GSM02N15T

150V N Channel MOSFET

Product Description

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

These devices are well suited for high efficiency fast switching applications.

Features

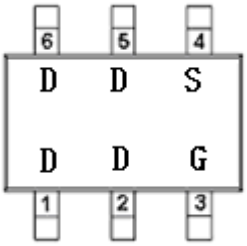
- 150V,1A, RDS(ON) =480mΩ@VGS = 10V
- Improved dv/dt capability
- Fast switching
- TSOP-6 package design

Applications

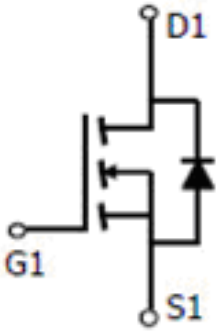
- Networking
- LED applications
- Load Switch

Packages & Pin Assignments

GSM02N15TSF (TSOP-6)

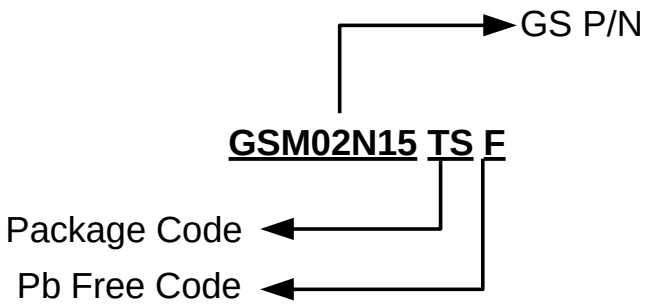


Pin	Symbol	Description
1	D	Drain
2	D	Drain
3	G	Gate
4	S	Source
5	D	Drain
6	D	Drain



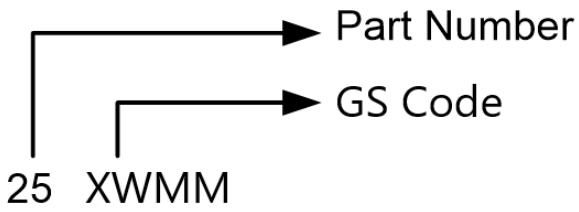
n-channel

Ordering Information



Part Number	Package	Quantity Reel
GSM02N15TSF	TSOP-6	3000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		150	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_A=25℃	1.0	A
		T_A=100℃	0.21	
I_{DM}	Pulsed Drain Current (note 1)		5.6	A
P_D	Power Dissipation (T_A=25℃)		1.14	W
	Power Dissipation (T_A=100℃)		0.23	
T_J	Operating Junction Temperature Range		-50 to +150	℃
T_{STG}	Storage Temperature Range		-50 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		110	℃/W

Electrical Characteristics

(T_J=25ºC unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	150			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=150,V_{GS}=0V T_J=25ºC			1	μA
		V_{DS}=120V,V_{GS}=0V, T_J=125ºC			10	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=1A		380	480	mΩ
		V_{GS}=6V,I_D=0.5A		410	520	
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=1A		1.7		S
V_{SD}	Diode Forward Voltage	I_S=1A,V_{GS}=0V T_J=25ºC			1	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V,f=1MHz		350	700	pF
C_{oss}	Output Capacitance			34	68	
C_{rss}	Reverse Transfer Capacitance			26	52	
Q_g	Total Gate Charge (Note 2,3)	V_{DS}=75V, V_{GS}=10V,I_D=1.0A		8.1	16	nC
Q_{gs}	Gate-Source Charge (Note 2,3)			2	4	
Q_{gd}	Gate-Drain Charge (Note 2,3)			2.7	5.4	
$t_{d(on)}$	Turn-On Time (Note 2,3)	V_{DD}=75V, R_G=10Ω ,I_D=1.0A, V_{GS}=10V		8.2	16	ns
T_r				5.8	12	
$t_{d(off)}$	Turn-Off Time (Note 2,3)			14.8	28	
T_f				8.0	16	

