

GSM0988S

100V N-Channel MOSFETs

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.

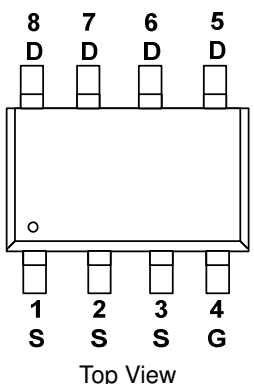
Features

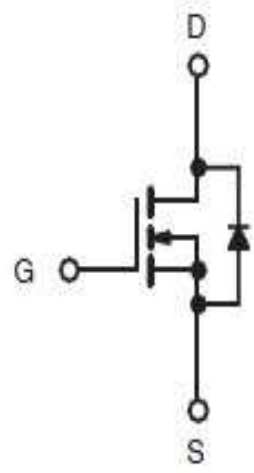
- 100V, 6A, $R_{DS(ON)}=36m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

Applications

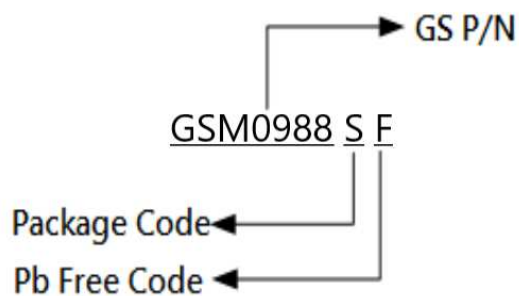
- Networking
- Load Switch
- LED Lighting

Packages & Pin Assignments

GSM0988SF (SOP-8)	
 <p style="text-align: center;">Top View</p>	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

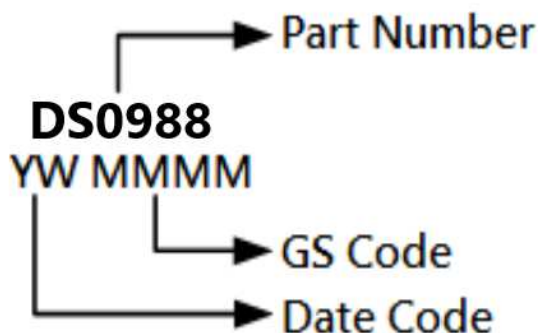


Ordering Information



Part Number	Package	Quantity Reel
GSM0988SF	SOP-8	4000 PCS

Marking Information



Absolute Maximum Ratings

$T_C=25^\circ\text{C}$ Unless otherwise noted

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	+20	V
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	6
		$T_C=100^\circ\text{C}$	3.8
I_{DM}	Pulsed Drain Current ¹	24	A
EAS	Single Pulse Avalanche Energy ²	36	mJ
IAS	Single Pulse Avalanche Current ²	27	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	3.78	W
	Power Dissipation (Derate above 25°C)	0.03	W/ $^\circ\text{C}$
T_J	Operating Junction Temperature Range	-50 to +150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to +150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	85	$^\circ\text{C}/\text{W}$

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 =250μA	100			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
I _{GSS}	Gate-Source Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V, T _J =25°C			1	μA
		V _{DS} =80V, V _{GS} =0V, T _J =85°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			6	A
I _{SM}	Pulsed Source Current				12	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =2A		30	36	mΩ
		V _{GS} =4.5V, I _D =1.5A		43	54	
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =1A		3.8		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A, T _J =25°C			1	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =10A		30		nS
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs, T _J =25°C		24		nC
Dynamic						
Q _g	Total Gate Charge ^{3,4}	V _{DS} =30V, V _{GS} =10V, I _D =10A		7.7	11	nC
Q _{gs}	Gate-Source Charge ^{3,4}			1.1	1.6	
Q _{gd}	Gate-Drain Charge ^{3,4}			3	4.5	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz		501	750	pF
C _{oss}	Output Capacitance			122	180	
C _{rss}	Reverse Transfer Capacitance			31	46	
t _{d(on)}	Turn-On Time ^{3,4}	V _{DD} =50V, I _D =1A, V _{GS} =10V, R _G =3.3Ω		7.4	15	ns
t _r				12	24	
t _{d(off)}	Turn-Off Time ^{3,4}			23	46	
t _f				16	32	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz		0.9		Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=50V, V_{GS}=10V, L=0.1mH, I_{AS}=27A., R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed , pulse width ≤ 300μs , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics

