

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

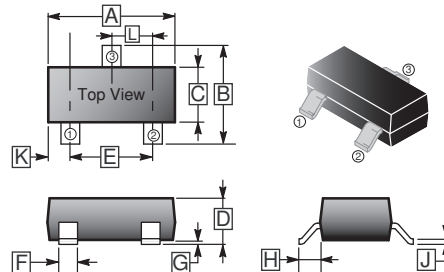
SC-59

DESCRIPTIONS

The SMG2310A utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device. The SMG2310A is universally used for all commercial-industrial applications.

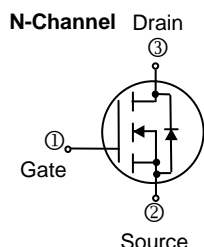
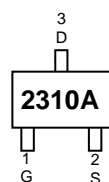
FEATURES

- Simple Drive Requirement,
- Small Package Outline
- Super High Density Cell Design for Extremely Low $R_{DS(ON)}$



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.25	3.00	H	0.40	REF.
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

MARKING CODE



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ³	$I_D @ T_A=25^\circ\text{C}$	5.0	A
Continuous Drain Current ³	$I_D @ T_A=70^\circ\text{C}$	4.0	A
Pulsed Drain Current ^{1,2}	I_{DM}	10	A
Power Dissipation	$P_D @ T_A=25^\circ\text{C}$	1.38	W
Linear Derating Factor		0.01	W/ $^\circ\text{C}$
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$
THERMAL DATA			
Thermal Resistance Junction-ambient ³	Max	$R_{\theta JA}$	90
			$^\circ\text{C}/\text{W}$

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}	60	-	-	V	$V_{GS} = 0, I_D = 250\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	0.5	-	1.5	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Forward Transconductance	g_{fs}	-	12	-	S	$V_{DS} = 15\text{V}, I_D = 4\text{A}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20\text{V}$
Drain-Source Leakage Current ($T_J=25^\circ\text{C}$)	I_{DSS}	-	-	1	μA	$V_{DS} = 60\text{V}, V_{GS} = 0$
Drain-Source Leakage Current ($T_J=55^\circ\text{C}$)		-	-	10	μA	$V_{DS} = 60\text{V}, V_{GS} = 0$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	115	m Ω	$V_{GS} = 10\text{V}, I_D = 5.0\text{A}$
		-	-	125		$V_{GS} = 4.5\text{V}, I_D = 4.5\text{A}$
Total Gate Charge ²	Q_g	-	4.0	-	nC	$I_D = 4\text{A}$
Gate-Source Charge	Q_{gs}	-	1.2	-		$V_{DS} = 30\text{V}$
Gate-Drain ("Miller") Charge	Q_{gd}	-	1.0	-		$V_{GS} = 4.5\text{V}$
Turn-on Delay Time ²	$T_{d(on)}$	-	6	-	ns	$V_{DD} = 30\text{V}, R_G = 6\Omega$ $I_D = 2.5\text{A}, V_{GS} = 10\text{V}$ $R_L = 12\Omega$
Rise Time	T_r	-	12	-		
Turn-off Delay Time	$T_{d(off)}$	-	18	-		
Fall Time	T_f	-	10	-		
Input Capacitance	C_{iss}	-	320	-	pF	$V_{GS} = 0\text{V}$ $V_{DS} = 30\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	42	-		
Reverse Transfer Capacitance	C_{rss}	-	20	-		
SOURCE-DRAIN DIODE						
Forward On Voltage ²	V_{SD}	-	-	1.2	V	$I_S = 2.5\text{A}, V_{GS} = 0\text{V}$

- 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 1 in² copper pad of FR4 board; 270 $^\circ\text{C}/\text{W}$ when mounted on M in. copper pad.

