

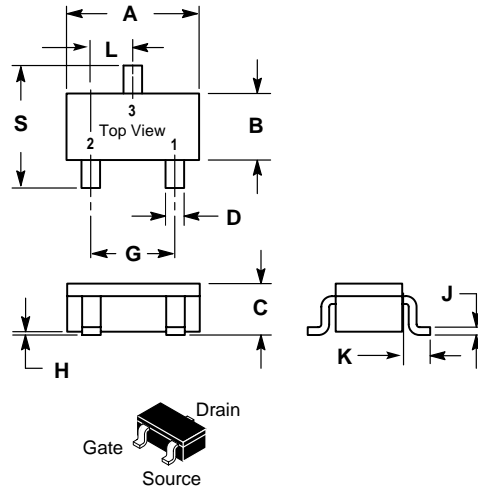
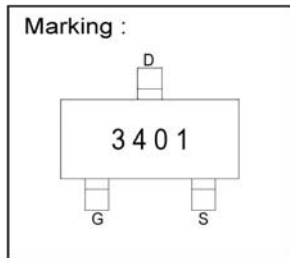
A suffix of "-C" specifies halogen & lead-free

Description

The SMG3401 uses advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device. The SMG3401 is universally used for all commercial-industrial applications.

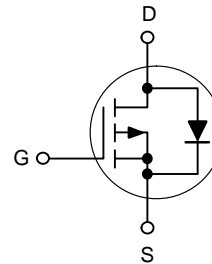
Features

- * Small Package Outline
- * Lower Gate Charge
- * RoHS Compliant



SC-59		
Dim	Min	Max
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80

All Dimension in mm



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	$I_D @ T_A=25^\circ C$	-4.2	A
Continuous Drain Current ³	$I_D @ T_A=70^\circ C$	-3.5	A
Pulsed Drain Current ^{1,2}	I_{DM}	30	A
Total Power Dissipation	$P_D @ T_A=25^\circ C$	1.38	W
Linear Derating Factor		0.01	W/ $^\circ C$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55~+150	$^\circ C$

Thermal Data

Parameter	Symbol	Ratings	Unit
Thermal Resistance Junction-ambient ³	Max. R_{thj-a}	90	$^\circ C/W$

Electrical Characteristics(T_j=25 °C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV _{DSS}	-30	-	-	V	V _{GS} =0V, I _D =-250uA
Gate Threshold Voltage	V _{GS(th)}	-0.7	-	-1.3	V	V _{DS} =V _{GS} , I _D =-250uA
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} =±12V
Drain-Source Leakage Current (T _j =25°C)	I _{DSS}	-	-	-1	uA	V _{DS} =-24V, V _{GS} =0
Drain-Source Leakage Current (T _j =55°C)		-	-	-5	uA	V _{DS} =-24V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	50	mΩ	V _{GS} =-10V, I _D =-4.2A
		-	-	65		V _{GS} =-4.5V, I _D =-4.0A
		-	-	120		V _{GS} =-2.5V, I _D =-1.0A
Total Gate Charge ²	Q _g	-	9.4	-	nC	I _D =-4A V _{DS} =-15V V _{GS} =-4.5V
Gate-Source Charge	Q _{gs}	-	2	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	3	-		
Turn-on Delay Time ²	T _{d(ON)}	-	6.3	-	nS	V _{DS} =-15V V _{GS} =-10V R _G =6 Ω R _L =3.6 Ω
Rise Time	T _r	-	3.2	-		
Turn-off Delay Time	T _{d(OFF)}	-	38.2	-		
Fall Time	T _f	-	12	-		
Input Capacitance	C _{iss}	-	954	-	pF	V _{GS} =0V V _{DS} =-15V f=1.0MHz
Output Capacitance	C _{oss}	-	115	-		
Reverse Transfer Capacitance	C _{rss}	-	77	-		
Gate Resistance	R _g	-	6	-	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward On Voltage ²	V _{SD}	-	-	-1.0	V	I _S =-1.0A, V _{GS} =0V.
Reverse Recovery Time ²	T _{rr}	-	20.2	-	nS	I _S =-4A, V _{GS} =0 dI/dt=100A/uS
Reverse Recovery Charge	Q _{rr}	-	11.2	-	nC	
Continuous Source Current (Body Diode)	I _S	-	-	-2.2	A	V _D =V _G =0V, V _S =-1.0V

Notes: 1.Pulse width limited by Max. junction temperature.

