

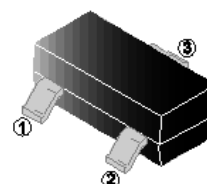
RoHS Compliant Product
A Suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMG4KN25-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the small power switching and load switch applications.

The SMG4KN25-C meet the RoHS and Green Product requirement with full function reliability approved.

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FEATURES

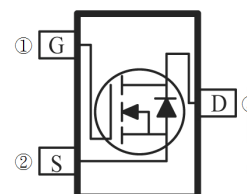
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING

4KN25

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch



ORDER INFORMATION

Part Number	Type
SMG4KN25-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	250	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^{1 2} @ $V_{GS}=10\text{V}$	I_D	$T_A=25^{\circ}\text{C}$	0.37
		$T_A=70^{\circ}\text{C}$	0.29
Pulsed Drain Current ³	I_{DM}	1.48	A
Total Power Dissipation ^{1 2}	P_D	1.25	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^{\circ}\text{C}$
Thermal Resistance			
Thermal Resistance from Junction-Ambient ¹	$R_{\theta JA}$	100	$^{\circ}\text{C}/\text{W}$

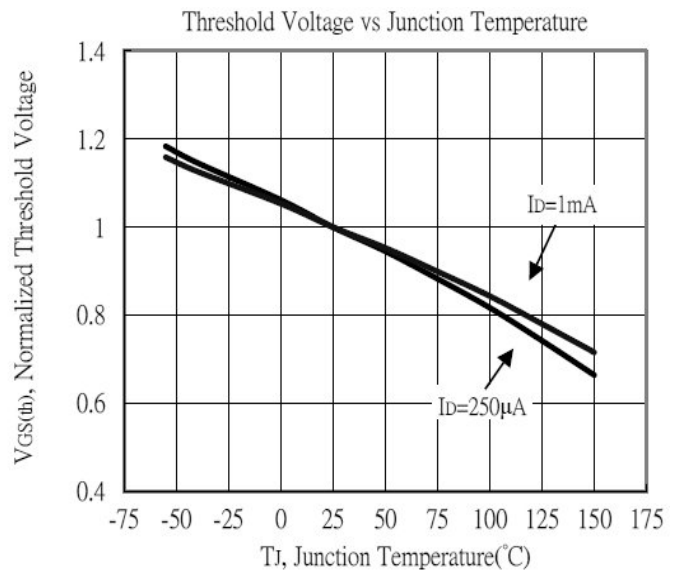
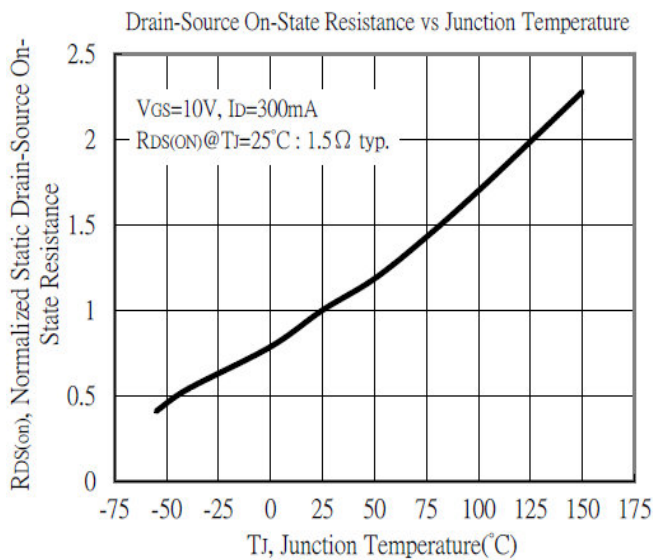
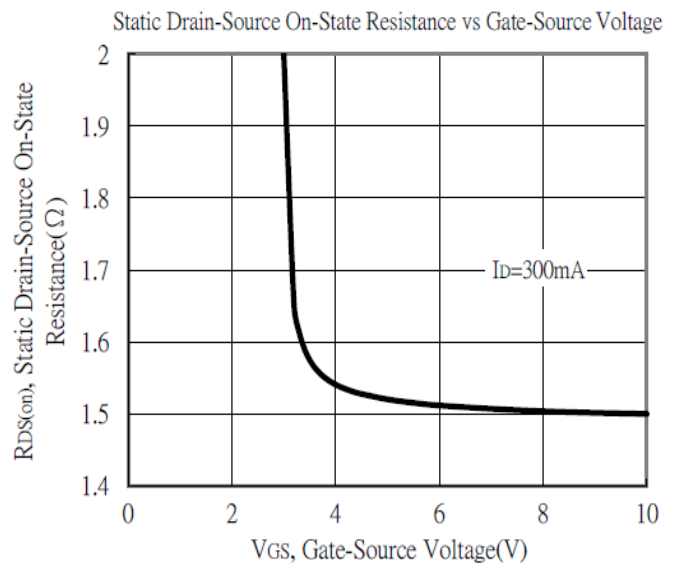
