Elektronische Bauelemente

SMG3401

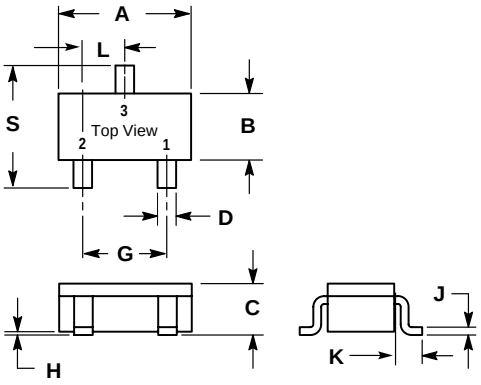
-4.2A, -30V,$R_{DS(ON)}$ 50mΩ

P-Channel Enhancement Mode Power Mos.FET

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

Description

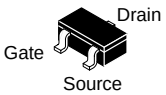
The SMG3401 uses advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device.
The SMG3401 is universally used for all commercial-industrial applications.

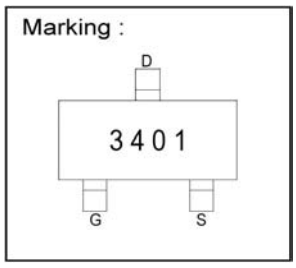


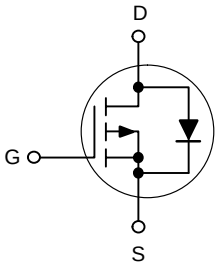
SC-59		
Dim	**Min**	**Max**
A	2.70	3.10
B	1.40	1.60
C	1.00	1.30
D	0.35	0.50
G	1.70	2.10
H	0.00	0.10
J	0.10	0.26
K	0.20	0.60
L	0.85	1.15
S	2.40	2.80
All Dimension in mm		

Features

* Small Package Outline
* Lower Gate Charge
* RoHS Compliant







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°C	-4.2	A
Continuous Drain Current [3]	I_D@T_A=70°C	-3.5	A
Pulsed Drain Current[1,2]	I_{DM}	30	A
Total Power Dissipation	P_D@T_A=25°C	1.38	W
Linear Derating Factor		0.01	W/°C
Operating Junction and Storage Temperature Range	Tj, Tstg	-55~+150	°C

Thermal Data

Parameter		Symbol	Ratings	Unit
Thermal Resistance Junction-ambient [3]	Max.	Rthj-a	90	°C/W

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SMG3401

-4.2A, -30V, $R_{DS(ON)}$ 50mΩ

P-Channel Enhancement Mode Power Mos.FET

Electrical Characteristics(Tj=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 (Tj=25℃)	I_{DSS}	–	–	-1	uA	V_{DS}=-24V,V_{GS}=0
Drain-Source Leakage Current (Tj=55℃)		–	–	-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]	Qg	–	9.4	–	nC	I_D=-4A V_{DS}=-15V V_{GS}=-4.5V
Gate-Source Charge	Qgs	–	2	–		
Gate-Drain ("Miller") Charge	Qgd	–	3	–		
Turn-on Delay Time[2]	$T_{d(ON)}$	–	6.3	–	nS	V_{DS}=-15V V_{GS}=-10V R_G=6Ω R_L=3.6Ω
Rise Time	Tr	–	3.2	–		
Turn-off Delay Time	$T_{d(Off)}$	–	38.2	–		
Fall Time	T_f	–	12	–		
Input Capacitance	Ciss	–	954	–	pF	V_{GS}=0V V_{DS}=-15V f=1.0MHz
Output Capacitance	Coss	–	115	–		
Reverse Transfer Capacitance	Crss	–	77	–		
Gate Resistance	Rg	–	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]	Trr	–	20.2	–	nS	Is=-4A, V_{GS}=0 dl/dt=100A/uS
Reverse Recovery Charge	Qrr	–	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 in^2 copper pad of FR4 board; 270°C/W when mounted on min. copper pad.

