Elektronische Bauelemente

STT3585

3.5A, 20V, $R_{DS(ON)}$ 75mΩ
-2.5A, -20V, $R_{DS(ON)}$ 160mΩ
N And P-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

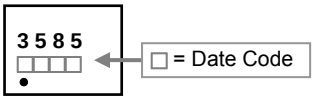
The STT3585 provide the designer with best combination of fast switching, low on-resistance and cost effectiveness.

The TSOP-6 package is universally used for all commercial-industrial surface mount applications.

FEATURES

- Low Gate Charge
- Low On-resistance

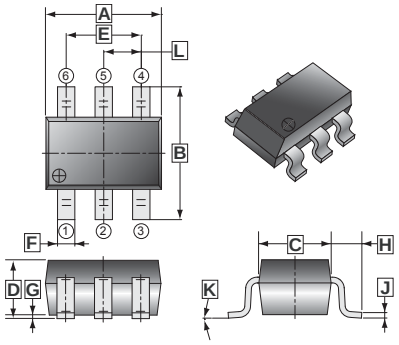
MARKING CODE



PACKAGE INFORMATION

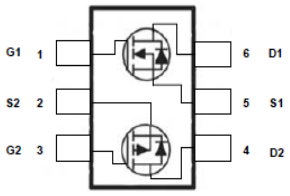
Package	MPQ	Leader Size
TSOP-6	3K	7 inch

TSOP-6



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	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			

TOP VIEW



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter		Symbol	Ratings		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DS}	20	-20	V
Gate-Source Voltage		V_{GS}	±12	±12	V
Continuous Drain Current [3]	T_A = 25°C	I_D	3.5	-2.5	A
	T_A = 70°C		2.8	-1.97	
Pulsed Drain Current [1]		I_{DM}	10	-10	A
Power Dissipation		P_D	1.14		W
Maximum Junction to Ambient [3]		$R_{\theta JA}$	110		°C / W
Linear Derating Factor			0.01		W / °C
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150		°C

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static							
Drain-Source Breakdown Voltage	N-Ch	BV_{DSS}	20	-	-	V	V_{GS}=0, I_D=250μA
	P-Ch		-20	-	-		V_{GS}=0, I_D= -250μA
Breakdown Voltage Temp. Coefficient	N-Ch	$\triangle BV_{DSS}/\triangle T_J$	-	0.02	-	V/°C	Reference to 25°C, ID=1mA
	P-Ch		-	-0.01	-		Reference to 25°C, ID= -1mA
Gate-Threshold Voltage	N-Ch	$V_{GS(th)}$	0.5	-	1.2	V	V_{DS}=V_{GS}, I_D=250μA
	P-Ch		-	-	-1.2		V_{DS}=V_{GS}, I_D= -250μA
Forward Transconductance	N-Ch	g_{fs}	-	7	-	S	V_{DS}=5V, I_D=3A
	P-Ch		-	4	-		V_{DS}= -5V, I_D= -2A
Gate-Source Leakage Current	N-Ch	I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
	P-Ch		-	-	±100		V_{GS}= ±12V
Drain-Source Leakage Current	N-Ch	I_{DSS}	-	-	1	μA	V_{DS}=20 V, V_{GS}=0
	P-Ch		-	-	-1		V_{DS}= -20 V, V_{GS}=0
	N-Ch		-	-	10		V_{DS}=16V, V_{GS}=0
	P-Ch		-	-	-25		V_{DS}= -16V, V_{GS}=0
Drain-Source On-Resistance [1]	N-Ch	$R_{DS(ON)}$	-	-	75	mΩ	V_{GS}=4.5V, I_D=3.5A
	P-Ch		-	-	160		V_{GS}= -4.5V, I_D= -2.5A
	N-Ch		-	-	125		V_{GS}=2.5V, I_D=1.2A
	P-Ch		-	-	300		V_{GS}= -2.5V, I_D= -2A
Total Gate Charge[1]	N-Ch	Q_g	-	4	7	nC	N-Channel V_{DS}=16V, V_{GS}=4.5V, I_D=3A P-Channel V_{DS}= -16V, V_{GS}= -4.5V, I_D= -2A
	P-Ch		-	5	8		
Gate-Source Charge	N-Ch	Q_{gs}	-	0.7	-		
	P-Ch		-	1	-		
Gate-Drain Charge	N-Ch	Q_{gd}	-	2	-		
	P-Ch		-	2	-		
Turn-on Delay Time[1]	N-Ch	$T_{d(on)}$	-	6	-	nS	N-Channel V_{DS}=15V, R_G=3.3Ω,R_D=15Ω V_{GS}=5V, I_D=1A P-Channel V_{DS}= -10V, R_G=3.3Ω,R_D=10Ω V_{GS}= -10V, I_D= -1A
	P-Ch		-	6	-		
Rise Time	N-Ch	T_r	-	8	-		
	P-Ch		-	17	-		
Turn-off Delay Time	N-Ch	$T_{d(off)}$	-	10	-		
	P-Ch		-	16	-		
Fall Time	N-Ch	T_f	-	3	-		
	P-Ch		-	5	-		
Input Capacitance	N-Ch	C_{iss}	-	430	520	pF	N-Channel V_{GS}=0, V_{DS}=20V, f=1.0MHz P-Channel V_{GS}=0, V_{DS}= -20V, f=1.0MHz
	P-Ch		-	630	750		
Output Capacitance	N-Ch	C_{oss}	-	55	-		
	P-Ch		-	50	-		
Reverse Transfer Capacitance	N-Ch	C_{rss}	-	40	-		
	P-Ch		-	40	-		
Gate Resistance	N-Ch	R_g	-	1.4	1.7	Ω	f=1.0MHz
	P-Ch		-	7	10		