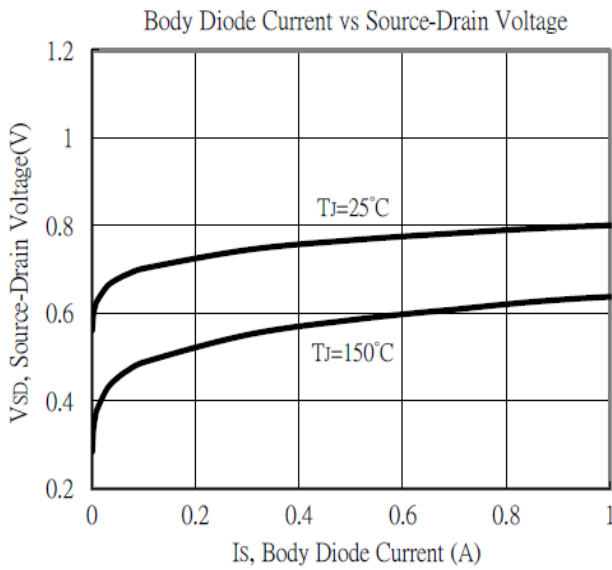
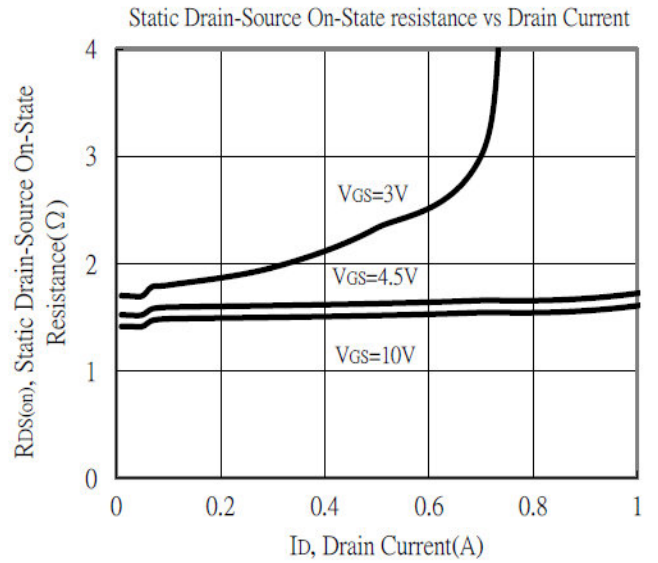
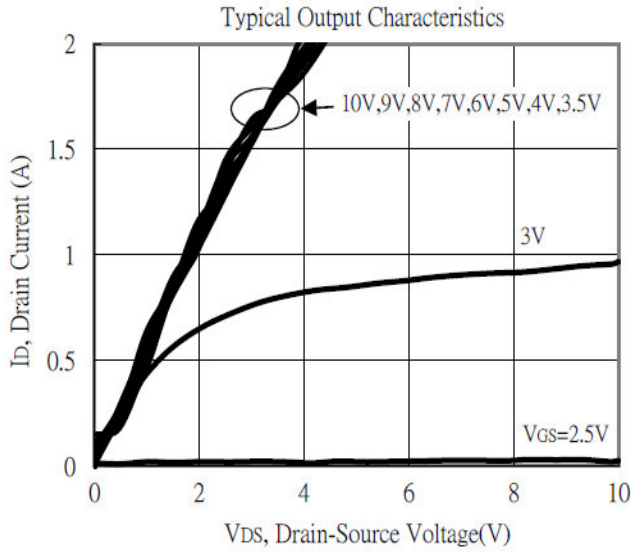
ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	250	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$
Forward Transconductance	g_{fs}	-	1.5	-	S	$V_{DS}=10\text{V}, I_D=300\text{mA}$
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	$V_{DS}=200\text{V}, V_{GS}=0$
Drain-Source On-State Resistance	$R_{DS(on)}$	-	1.6	4	Ω	$V_{GS}=10\text{V}, I_D=300\text{mA}$
		-	2	4.5		$V_{GS}=4.5\text{V}, I_D=200\text{mA}$
Total Gate Charge ^{4 5}	Q_g	-	4.9	-	nC	$V_{DS}=125\text{V}$ $V_{GS}=10\text{V}$ $I_D=0.3\text{A}$
Gate-Source Charge ^{4 5}	Q_{gs}	-	0.9	-		
Gate-Drain ("Miller") Change ^{4 5}	Q_{gd}	-	0.8	-		
Turn-on Delay Time ^{4 5}	$T_{d(on)}$	-	3.9	-	nS	$V_{DD}=125\text{V}$ $V_{GS}=10\text{V}$ $R_G=1\Omega$ $I_D=0.3\text{A}$
Rise Time ^{4 5}	T_r	-	6.7	-		
Turn-off Delay Time ^{4 5}	$T_{d(off)}$	-	16.6	-		
Fall Time ^{4 5}	T_f	-	17.3	-		
Input Capacitance	C_{iss}	-	153	-	pF	$V_{DS}=100\text{V}$ $V_{GS}=0\text{V}$ $f=1\text{MHz}$
Output Capacitance	C_{oss}	-	11	-		
Reverse Transfer Capacitance	C_{rss}	-	8	-		
Source-Drain Diode						
Forward On Voltage ⁴	V_{SD}	-	0.75	1.2	V	$I_S=0.3\text{A}, V_{GS}=0$

