

GSM02P15T

150V P Channel MOSFET

Product Description

These P-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.

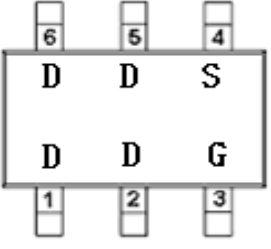
Features

- -150V,-1A, $R_{DS(ON)} = 750m\Omega @ V_{GS} = -10V$
- Improved dv/dt capability
- Fast switching
- TSOP-6 package design

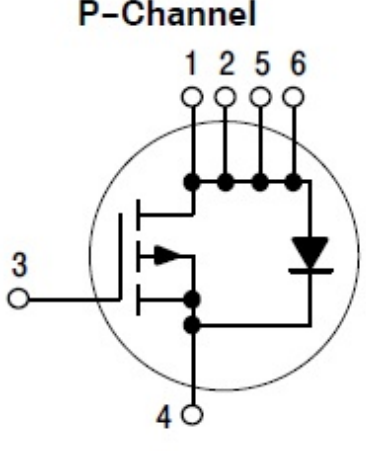
Applications

- Networking
- LED applications
- Load Switch

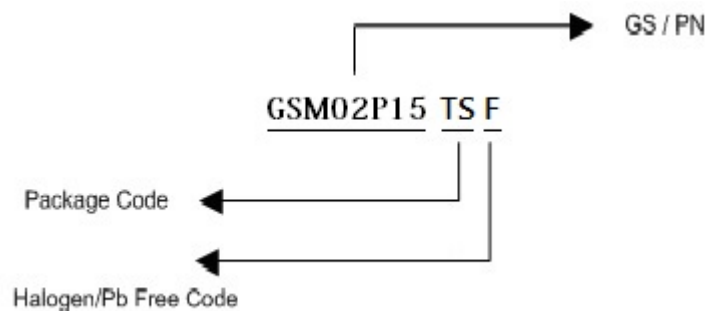
Packages & Pin Assignments

GSM02P15TSF (TSOP-6)		
		
Pin	Symbol	Description
1	D	Drain
2	D	Drain
3	G	Gate
4	S	Source
5	D	Drain
6	D	Drain

P-Channel

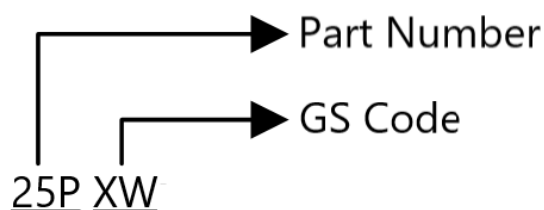


Ordering Information



Part Number	Package	Quantity Reel
GSM02P15TSF	TSOP-6	3000 PCS

Marking Information



Absolute Maximum Ratings

$T_C=25^{\circ}\text{C}$ 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	A
		T _C =100°C	-0.63	
I _{DM}	Pulsed Drain Current (note 1)		-4	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		-50 to +150	°C
T _{STG}	Storage Temperature Range		-50 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient		80	°C/W

Electrical Characteristics

(T_J=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	μA
		V _{DS} =-120V,V _{GS} =0V, T _J =125°C			-10	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-10V,I _D =-1A		650	800	mΩ
		V _{GS} =-6V,I _D =-0.5A		700	950	
g _{FS}	Forward Transconductance	V _{DS} =-10V,I _D =-1A		2		S
V _{SD}	Diode Forward Voltage	I _S =-1A,V _{GS} =0V T _J =25°C			-1	V
I _S	Continuous Source Current	V _{GS} =V _D =0V, Force Current			-1	A
I _{SM}	Pulsed Source Current				-2	A
R _g	Gate resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		30	60	Ω
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V,f=1MHz		430	700	pF
C _{Oss}	Output Capacitance			38	60	
C _{rss}	Reverse Transfer Capacitance			28	56	
Q _g	Total Gate Charge (Note 2,3)	V _{DS} =-75V, V _{GS} =10V,I _D =-1.0A		4.4	8	nC
Q _{gs}	Gate-Source Charge (Note 2,3)			0.7	2	
Q _{gd}	Gate-Drain Charge (Note 2,3)			1.5	3	
t _{d(on)}	Turn-On Time (Note 2,3)	V _{DD} =-75V, R _G =10Ω ,I _D =-1.0A, V _{GS} =-10V		12.5	20	ns
T _r				8.9	18	
t _{d(off)}	Turn-Off Time (Note 2,3)			17.3	36	
T _f				11.5	24	