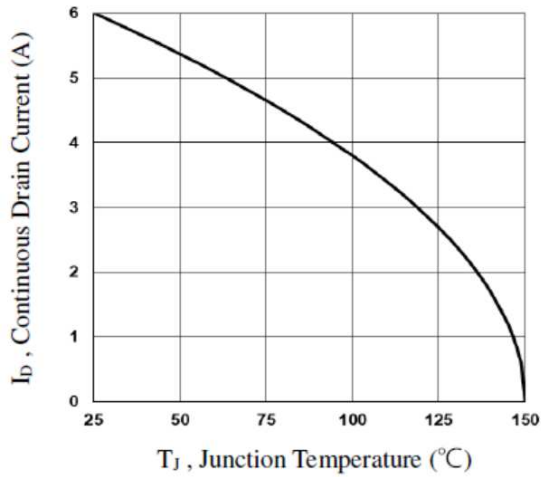


Fig.1 Continuous Drain Current vs. T_J

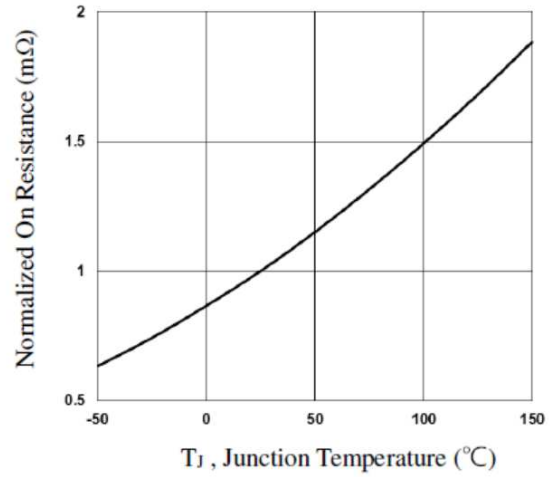


Fig.2 Normalized R_{DS(on)} vs. T_J

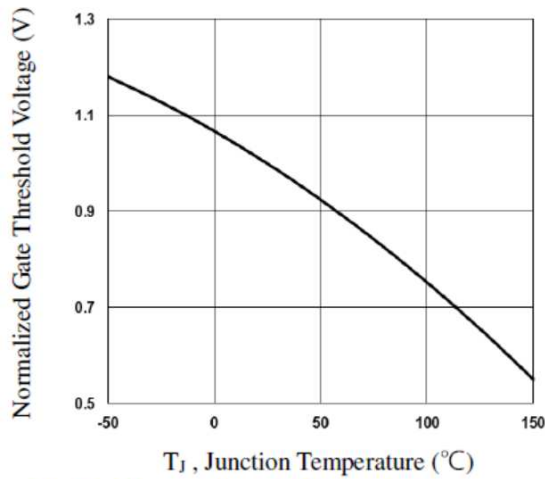


Fig.3 Normalized V_{th} vs. T_J

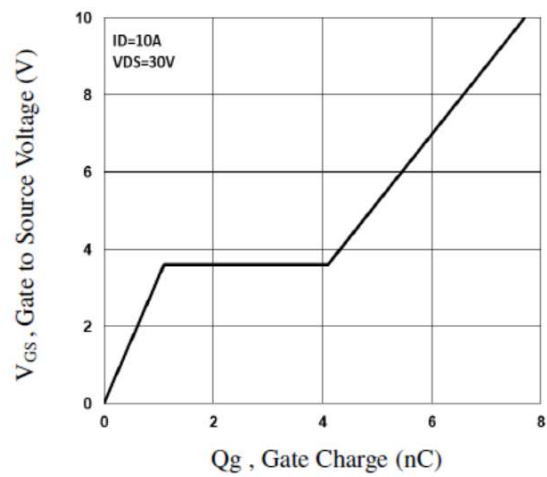


Fig.4 Gate Charge Characteristics

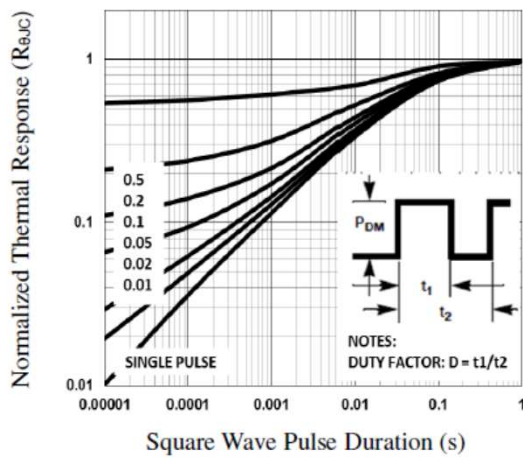


Fig.5 Normalized Transient Impedance

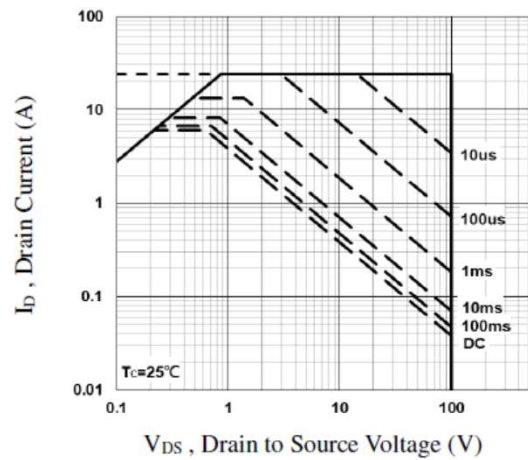


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

