Elektronische Bauelemente

SMG3007-C

-7A, -30V, $R_{DS(ON)}$ 21mΩ

P-Channel Enhancement Mode Power MOSFET

RoHS Compliant Product

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

FEATURES

- Trench Power LV MOSFET Technology
- High Dense Cell Design for Low $R_{DS(on)}$
- High Speed Switching
- Epoxy Meets UL 94 V 0 Flammability Rating

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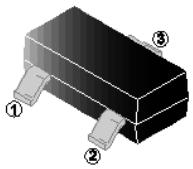


APPLICATION

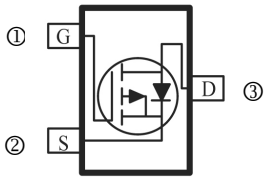
- Battery Protection
- Power Management
- Load Switch

MARKING

3007B

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-23	3K	7 inch



ORDER INFORMATION

Part Number	Type
SMG3007-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Continuous Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	-7	A
	T_A=100℃		-4	
Pulsed Drain Current [1]		I_{DM}	-60	A
Total Power Dissipation [2]	T_A=25℃	P_D	1.2	W
	T_A=100℃		0.5	
Thermal Resistance from Junction-Ambient [3]		$R_{\theta JA}$	100	℃/W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS}=0V, I_D= -250μA
Gate Threshold Voltage	$V_{GS(th)}$	-1	-1.5	-2.5	V	V_{DS}=V_{GS}, I_D= -250μA
Zero Gate Voltage Drain Current	I_{DSS}	-	-	-1	μA	V_{GS}=0V, V_{DS}= -30V
		-	-	-100		V_{GS}=0V, V_{DS}= -30V, T_J=150℃
Gate-Body Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V, V_{DS}=0V
Drain-Source On Resistance	$R_{DS(ON)}$	-	16	21	mΩ	V_{GS}= -10V, I_D= -7A
		-	21	28		V_{GS}= -4.5V, I_D= -5A
Gate resistance	R_G	-	16	-	Ω	f=1MHz
Total Gate Charge	Q_g	-	24	-	nC	V_{DS}= -15V V_{GS}= -10V I_D= -7A
Gate-Source Charge	Q_{gs}	-	2	-		
Gate-Drain Charge	Q_{gd}	-	6	-		
Turn-On Delay Time	$T_{d(on)}$	-	11	-	nS	V_{DD}= -15V V_{GS}= -10V I_D= -7A R_G=2.5Ω
Rise Time	T_r	-	4	-		
Turn-Off Delay Time	$T_{d(off)}$	-	70	-		
Fall Time	T_f	-	50	-		
Input Capacitance	C_{iss}	-	1220	-	pF	V_{DS}= -15V V_{GS}=0V f=1MHz
Output Capacitance	C_{oss}	-	170	-		
Reverse Transfer Capacitance	C_{rss}	-	160	-		
Source Drain Diode						
Maximum Body-Diode Continuous Current	I_S	-	-	-7	A	
Diode Forward Voltage	V_{SD}	-	-0.9	-1.2	V	I_S= -7A, V_{GS}=0
Reverse Recovery Time	t_{rr}	-	35	-	nS	I_F= -7A, di/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	11	-	nC	

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
3. The value of $R_{\theta JA}$ is measured with the device mounted on the minimum recommend pad size, in the still air environment with T_A=25℃. The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.