CHARACTERISTIC CURVE

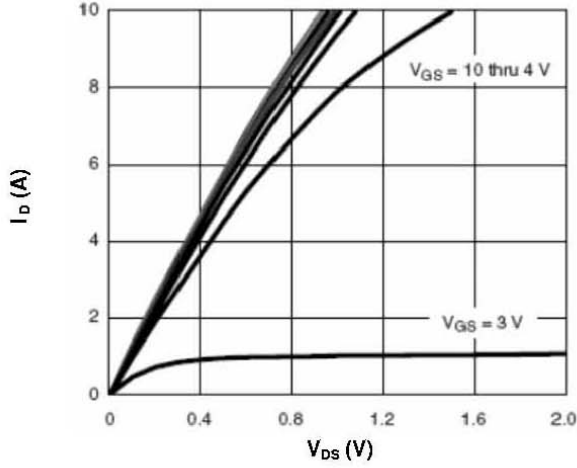


Fig 1. Typical Output Characteristics

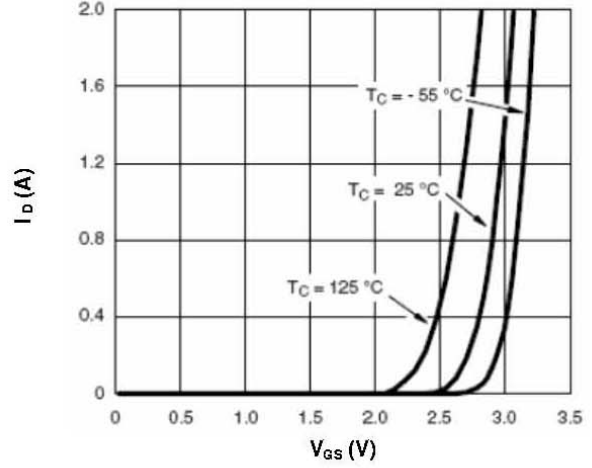


Fig 2. Transfer Characteristics

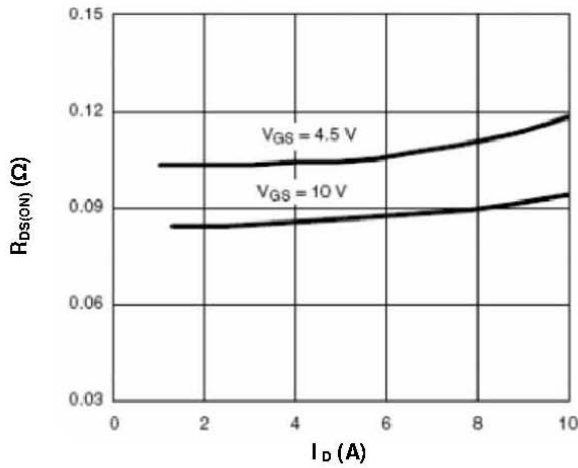


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

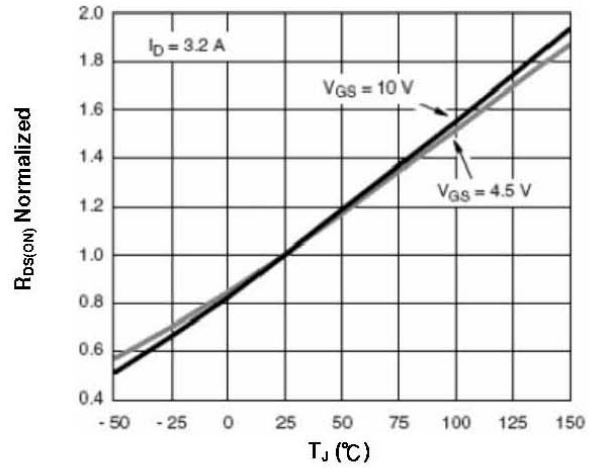


