

GSM02N15

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.

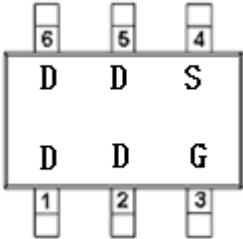
Features

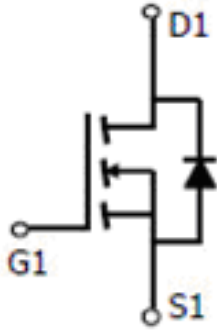
- 150V, 1.4A, $R_{DS(ON)} = 480m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- TSOP-6 package design

Applications

- Portable Equipment
- Battery Powered System
- Load Switch

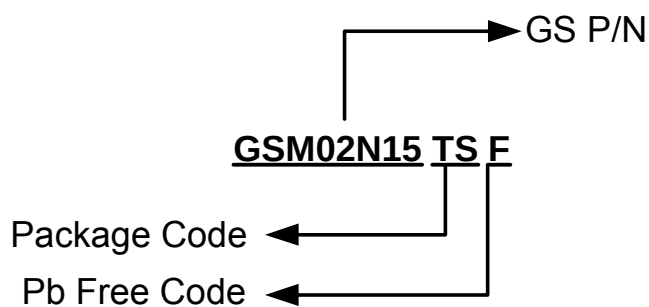
Packages & Pin Assignments

GSM02N15TSF (TSOP-6)		
		
Pin	Symbol	Description
1	D	Drain
2	D	Drain
3	G	Gate
4	S	Source
5	D	Drain
6	D	Drain



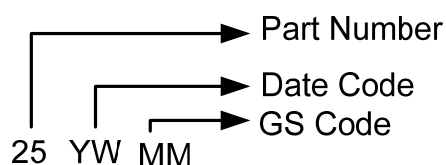
n-channel

Ordering Information



Part Number	Package	Quantity Reel
GSM02N15TSF	TSOP-6	3000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C 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 _C =25°C	1.4	A
		T _C =100°C	0.88	
I _{DM}	Pulsed Drain Current (note 1)		5.6	A
P _D	Power Dissipation (T _C =25°C)		1.56	W
	Power Dissipation (Derate above 25°C)		0.012	W/°C
T _J	Operating Junction Temperature Range		-55 to +150	°C
T _{STG}	Storage Temperature Range		-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		80	°C/W

Electrical Characteristics

(T_A=25°C 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	
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 =25°C			1	uA
		V _{DS} =120V,V _{GS} =0V, T _J =125°C			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 =1.0A,V _{GS} =0V T _J =25°C			1	V
Dynamic						
C _{iSS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V,f=1MHz		350		pF
C _{oSS}	Output Capacitance			34		
C _{rSS}	Reverse Transfer Capacitance			26		
Q _g	Total Gate Charge (Note 2,3)	V _{DS} =75V, V _{GS} =10V,I _D =1.0A		8.1		nC
Q _{gs}	Gate-Source Charge (Note 2,3)			2.0		
Q _{gd}	Gate-Drain Charge (Note 2,3)			2.7		
t _{d(on)}	Turn-On Time (Note 2,3)	V _{DD} =75V, R _G =10Ω ,I _D =1.0A, V _{GS} =10V		8.2		ns
T _r				5.8		
t _{d(off)}	Turn-Off Time (Note 2,3)			14.8		
T _f				8.0		