2.Pulse width ≤300us, dutycycle ≤2%.

3.Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on min. copper pad.

Characteristics Curve

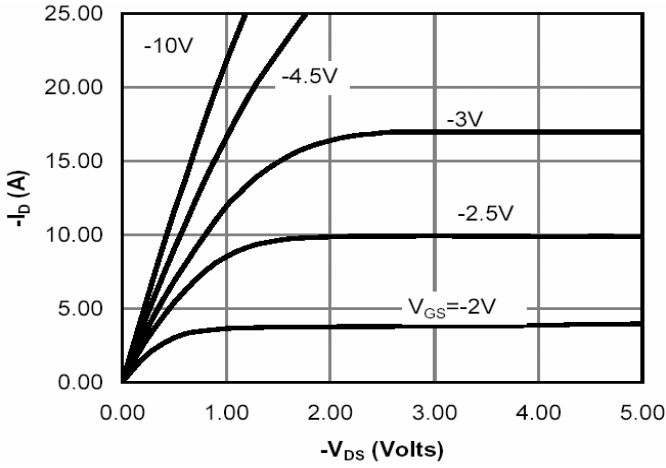


Fig 1. Typical Output Characteristics

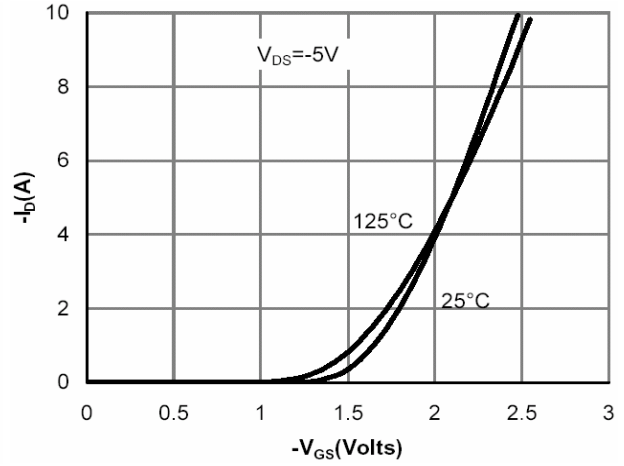


Fig 2. Typical Output Characteristics

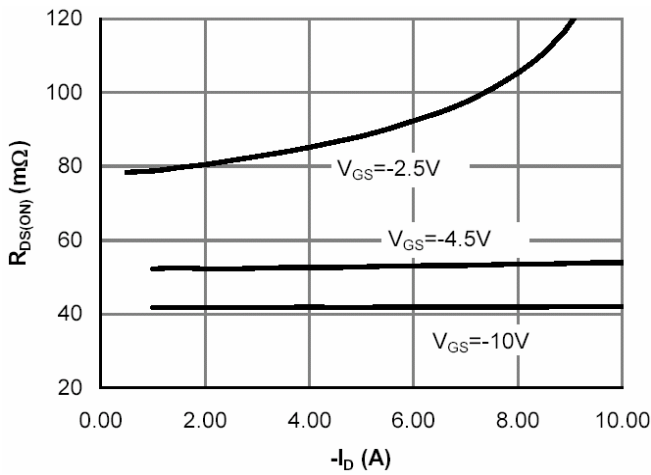


Fig 3. On-Resistance v.s. Gate Voltage

