Elektronische Bauelemente

SMG3404

N-Ch Enhancement Mode Power MOSFET

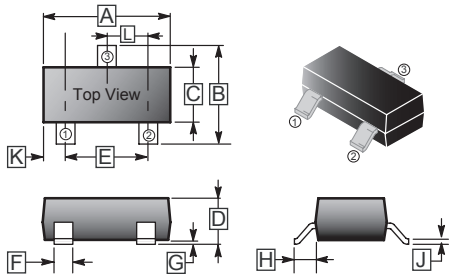
3.8 A, 30 V, $R_{DS(ON)}$, 60 mΩ

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

DESCRIPTIONS & FEATURES

- The SMG3404 uses advanced trench technology to provide excellent on-resistance, very low gate charge and operation with gate voltages as low as 2.5V.
- The SMG3404 is universally used for all commercial-industrial applications and suited for use as a load switch or in PWM applications.
- Lower Gate Charge
- Small Package Outline

SC-59

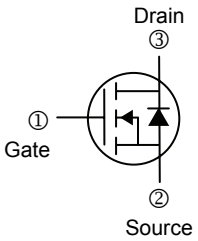


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.25	3.00	H	0.40 REF.	
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

PACKAGE INFORMATION

Weight: 0.07800g

MARKING CODE



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[3]	I_D @T_A=25℃	3.8	A
Continuous Drain Current[3]	I_D @T_A=70℃	3.1	A
Pulsed Drain Current[1,2]	I_{DM}	15	A
Total Power Dissipation	P_D @T_A=25℃	1.38	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	℃
Linear Derating Factor		0.01	W/℃

THERMAL DATA

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient[3] Max	$R_{\theta J\text{-}AMB}$	90	℃/W

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS} = 0, I_D = 250 uA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	1.8	V	V_{DS} = V_{GS}, I_D = 250 μA
Forward Transconductance	g_{fs}	-	11.7	-	S	V_{DS} = 5 V, I_D = 3.8 A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS} = ±12 V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS} = 24 V, V_{GS} = 0
Drain-Source Leakage Current(Tj=55℃)		-	-	5	uA	V_{DS} = 24 V, V_{GS} = 0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	60	mΩ	V_{GS} = 10 V, I_D = 3.8 A
		-	-	70		V_{GS} = 4.5 V, I_D = 3.5 A
		-	-	155		V_{GS} = 2.5 V, I_D = 1.0 A
Total Gate Charge[2]	Q_g	-	4.34	-	nC	I_D = 3.8 A V_{DS} = 15 V V_{GS} = 10 V
Gate-Source Charge	Q_{gs}	-	0.6	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	1.38	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	3.3	-	ns	V_{DS} = 15 V I_D = 3.8 A V_{GS} = 10 V R_G = 6 Ω
Rise Time	T_r	-	1	-		
Turn-off Delay Time	$T_{d(off)}$	-	21.7	-		
Fall Time	T_f	-	2.1	-		
Input Capacitance	C_{iss}	-	390	-	pF	V_{GS} = 0 V V_{DS} = 15 V f = 1.0 MHz
Output Capacitance	C_{oss}	-	54.5	-		
Reverse Transfer Capacitance	C_{rss}	-	41	-		

SOURCE-DRAIN DIODE

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.0	V	I_S = 1.0 A, V_{GS} = 0V
Continuous Source Current (Body Diode)	I_S	-	-	2.5	A	

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; 270°C/W when mounted on Min. copper pad.

