

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

DESCRIPTION

The SSM9575 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

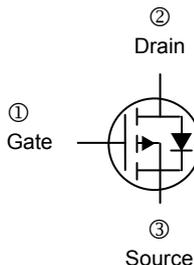
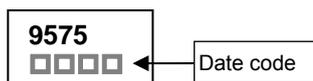
FEATURES

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

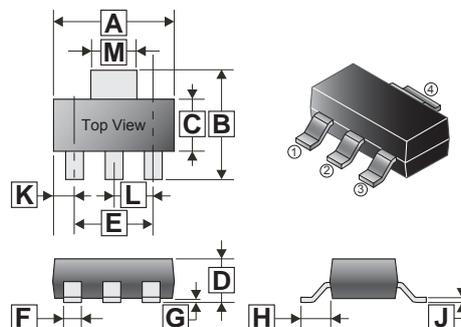
APPLICATION

The SOT-223 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage application such as DC/DC converters.

MARKING:



SOT-223



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.20	6.70	G	-	0.18
B	6.70	7.30	H	1.89	2.15
C	3.30	3.70	J	0.25	0.35
D	1.40	1.90	K	0.95	1.20
E	4.50	4.70	L	2.30 REF.	
F	0.60	0.84	M	2.90	3.10

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current ³	I_D	$T_A=25^\circ\text{C}$	-4
		$T_A=70^\circ\text{C}$	-3.2
Pulsed Drain Current ¹	I_{DM}	-20	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$	P_D	3	W
Maximum Resistance Junction-ambient ³	$R_{\theta JA}$	45	$^\circ\text{C} / \text{W}$
Linear Derating Factor		0.02	$\text{W} / ^\circ\text{C}$
Operating Junction & Storage temperature	T_J, T_{STG}	-55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	-60	-	-	V	$V_{GS}=0, I_D = -250\mu\text{A}$	
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	-	-0.04	-	V / $^\circ\text{C}$	Reference to 25°C , $I_D = -1\text{mA}$	
Gate Threshold Voltage	$V_{GS(th)}$	-1	-	-3	V	$V_{DS}=V_{GS}, I_D = -250\mu\text{A}$	
Forward Trans-conductance	g_{fs}	-	7	-	S	$V_{DS} = -10\text{V}, I_D = -4\text{A}$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 25\text{V}$	
Drain-Source Leakage Current	$T_J=25^\circ\text{C}$	I_{DSS}	-	-	-1	uA	$V_{DS} = -60\text{V}, V_{GS}=0$
	$T_J=70^\circ\text{C}$		-	-	-25		$V_{DS} = -48\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	90	m Ω	$V_{GS} = -10\text{V}, I_D = -4\text{A}$	
		-	-	120		$V_{GS} = -4.5\text{V}, I_D = -3\text{A}$	
Total Gate Charge ²	Q_g	-	18	28	nC	$I_D = -4\text{A}$ $V_{DS} = -48\text{V}$ $V_{GS} = -4.5\text{V}$	
Gate-Source Charge	Q_{gs}	-	5	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	7	-			
Turn-on Delay Time ²	$T_{d(on)}$	-	12	-	nS	$V_{DS} = -30\text{V}$ $I_D = -1\text{A}$ $V_{GS} = -10\text{V}$ $R_G = 3.3\Omega$ $R_D = 30\Omega$	
Rise Time	T_r	-	5	-			
Turn-off Delay Time	$T_{d(off)}$	-	68	-			
Fall Time	T_f	-	32	-			
Input Capacitance	C_{iss}	-	1745	2790	pF	$V_{GS}=0$ $V_{DS} = -25\text{V}$ $f = 1\text{ MHz}$	
Output Capacitance	C_{oss}	-	165	-			
Reverse Transfer Capacitance	C_{rss}	-	125	-			
Source-Drain Diode							
Forward On Voltage ²	V_{SD}	-	-	-1.2	V	$I_S = -2\text{A}, V_{GS}=0$	
Reverse Recovery Time ²	T_{rr}	-	56	-	nS	$I_S = -4\text{A}, V_{GS}=0$	
Reverse Recovery Charge	Q_{rr}	-	146	-	nC	$di/dt = 100\text{A} / \mu\text{s}$	

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in² copper pad of FR4 board; $125^\circ\text{C} / \text{W}$ when mounted on Min. copper pad.

