Elektronische Bauelemente

SID9575

-15A , -60V , $R_{DS(ON)}$ 90 mΩ

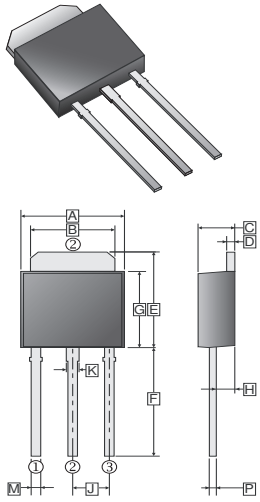
P-Channel Enhancement Mode Power MOSFET

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

DESCRIPTION

The SID9575 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

TO-251



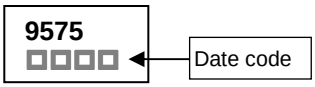
FEATURES

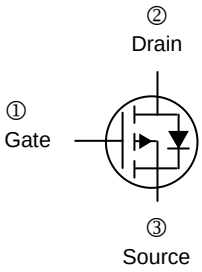
- Simple Drive Requirement
- Lower On-resistance
- Fast Switching Characteristic

APPLICATION

The through-hole version (TO-251) is available for low-profile applications and suited for low voltage applications such as DC / DC converters.

MARKING:





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	5.40	5.80
B	5.20	5.50	H	0.90	1.50
C	2.20	2.40	J	2.30	
D	0.45	0.55	K	0.60	0.90
E	6.80	7.20	M	0.50	0.70
F	7.20	7.80	P	0.45	0.60

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±25	V
Continuous Drain Current	V_{GS}=10V, T_C=25°C	I_D	-15	A
	V_{GS}=10V, T_C=100°C		-9.5	A
Pulsed Drain Current[1]		I_{DM}	-45	A
Total Power Dissipation @ T_C = 25°C		P_D	36	W
Thermal Resistance Junction-case		$R_{\theta JC}$	3.5	°C / W
Thermal Resistance Junction-ambient		$R_{\theta JA}$	110	°C / W
Linear Derating Factor			0.29	W / °C
Operating Junction & Storage temperature		T_J, T_{STG}	-55~150	°C

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

Parameter		Symbol	Min	Typ	Max	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-60	-	-	V	V_{GS}=0, I_D = -250μA
Breakdown Voltage Temperature Coefficient		ΔBV_{DSS} / ΔT_J	-	-0.06	-	V / ℃	Reference to 25℃, I_D = -1mA
Gate Threshold Voltage		$V_{GS(th)}$	-1	-	-3	V	V_{DS}=V_{GS}, I_D= -250 μA
Forward Trans-conductance		g_{fs}	-	14	-	S	V_{DS} = -10V, I_D = -9A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±25V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-1	uA	V_{DS}= -60 V, V_{GS}=0
	T_J=150℃		-	-	-25		V_{DS}= -48 V, V_{GS}=0
Static Drain-Source On-Resistance[2]		$R_{DS(ON)}$	-	-	90	mΩ	V_{GS}= -10 V, I_D= -12A
			-	-	120		V_{GS}= -4.5 V, I_D= -9 A
Total Gate Charge[2]		Q_g	-	17	27	nC	I_D= -9 A V_{DS}= -48 V V_{GS}= -4.5 V
Gate-Source Charge		Q_{gs}	-	5	-		
Gate-Drain (“Miller”) Charge		Q_{gd}	-	6	-		
Turn-on Delay Time[2]		$T_{d(on)}$	-	10	-	nS	V_{DS}= -30 V I_D= -9 A V_{GS}= -10 V R_G=3.3 Ω R_D=3.3 Ω
Rise Time		T_r	-	19	-		
Turn-off Delay Time		$T_{d(off)}$	-	46	-		
Fall Time		T_f	-	53	-		
Input Capacitance		C_{iss}	-	1660	2660	pF	V_{GS}=0 V_{DS}= -25V f =1 MHz
Output Capacitance		C_{oss}	-	160	-		
Reverse Transfer Capacitance		C_{rss}	-	100	-		
Source-Drain Diode							
Forward On Voltage[2]		V_{SD}	-	-	-1.2	V	I_S= -9A, V_{GS}=0
Reverse Recovery Time[2]		T_{rr}	-	56	-	nS	I_S= -9 A, V_{GS}=0 dI/dt=100A / μs
Reverse Recovery Charge		Q_{rr}	-	159	-	nC	