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

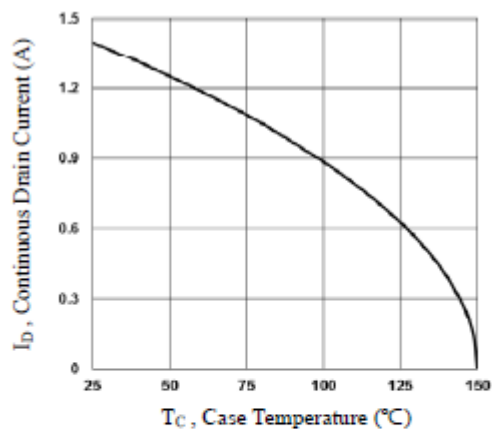


Fig.1 Continuous Drain Current vs. T_C

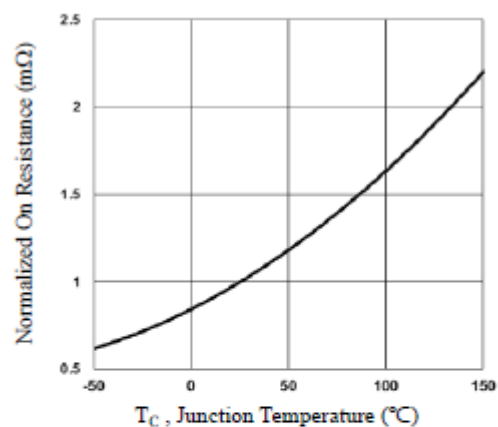


Fig.2 Continuous Drain Current vs. T_C

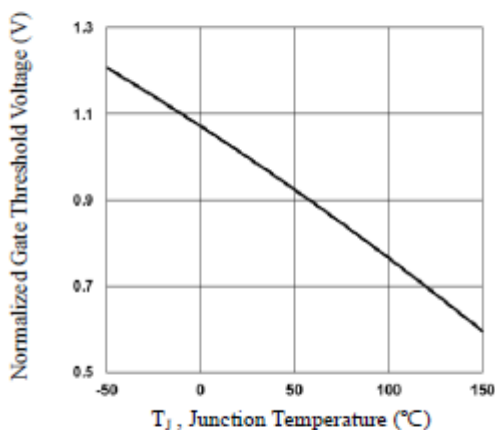


Fig.3 Normalized V_{th} vs. T_J

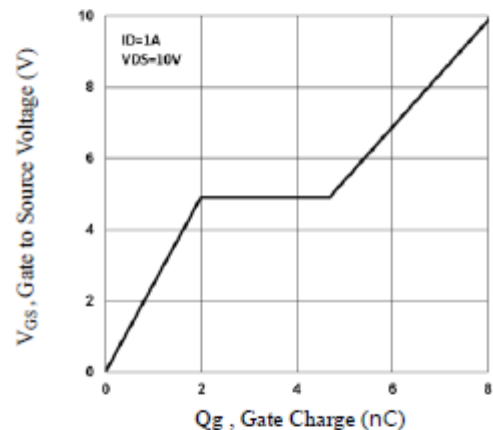


Fig.4 Gate Charge Waveform

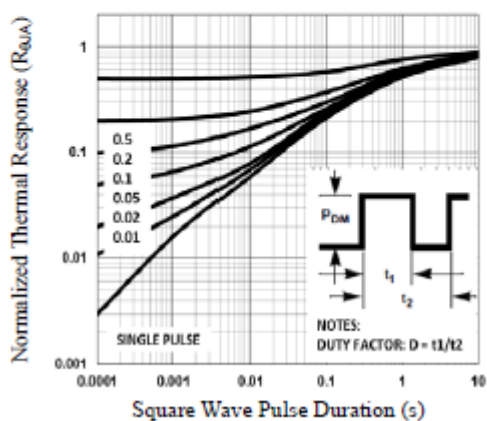


Fig.5 Normalized Transient Impedance

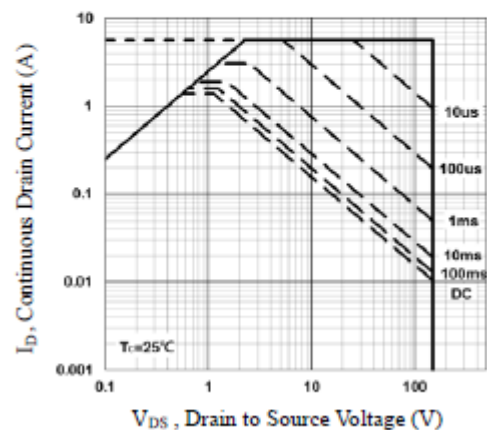
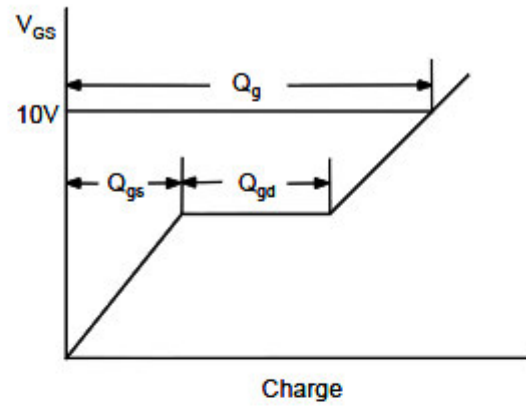
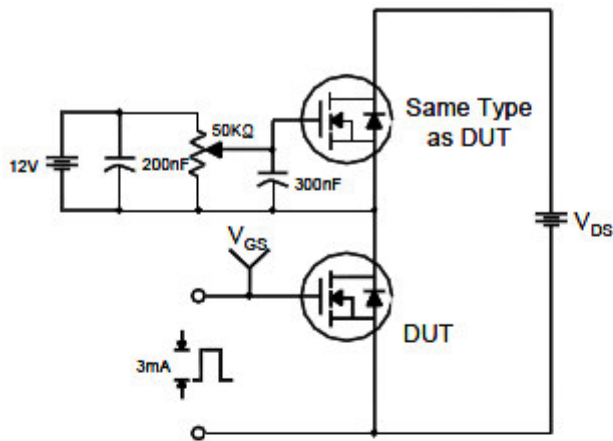
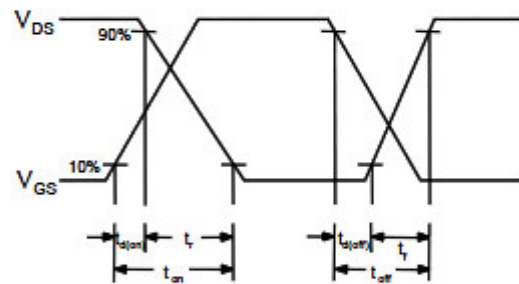
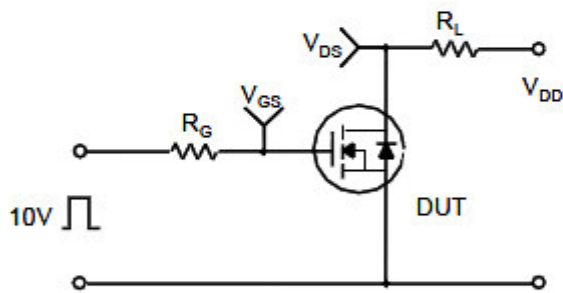


