Elektronische Bauelemente

SMG3402

N-Ch Enhancement Mode Power MOSFET

4.6 A, 30 V, $R_{DS(ON)}$, 30 mΩ

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

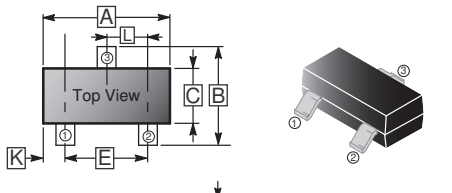
DESCRIPTIONS & FEATURES

- The SMG3402 uses advanced trench technology to provide excellent on-resistance.
- The device is suitable for use as a load switch or in PWM applications.
- Lower On-resistance

PACKAGE INFORMATION

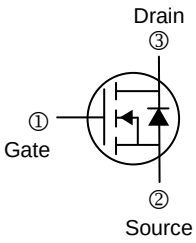
Weight: 0.07800g

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			

MARKING CODE



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[3]	I_D @T_A=25℃	4.6	A
Continuous Drain Current[3]	I_D @T_A=70℃	3.7	A
Pulsed Drain Current[1,2]	I_{DM}	16	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	-	2.5	V	V_{DS} = V_{GS}, I_D = 250 μA
Forward Transconductance	g_{fs}	-	5	-	S	V_{DS} = 5 V, I_D = 4.6 A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS} = ±20 V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS} = 30 V, V_{GS} = 0
Drain-Source Leakage Current(Tj=55℃)		-	-	5	uA	V_{DS} = 24 V, V_{GS} = 0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	-	30	mΩ	V_{GS} = 10 V, I_D = 4.6 A
		-	-	42		V_{GS} = 4.5 V, I_D = 4.0 A
Total Gate Charge[2]	Q_g	-	15.8	-	nC	I_D = 4.6 A V_{DS} = 15 V V_{GS} = 10 V
Gate-Source Charge	Q_{gs}	-	2	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	3	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	4.8	-	ns	V_{DS} = 15 V I_D = 1 A V_{GS} = 10 V R_G = 6 Ω R_L = 15 Ω
Rise Time	T_r	-	3.9	-		
Turn-off Delay Time	$T_{d(off)}$	-	27.7	-		
Fall Time	T_f	-	5.5	-		
Input Capacitance	C_{iss}	-	782	-	pF	V_{GS} = 0 V V_{DS} = 15 V f = 1.0 MHz
Output Capacitance	C_{oss}	-	135	-		
Reverse Transfer Capacitance	C_{rss}	-	93	-		

