

RoHS Compliant Product  
 A suffix of "-C" specifies halogen and lead-free

**DESCRIPTION**

The SMG3403-C provide the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

The SMG3403-C is universally preferred for all commercial industrial surface mount application and suited for low voltage applications such as DC/DC converters.

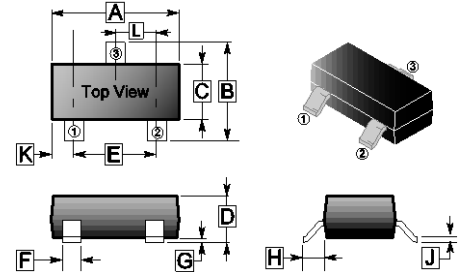
**FEATURES**

- Small Package Outline
- Simple Drive Requirement

**MARKING**

**3403**

**SC-59**

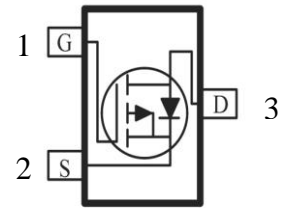


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10	REF.
B	2.10	3.00	H	0.40	REF.
C	1.20	1.70	J	0.047	0.207
D	0.89	1.40	K	0.5	REF.
E	2.00	Typ.	L	0.95	REF.
F	0.30	0.50			

**PACKAGE INFORMATION**

Package	MPQ	Leader Size
SC-59	3K	7 inch

**TOP VIEW**



**ORDER INFORMATION**

Part Number	Type
SMG3403-C	Lead (Pb)-free and Halogen-free

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

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup> @ $V_{GS} = -10\text{V}$	$I_D$	$T_A=25^{\circ}\text{C}$	-3.7
		$T_A=70^{\circ}\text{C}$	-3
Pulsed Drain Current <sup>2,3</sup>	$I_{DM}$	12	A
Power Dissipation	$P_D$	1.38	W
Linear Derating Factor		0.01	W/ $^{\circ}\text{C}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^{\circ}\text{C}$
<b>Thermal Resistance Rating</b>			
Thermal Resistance Junction-ambient <sup>1</sup>	$R_{\theta JA}$	90	$^{\circ}\text{C/W}$

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

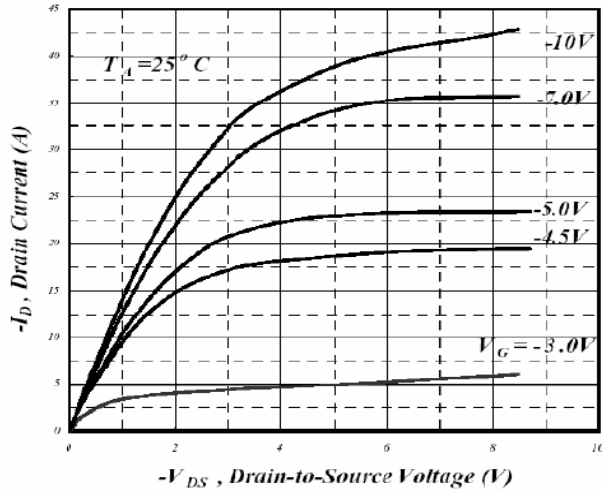
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions	
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	-	-	V	$V_{GS}=0V, I_D=-250\mu A$	
Breakdown Voltage Temp. Coefficient	$\Delta BV_{DS}/\Delta T_J$	-	-0.02	-	V/ $^\circ\text{C}$	Reference to $25^\circ\text{C}$ , $I_D=-1\text{mA}$	
Gate-Threshold Voltage	$V_{GS(th)}$	-1	-	-3	V	$V_{DS}=V_{GS}, I_D=-250\mu A$	
Forward Transconductance	$g_{fs}$	-	5	-	S	$V_{DS}=-10V, I_D=-3A$	
Gate-Body Leakage Current	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS}=\pm 20V$	
Drain-Source Leakage Current	$I_{DSS}$	$T_J=25^\circ\text{C}$	-	-	-1	$\mu A$	$V_{DS}=-24V, V_{GS}=0V$
		$T_J=55^\circ\text{C}$	-	-	-25		$V_{DS}=-24V, V_{GS}=0V$
Drain-Source On-Resistance <sup>3</sup>	$R_{DS(ON)}$	-	-	75	m $\Omega$	$V_{GS}=-10V, I_D=-3A$	
		-	-	120		$V_{GS}=-4.5V, I_D=-2.6A$	
Total Gate Charge <sup>3</sup>	$Q_g$	-	5	8	nC	$V_{DS}=-24V$ $V_{GS}=-4.5V$ $I_D=-3A$	
Gate-Source Charge	$Q_{gs}$	-	1	-			
Gate-Drain ("Miller") Charge	$Q_{gd}$	-	3	-			
Turn-on Delay Time <sup>3</sup>	$T_{d(on)}$	-	8	-	nS	$V_{DS}=-15V$ $V_{GS}=-10V$ $I_D=-1A$ $R_G=3.3\Omega$ $R_D=15\Omega$	
Rise Time	$T_r$	-	5	-			
Turn-off Delay Time	$T_{d(off)}$	-	20	-			
Fall Time	$T_f$	-	7	-			
Input Capacitance	$C_{iss}$	-	412	660	pF	$V_{GS}=0V$ $V_{DS}=-25V$ $f=1\text{MHz}$	
Output Capacitance	$C_{oss}$	-	91	-			
Reverse Transfer Capacitance	$C_{rss}$	-	62	-			
<b>Source-Drain Diode</b>							
Diode Forward Voltage <sup>3</sup>	$V_{SD}$	-	-	-1.2	V	$I_S=-1.2A, V_{GS}=0V$	
Reverse Recovery Time <sup>3</sup>	$t_{rr}$	-	20	-	nS	$I_S=-3A, V_{GS}=0V,$	
Reverse Recovery Charge	$Q_{rr}$	-	15	-	nC	$dI/dt=100A/\mu S$	