Fig 4. On-Resistance vs. Junction Temperature

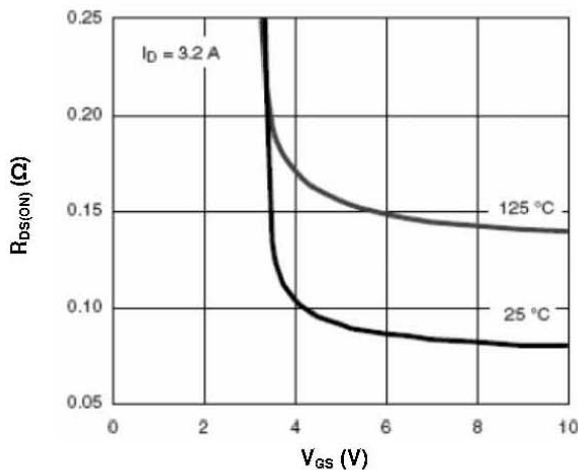


Fig 5. On-Resistance vs. Gate-Source Voltage

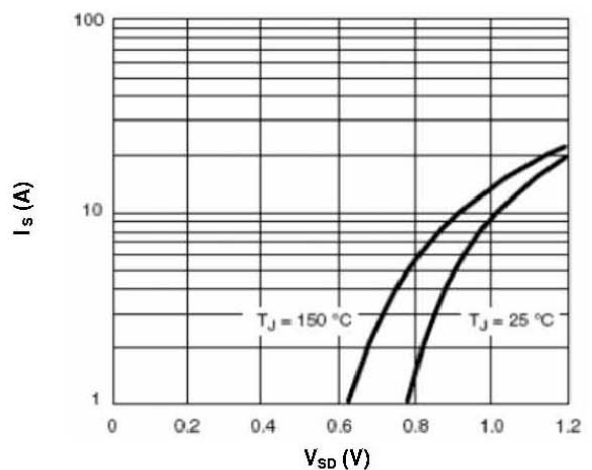


Fig 6. Body Diode Characteristics

CHARACTERISTIC CURVE

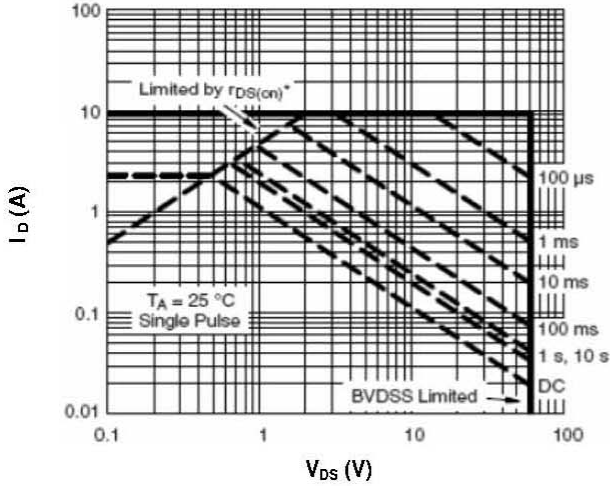


Fig 7. Maximum Safe Operating Area

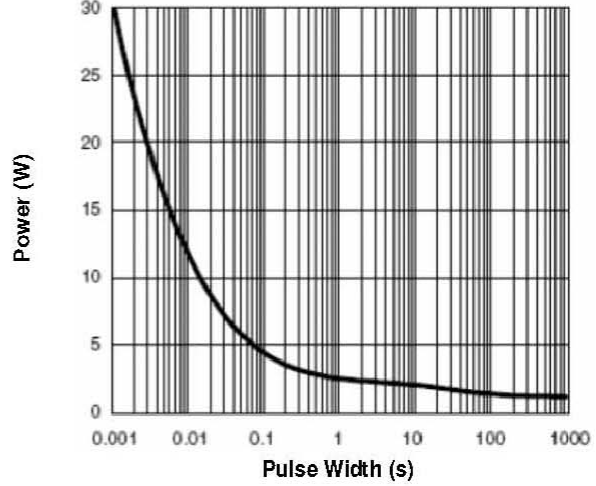


