Elektronische Bauelemente

SMG5403

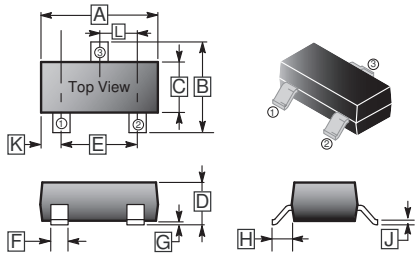
-2.6A , -30V , $R_{DS(ON)}$ 115 mΩ
P-Channel Enhancement Mode MOSFET

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

DESCRIPTION

The SMG5403 uses advanced trench technology to provide excellent on-resistance with low gate change. The device is suitable for use as a load switch or in PWM applications.

SC-59



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			

FEATURES

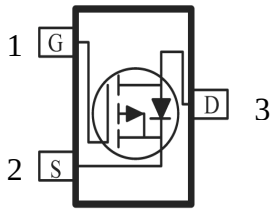
- Lower Gate Threshold Voltage
- Small Package Outline

MARKING

5403

PACKAGE INFORMATION

Package	MPQ	Leader Size
SC-59	3K	7 inch



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

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current [3]	T_A=25℃	I_D	-2.6	A
	T_A=70℃		-2.2	
Pulsed Drain Current [1]		I_{DM}	-10	A
Power Dissipation	T_A=25℃	P_D	1.38	W
Linear Derating Factor			0.01	W / ℃
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Rating				
Maximum Junction to Ambient [3]		$R_{\theta JA}$	90	℃ / W

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static							
Drain-Source Breakdown Voltage		BV_{DSS}	-30	-	-	V	V_{GS}=0, I_D= -250μA
Gate-Threshold Voltage		$V_{GS(th)}$	-0.5	-	-1.4	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Transconductance		g_{FS}	-	5	-	S	V_{DS}= -5V, I_D = -2.5A
Gate-Body Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±12V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	-1	μA	V_{DS}= -30V, V_{GS}=0
	T_J=70℃		-	-	-25		V_{DS}= -24V, V_{GS}=0
Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	-	115	mΩ	V_{GS}= -10V, I_D= -2.6A
			-	-	150		V_{GS}= -4.5V, I_D= -2A
			-	-	200		V_{GS}= -2.5V, I_D= -1A
Total Gate Charge[2]		Q_g	-	4.5	-	nC	V_{DS}= -15V, V_{GS}= -4.5V, I_D= -2.5A
Gate-Source Charge		Q_{gs}	-	0.8	-		
Gate-Drain Charge		Q_{gd}	-	1.34	-		
Turn-on Delay Time[2]		$T_{d(on)}$	-	5.4	-	nS	V_{DS}= -15V, V_{GS}= -10V, R_G=3.3Ω, R_D=4.6Ω, I_D= -1A
Rise Time		T_r	-	4.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	31	-		
Fall Time		T_f	-	8	-		
Input Capacitance		C_{iss}	-	415	-	pF	V_{GS}=0 V_{DS}= -25V, f=1.0MHz
Output Capacitance		C_{oss}	-	55	-		
Reverse Transfer Capacitance		C_{rss}	-	42	-		
Source-Drain Diode							
Diode Forward Voltage [2]		V_{SD}	-	-	-1.2	V	I_S= -1.2A, V_{GS}=0
Reverse Recovery Time		T_{rr}	-	16.2	-	nS	I_S= -2.5A, V_{GS}=0 dI/dt=100A/μS
Reverse Recovery Charge		Q_{rr}	-	9	-	nC	

Notes:
1. Pulse width limited by Max. junction temperature.
2. Pulse width≦300μs, duty cycle≦2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board; 270°C / W when mounted on Min. copper pad.