Fig.6 Maximum Safe Operation Area

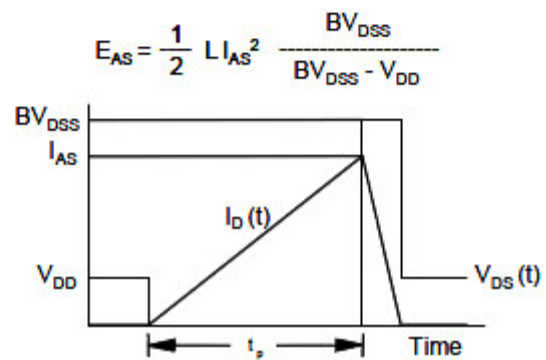
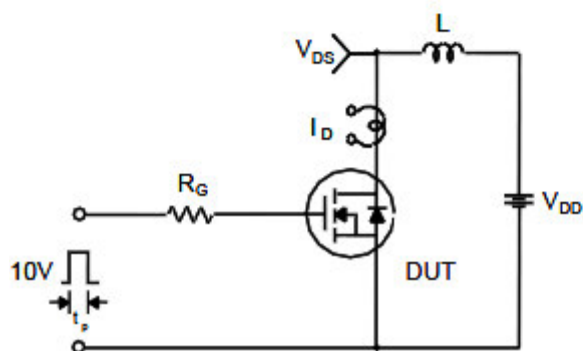
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

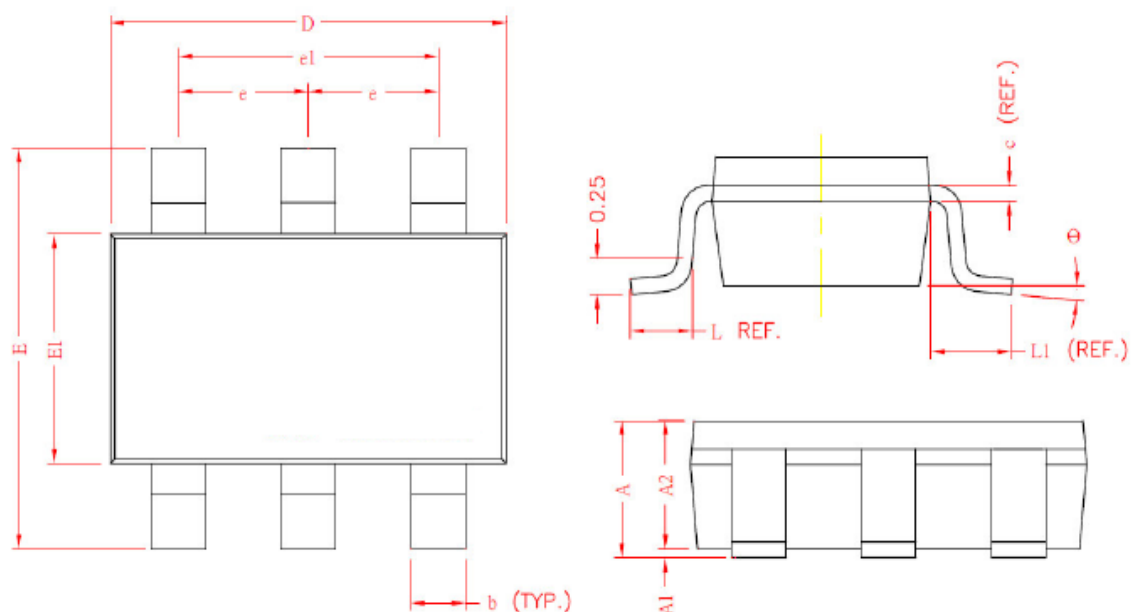


Unclamped Inductive Switching Test Circuit & Waveforms



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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