ELECTRICAL CHARACTERISTICS (T_J = 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=1.2A, V_{GS}=0
	P-Ch		-	-	-1.2		I_S= -1.2A, V_{GS}=0
Reverse Recovery Time	N-Ch	T_{RR}	-	16	-	ns	I_S=3A, V_{GS}=0 ,dI/dt=100A/μs
	P-Ch		-	20	-		I_S= -2A, V_{GS}=0 ,dI/dt=100A/μs
Reverse Recovery Charge	N-Ch	Q_{rr}	-	8	-	nC	I_S=3A, V_{GS}=0 ,dI/dt=100A/μs
	P-Ch		-	15	-		I_S= -2A, V_{GS}=0 ,dI/dt=100A/μs

Notes:
1 Pulse width limited by Max. junction temperature.
2 Pulse width≦300μs, duty cycle≦2%.
3 Surface mounted on 1 in^2 copper pad of FR4 board; t≦5 sec. 180°C/W when mounted on min. copper pad.

CHARACTERISTICS CURVE (N-Channel)

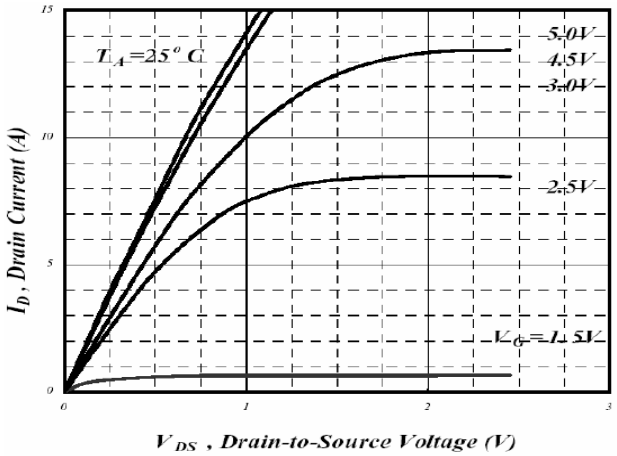


Fig 1. Typical Output Characteristics

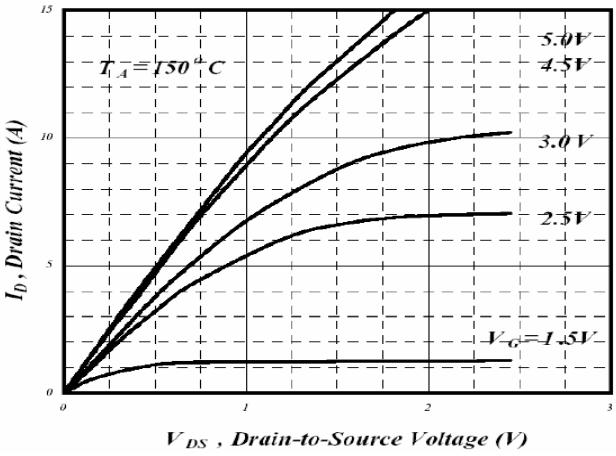


Fig 2. Typical Output Characteristics

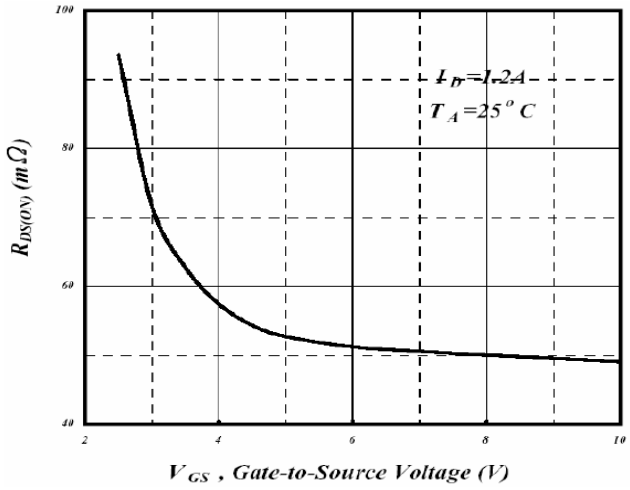


Fig 3. On-Resistance v.s. Gate Voltage

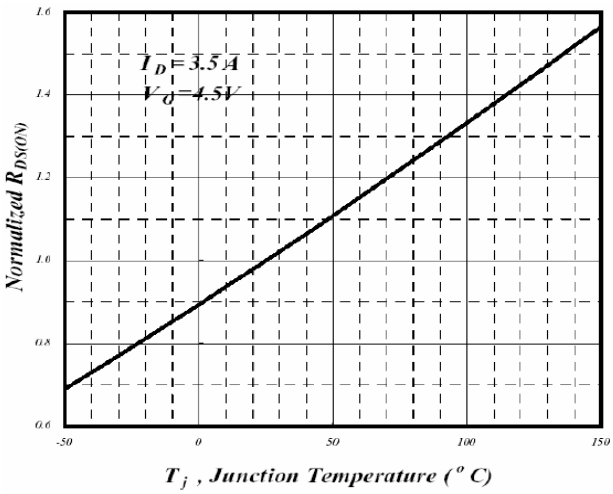


Fig 4. Normalized On-Resistance v.s. Junction Temperature

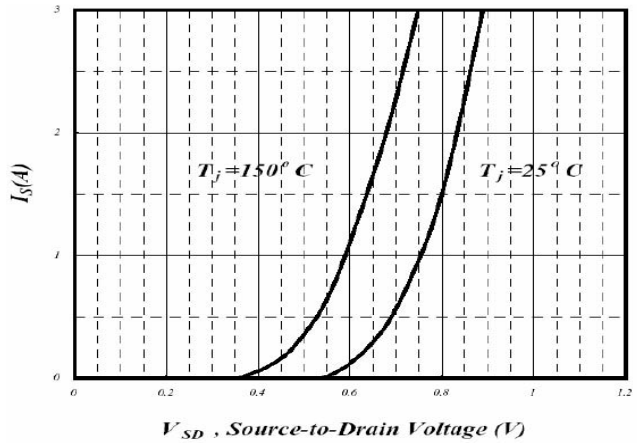


Fig 5. Forward Characteristics of Reverse Diode

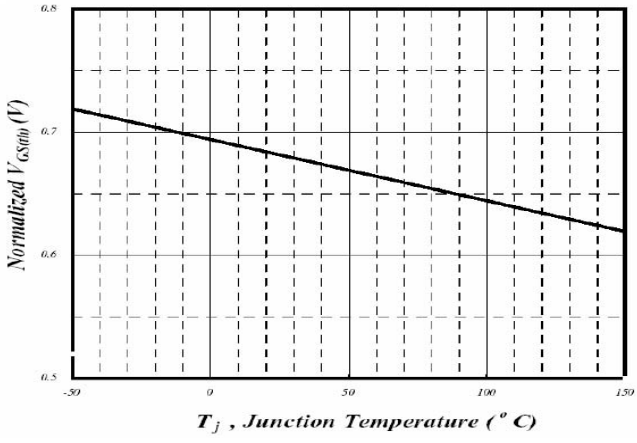


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTICS CURVE (N-Channel)