CHARACTERISTIC CURVES

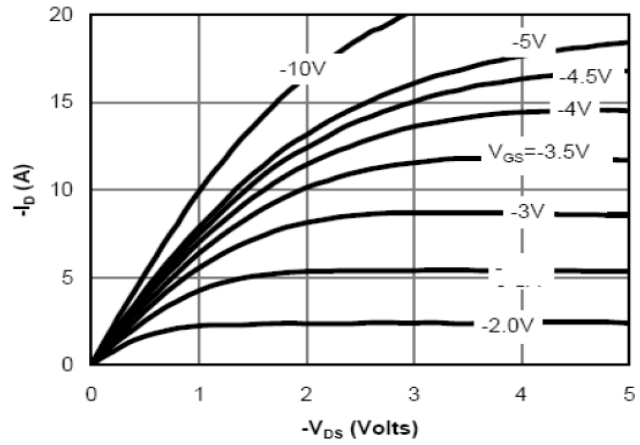


Fig 1: On-Region Characteristics

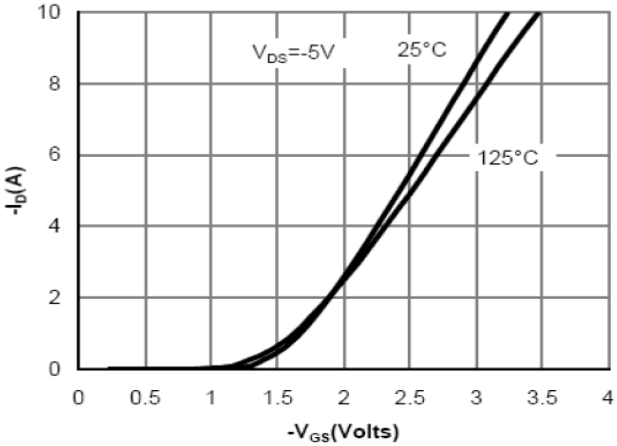


Figure 2: Transfer Characteristics

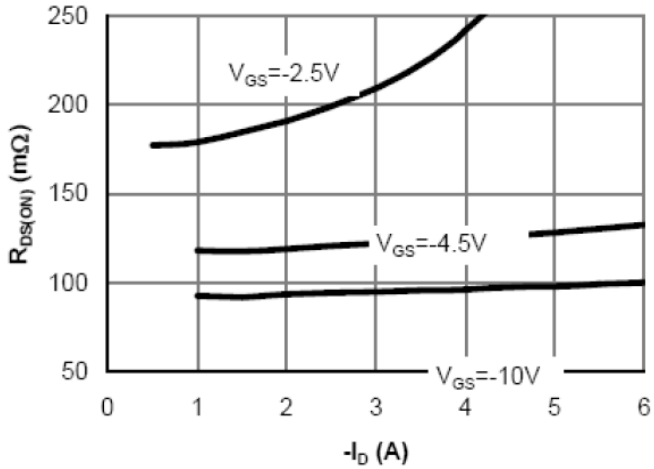


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

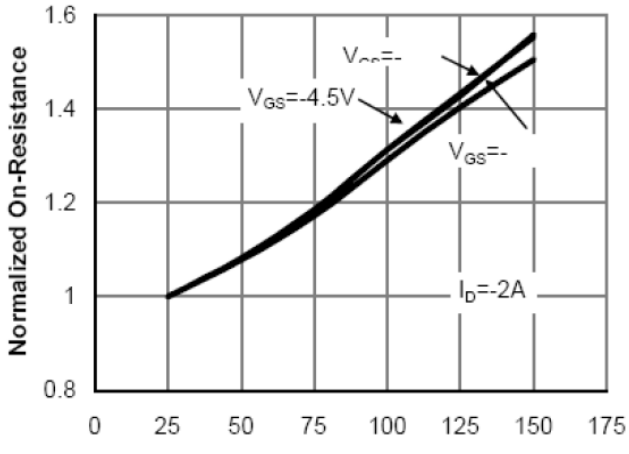


Figure 4: On-Resistance vs. Junction Temperature