Notes:
1. Pulse width limited by safe operating area.
2. Pulse width≦300us, duty cycle≦2%

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CHARACTERISTIC CURVES

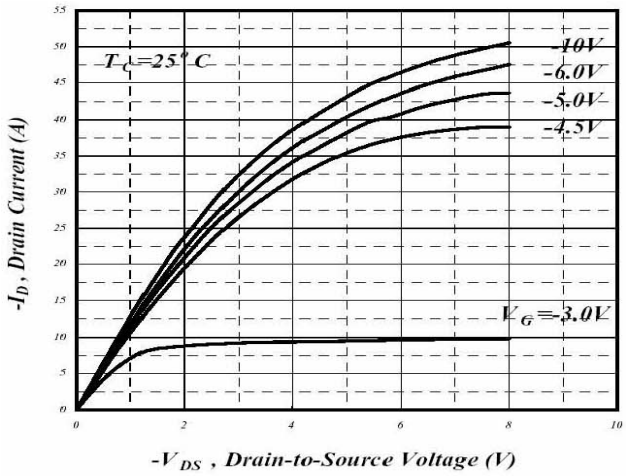

Fig 1. Typical Output Characteristics

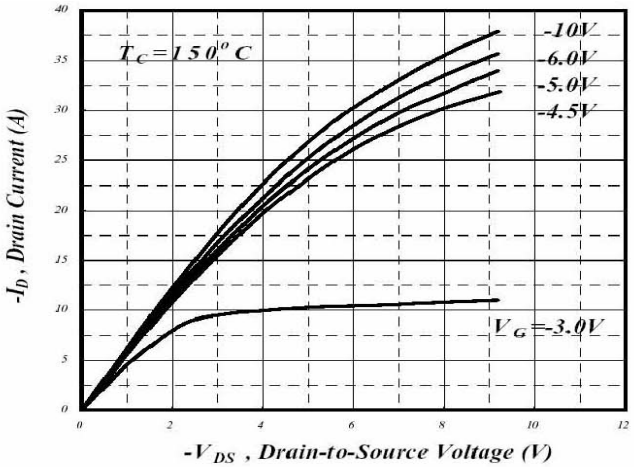

Fig 2. Typical Output Characteristics

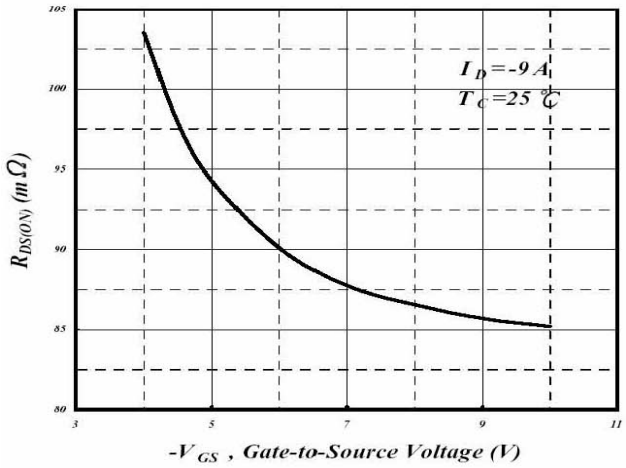

Fig 3. On-Resistance v.s. Gate Voltage

