

RoHS Compliant Product

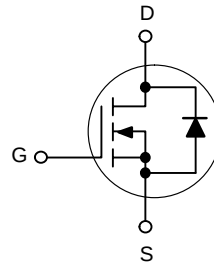
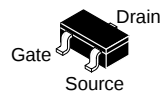
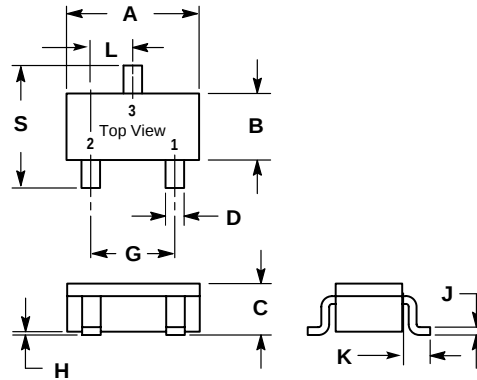
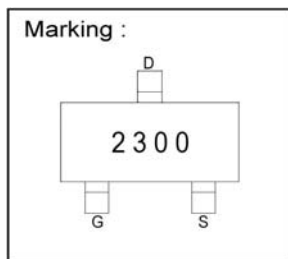
A suffix of "-C" specifies halogen & lead-free

Description

- * The SMG2300 provide the designer with best combination of fast switching, low on-resistance and cost-effectiveness.
- * The SMG2300 is universally used for all commercial-industrial surface mount applications.

Features

- * Low on-resistance
- * Capable of 2.5V gate drive
- * Small package outline



SC-59		
Dim	Min	Max
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80
All Dimension in mm		

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current ³	$I_D @ T_A=25^\circ C$	6	A
Continuous Drain Current ³	$I_D @ T_A=70^\circ C$	4.8	A
Pulsed Drain Current ^{1,2}	I_{DM}	20	A
Power Dissipation	$P_D @ T_A=25^\circ C$	1.25	W
Linear Derating Factor		0.01	W/ $^\circ C$
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~ +150	$^\circ C$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ Max.	R_{thj-a}	100	$^\circ C/W$

Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS}=0$, $I_D=250\mu\text{A}$
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_j$	-	0.1	-	V/ $^\circ\text{C}$	Reference to 25°C , $I_D=1\text{mA}$
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.0	V	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 8\text{V}$
Drain-	I_{DSS}	-	-	1	μA	$V_{DS}=20\text{V}$, $V_{GS}=0$
Drain-Source Leakage Current($T_j=70^\circ\text{C}$)		-	-	25	μA	$V_{DS}=16\text{V}$, $V_{GS}=0$
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	-	-	28	m Ω	$V_{GS}=4.5\text{V}$, $I_D=6\text{A}$
		-	-	38		$V_{GS}=2.5\text{V}$, $I_D=5.2\text{A}$
Total Gate Charge ²	Q_g	-	10	-	nC	$I_D=6\text{A}$ $V_{DS}=10\text{V}$ $V_{GS}=4.5\text{V}$
Gate-Source Charge	Q_{gs}	-	3.6	-		
Gate-Drain ("Miller") Change	Q_{gd}	-	2	-		
Turn-on Delay Time ²	$T_{d(on)}$	-	8	-	ns	$V_{DD}=10\text{V}$ $I_D=1\text{A}$ $V_{GS}=4.5\text{V}$ $R_G=0.2\Omega$
Rise Time	T_r	-	6	-		
Turn-off Delay Time	$T_{d(off)}$	-	19	-		
Fall Time	T_f	-	7	-		
Input Capacitance	C_{iss}	-	550	-	pF	$V_{GS}=0\text{V}$ $V_{DS}=15\text{V}$ $f=1.0\text{MHz}$
Output Capacitance	C_{oss}	-	120	-		
Reverse Transfer Capacitance	C_{rss}	-	80	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V_{SD}	-	0.7	1.3	V	$I_S=1.25\text{A}$, $V_{GS}=0\text{V}$

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 FR4 board, $t \leq 10\text{sec}$.

