-resistance and low gate charge. The complementary MOSFETs form a high-speed power inverter, suitable for a multitude of applications. The TSOP-6 package is universally used for all commercial-industrial surface mount applications.

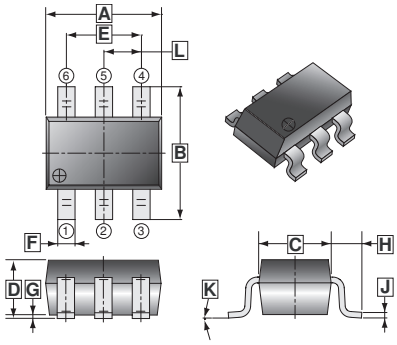
FEATURES

- Low Gate Change
- Low On-resistance

MARKING



TSOP-6

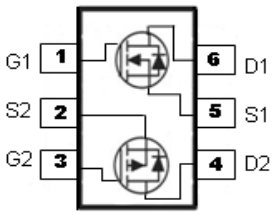


REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60 REF.	
C	1.40	1.80	J	0.12 REF.	
D	1.10 MAX.		K	0°	10°
E	1.90 REF.		L	0.95 REF.	
F	0.30	0.50			

PACKAGE INFORMATION

Package	MPQ	Leader Size
TSOP-6	3K	7 inch

TOP VIEW



ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Ratings N-Channel	Ratings P-Channel	Unit
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current [2]	T_A=25℃	I_D	3.3	-2.3	A
	T_A=70℃		2.6	-1.8	
Pulsed Drain Current [1]		I_{DM}	10	-10	A
Power Dissipation @T_A=25℃		P_D	1.14		W
Linear Derating Factor			0.01		W / ℃
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150		℃
Thermal Resistance Rating					
Maximum Junction to Ambient [2]		$R_{\theta JA}$	110		℃ / W

Notes:
1. Pulse width limited by Max. junction temperature.
2. Surface mounted on 1 in^2 copper pad of FR4 board, t≦5sec; 180℃ / W when mounted on Min. copper pad.

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static							
Drain-Source Breakdown Voltage	N-Ch	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
	P-Ch		-30	-	-		V_{GS}=0, I_D=-250μA
Gate-Threshold Voltage	N-Ch	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
	P-Ch		-1	-	-2.5		V_{DS}=V_{GS}, I_D= -250μA
Forward Transconductance	N-Ch	g_{fs}	-	4	-	S	V_{DS}=5V, I_D=3A
	P-Ch		-	2	-		V_{DS}= -5V, I_D= -2A
Gate-Source Leakage Current	N-Ch	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
	P-Ch		-	-	±100		V_{GS}= ±20V
Drain-Source Leakage Current	N-Ch	I_{DSS}	-	-	1	uA	V_{DS}=30 V, V_{GS}=0
	P-Ch		-	-	-1		V_{DS}= -30 V, V_{GS}=0
	N-Ch		-	-	25		V_{DS}=24V, V_{GS}=0
	P-Ch		-	-	-25		V_{DS}= -24V, V_{GS}=0
Drain-Source On-Resistance [1]	N-Ch	$R_{DS(ON)}$	-	-	65	mΩ	V_{GS}=10V, I_D=3A
	P-Ch		-	-	120		V_{GS}= -10V, I_D= -2A
	N-Ch		-	-	90		V_{GS}=4.5V, I_D=2A
	P-Ch		-	-	170		V_{GS}= -4.5V, I_D= -1A
Total Gate Charge[1]	N-Ch	Q_g	-	3.1	-	nC	N-Channel V_{DS}=25V, V_{GS}= 4.5V, I_D= 3A P-Channel V_{DS}= -25V, V_{GS}= -4.5V, I_D= -2.0A
	P-Ch		-	3	-		
Gate-Source Charge	N-Ch	Q_{gs}	-	1.2	-		
	P-Ch		-	0.78	-		
Gate-Drain Charge	N-Ch	Q_{gd}	-	1.6	-		
	P-Ch		-	1.6	-		
Turn-on Delay Time[1]	N-Ch	$T_{d(on)}$	-	3.3	-	nS	N-Channel V_{DS}= 15V, R_G= 3.3Ω,R_D=15Ω V_{GS}= 10V, I_D= 1A P-Channel V_{DS}= -15V, R_G= 3.3Ω,R_D=15Ω V_{GS}=-5V, I_D= -1A
	P-Ch		-	7	-		
Rise Time	N-Ch	T_r	-	2.5	-		
	P-Ch		-	6	-		
Turn-off Delay Time	N-Ch	$T_{d(off)}$	-	13.2	-		
	P-Ch		-	15	-		
Fall Time	N-Ch	T_f	-	1.7	-		
	P-Ch		-	7.5	-		
Input Capacitance	N-Ch	C_{iss}	-	200	-	pF	N-Channel V_{GS}=0, V_{DS}=25V, f=1.0MHz P-Channel V_{GS}=0, V_{DS}=-25V, f=1.0MHz
	P-Ch		-	260	-		
Output Capacitance	N-Ch	C_{oss}	-	40	-		
	P-Ch		-	55	-		
Reverse Transfer Capacitance	N-Ch	C_{rss}	-	20	-		
	P-Ch		-	44	-		
Gate Resistance	N-Ch	R_g	-	2.3	3.0	Ω	f=1.0MHz
	P-Ch		-	4.3	5		

