

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.

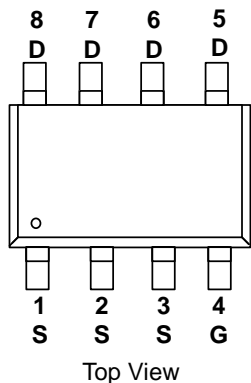
Features

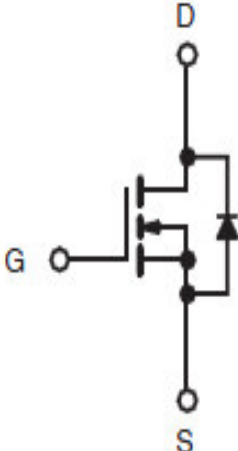
- 100V, 6A, $R_{DS(ON)}=36m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

Applications

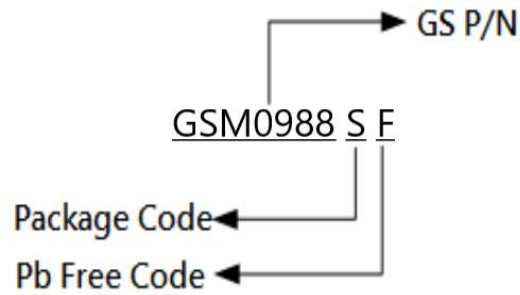
- Networking
- Load Switch
- LED Lighting

Packages & Pin Assignments

| GSM0988SF (SOP-8) | |
|---|-------------|
|  <p>Top View</p> | |
| Pin | Description |
| 1 | Source |
| 2 | Source |
| 3 | Source |
| 4 | Gate |
| 5 | Drain |
| 6 | Drain |
| 7 | Drain |
| 8 | Drain |

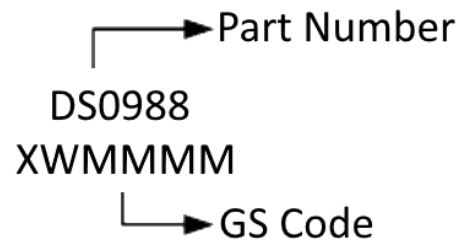


Ordering Information



| 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

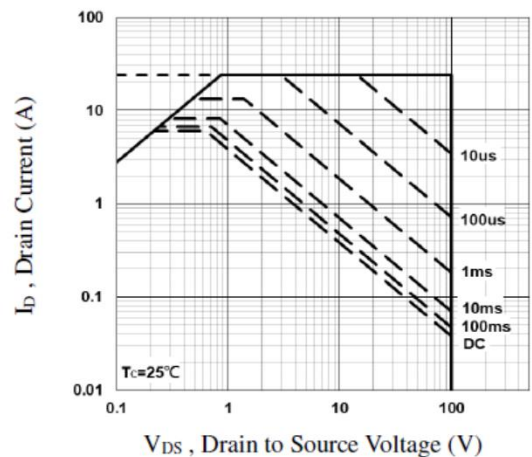
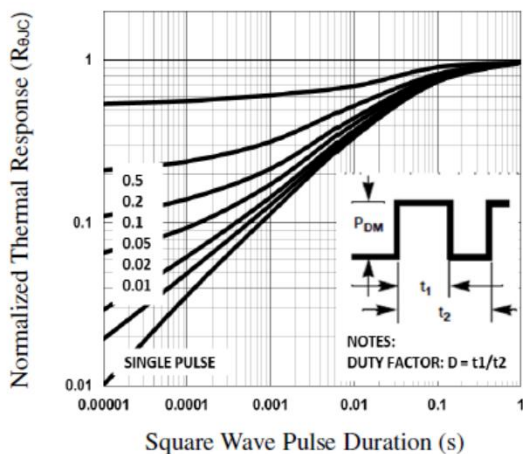
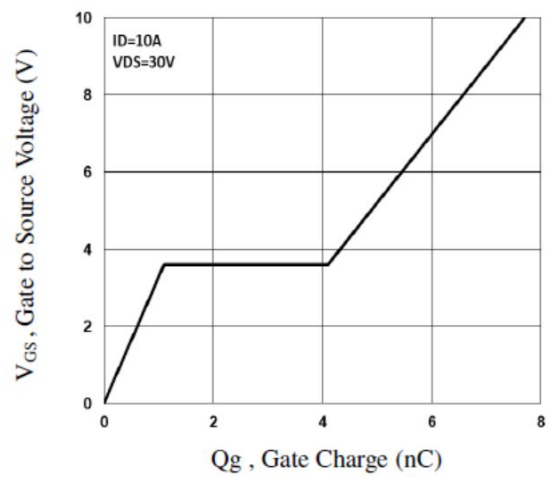
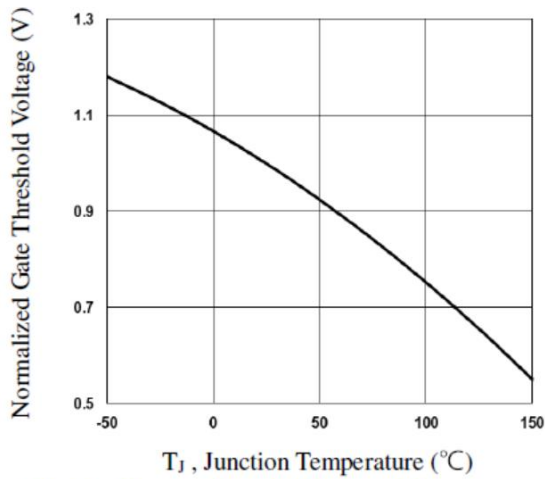
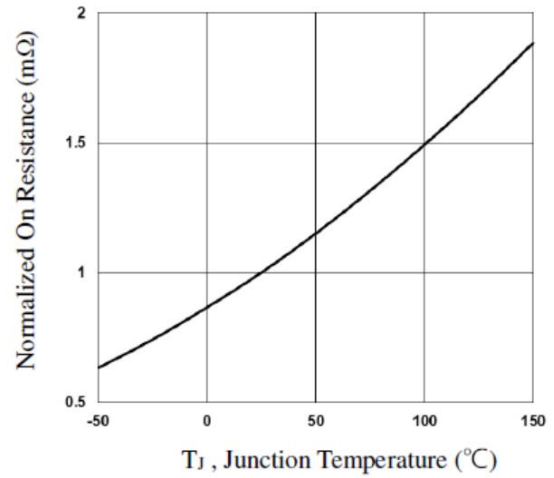
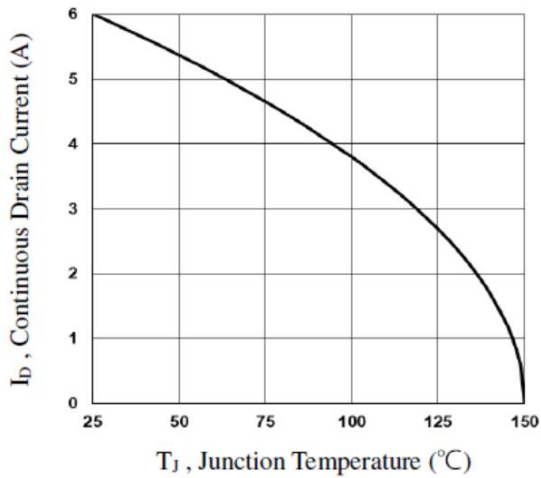
T_J=25°C Unless otherwise noted