TYPICAL CHARACTERISTIC CURVE

Figure1. Output Characteristics

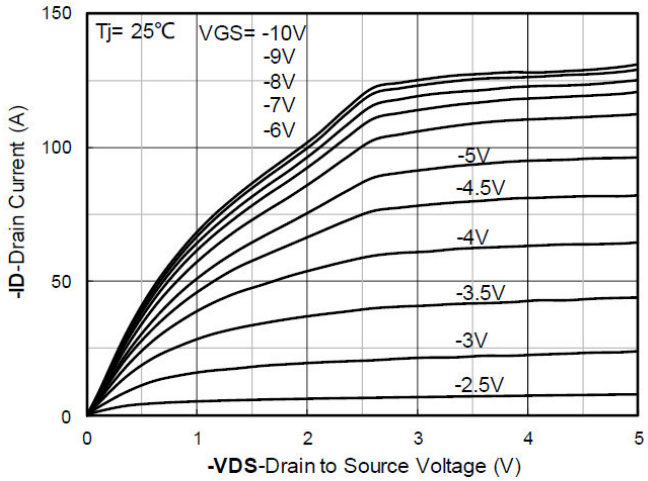


Figure2. Transfer Characteristics

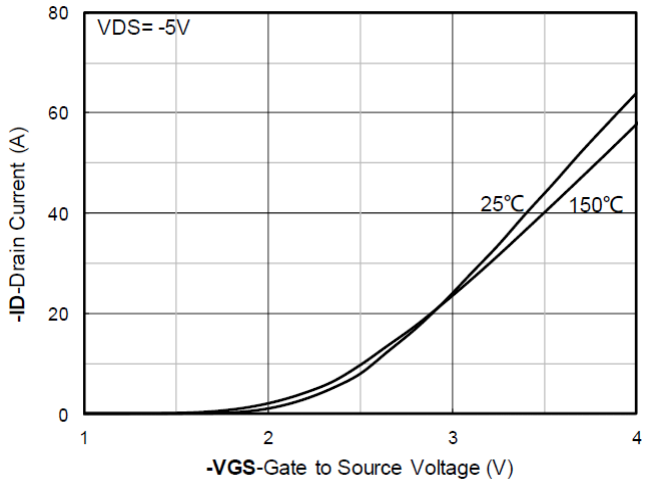


Figure3. Capacitance Characteristics