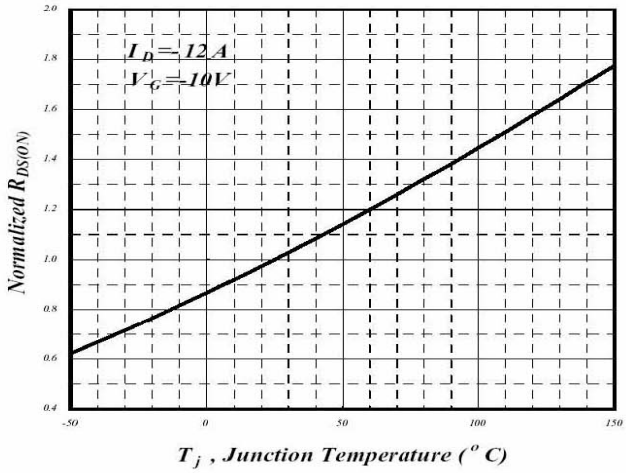

Fig 4. Normalized On-Resistance v.s. Junction Temperature

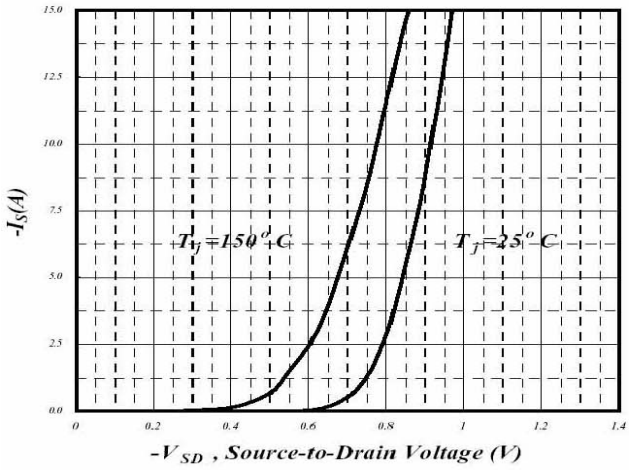

Fig 5. Forward Characteristics of Reverse Diode

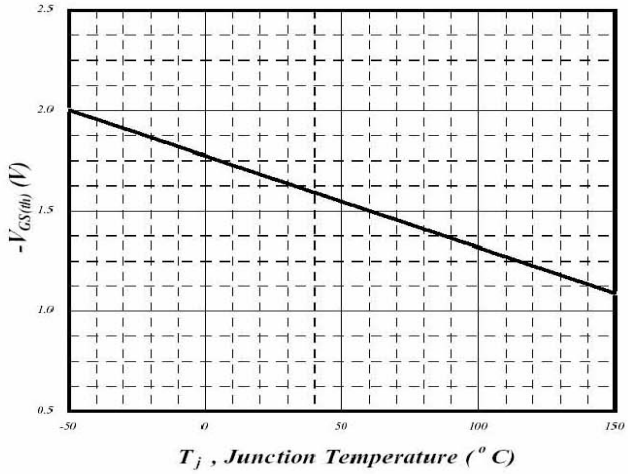

Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVES

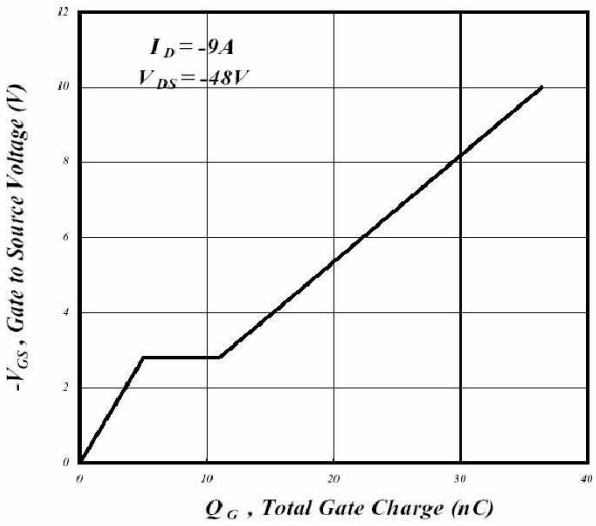

Fig 7. Gate Charge Characteristics