CHARACTERISTIC CURVES

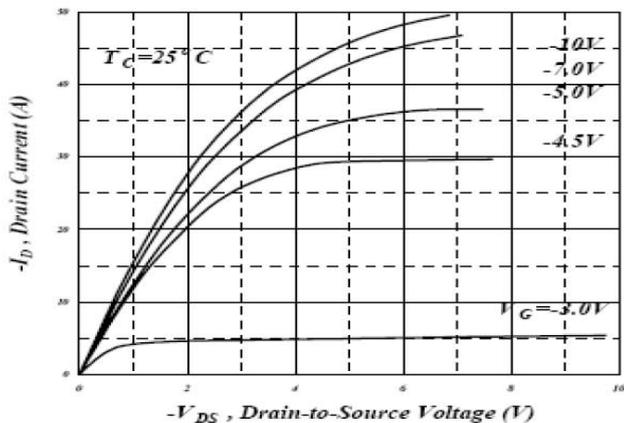


Fig 1. Typical Output Characteristics

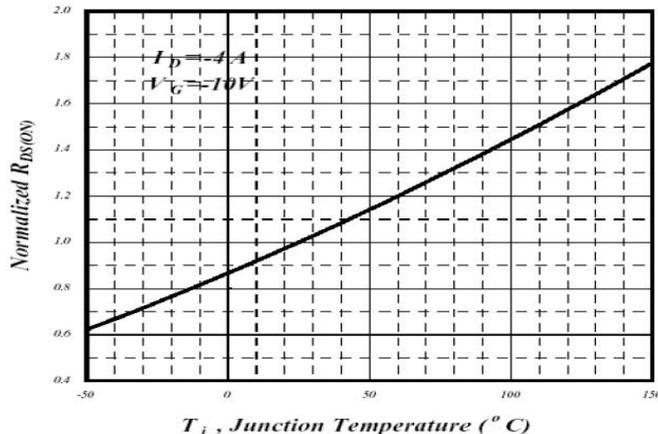


Fig 2. Normalized On-Resistance v.s. Junction Temperature

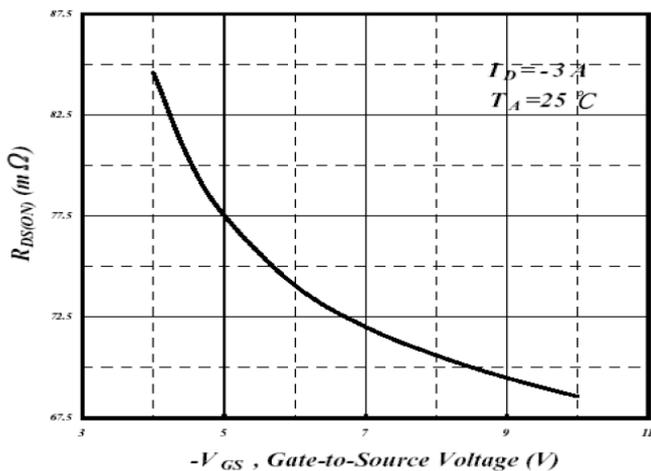


Fig 3. On-Resistance v.s. Gate Voltage

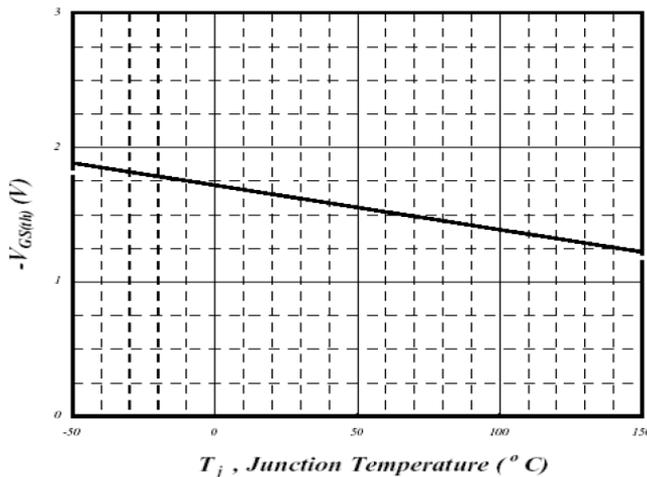