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

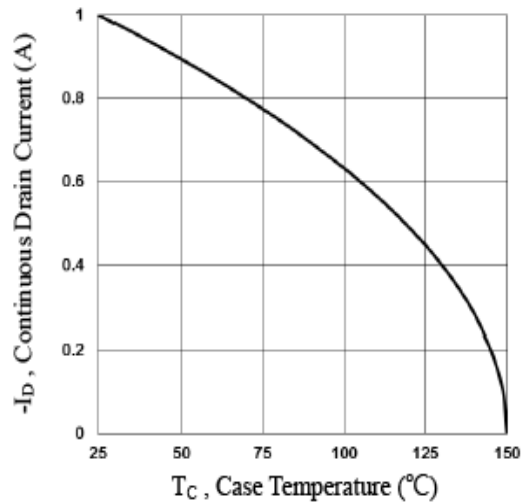


Fig.1 Continuous Drain Current vs. T_C

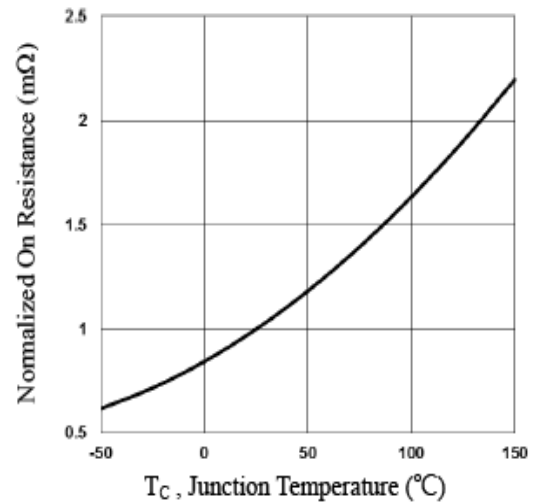


Fig.2 Continuous Drain Current vs. T_C

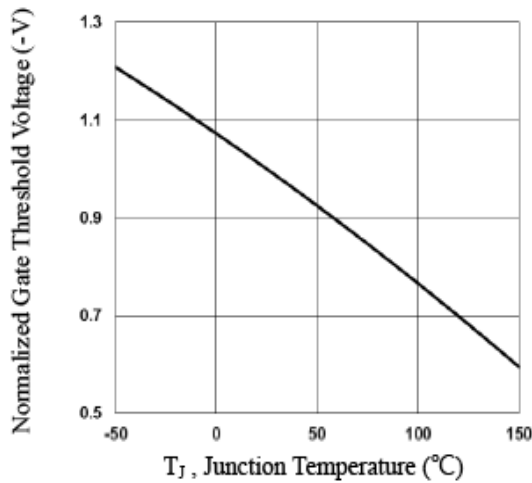


Fig.3 Normalized V_{th} vs. T_J

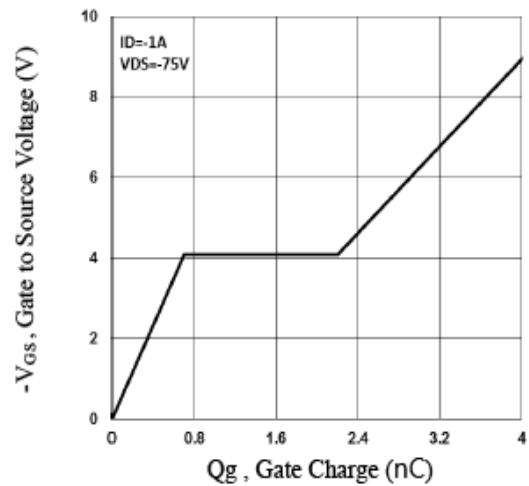


Fig.4 Gate Charge Waveform

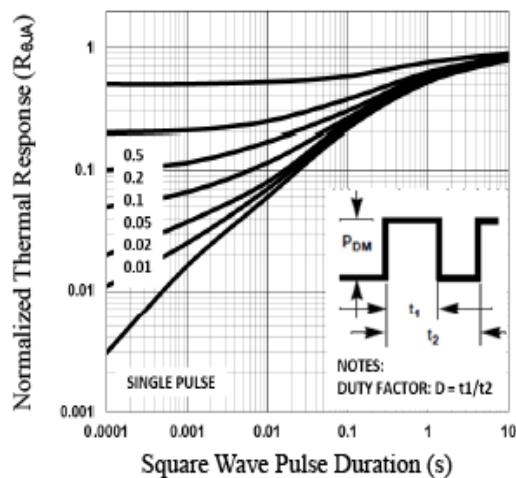


Fig.5 Normalized Transient Impedance

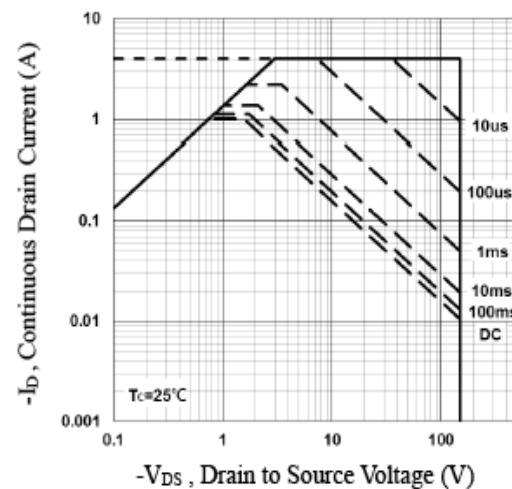


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (continue)