Notes:
1. Pulse test

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Source-Drain Diode							
Forward On Voltage[1]	N-Ch	V_{SD}	-	-	1.2	V	I_S=0.9A, V_{GS}=0
	P-Ch		-	-	-1.2		I_S= -0.9A, V_{GS}=0
Reverse Recovery Time	N-Ch	T_{rr}	-	14	-	ns	I_S=3A, V_{GS}=0 ,dI/dt=100A/μs
	P-Ch		-	15	-		I_S= -2A, V_{GS}=0 ,dI/dt=100A/μs
Reverse Recovery Charge	N-Ch	Q_{rr}	-	7	-	nC	I_S=3A, V_{GS}=0 ,dI/dt=100A/μs
	P-Ch		-	7	-		I_S= -2A, V_{GS}=0 ,dI/dt=100A/μs

Notes:
1. Pulse test

CHARACTERISTIC CURVES (N-Channel)

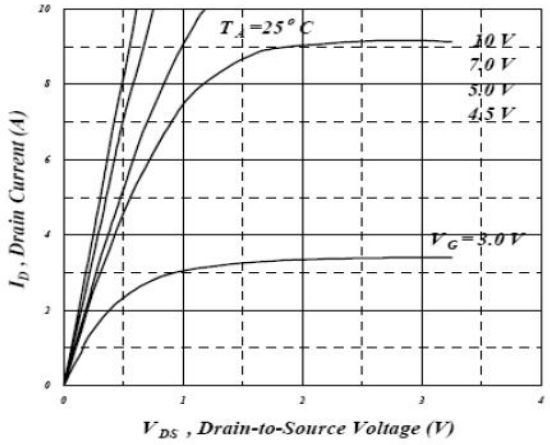


Fig 1. Typical Output Characteristics

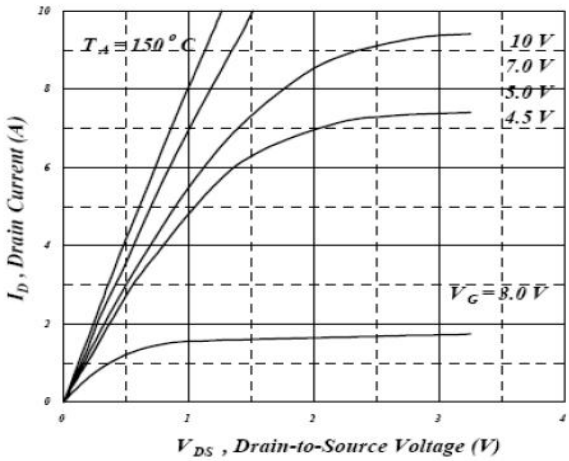


Fig 2. Typical Output Characteristics

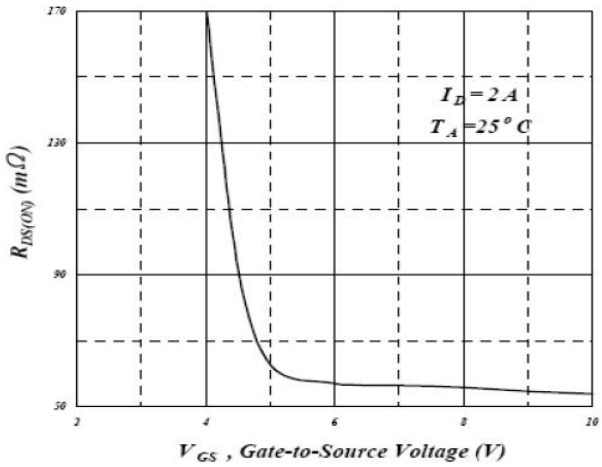


Fig 3. On-Resistance v.s. Gate Voltage

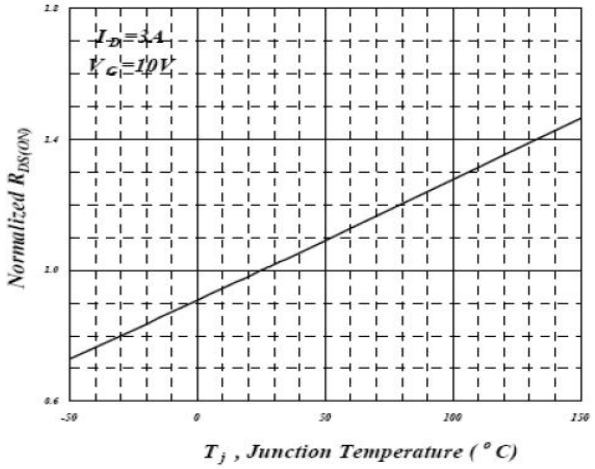


Fig 4. Normalized On-Resistance v.s. Junction Temperature

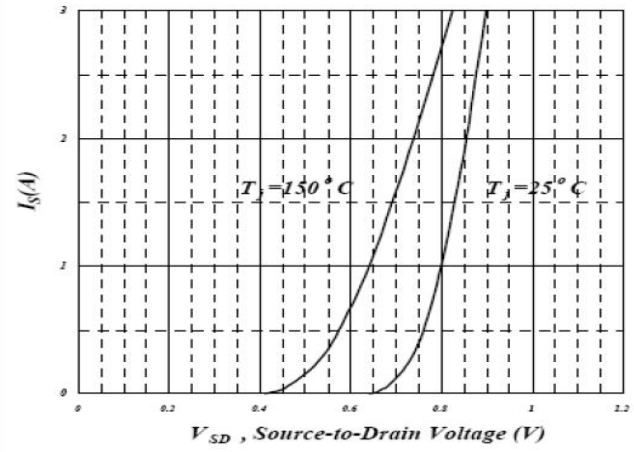


Fig 5. Forward Characteristic of Reverse Diode

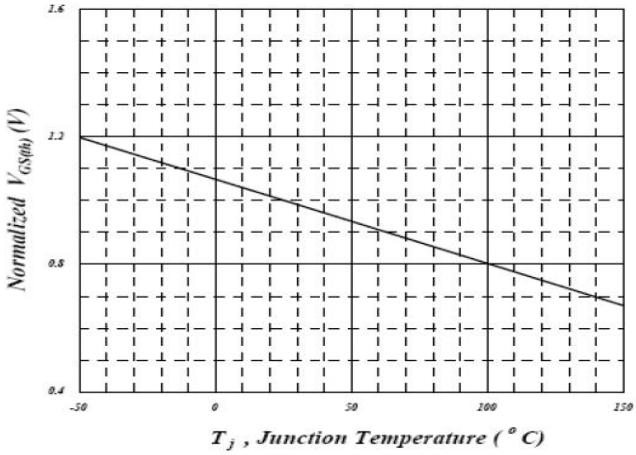


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVES (N-Channel)