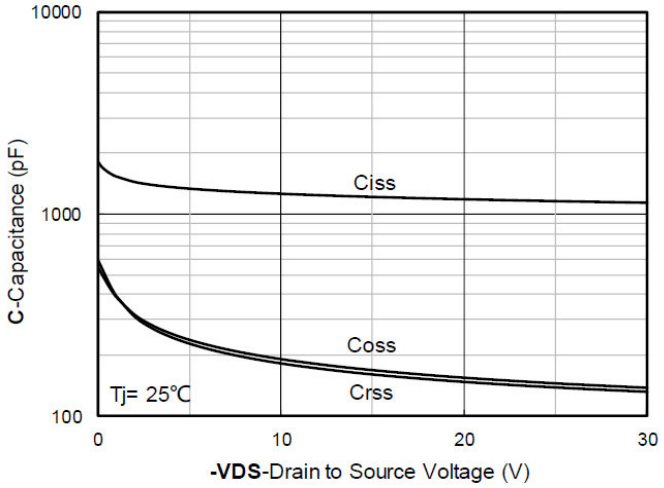


Figure4. Gate Charge

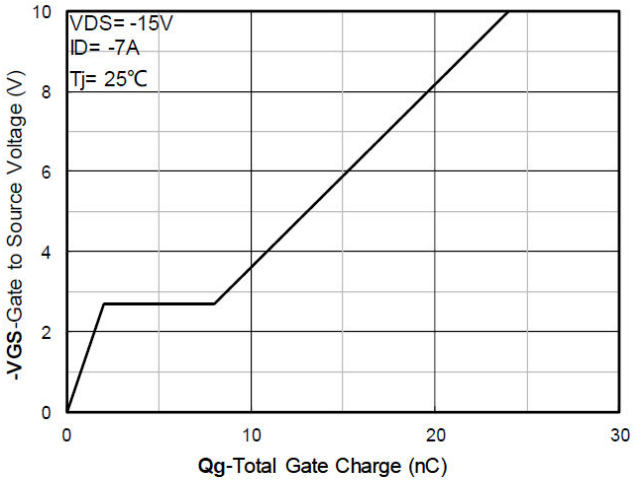


Figure5. On-Resistance vs Gate to Source Voltage

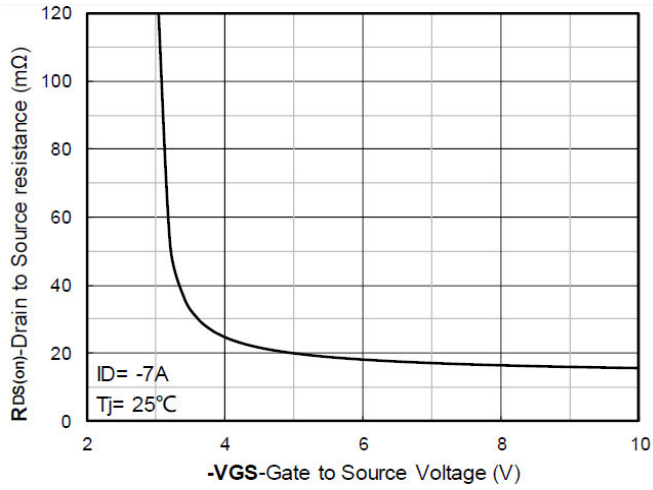
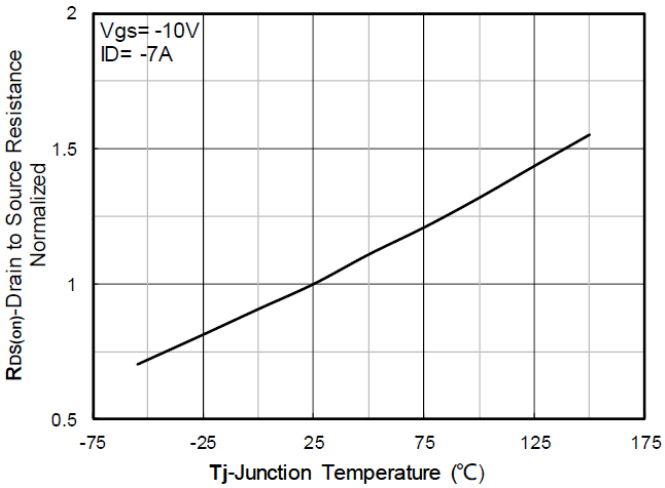