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------------|-----------------------------------|---|---|-----|------|------|
| Static | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 100 | | | V |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250uA | 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 | uA |
| | | 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 di/dt=100A/us, T _J =25°C | | 30 | | nS |
| Q _{rr} | Reverse Recovery Charge | | | 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 | |

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 ≤ 300us , duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics



Typical Performance Characteristics (Continue)

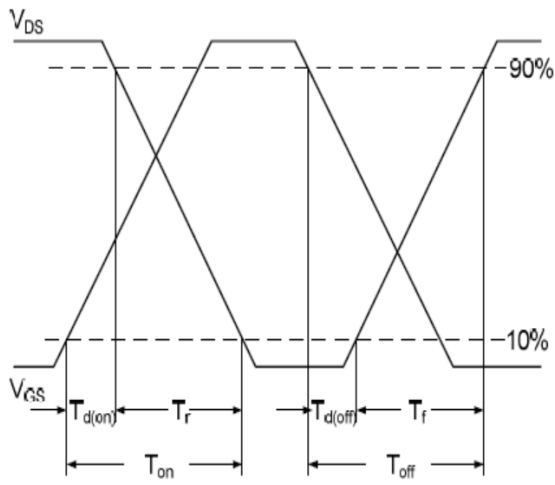


Fig.7 Switching Time Waveform

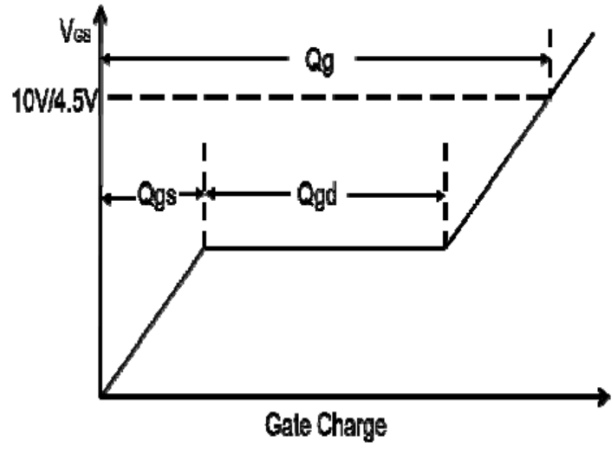
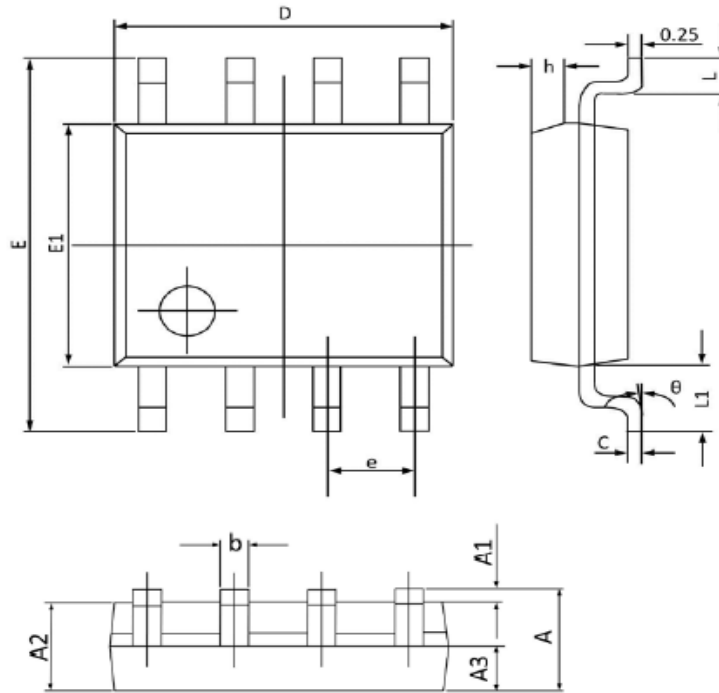


Fig.8 Gate Charge Waveform

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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