Fig 4. Gate Threshold Voltage v.s. Junction Temperature

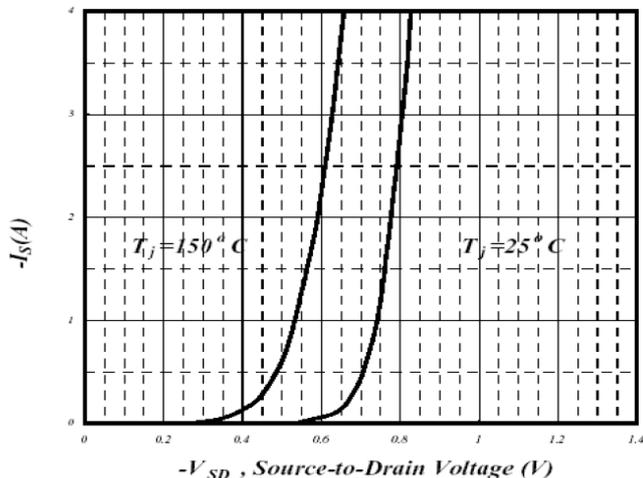


Fig 5. Forward Characteristics of Reverse Diode

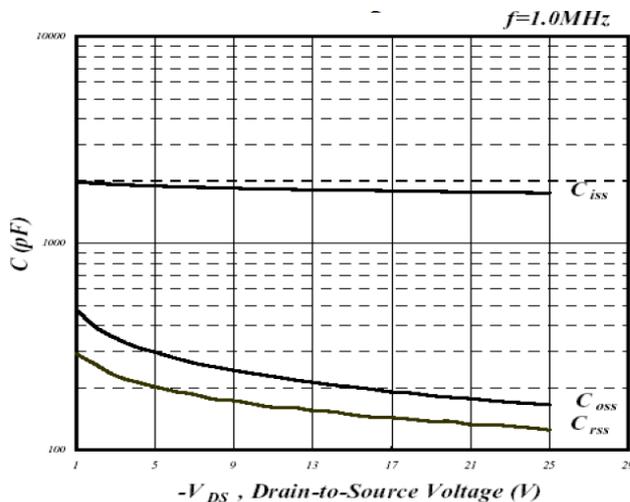


Fig 6. Typical Capacitance Characteristics

CHARACTERISTIC CURVES

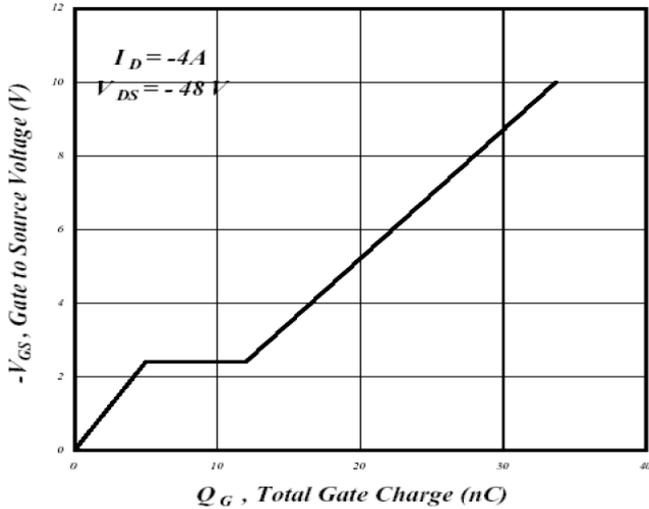


Fig 7. Gate Charge Characteristics

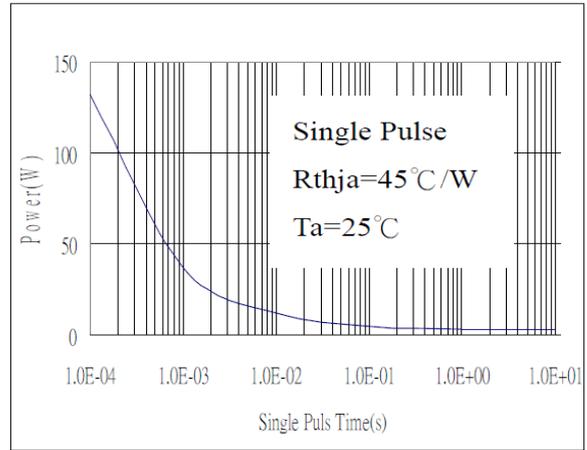