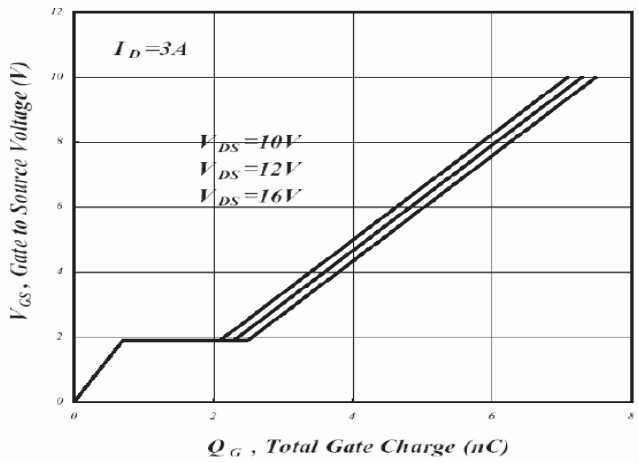


Fig 7. Gate Charge Characteristics

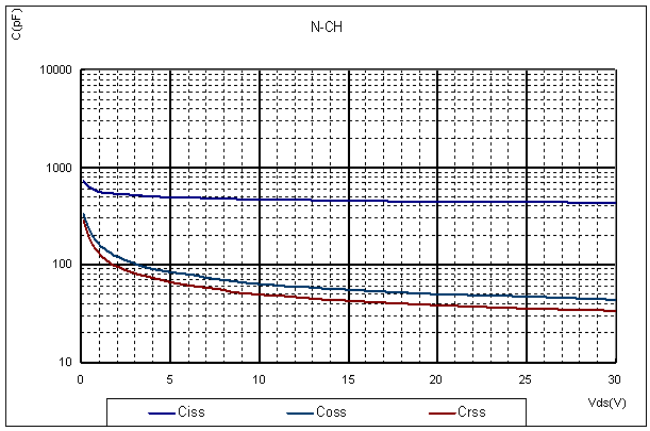


Fig 8. Typical Capacitance Characteristics

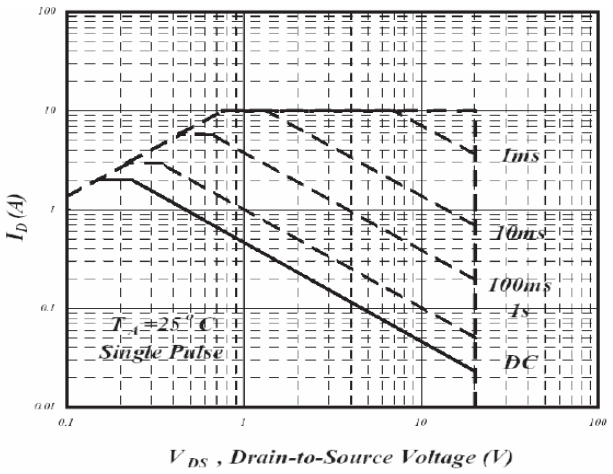


Fig 9. Maximum Safe Operating Area

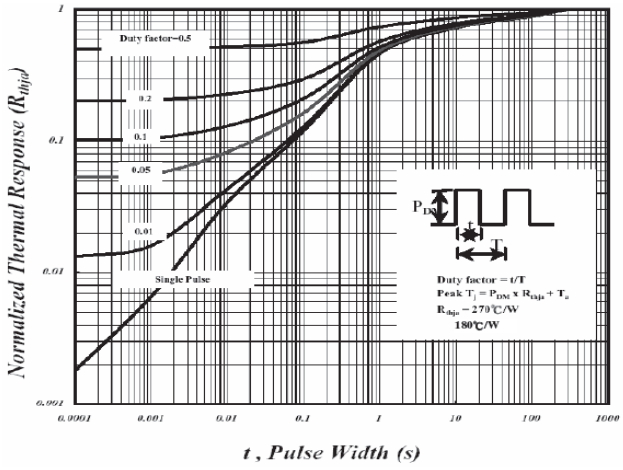


Fig 10. Effective Transient Thermal Impedance

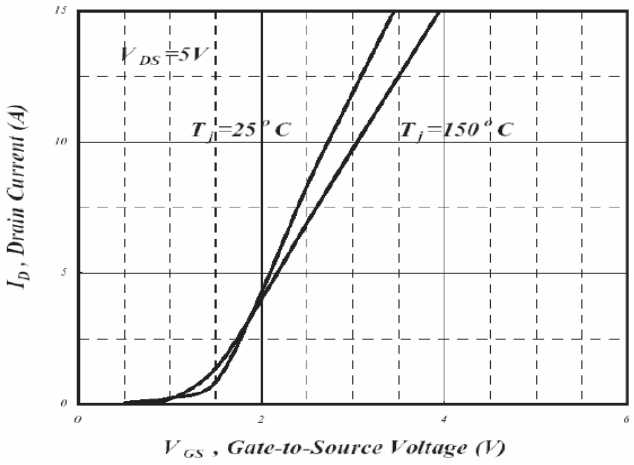


Fig 11. Transfer Characteristics

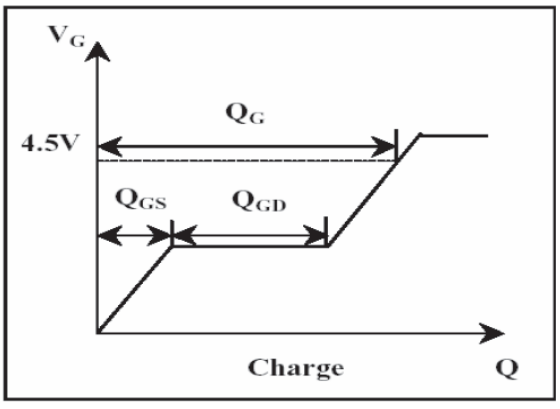


Fig 12. Gate Charge Waveform

CHARACTERISTICS CURVE (P-Channel)