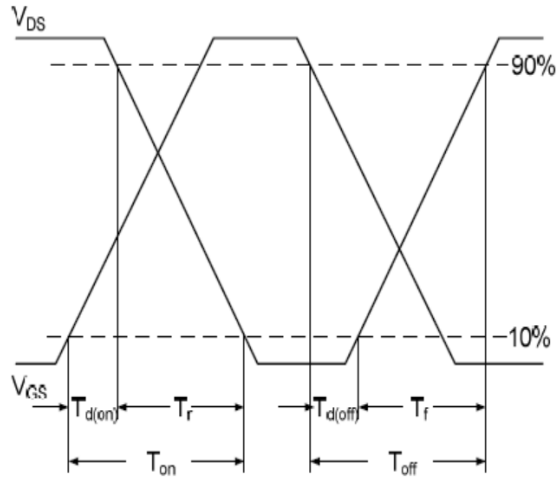


Fig.7 Switching Time Waveform

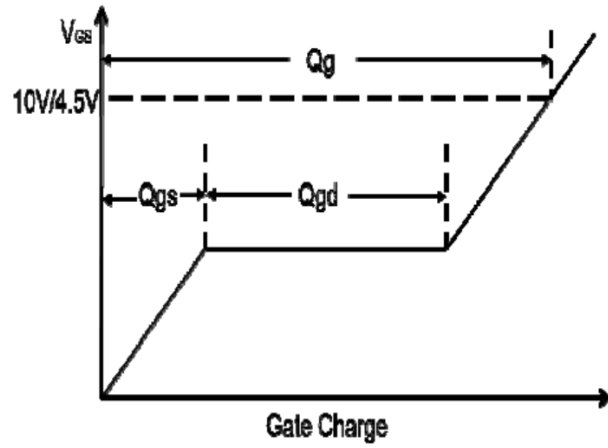
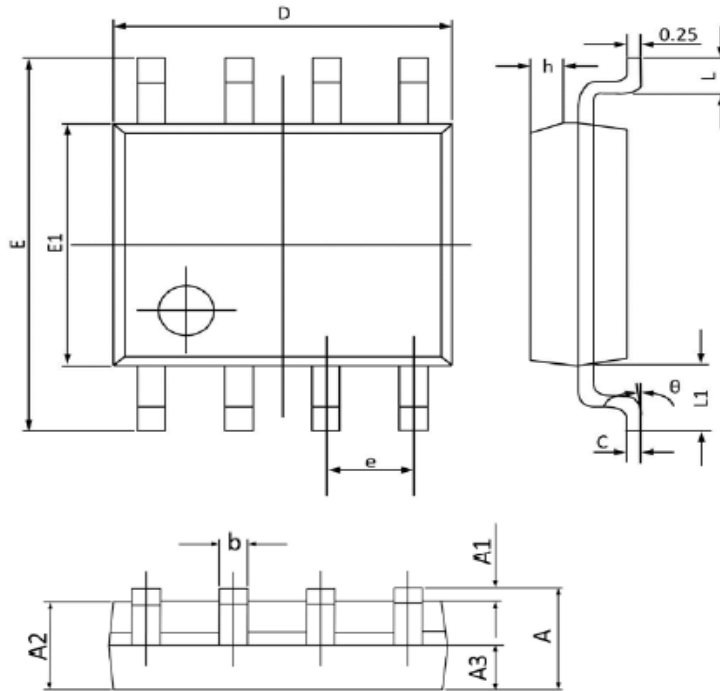


Fig.8 Gate Charge Waveform

Package Dimension

SOP-8







Dimensions



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270 (BSC)		0.050 (BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050 (BSC)		0.041 (BSC)	
θ	0°	8°	0°	8°

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