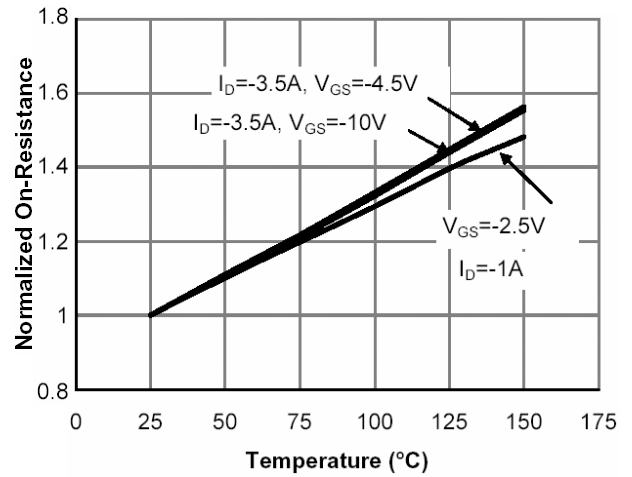


Fig 4. Normalized On-Resistance v.s. Junction Temperature

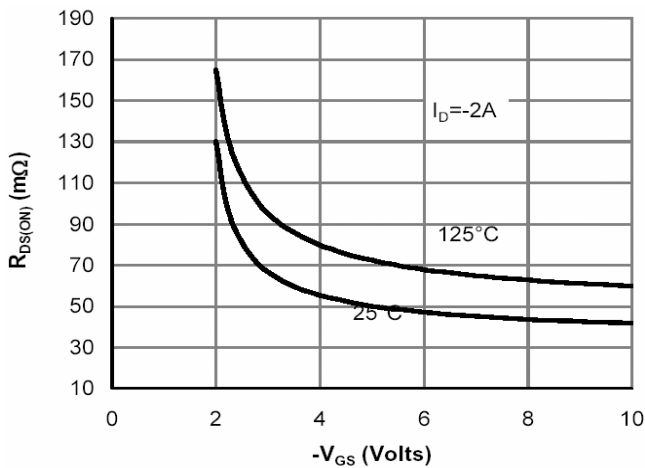


Fig 5. Forward Characteristics of Reverse Diode

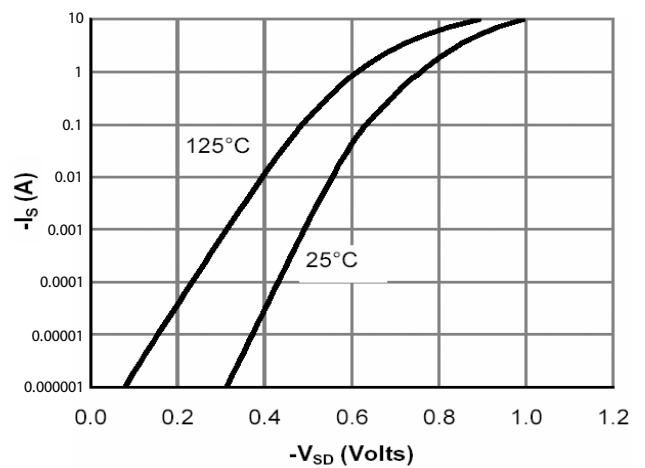


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

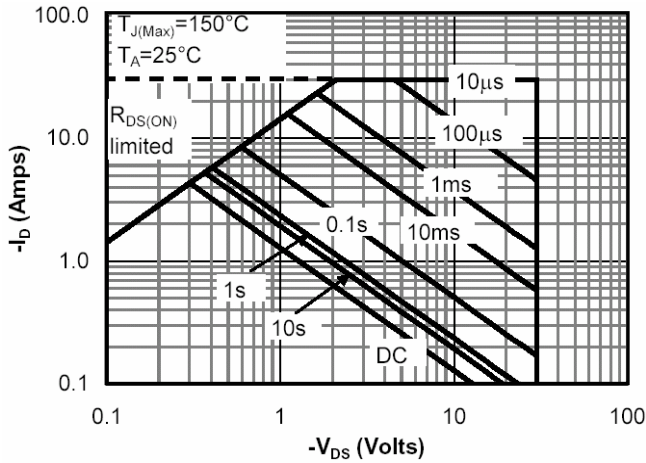


Fig 7. Gate Charge Characteristics