SOURCE-DRAIN DIODE

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.2	V	I_S= 1.25 A, V_{GS}=0V

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

CHARACTERISTIC CURVE

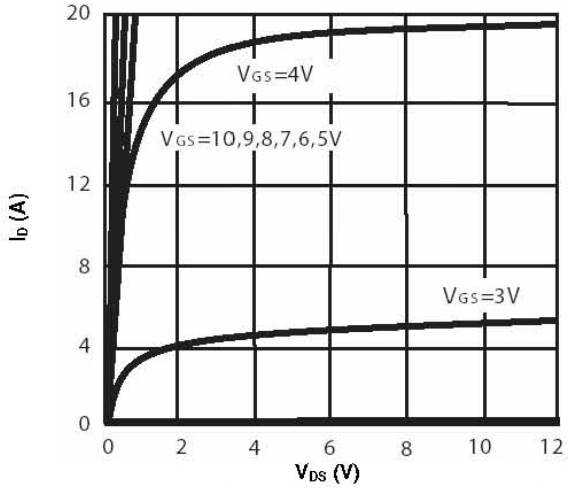


Fig 1. Typical Output Characteristics

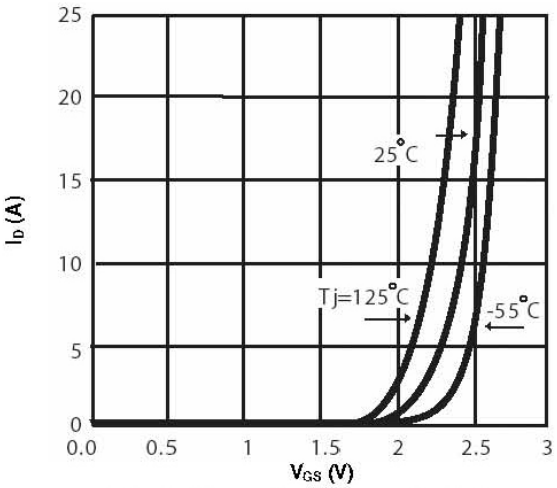


Fig 2. Transfer Characteristics

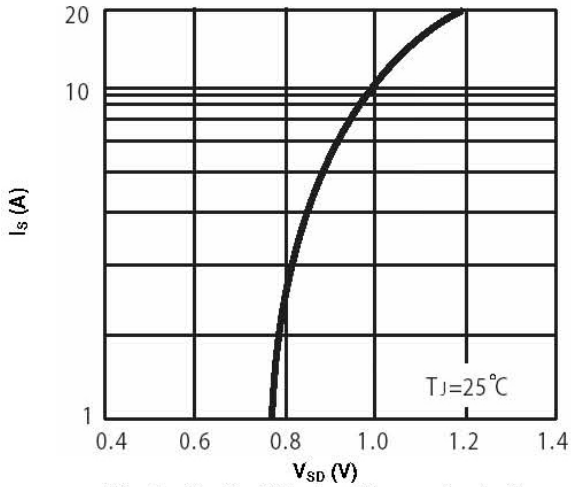


Fig 3. Body Diode Characteristics

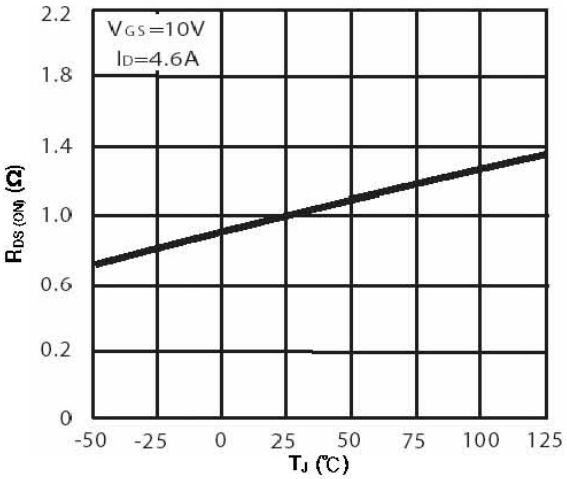


Fig 4. On-Resistance vs. Junction Temperature

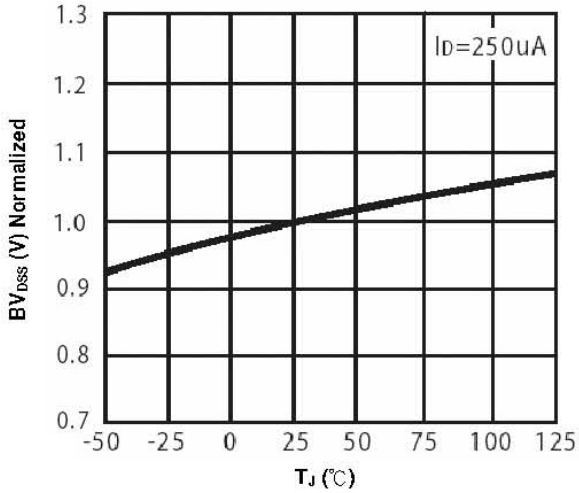


Fig 5. Breakdown Voltage vs. Junction Temperature

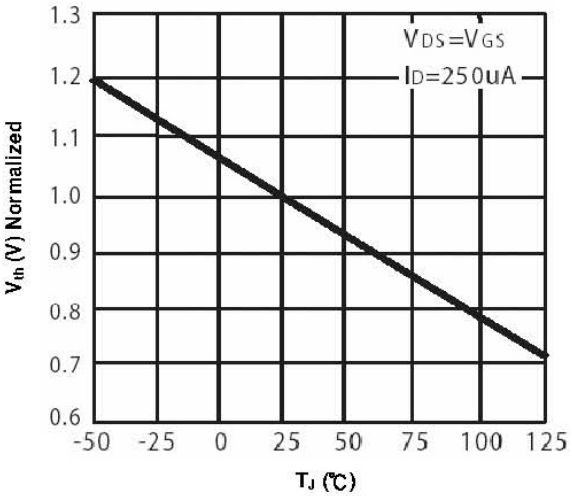


Fig 6. Gate Threshold Voltage vs. Junction Temperature

CHARACTERISTIC CURVES (cont'd)