Notes:

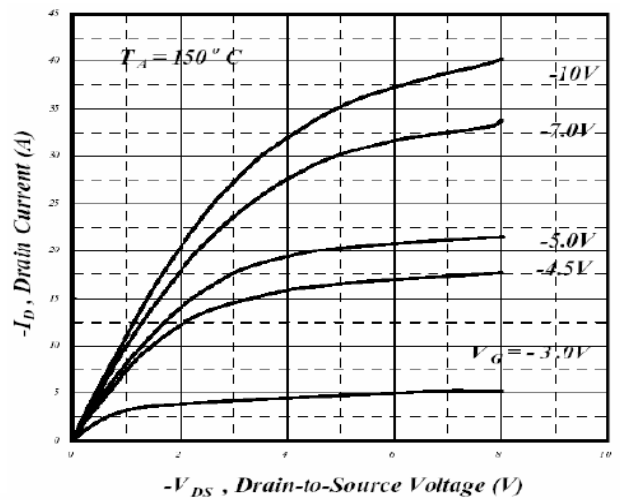
1. Surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. Pulse width limited by maximum junction temperature.
3. The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

**CHARACTERISTIC CURVES**

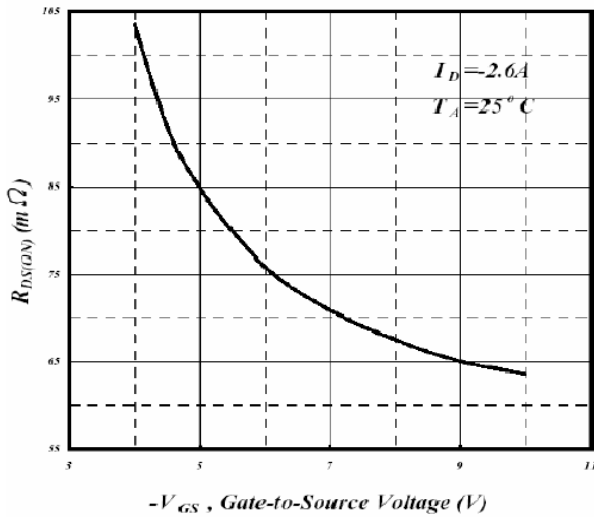
**Fig 1. Typical Output Characteristics**