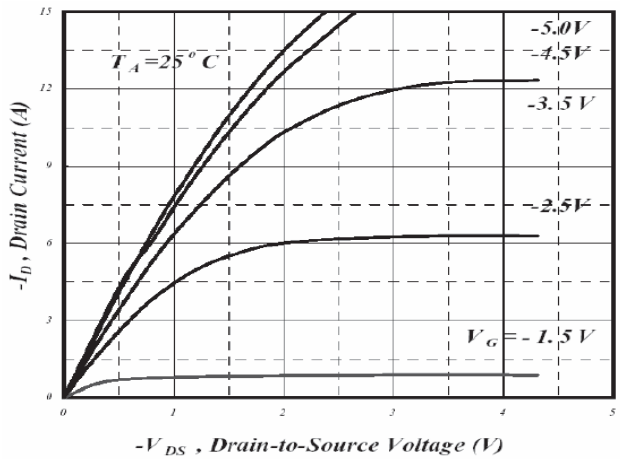


Fig 1. Typical Output Characteristics

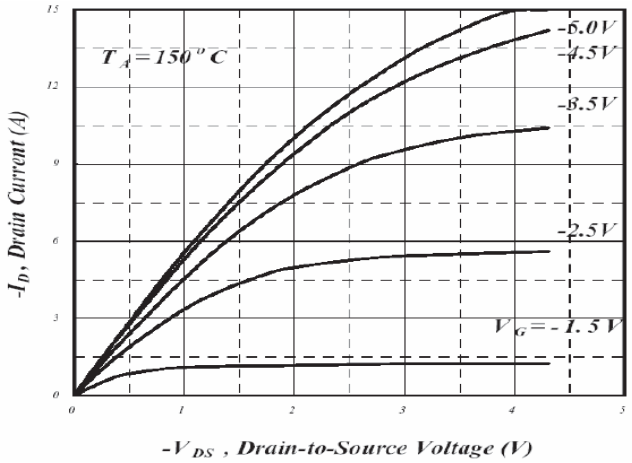


Fig 2. Typical Output Characteristics

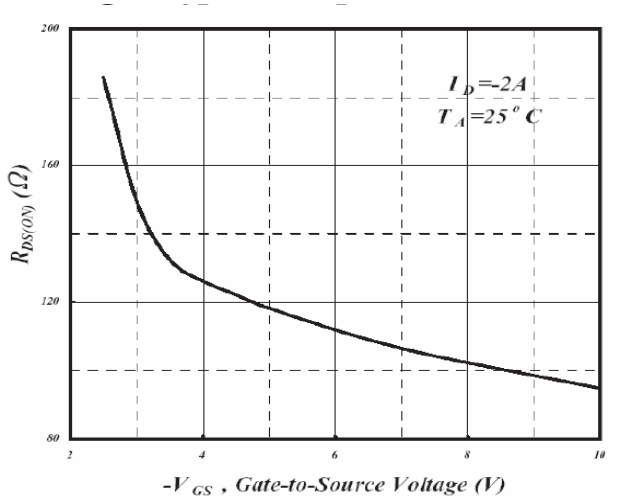


Fig 3. On-Resistance v.s. Gate Voltage

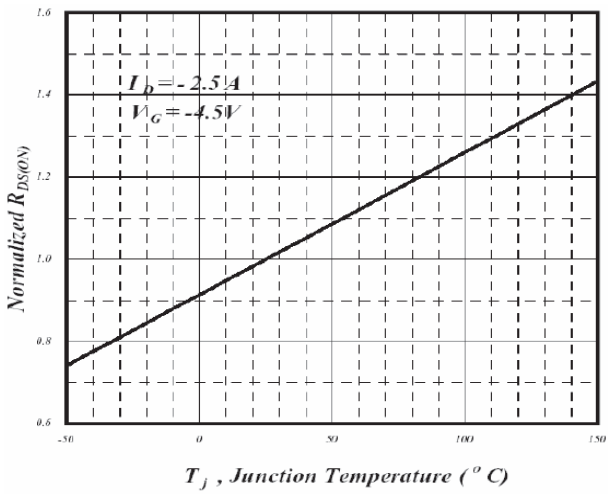