Figure6. Normalized On-Resistance



TYPICAL CHARACTERISTIC CURVE

Figure 7. $R_{DS(on)}$ VS Drain Current

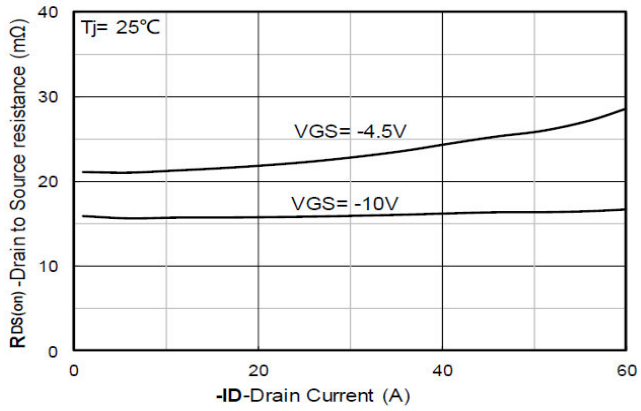


Figure 8. Forward Characteristics of Reverse Diode

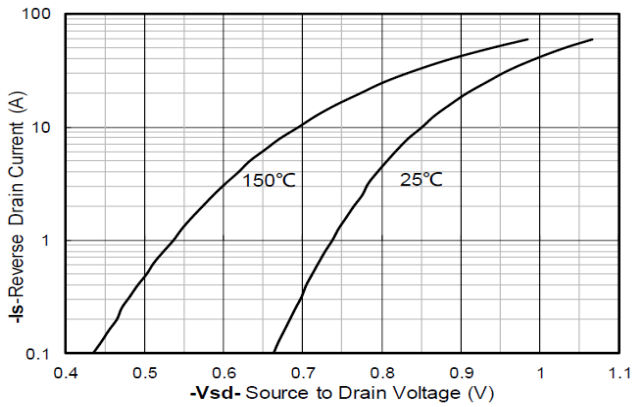


Figure 9. Normalized Breakdown Voltage

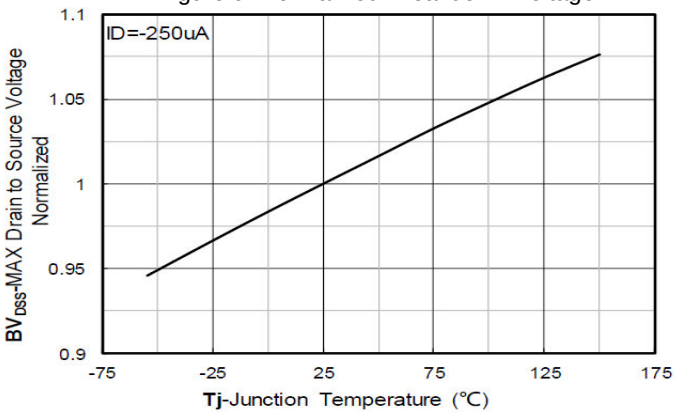


Figure 10. Normalized Threshold Voltage

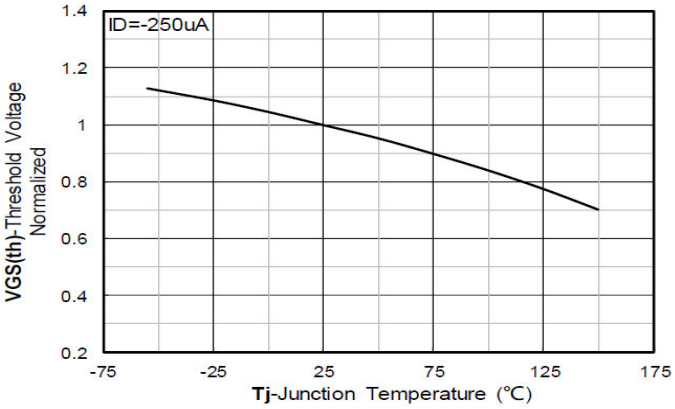


Figure 11. Current Dissipation

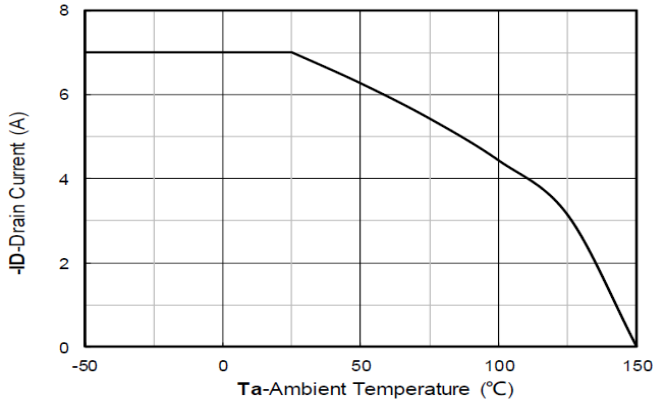


Figure 12. Power Dissipation

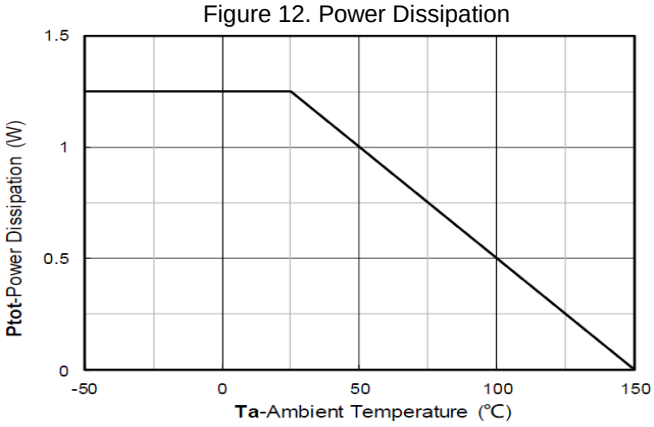