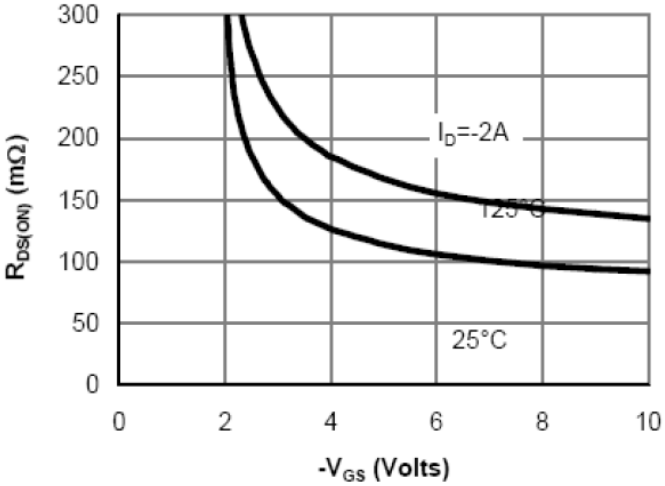


Figure 5: On-Resistance vs. Gate-Source Voltage

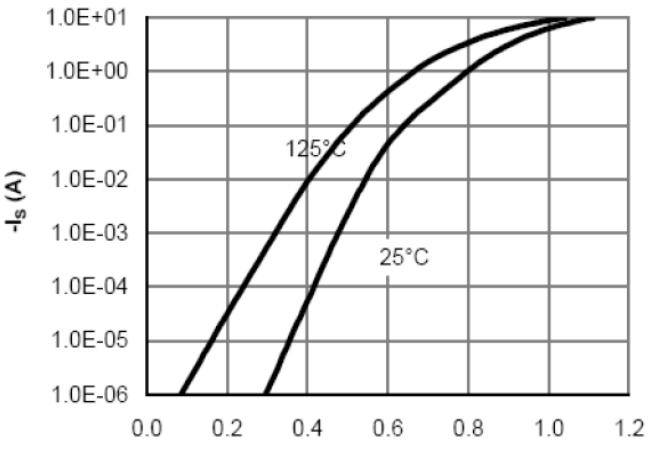


Figure 6: Body-Diode Characteristics

CHARACTERISTIC CURVES

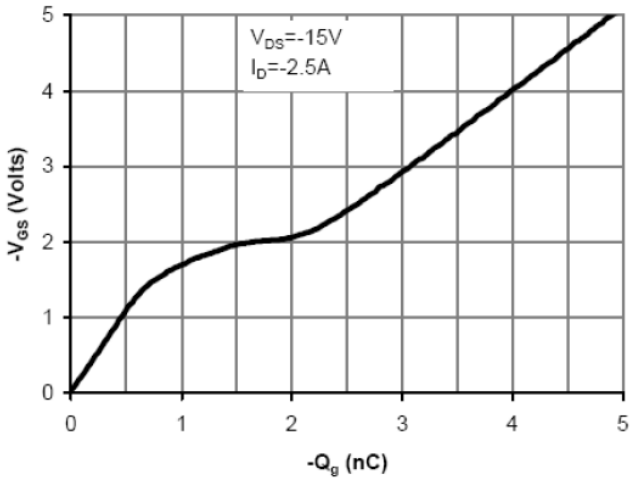


Figure 7: Gate-Charge Characteristics

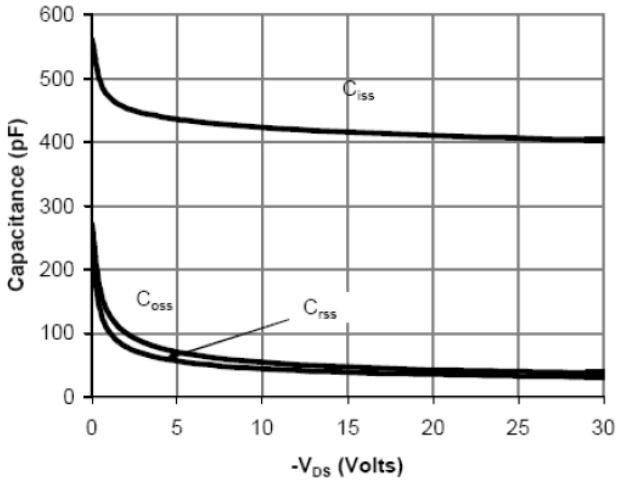