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

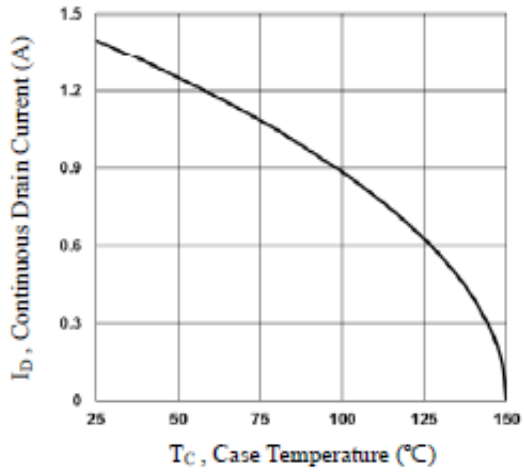


Fig.1 Continuous Drain Current vs. T_c

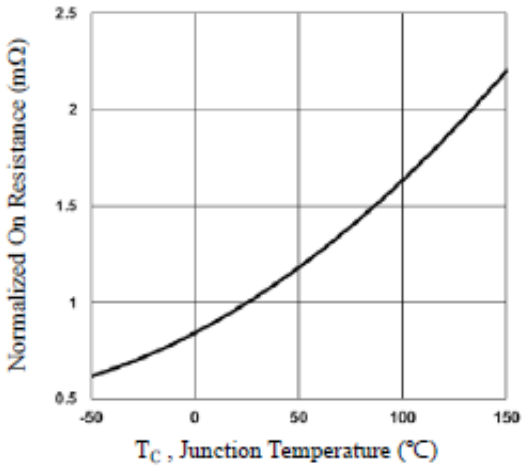


Fig.2 Continuous Drain Current vs. T_c

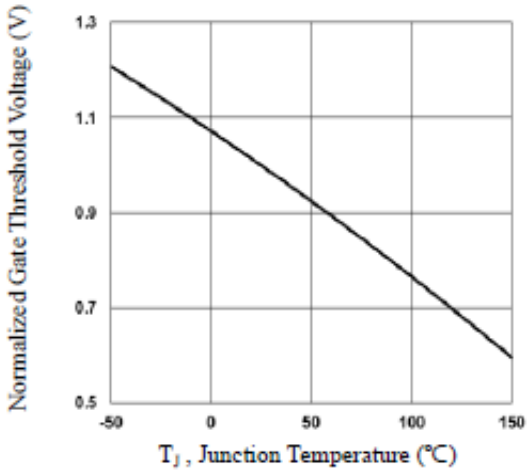


Fig.3 Normalized V_{th} vs. T_J

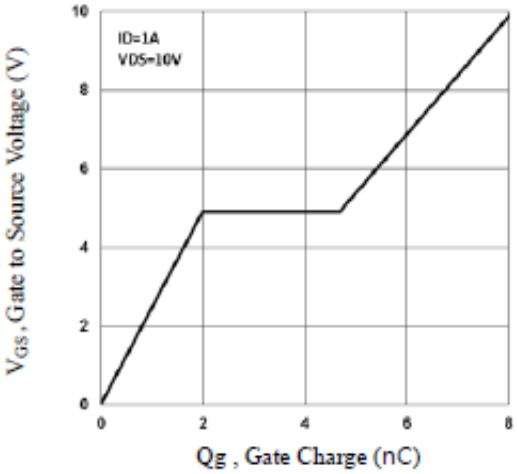