Fig 4. Normalized On-Resistance v.s. Junction Temperature

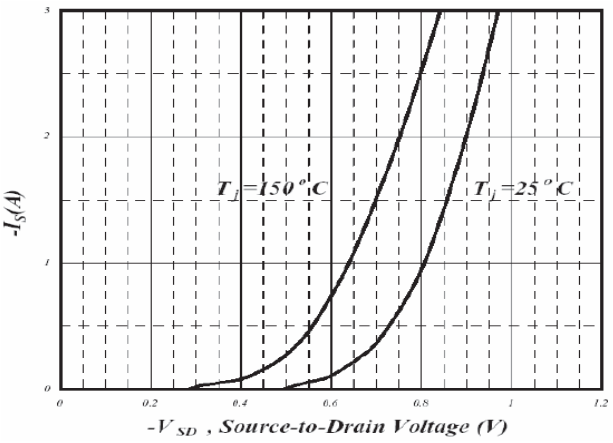


Fig 5. Forward Characteristics of Reverse Diode

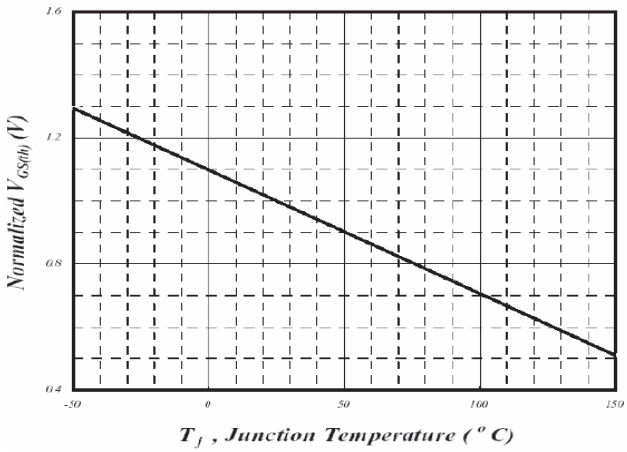


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTICS CURVE (P-Channel)

