

GSM0903S

100V P-Channel MOSFETs

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.

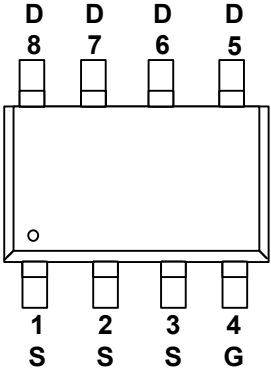
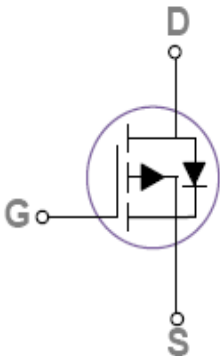
Features

- -100V, -2.9A, $R_{DS(ON)}=90m\Omega@V_{GS}=-10V$
- Fast switching
- Improved dv/dt capability
- Green Device Available

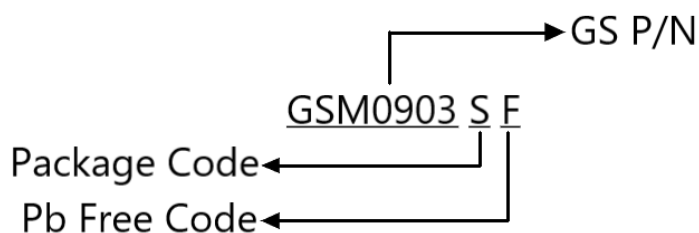
Applications

- Networking
- Load Switch
- LED Application

Packages & Pin Assignments

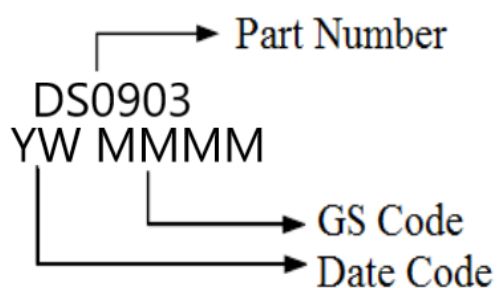
GSM0903SF (SOP-8)		
		
		
Pin No	Symbol	Description
1,2,3	S	Source
4	G	Gate
5,6,7,8	D	Drain

Ordering Information



Part Number	Package	Quantity
GSM0903SF	SOP-8	4000pcs

Marking Information



Absolute Maximum Ratings

T_C=25°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 _A =25°C	-2.9
		T _A =70°C	-2.3
I _{DM}	Pulsed Drain Current ¹	-11.6	A
EAS	Single Pulse Avalanche Energy ²	39	mJ
IAS	Single Pulse Avalanche Current ²	28	A
P _D	Power Dissipation	1.47	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	85	°C/W

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=-80V, V_{GS}=-10V, L=0.1mH, I_{AS}=-28A., R_G=25Ω, Starting T_J=25°C.

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	-1.2	-1.6	-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 =125°C	---	---	-10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	---	---	-2.9	A
I _{SM}	Pulsed Source Current		---	---	-5.8	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =-1.8A	---	73	90	mΩ
		V _{GS} =4.5V, I _D =-1.5A,	---	78	100	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A	---	---	-1	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, I _S =1A	---	45.3	---	ns
Q _{rr}	Reverse Recovery Charge	di/dt=100A/μs	---	37.6	---	nC
Dynamic						
Q _g	Total Gate Charge ^{3,4}	V _{DS} =-50V, V _{GS} =-10V, I _D =-1.5A	---	42	84	nC
Q _{gs}	Gate-Source Charge ^{3,4}		---	5.5	11	
Q _{gd}	Gate-Drain Charge ^{3,4}		---	6.4	12.8	
C _{iss}	Input Capacitance	V _{DS} =-50V, V _{GS} =0V, f=1MHz	---	2750	5500	pF
C _{oss}	Output Capacitance		---	89	1178	
C _{rss}	Reverse Transfer Capacitance		---	58	116	
t _{d(on)}	Turn-On Time ^{3,4}	V _{DD} =-30V, I _D =-1A, V _{GS} =-10V, R _G =6Ω	---	27	54	ns
t _r	Rise Time ^{3,4}		---	12	24	
t _{d(off)}	Turn-Off Time ^{3,4}		---	150	300	
t _f	Fall Time ^{3,4}		---	45	90	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	7	---	Ω

Note :

3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.