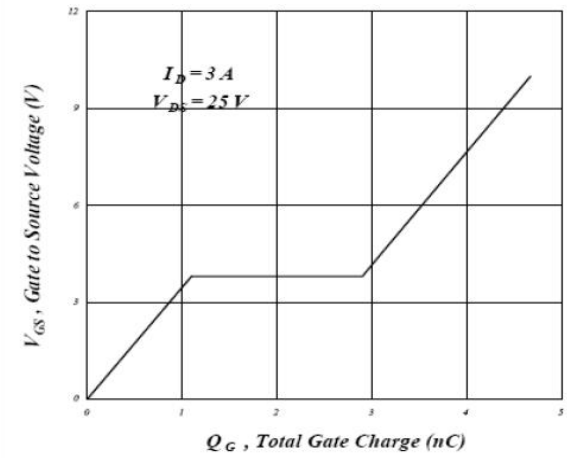


Fig 7. Gate Charge Characteristics

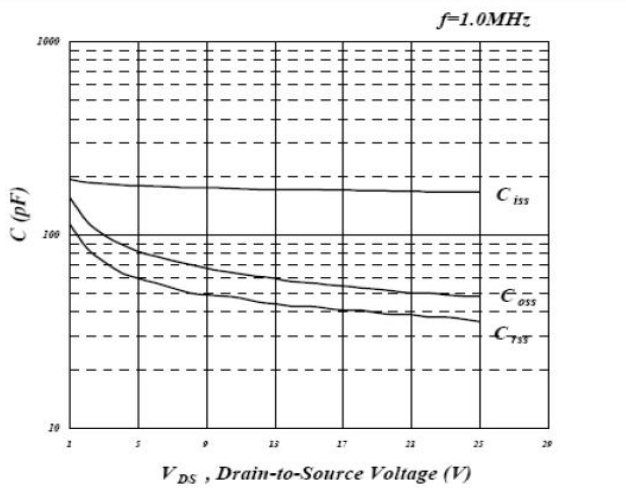


Fig 8. Typical Capacitance Characteristics

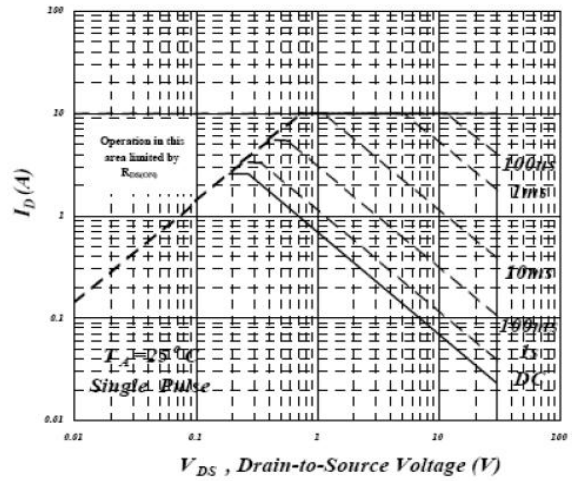


Fig 9. Maximum Safe Operating Area

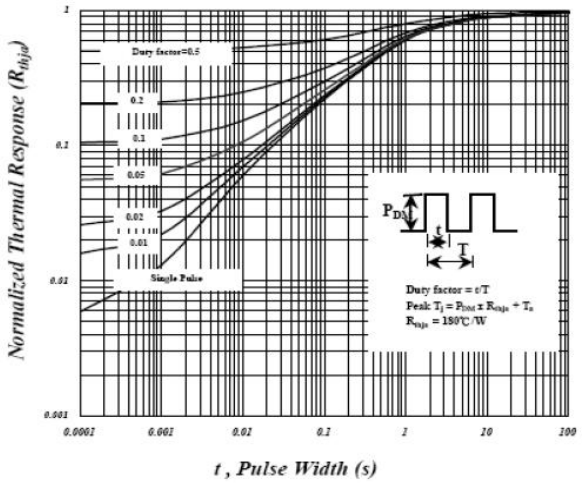


Fig 10. Effective Transient Thermal Impedance

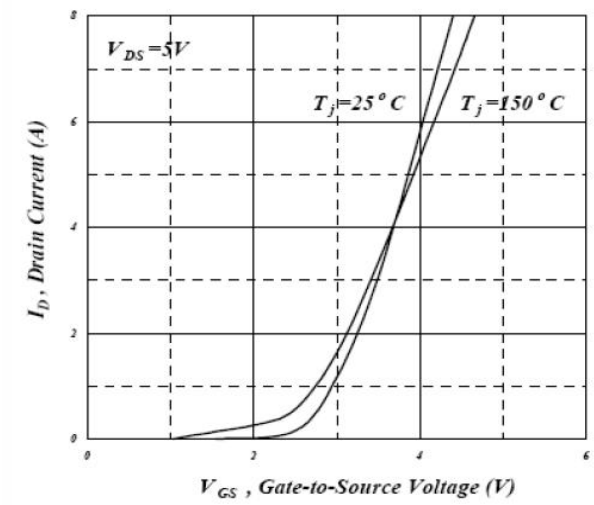


Fig 11. Transfer Characteristics

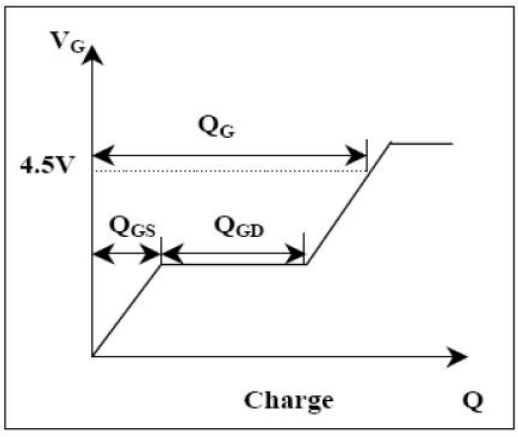


Fig 12. Gate Charge Waveform

CHARACTERISTIC CURVES (P-Channel)