Fig.4 Gate Charge Waveform

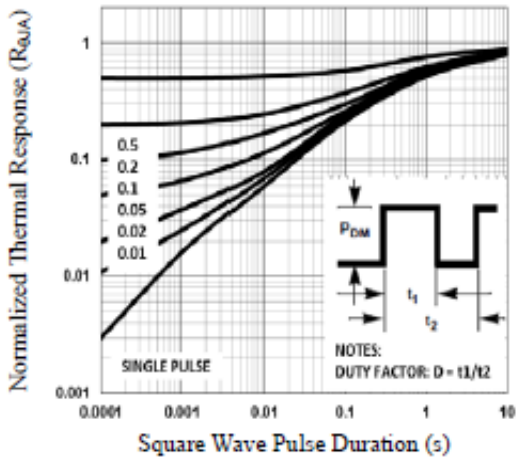


Fig.5 Normalized Transient Impedance

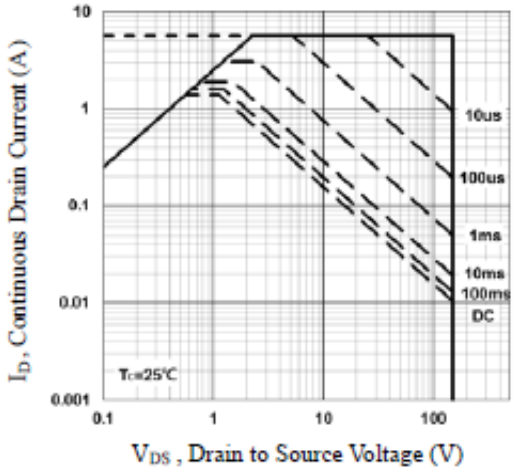
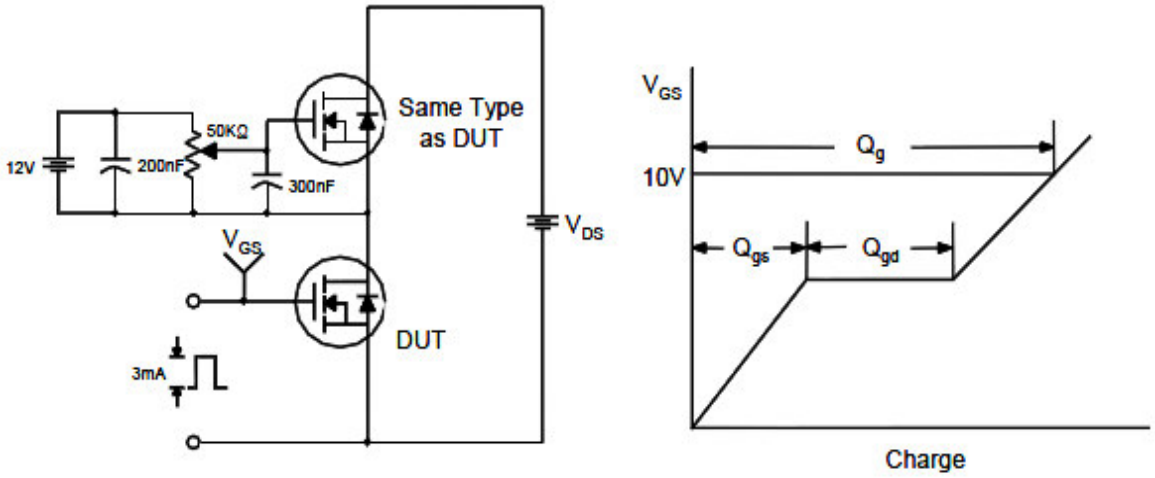


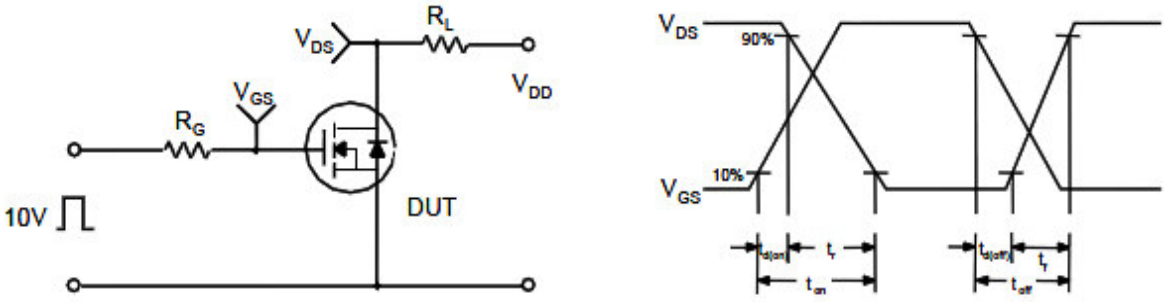
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (continue)