4. Essentially independent of operating temperature.

Typical Performance Characteristics

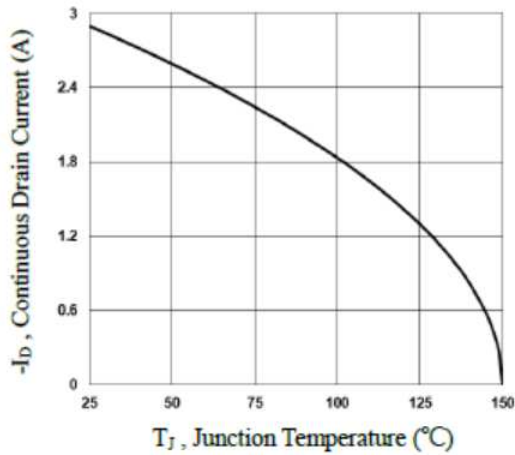


Fig.1 Continuous Drain Current vs. T_J

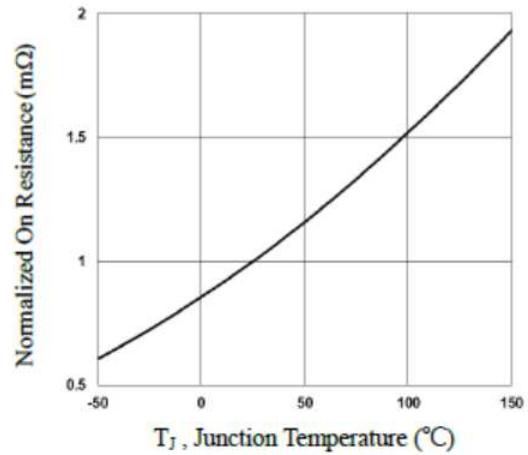


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

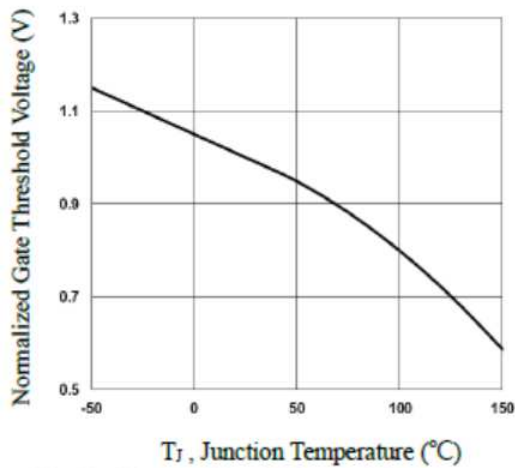


Fig.3 Normalized V_{th} vs. T_J

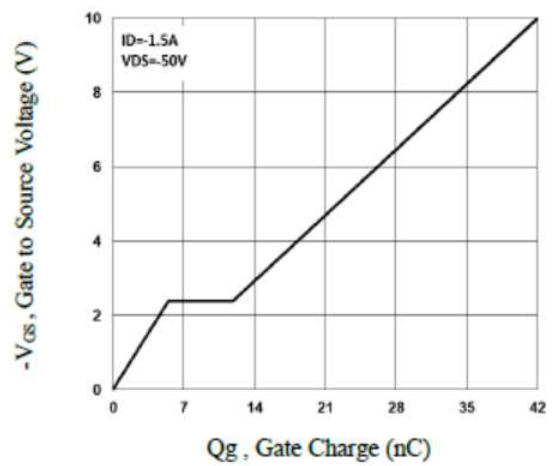


Fig.4 Gate Charge Waveform

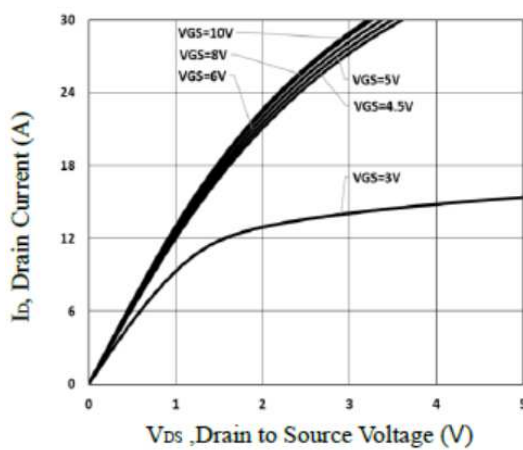