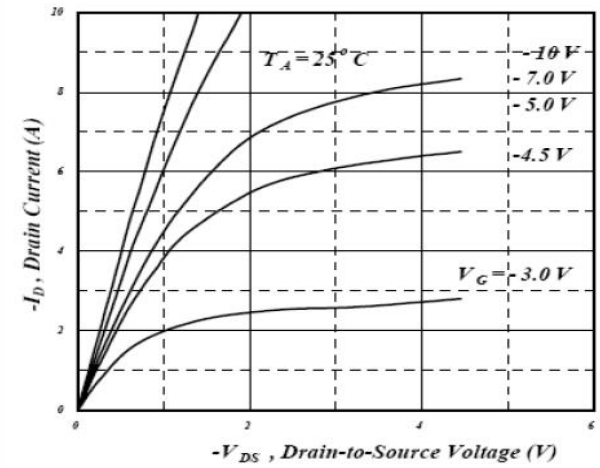


Fig 1. Typical Output Characteristics

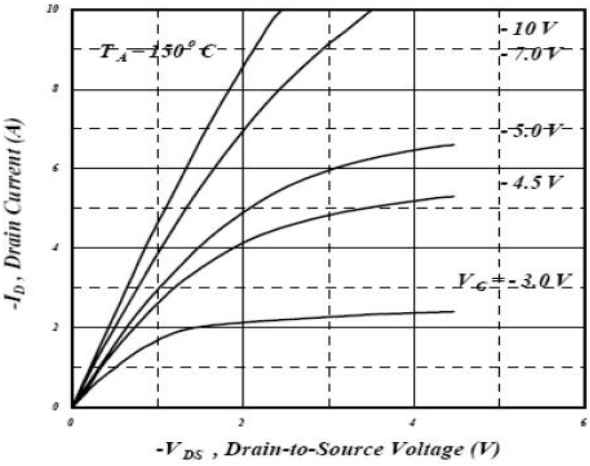


Fig 2. Typical Output Characteristics

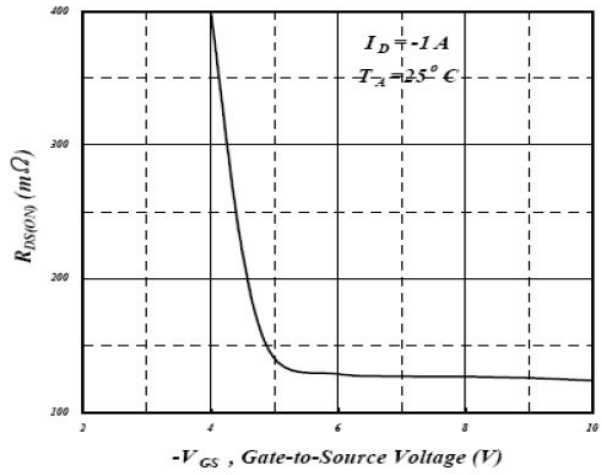


Fig 3. On-Resistance v.s. Gate Voltage

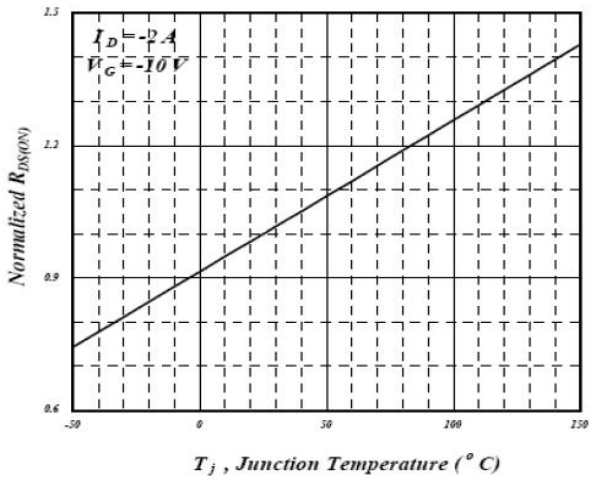
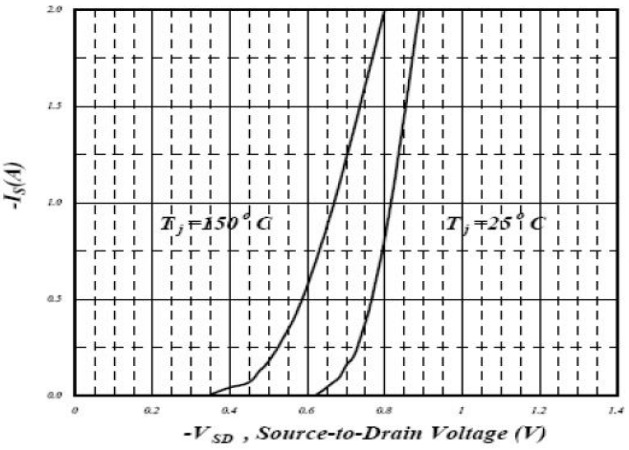