CHARACTERISTIC CURVE

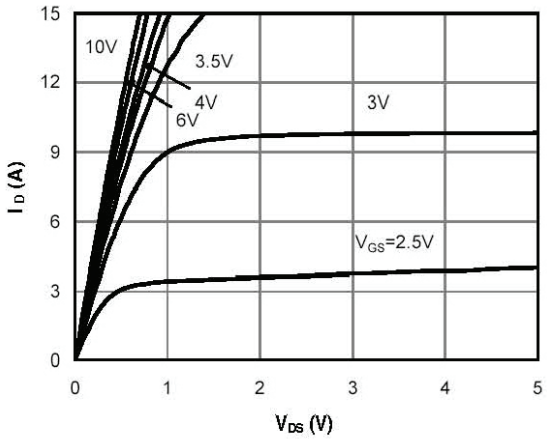


Fig 1. Typical Output Characteristics

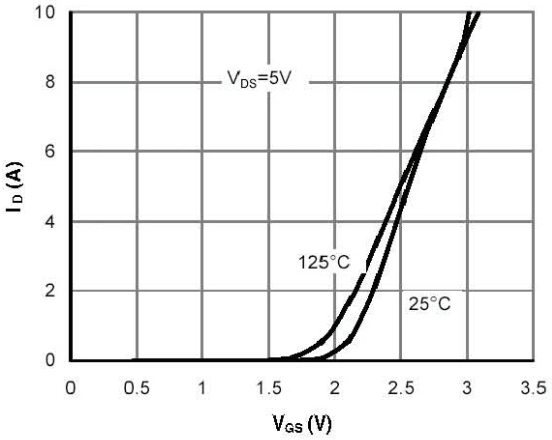


Fig 2. Transfer Characteristics

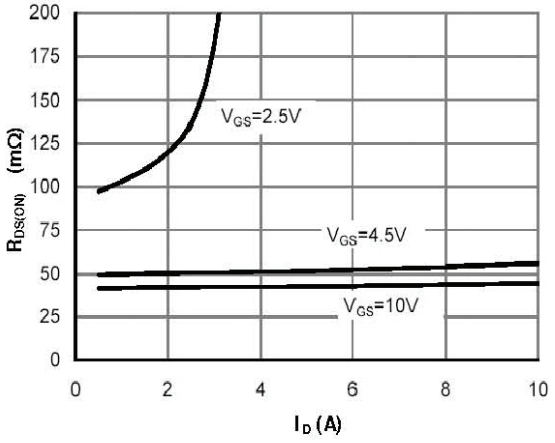


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

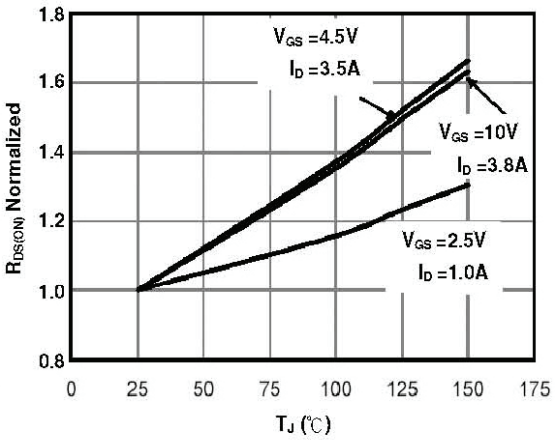


Fig 4. On-Resistance vs. Junction Temperature

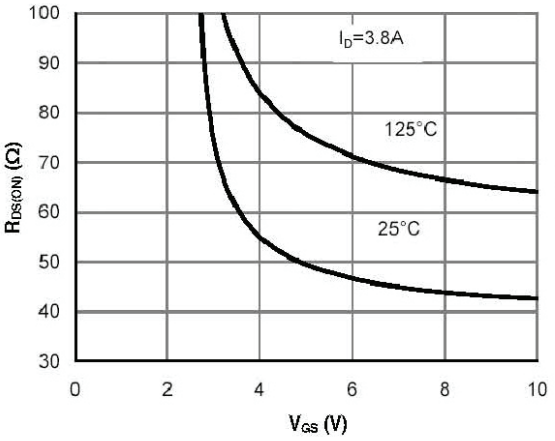


Fig 5. On-Resistance vs. Gate-Source Voltage

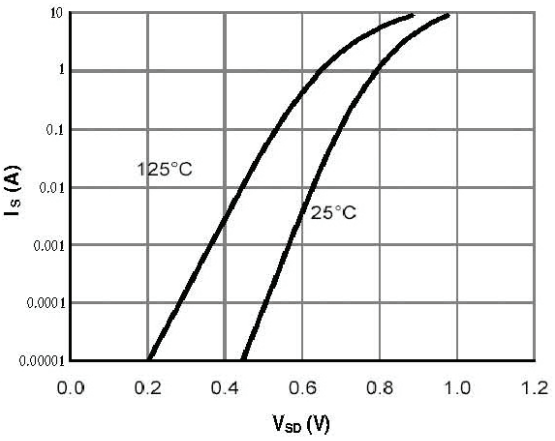


Fig 6. Body Diode Characteristics

CHARACTERISTIC CURVES (cont'd)

