Elektronische Bauelemente

SMG2313

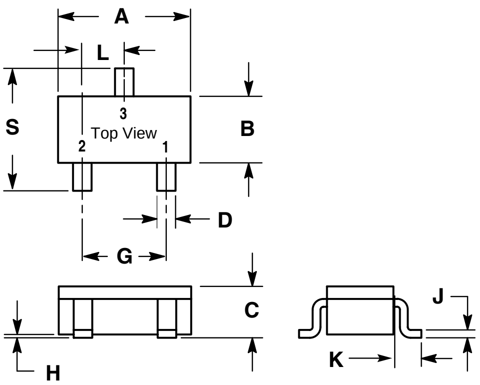
-2.5A, -20V, $R_{DS(ON)}$ 160mΩ

P-Channel Enhancement Mode Power Mos.FET

RoHS Compliant Product

Description

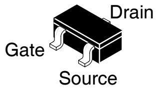
The SMG2313 provide the designer with the best combination of fast switching,low on-resistance and cost-effectiveness. The SMG231 is universally preferred for all commercial-industrial surface mount applications and suited for low voltage application such as DC/DC conerters.



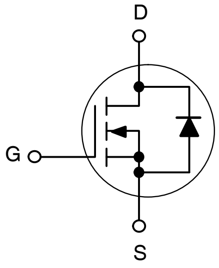
SC-59		
Dim	**Min**	**Max**
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80
All Dimension in mm		

Features

- * Small Package Outline
- * Simple Drive Requirement



Marking: 2313



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[3]	I_D @TA=25℃	-2.5	A
Continuous Drain Current[3]	I_D @TA=70℃	-1.97	A
Pulsed Drain Current[1]	I_{DM}	10	A
Power Dissipation	P_D @TA=25℃	1.38	W
Linear Derating Factor		0.01	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-a	90	℃/W

Any changing of specification will not be informed individual

Electrical Characteristics(Tj = 25℃ Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-20	-	-	V	V_{GS}=0, I_D=-250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	-0.01	-	V/℃	Reference to 25℃, I_D=-1mA
Gate Threshold Voltage	$V_{GS(th)}$	-	-	-1.2	V	V_{DS}=V_{GS}, I_D=-250uA
Forward Transconductance	g_{fs}	-	4.0	-	S	V_{DS}=-5V, I_D=-2A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±12V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	-1	uA	V_{DS}=-20V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	-25	uA	V_{DS}=-16V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	120	mΩ	V_{GS}=-10V, I_D=-2.8A
		-	-	160		V_{GS}=-4.5V, I_D=-2.5A
		-	-	300		V_{GS}=-2.5V, I_D=-2A
Total Gate Charge[2]	Q_g	-	5	8	nC	I_D=-2A V_{DS}=-16V V_{GS}=-4.5V
Gate-Source Charge	Q_{gs}	-	1	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	2	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	6	-	ns	V_{DS}=-10V I_D=-1A V_{GS}=-10V R_G=3.3Ω R_D=10Ω
Rise Time	T_r	-	17	-		
Turn-off Delay Time	$T_{d(off)}$	-	16	-		
Fall Time	T_f	-	5	-		
Input Capacitance	C_{iss}	-	270	430	pF	V_{GS}=0V V_{DS}=-20V f=1.0MHz
Output Capacitance	C_{oss}	-	70	-		
Reverse Transfer Capacitance	C_{rss}	-	55	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	-1.2	V	I_S=-1.2A, V_{GS}=0V
Reverse Recovery Time[2]	T_{rr}	-	20	-	ns	I_S=-2A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	15	-	nC	

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width≦300us, duty cycle≦2%.