Fig 4. Normalized On-Resistance v.s. Junction Temperature



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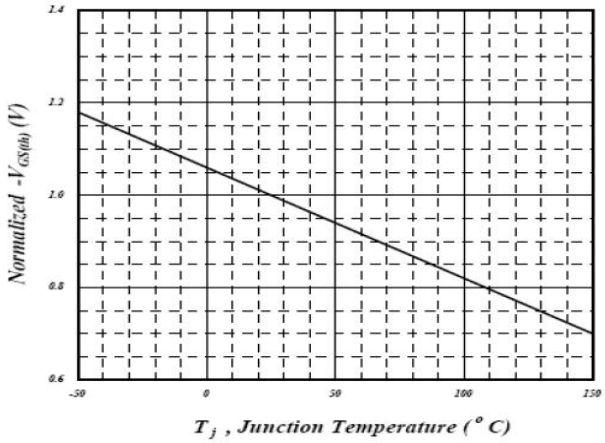


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVES (P-Channel)

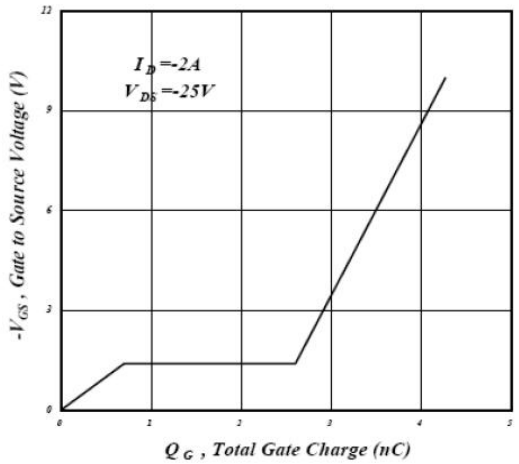
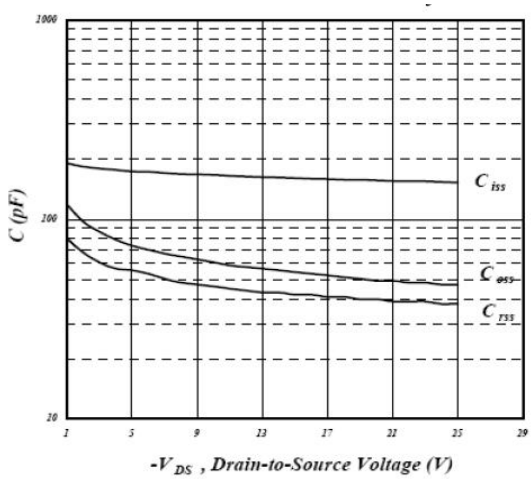