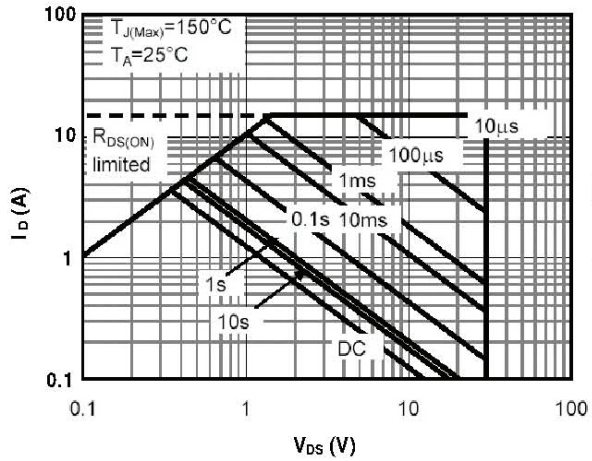


Fig 7. Maximum Safe Operating Area

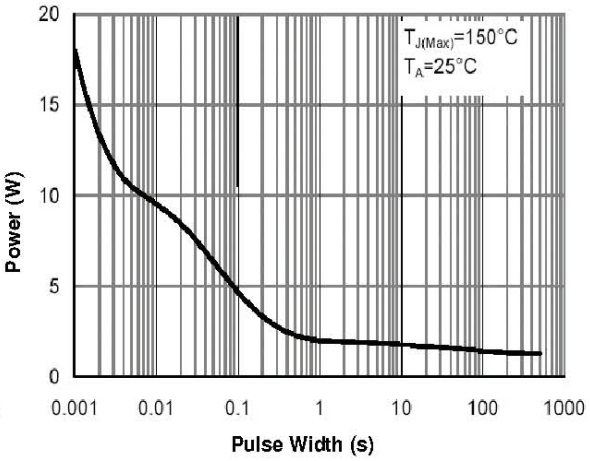


Fig 8. Single Pulse Power Rating Junction-to-Ambient

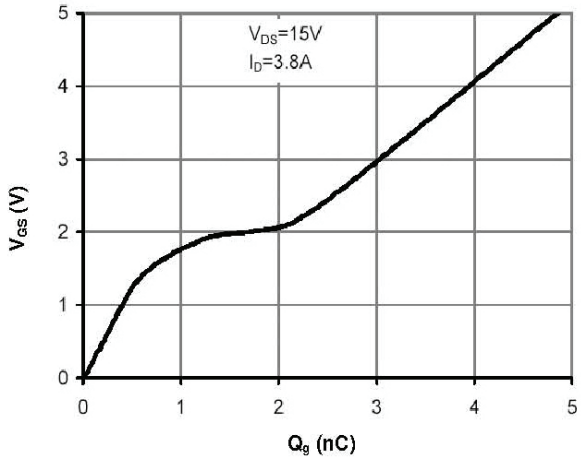


Fig 9. Gate Charge Characteristics

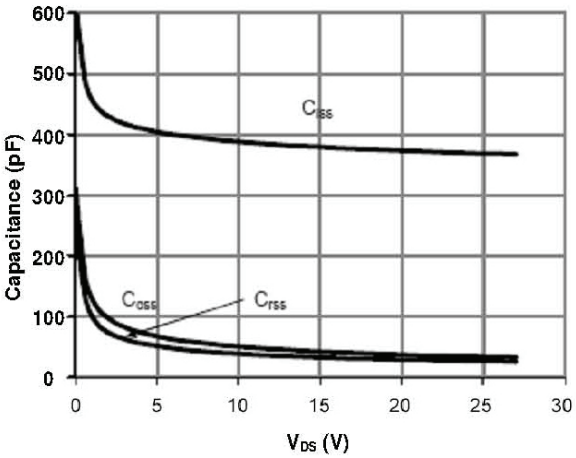


Fig 10. Typical Capacitance Characteristics

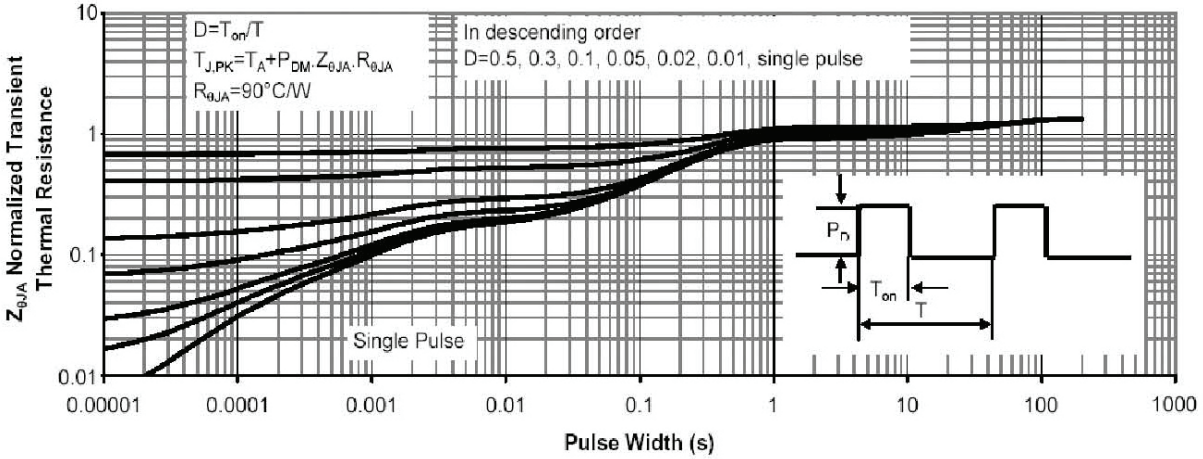


Fig 11. Normalized Maximum Transient Thermal Impedance