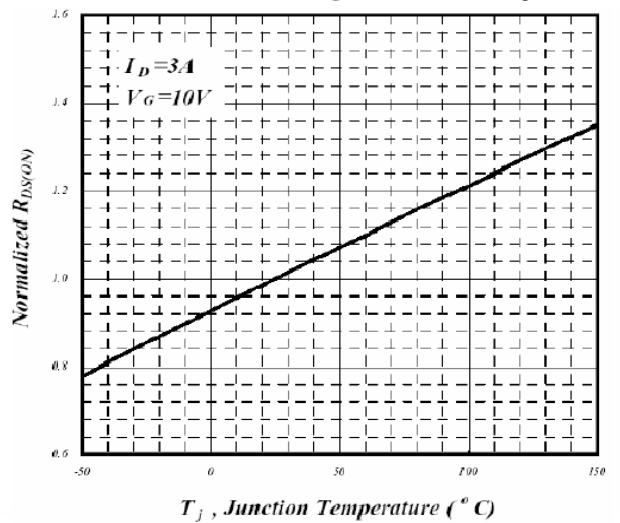
**Fig 2. Typical Output Characteristics**



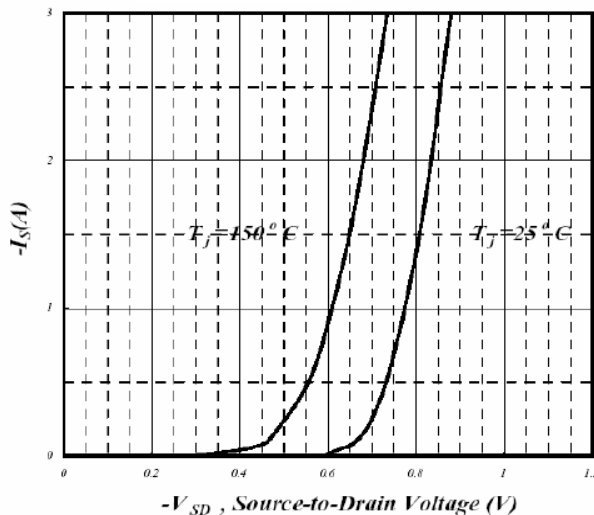
**Fig 3. On-Resistance v.s. Gate Voltage**



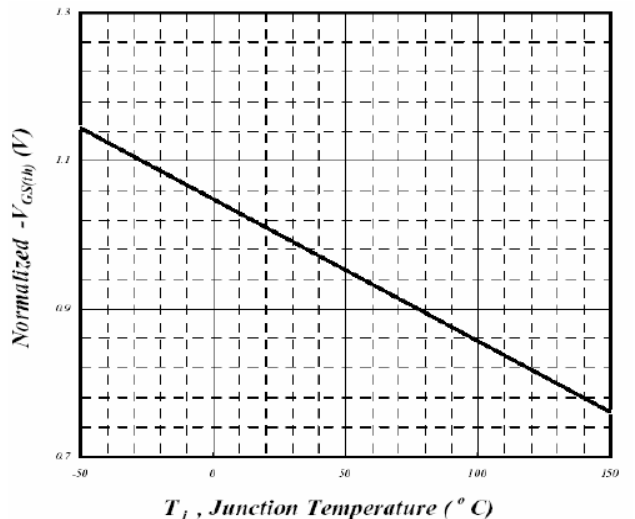
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