Figure 13. Maximum Transient Thermal Impedance

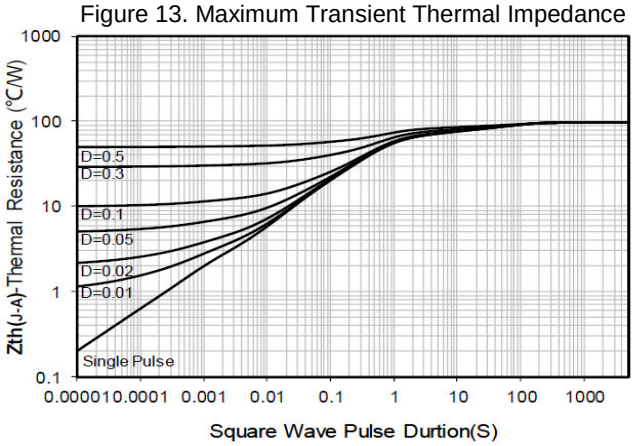
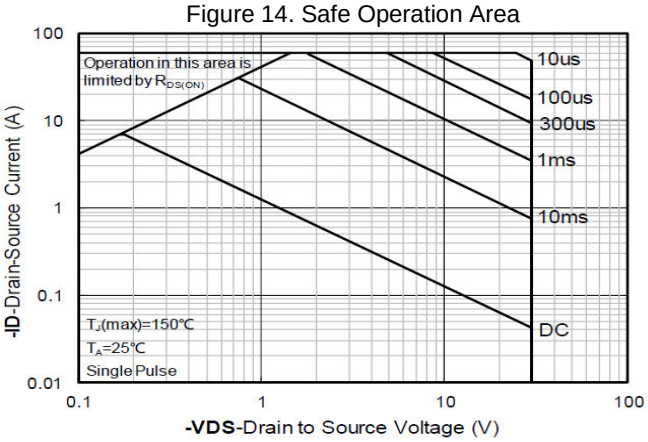


Figure 14. Safe Operation Area



PACKAGE OUTLINE DIMENSIONS

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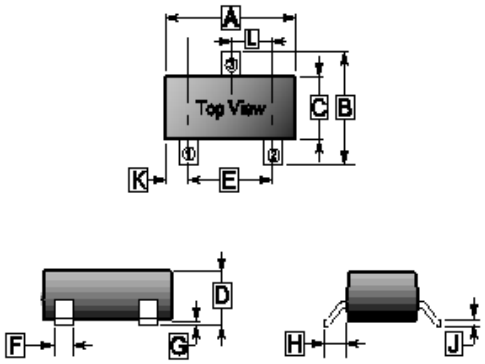

REF.	Millimeter	
	Min.	Max.
A	2.70	3.10
B	2.10	3.00
C	1.20	1.70
D	0.89	1.40
E	2.00 TYP.	
F	0.30	0.50
G	0.10 REF.	
H	0.40 REF.	
J	0.047	0.207
K	0.50 REF.	
L	0.95 REF.	

MOUNTING PAD LAYOUT

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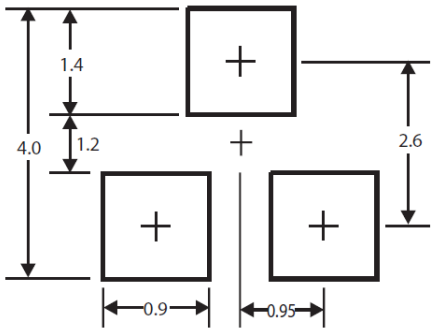

*Dimensions in millimeters