Characteristics Curve

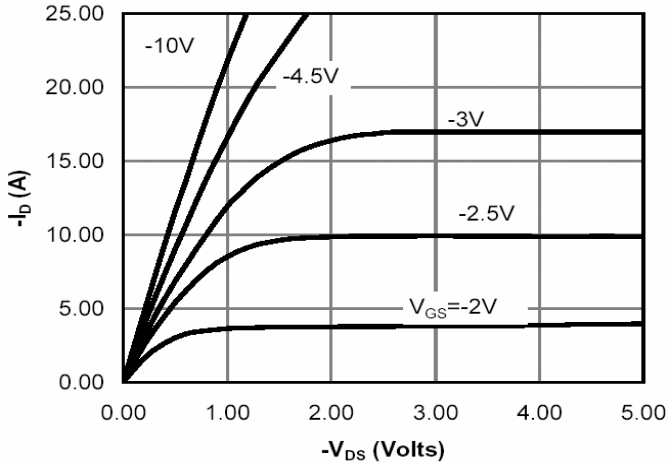


Fig 1. Typical Output Characteristics

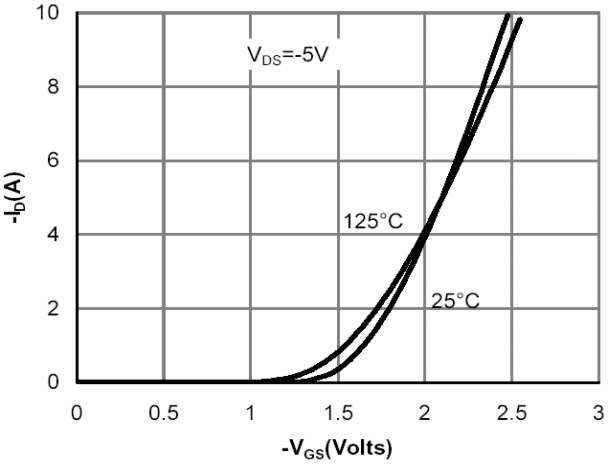


Fig 2. Typical Output Characteristics

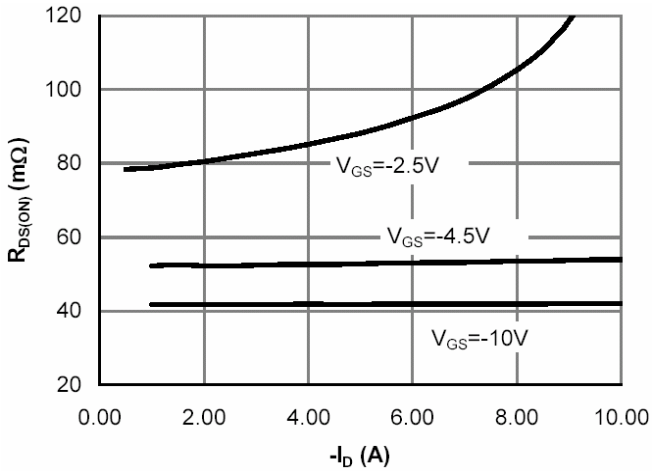


Fig 3. On-Resistance v.s. Gate Voltage

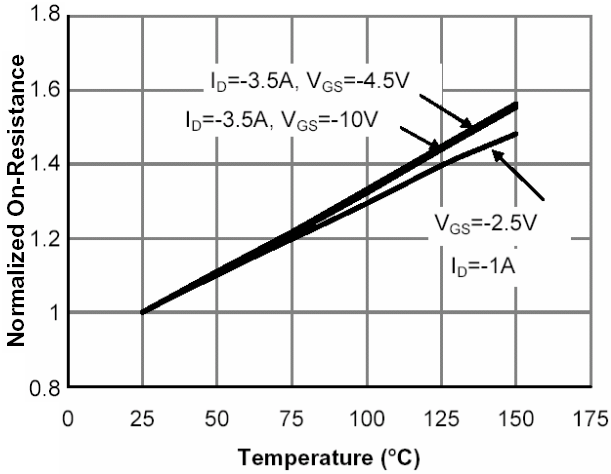


Fig 4. Normalized On-Resistance v.s. Junction Temperature