**Fig 5. Forward Characteristics of Reverse Diode**

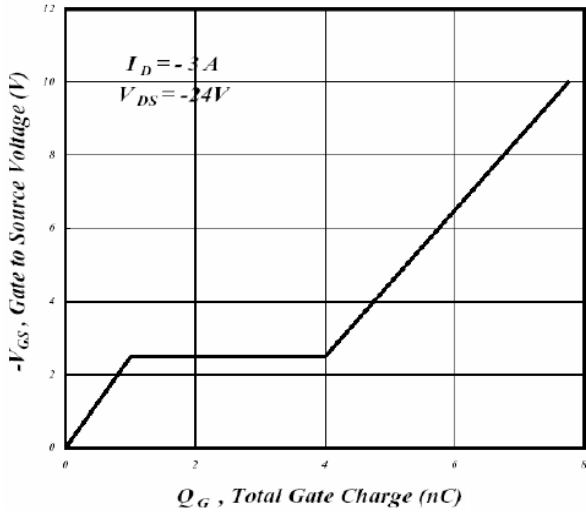


**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**

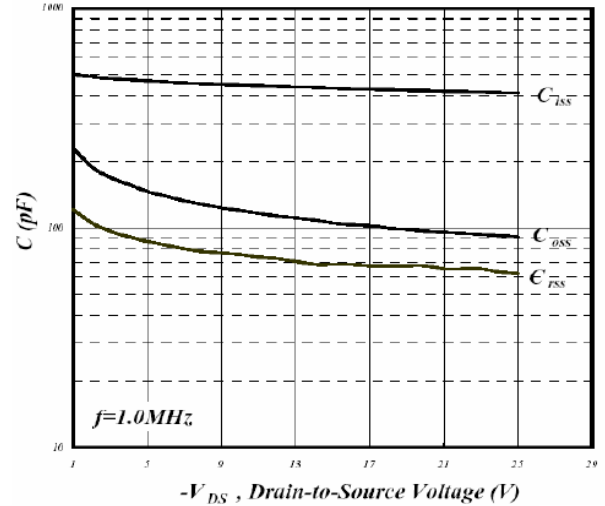


**CHARACTERISTIC CURVES**

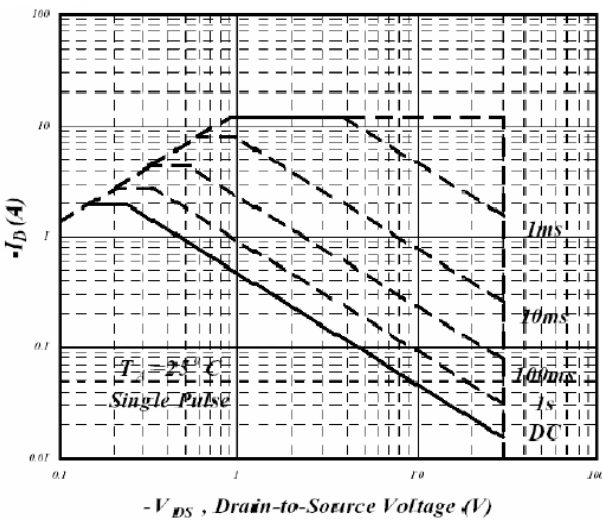
**Fig 7. Gate Charge Characteristics**



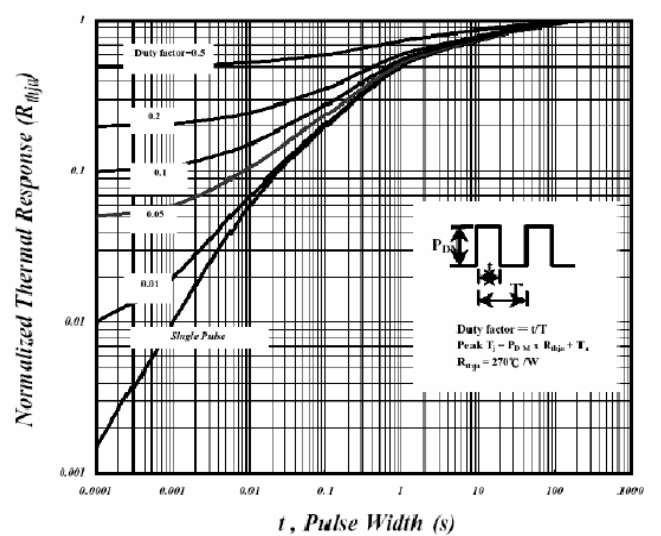
**Fig 8. Typical Capacitance Characteristics**



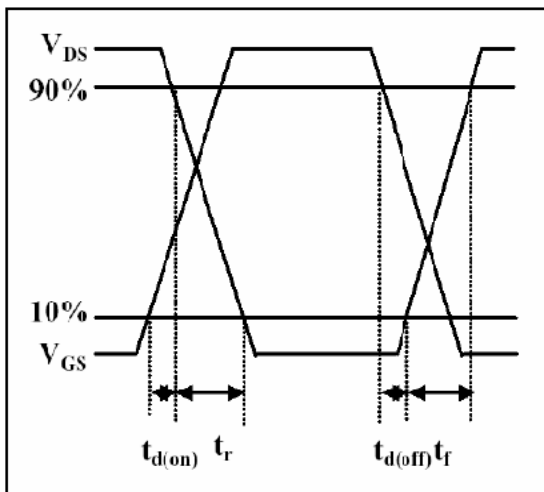
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**



**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