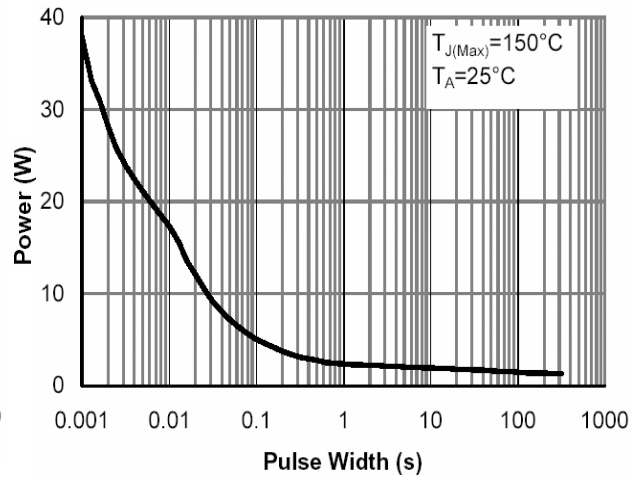


Fig 8. Typical Capacitance Characteristics

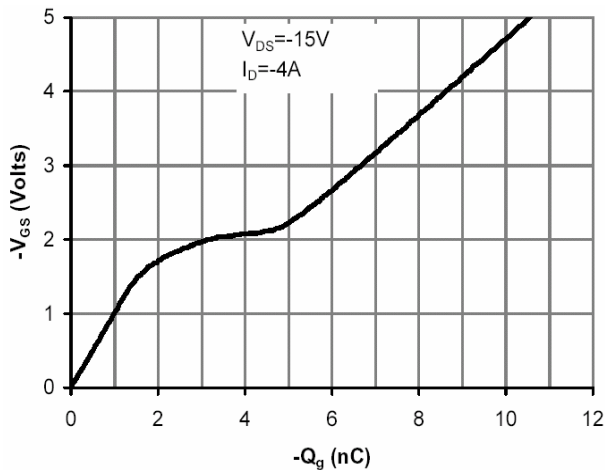


Fig 9. Maximum Safe Operating Area

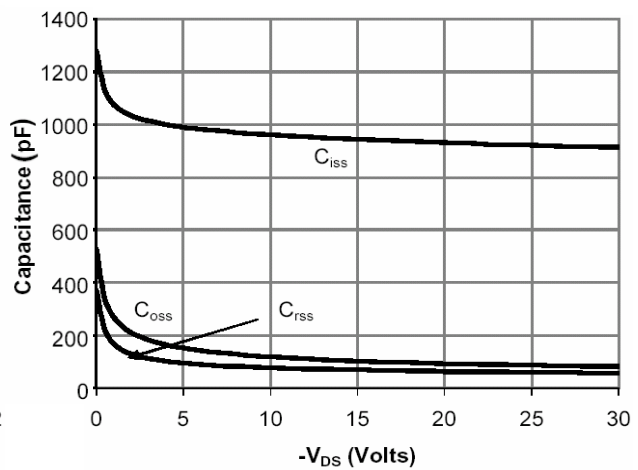


Fig 10. Effective Transient Thermal Impedance

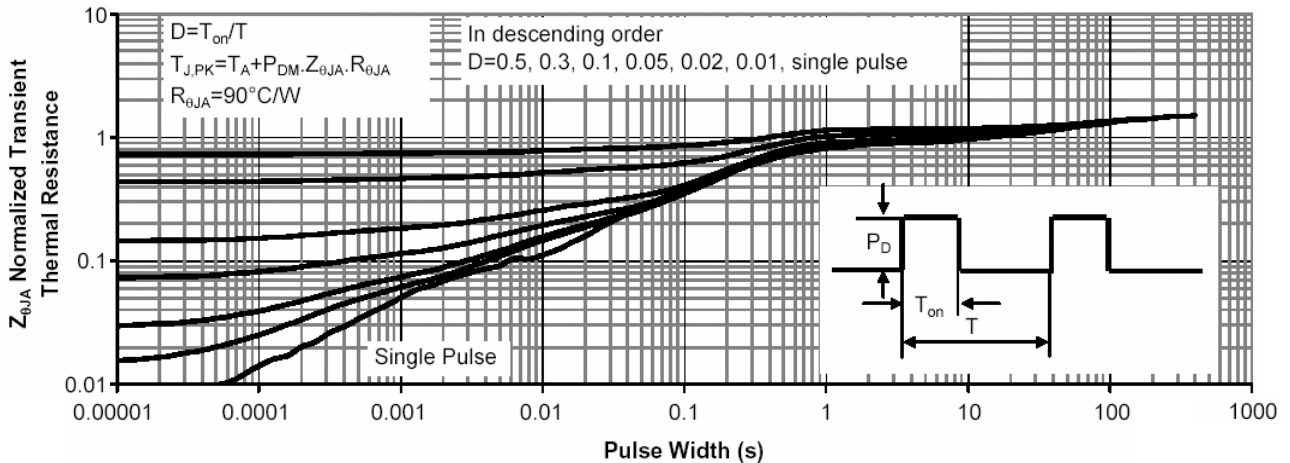


Fig 11. Normalized Maximum Transient Thermal Impedance