3. Surface mounted on 1 in^2 copper pad of FR4 board, t ≦10sec; 270℃/W when mounted on Min. copper pad.

Any changing of specification will not be informed individual

Characteristics Curve

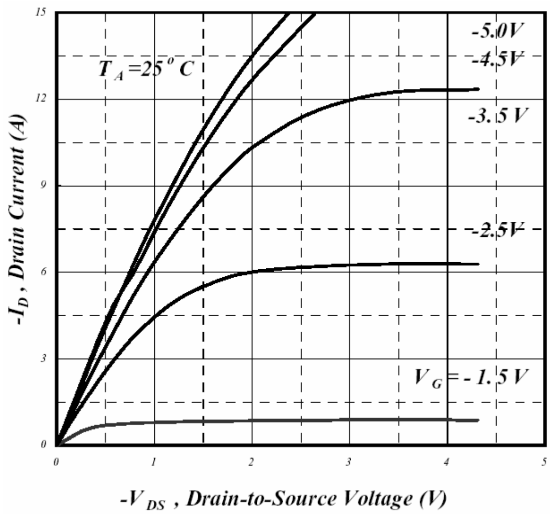


Fig 1. Typical Output Characteristics

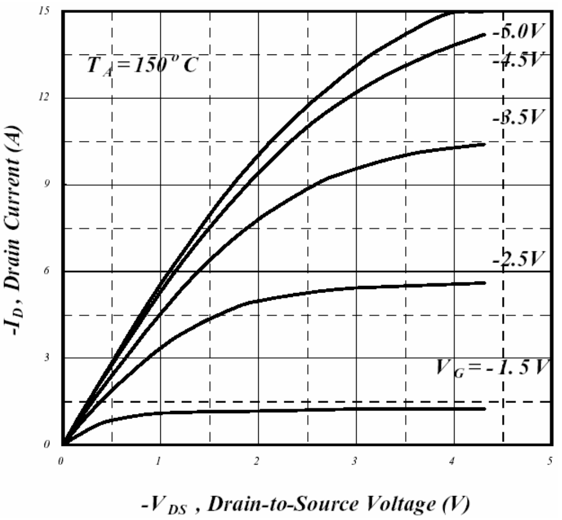


Fig 2. Typical Output Characteristics

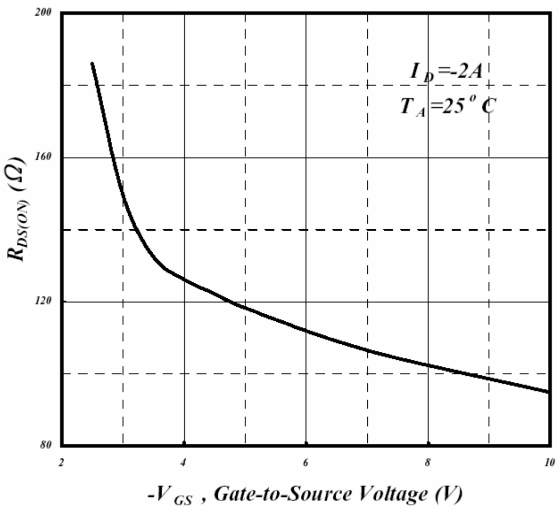