Fig 8. Single Pulse Maximum Power Dissipation

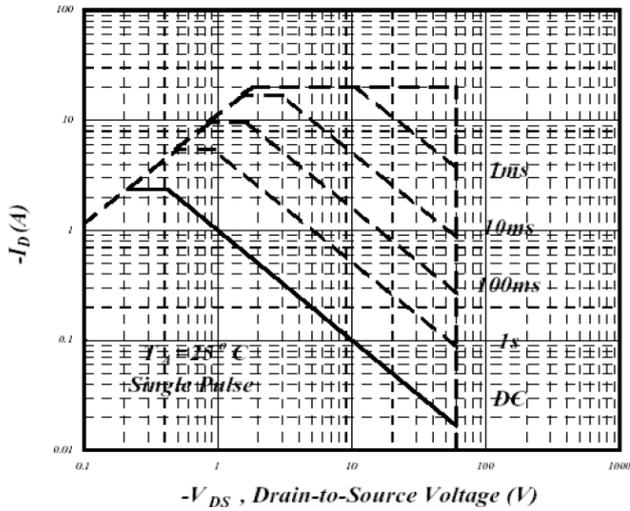


Fig 9. Maximum Safe Operating Area

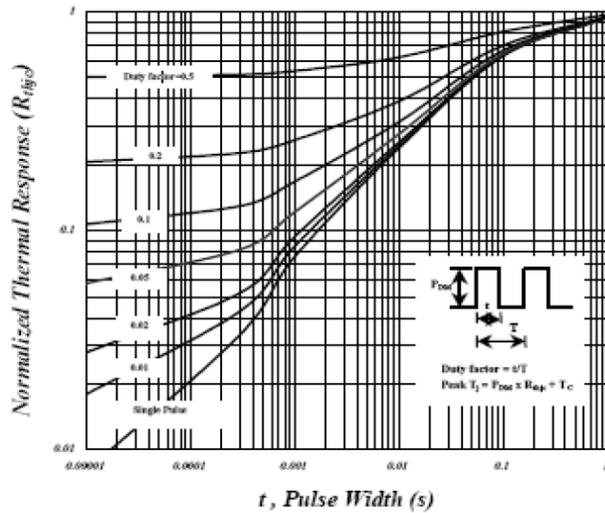


Fig 10. Effective Transient Thermal Impedance

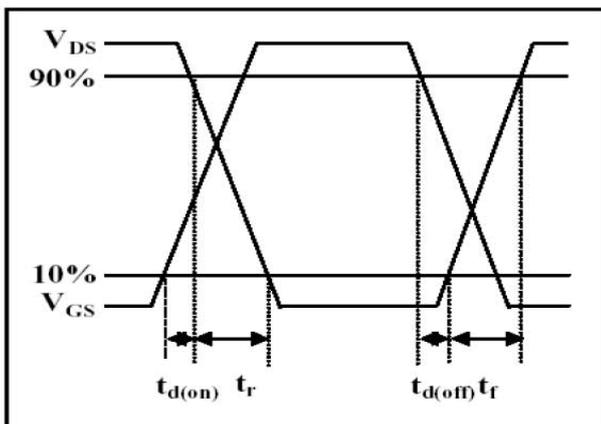


Fig 11. Switching Time Circuit

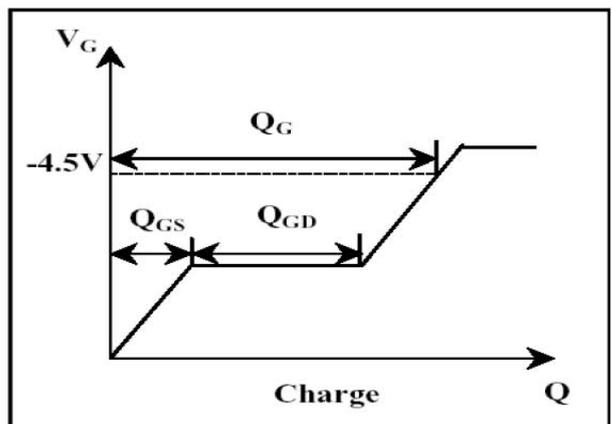


Fig 12. Gate Charge Waveform