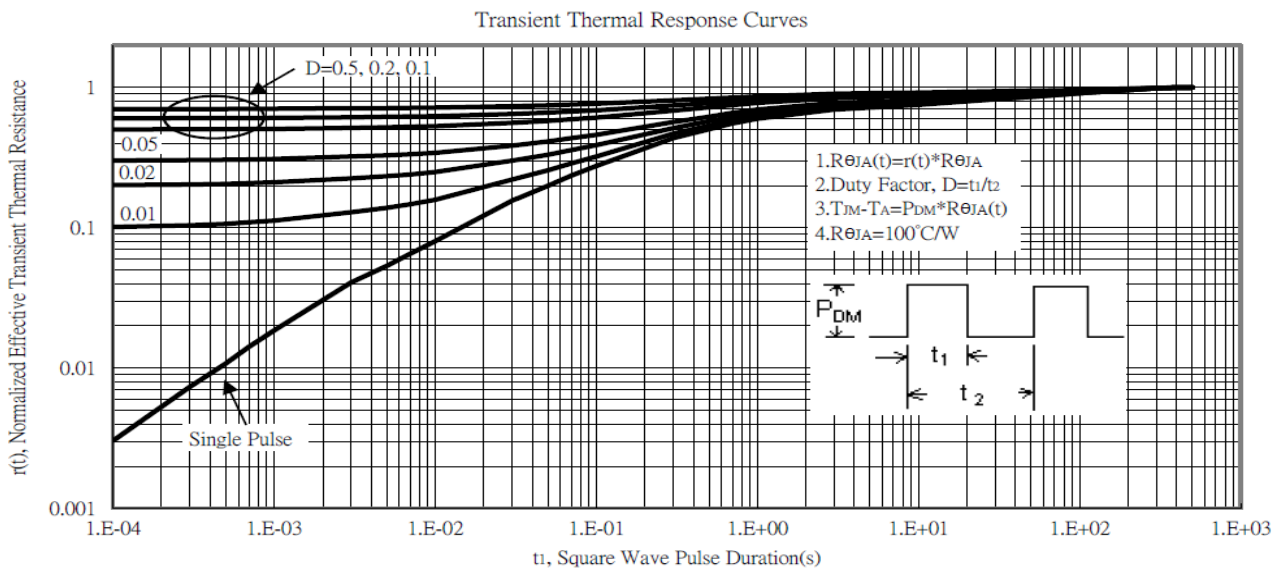
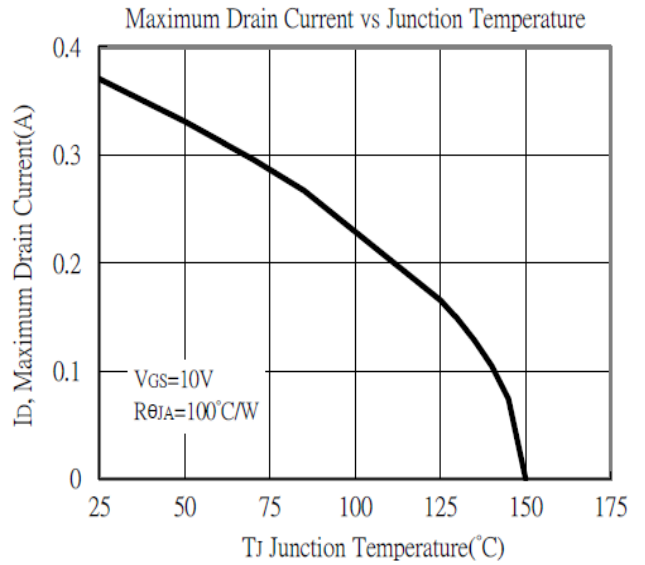
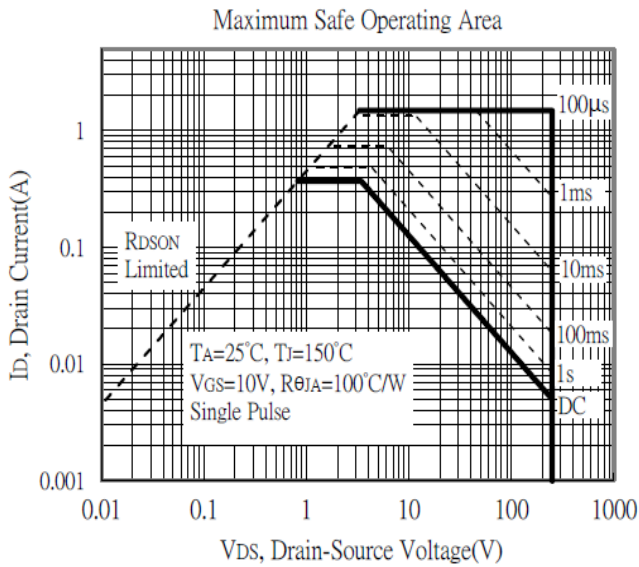
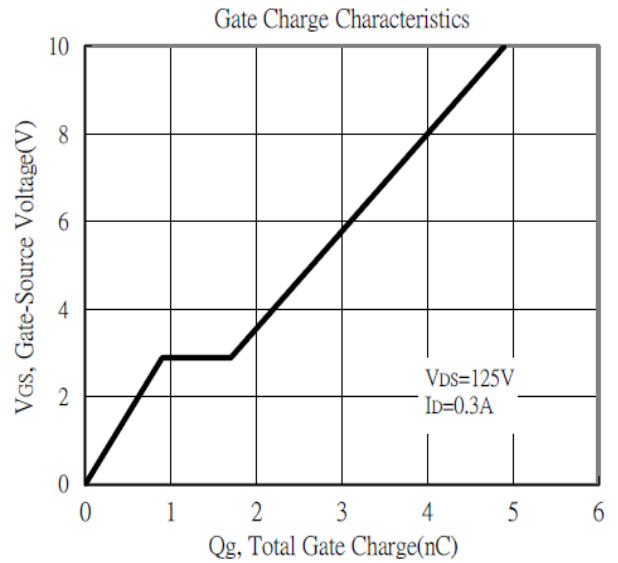
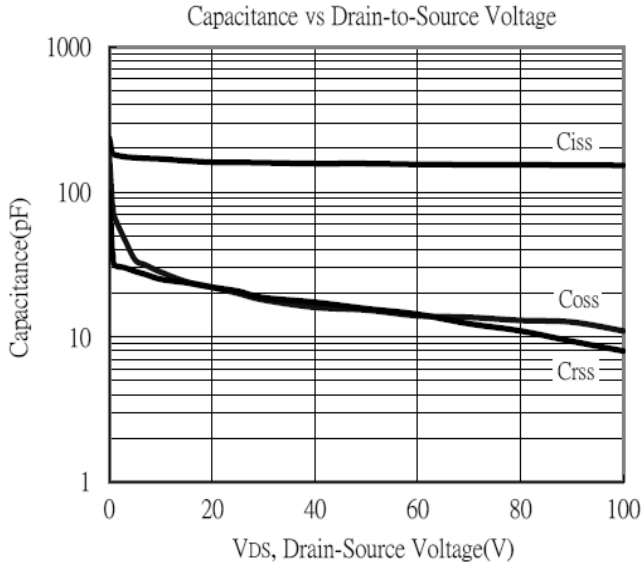
Notes:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. copper, in a still air environment with $T_A=25^\circ\text{C}$.
2. The power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$. Ratings are based on low frequency and low duty cycles to keep initial $T_J=25^\circ\text{C}$.
4. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
5. Independent of operating temperature.