Figure 8: Capacitance Characteristics

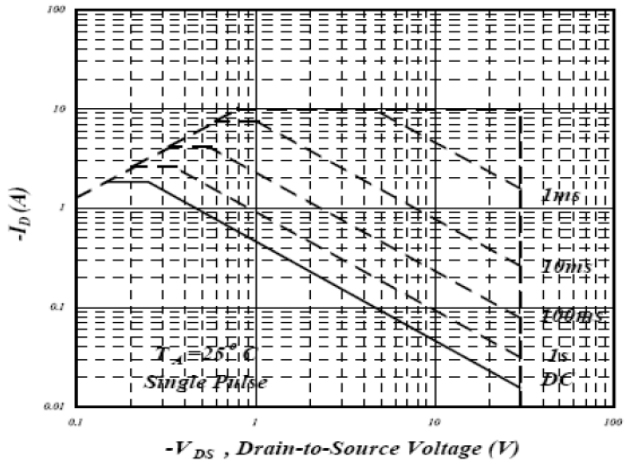


Fig 9. Maximum Safe Operating Area

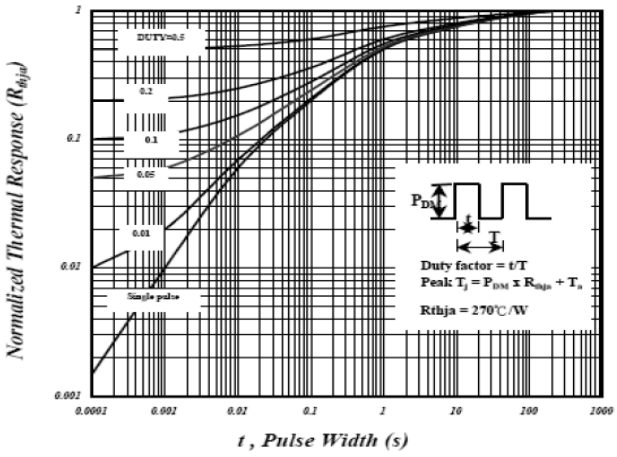


Fig 10. Effective Transient Thermal Impedance

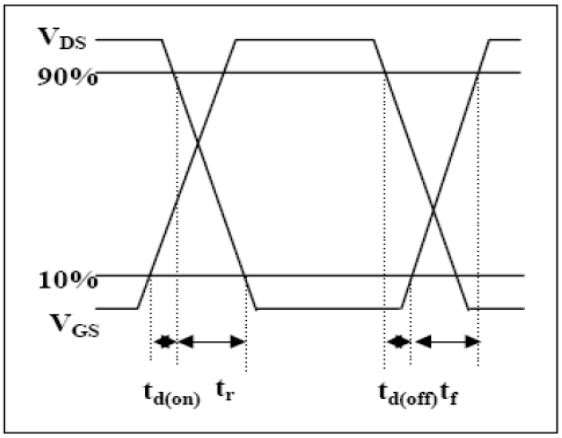


Fig 11. Switching Time Waveform

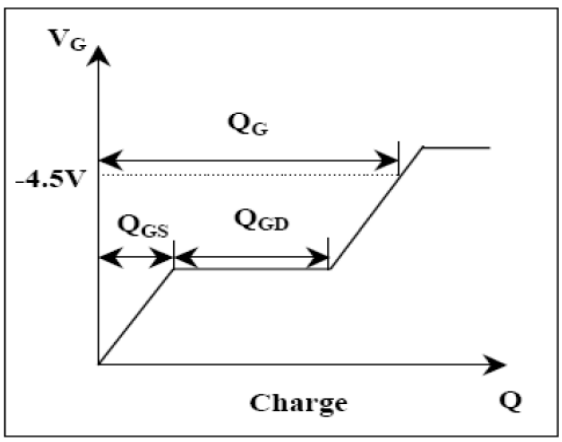


Fig 12. Gate Charge Waveform