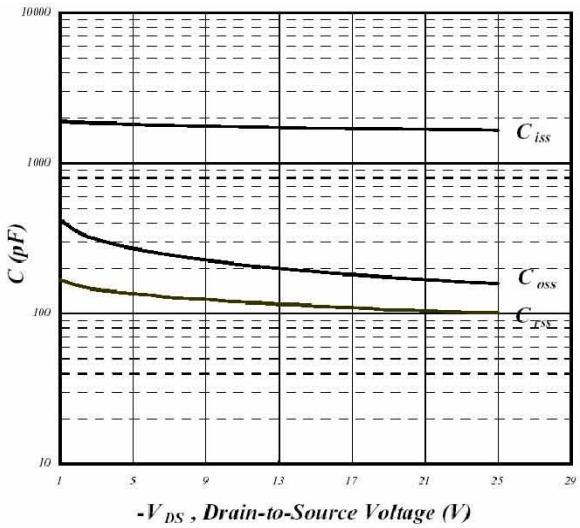

Fig 8. Typical Capacitance Characteristics

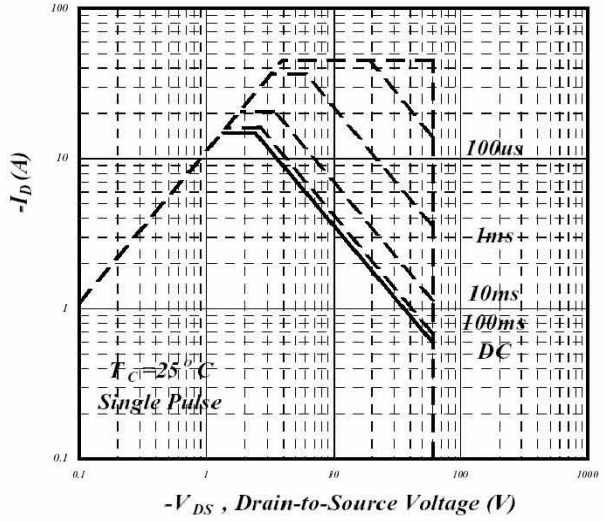

Fig 9. Maximum Safe Operating Area

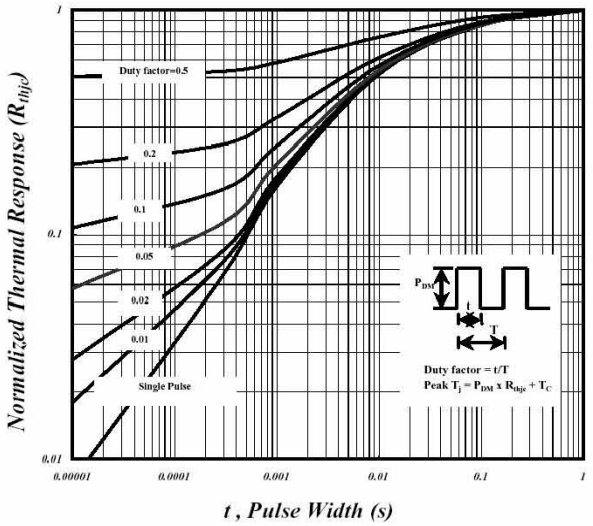

Fig 10. Effective Transient Thermal Impedance

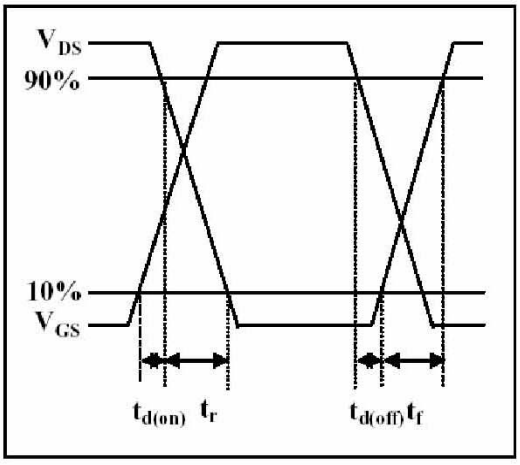

Fig 11. Switching Time Waveform

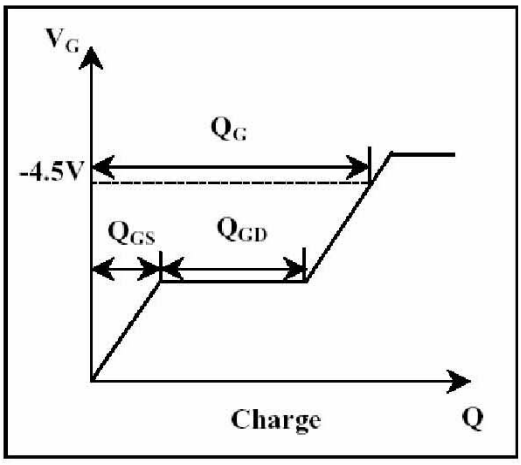

Fig 12. Gate Charge Waveform