Fig 3. On-Resistance v.s. Gate Voltage

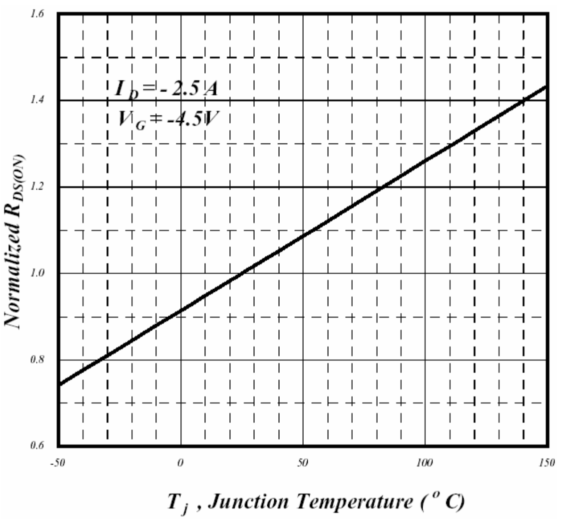


Fig 4. Normalized On-Resistance v.s. Junction Temperature

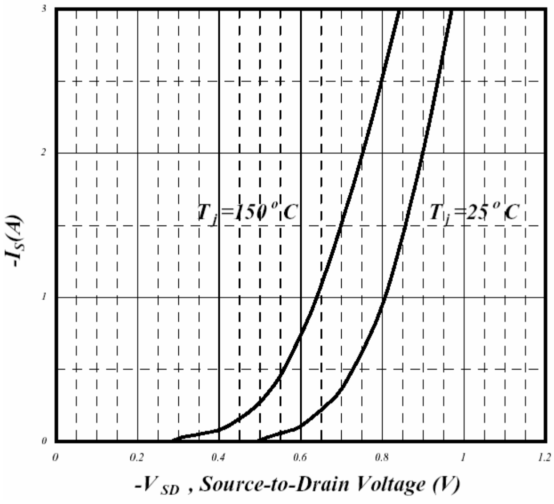


Fig 5. Forward Characteristics of Reverse Diode

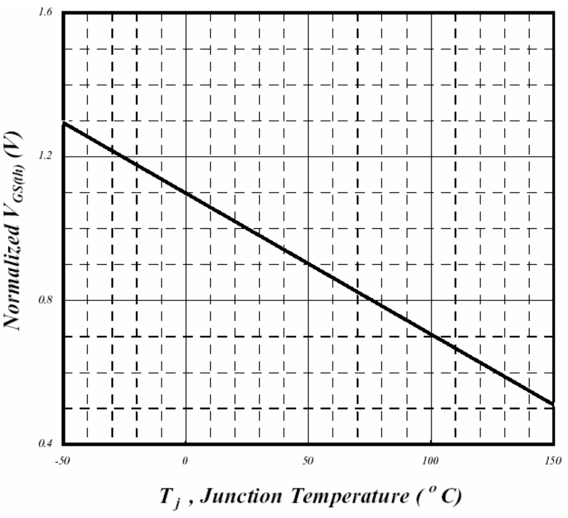


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Any changing of specification will not be informed individual