Characteristics Curve

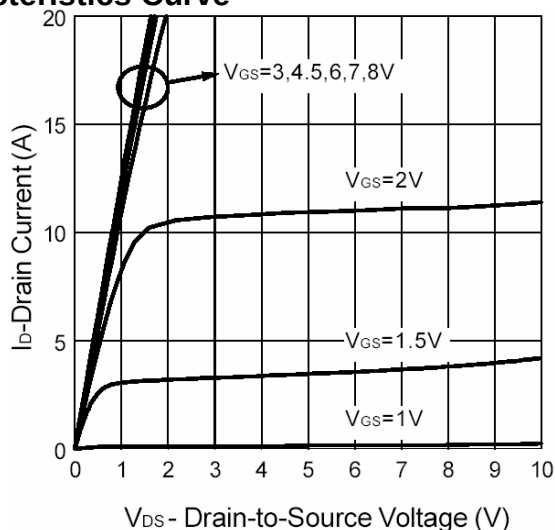


Fig 1. Typical Output Characteristics

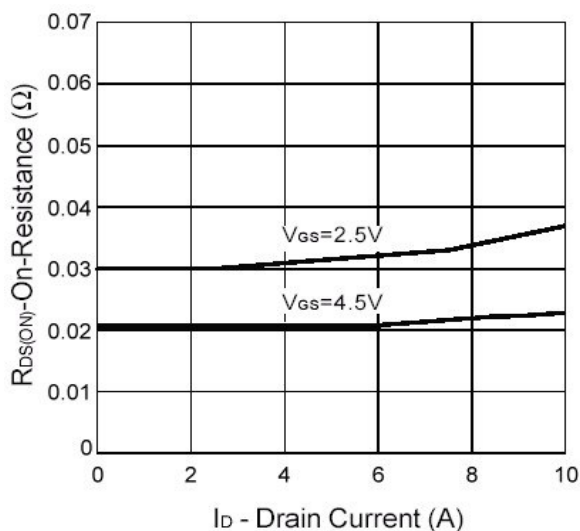


Fig 2. Typical Output Characteristics

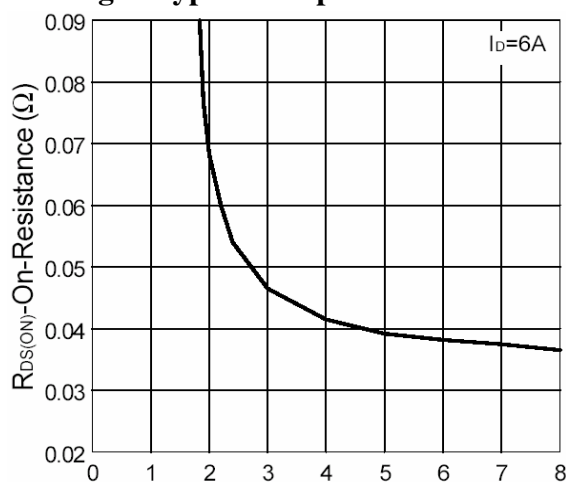


Fig 3. On-Resistance v.s. Gate Voltage

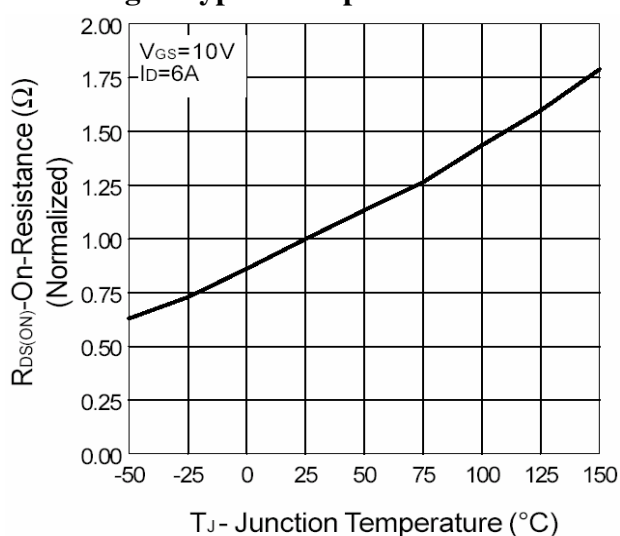