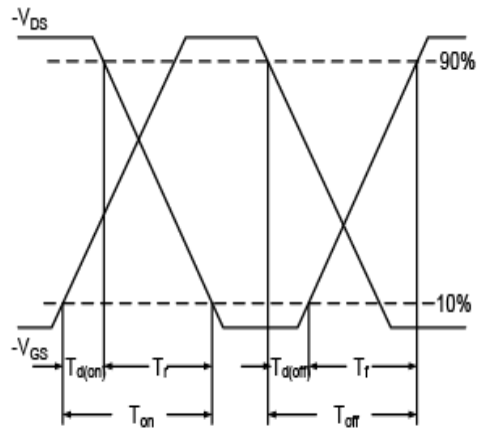


Fig.7 Switching Time Waveform

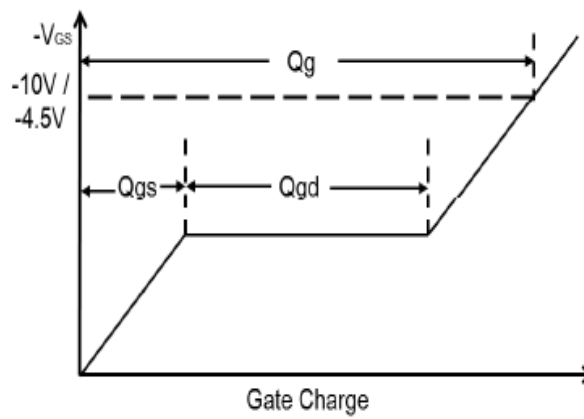
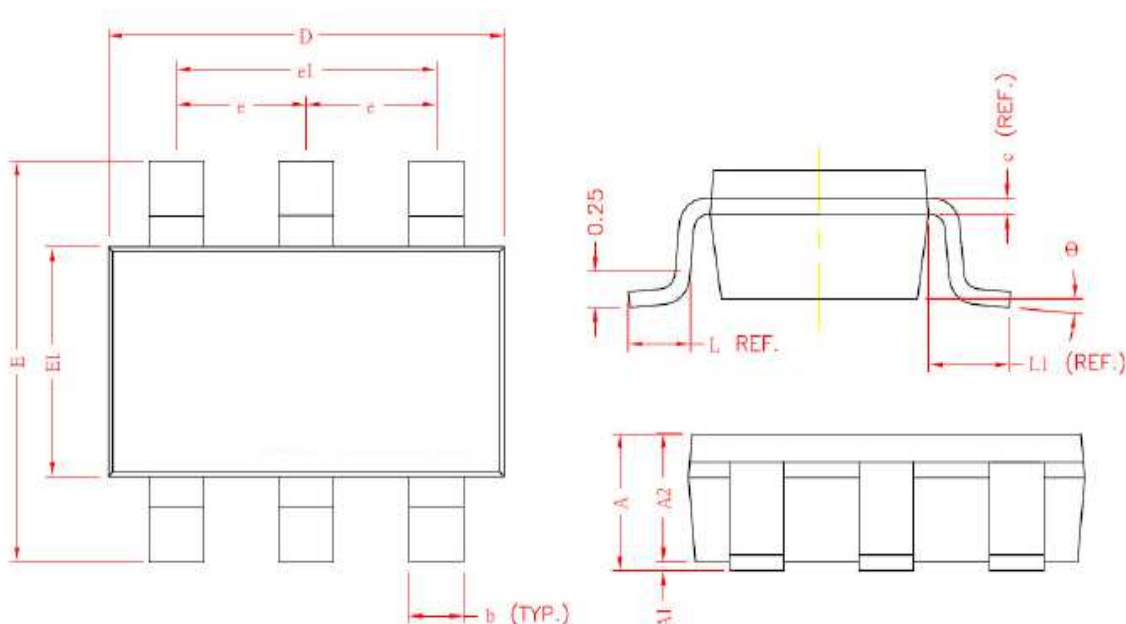


Fig.8 Gate Charge Waveform

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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