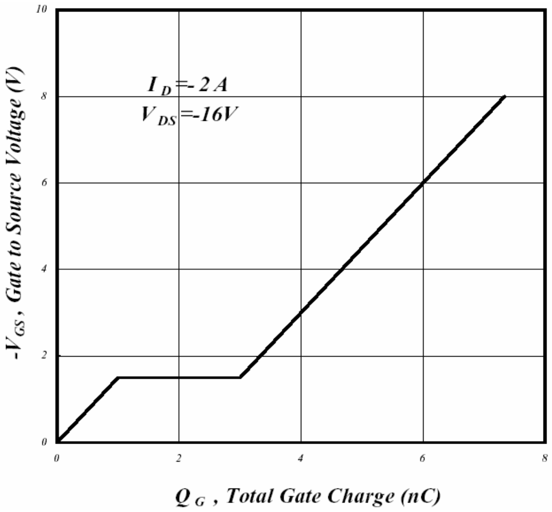


Fig 7. Gate Charge Characteristics

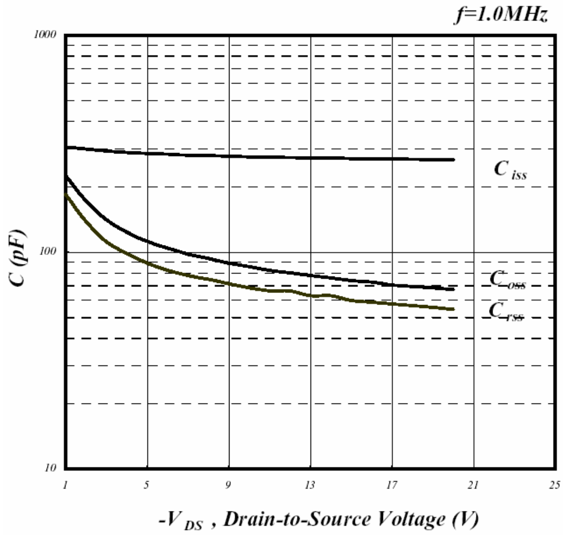


Fig 8. Typical Capacitance Characteristics

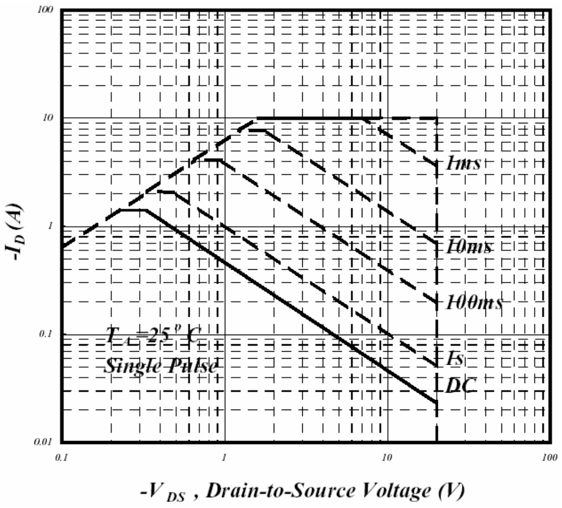


Fig 9. Maximum Safe Operating Area

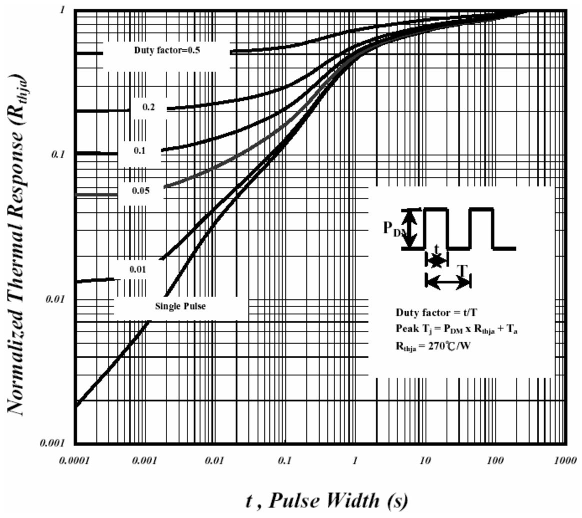


Fig 10. Effective Transient Thermal Impedance

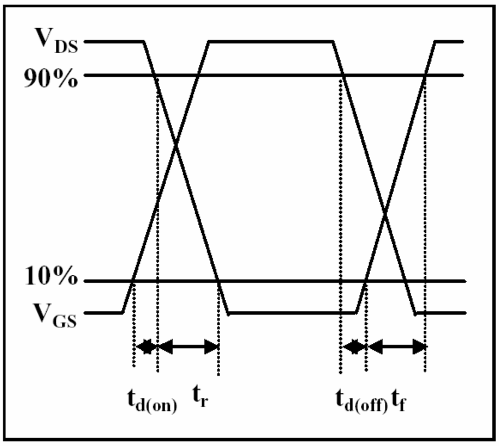


Fig 11. Switching Time Waveform

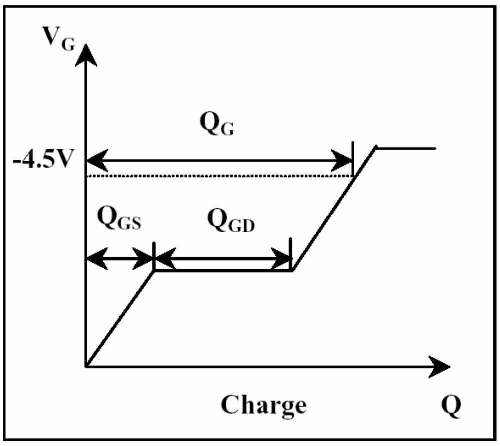


Fig 12. Gate Charge Waveform

Any changing of specification will not be informed individual