Fig 4. Normalized On-Resistance v.s. Junction Temperature

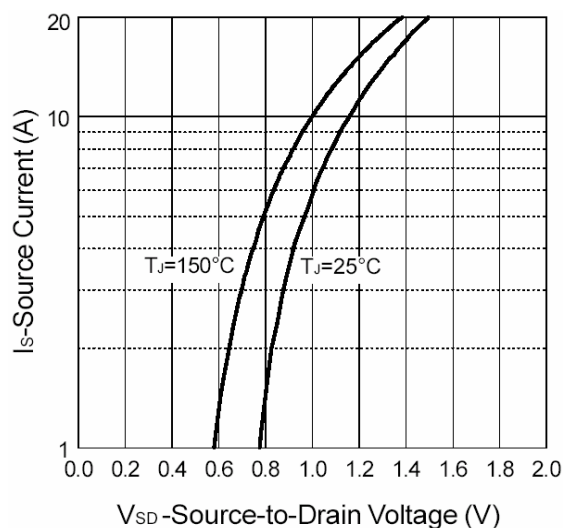


Fig 5. Forward Characteristics of Reverse Diode

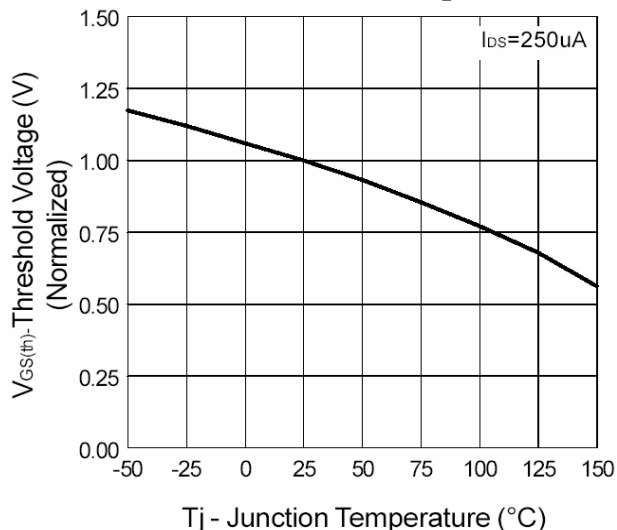


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

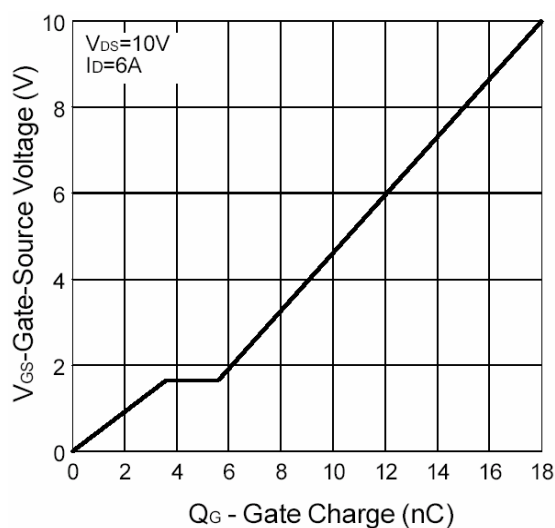


Fig 7. Gate Charge Characteristics