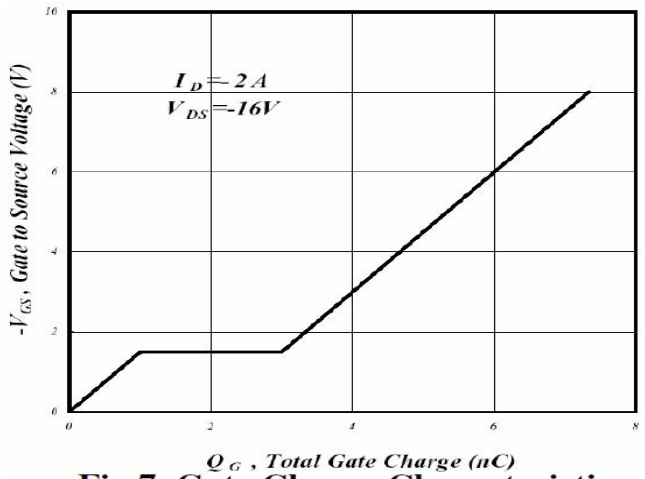


Fig 7. Gate Charge Characteristics

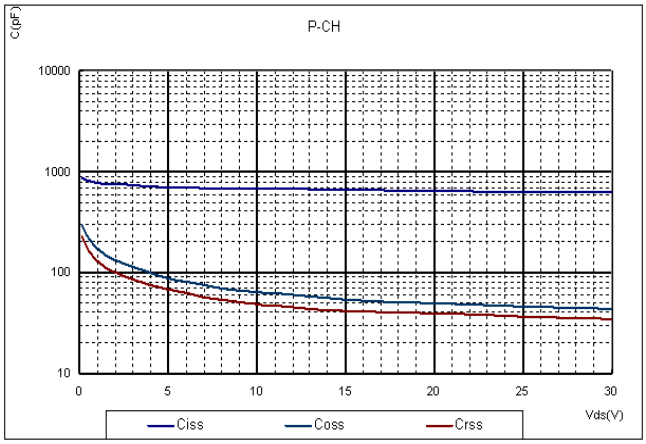


Fig 8. Typical Capacitance Characteristics

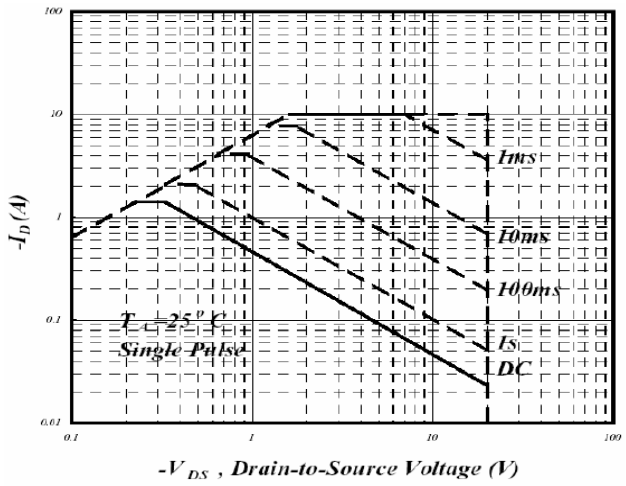


Fig 9. Maximum Safe Operating Area