Fig 8. Single Pulse Maximum Power Dissipation

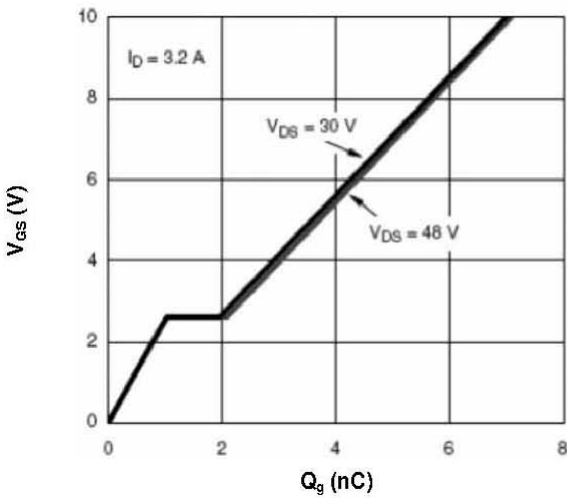


Fig 9. Gate Charge Characteristics

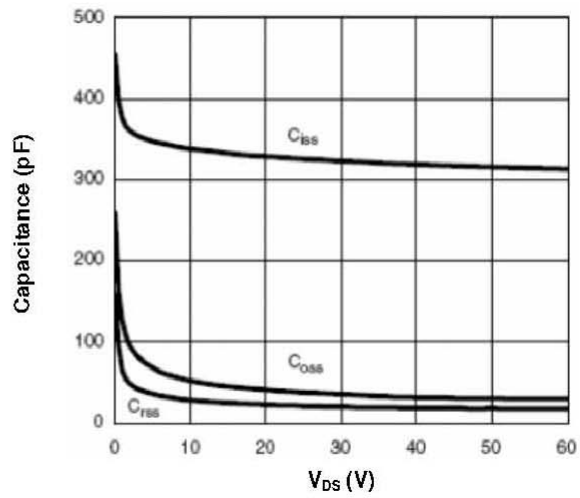


Fig 10. Typical Capacitance Characteristics

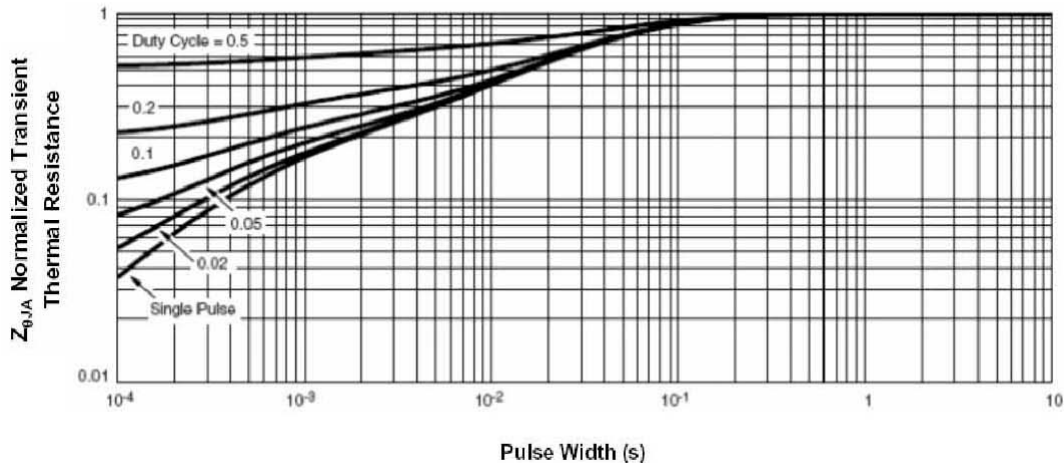


Fig 11. Normalized Maximum Transient Thermal Impedance