CHARACTERISTIC CURVES

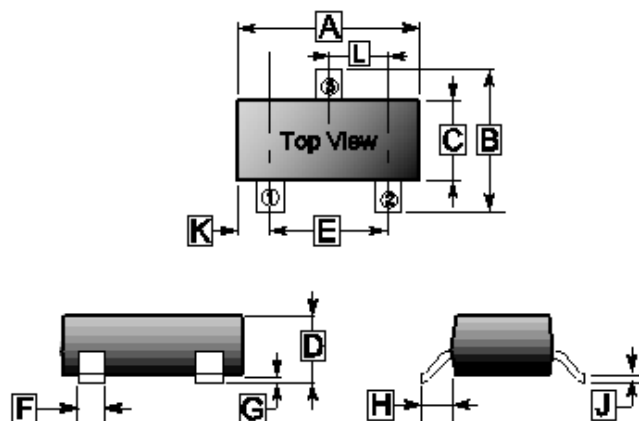


CHARACTERISTIC CURVES



PACKAGE OUTLINE DIMENSIONS

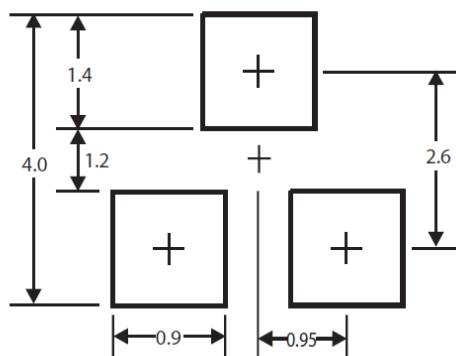
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REF.	Millimeter	
	Min.	Max.
A	2.70	3.10
B	2.10	3.00
C	1.20	1.70
D	0.89	1.40
E	2.00 TYP.	
F	0.30	0.50
G	0.10 REF.	
H	0.40 REF.	
J	0.047	0.207
K	0.50 REF.	
L	0.95 REF.	

MOUNTING PAD LAYOUT

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*Dimensions in millimeters