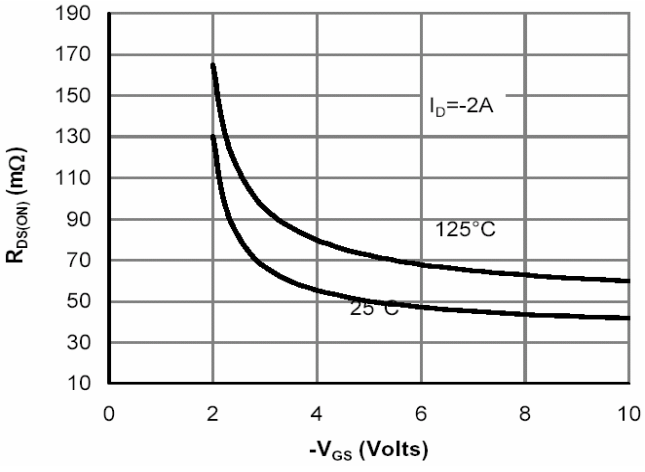


Fig 5. Forward Characteristics of Reverse Diode

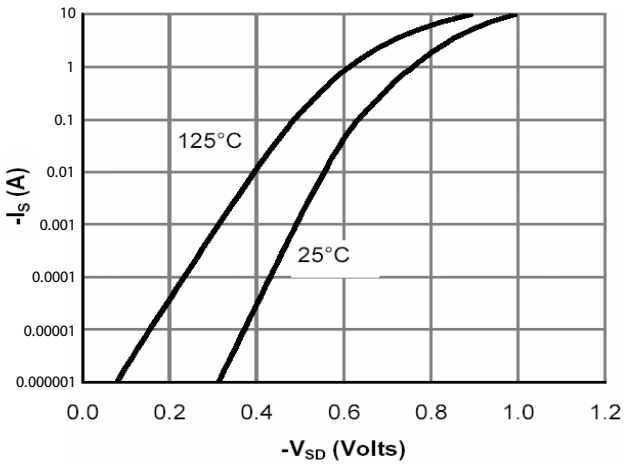
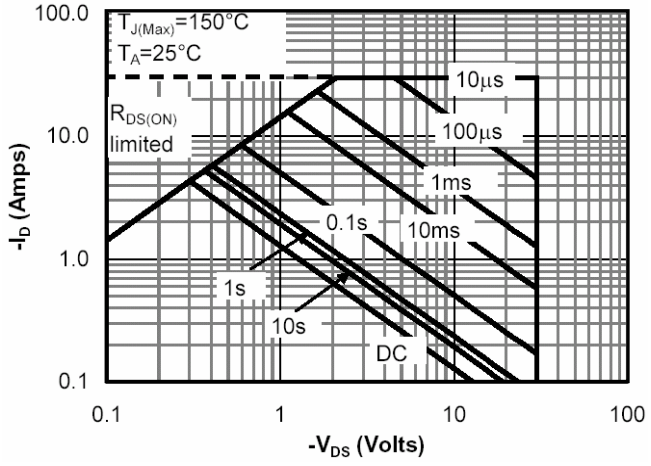


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



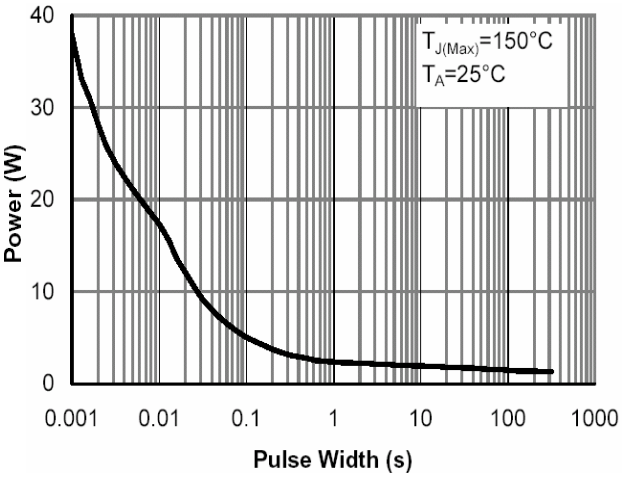
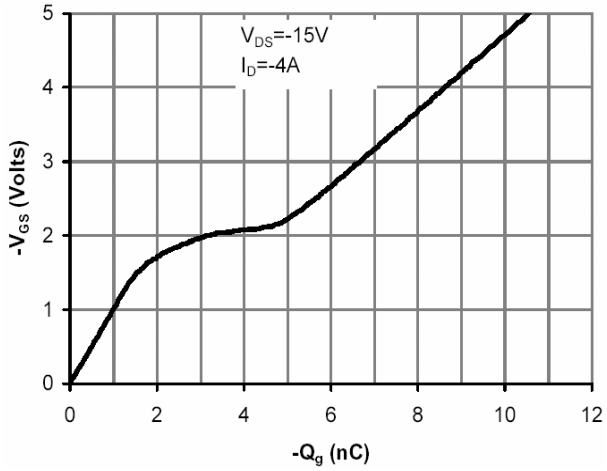