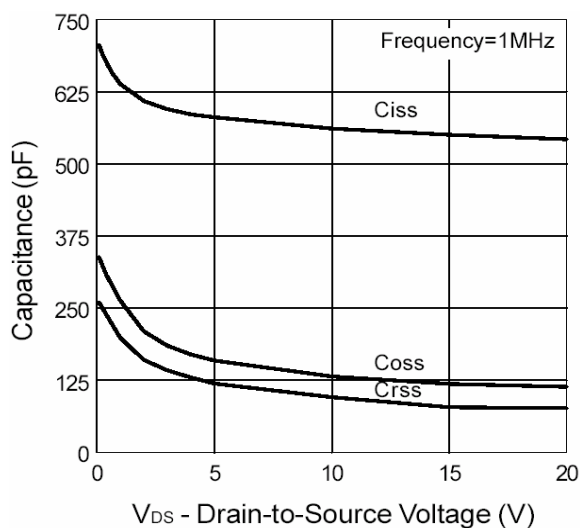


Fig 8. Typical Capacitance Characteristics

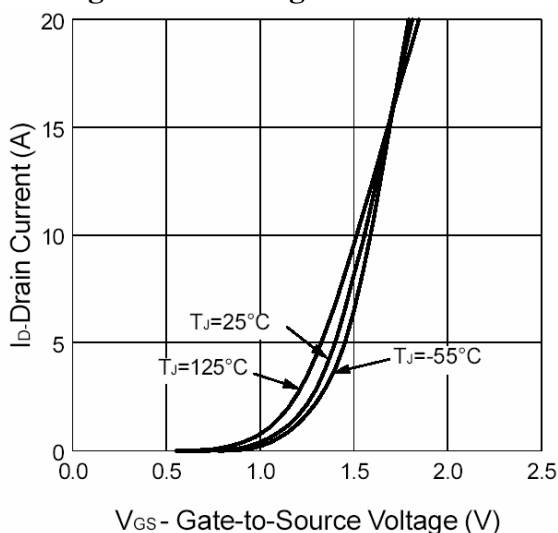


Fig 9. Transfer Characteristics

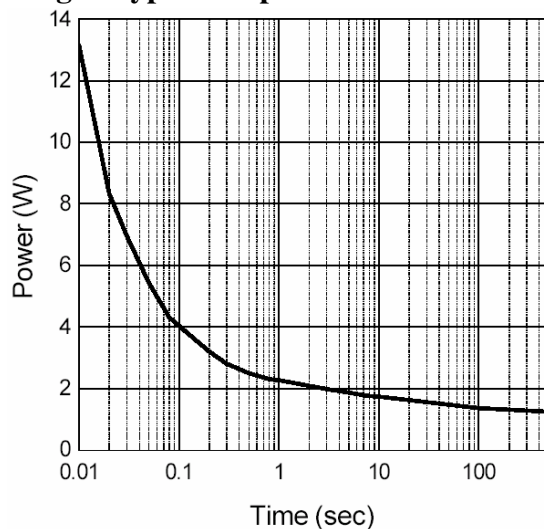


Fig 10. Single Pulse Power

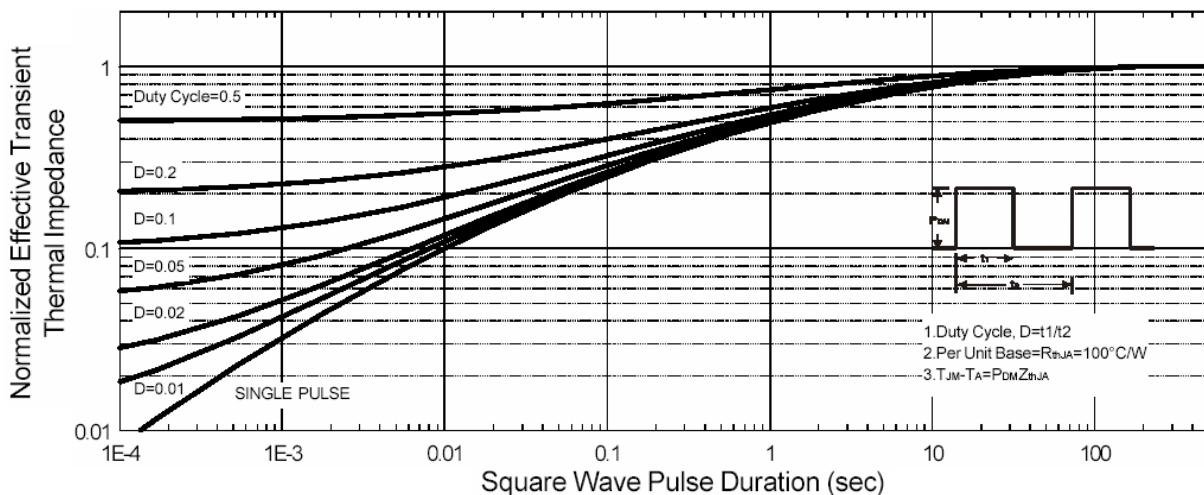


Fig 11. Normalized Thermal Transient Impedance, Junction to Ambient