Fig 7. Gate Charge Characteristics



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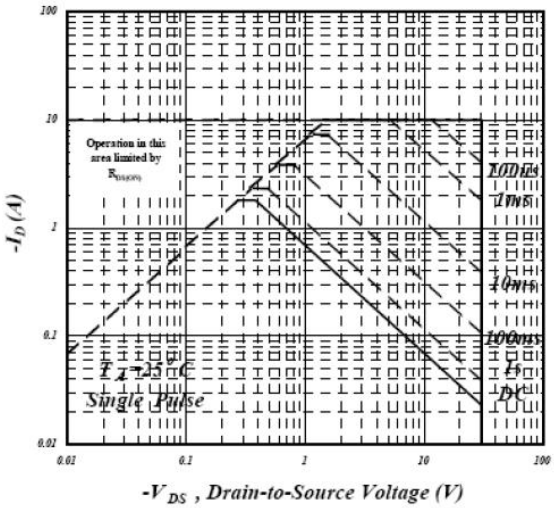

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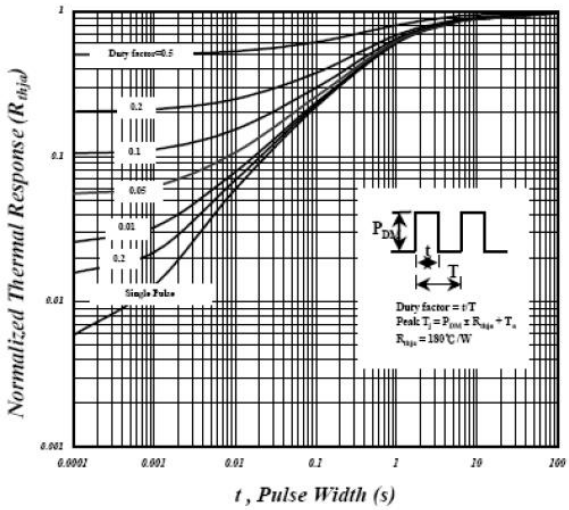

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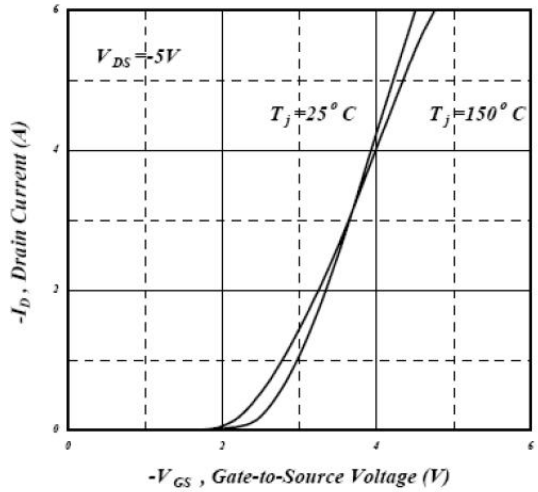
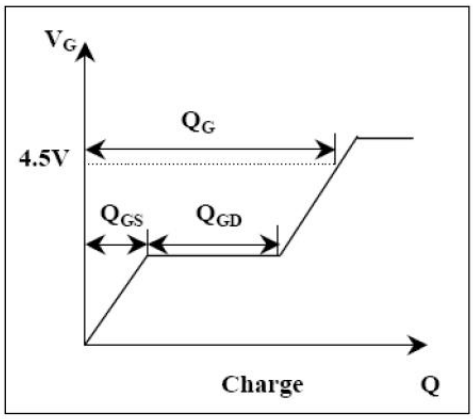


Fig 11. Transfer Characteristics



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