Fig 7. Gate Charge Characteristics

Fig 8. Typical Capacitance Characteristics



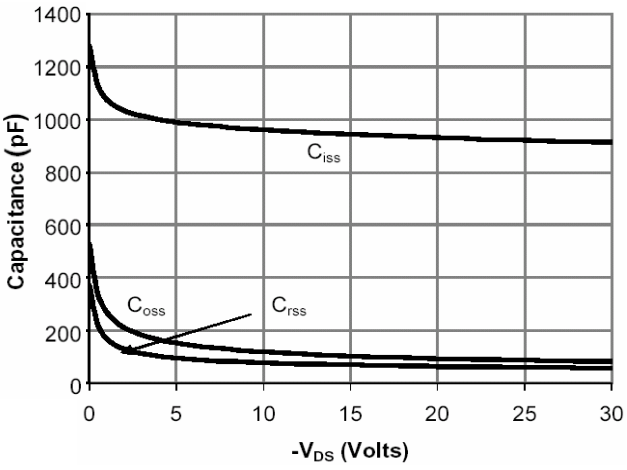


Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

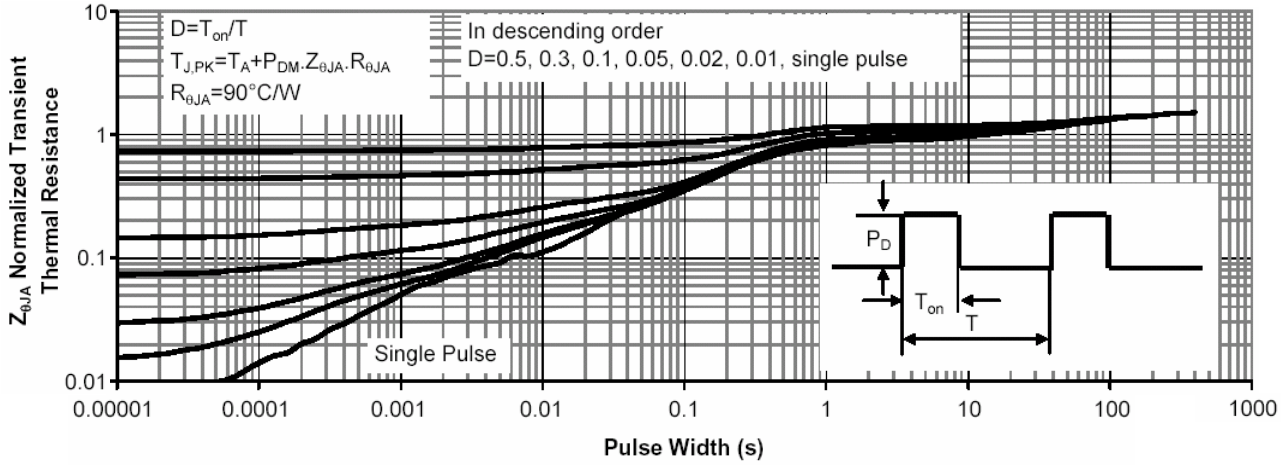


Fig 11. Normalized Maximum Transient Thermal Impedance