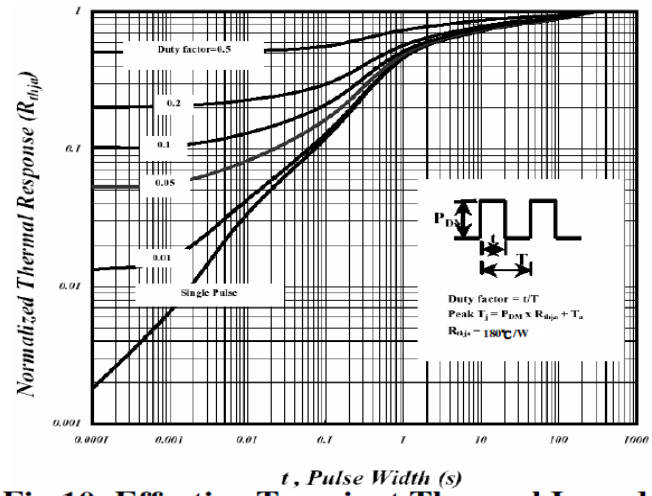


Fig 10. Effective Transient Thermal Impedance

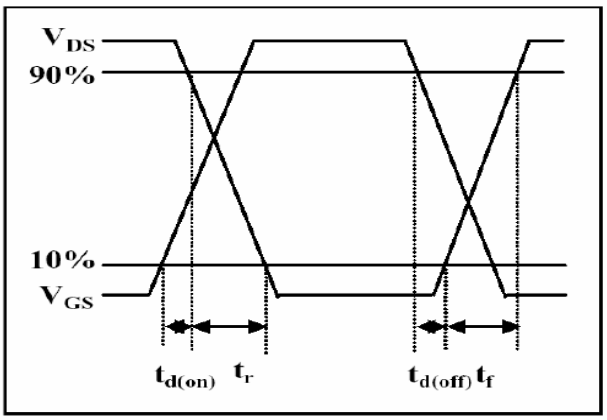


Fig 11. Switching Time Waveform

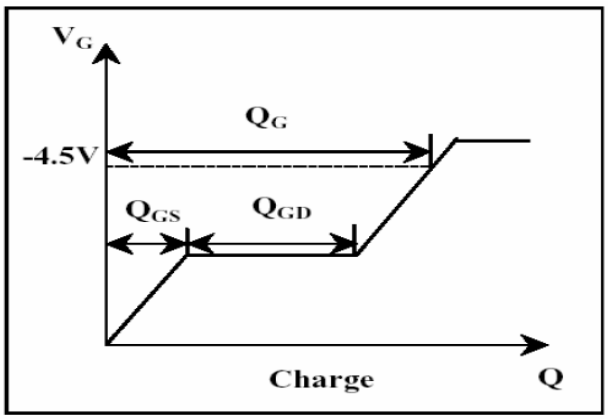


Fig 12. Gate Charge Waveform