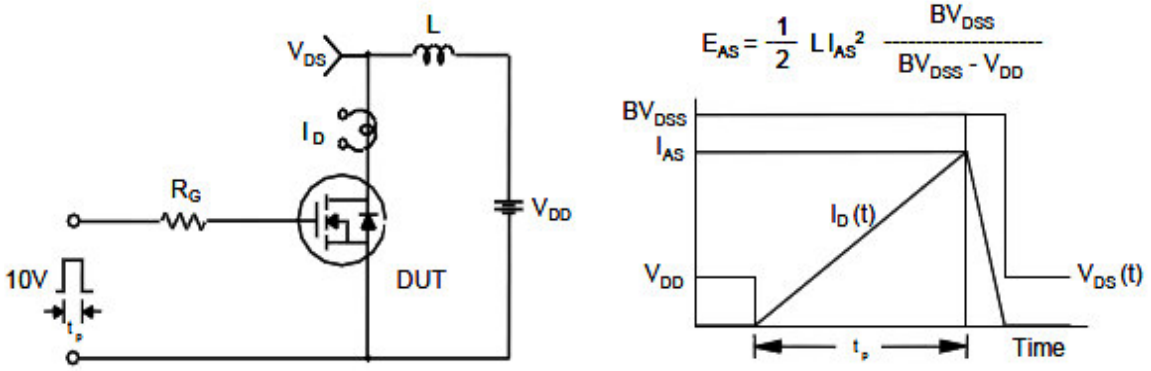
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

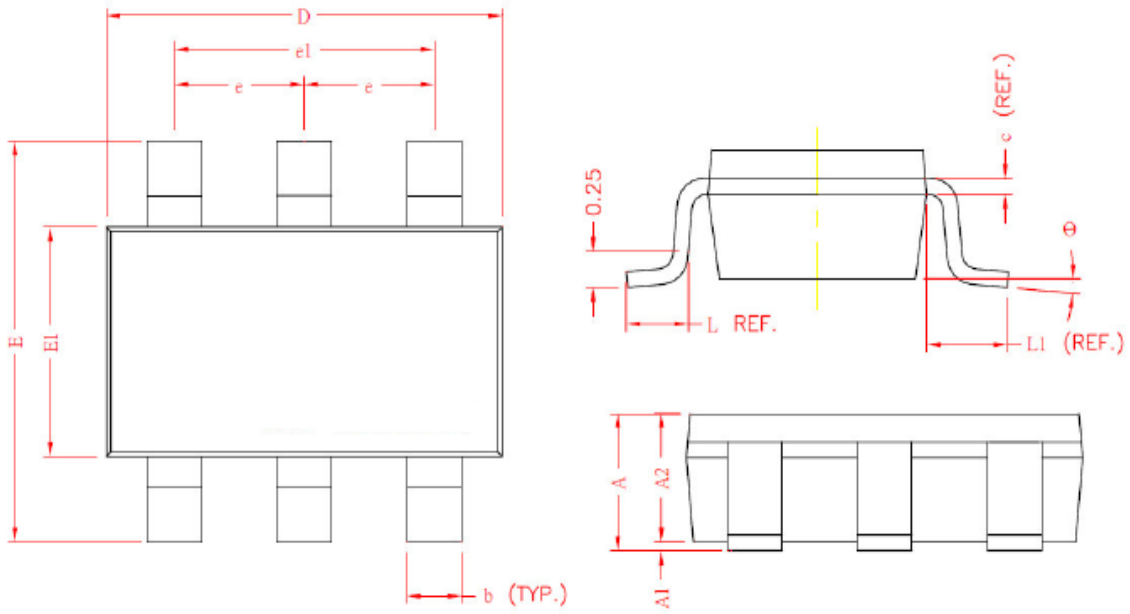


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

TSOP-6



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	-	1.45	-	0.057
A1	0.00	0.10	0.000	0.004
A2	0.70	1.35	0.028	0.053
c	0.12 (REF)		0.005 (REF)	
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.118
E1	1.40	1.80	0.055	0.071
L	0.45 (REF)		0.018 (REF)	
L1	0.60 (REF)		0.024 (REF)	
θ	0°	10°	0°	10°
b	0.30	0.50	0.012	0.020
e	0.95 (REF)		0.037 (REF)	
e1	1.90 (REF)		0.075 (REF)	

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