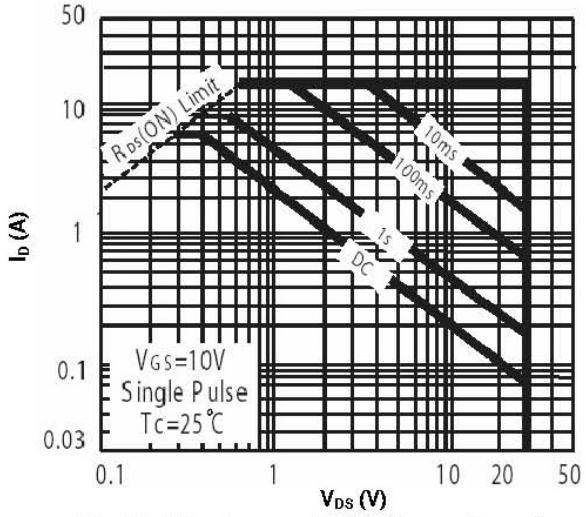


Fig 7. Maximum Safe Operating Area

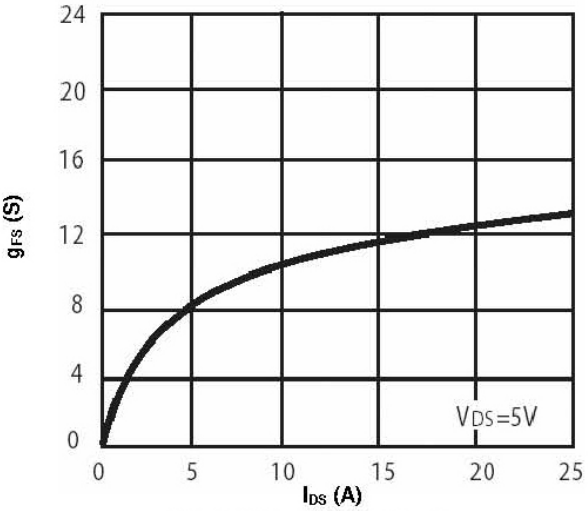


Fig 8. Transconductance vs. Drain Current

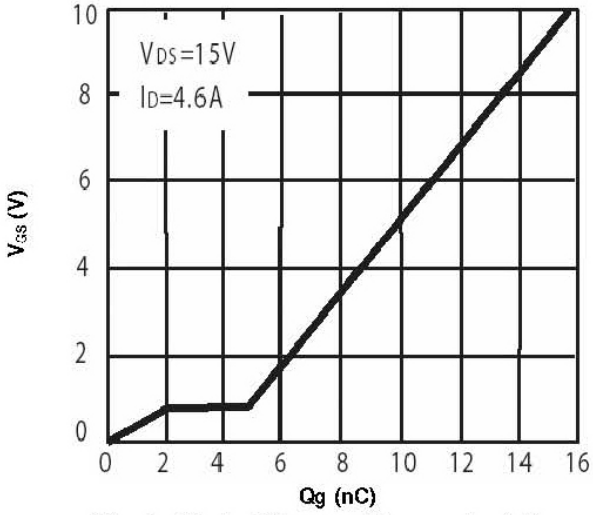


Fig 9. Gate Charge Characteristics

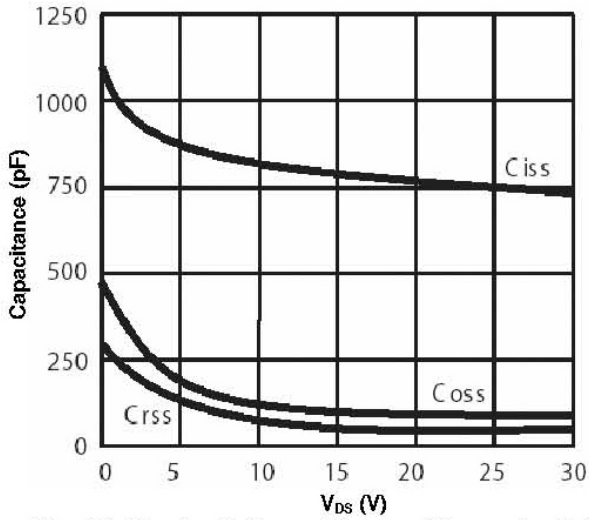


Fig 10. Typical Capacitance Characteristics

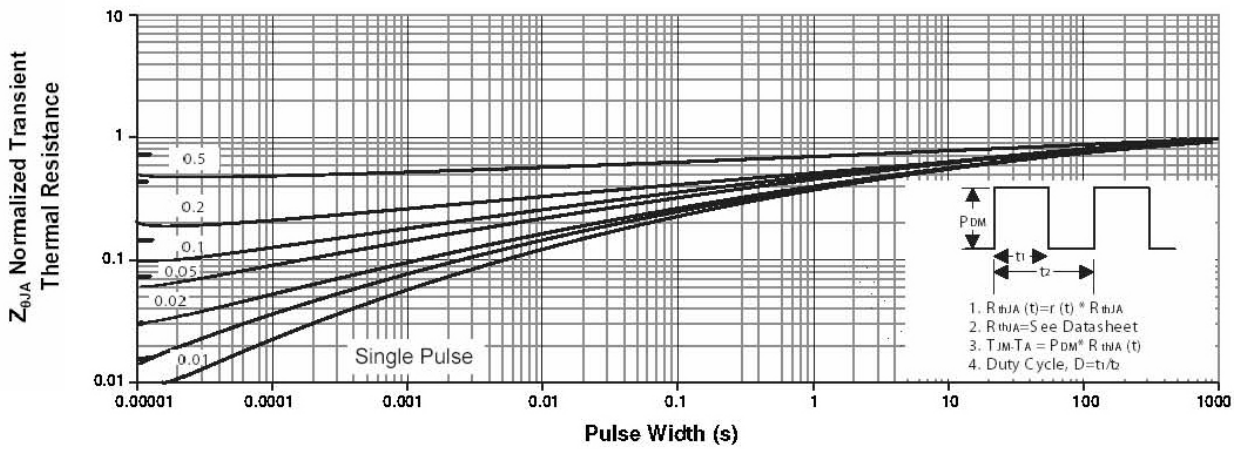


Fig 11. Normalized Maximum Transient Thermal Impedance