Fig.5 Typical Output Characteristics

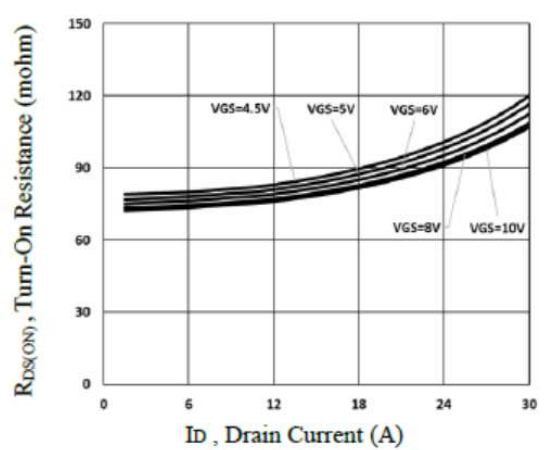


Fig.6 Turn-On Resistance vs. I_D

Typical Performance Characteristics(continue)

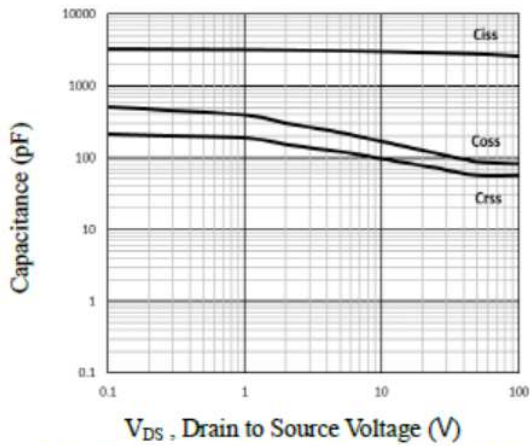


Fig.7 Capacitance Characteristics

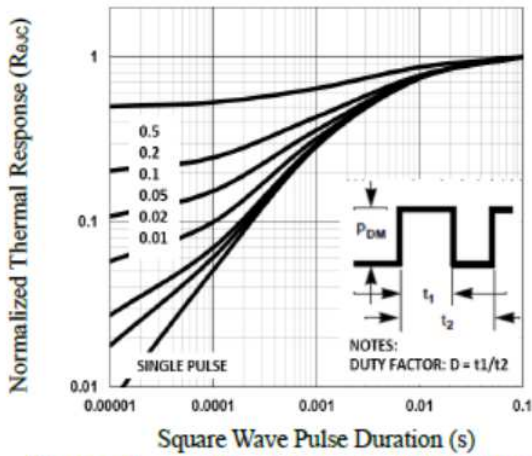


Fig.8 Normalized Transient Impedance

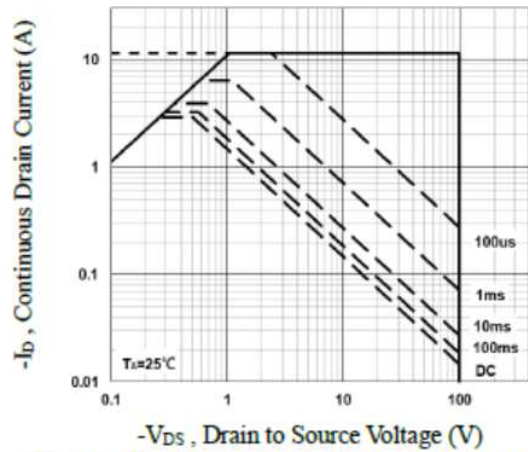


Fig.9 Maximum Safe Operation Area

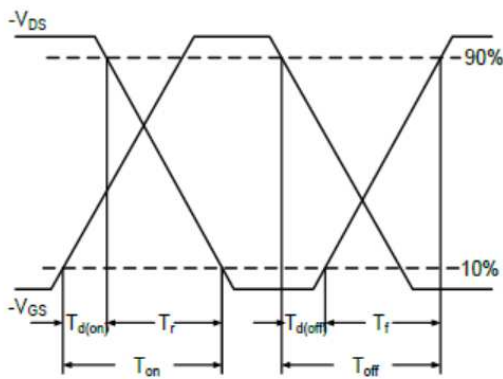


Fig.10 Switching Time Waveform

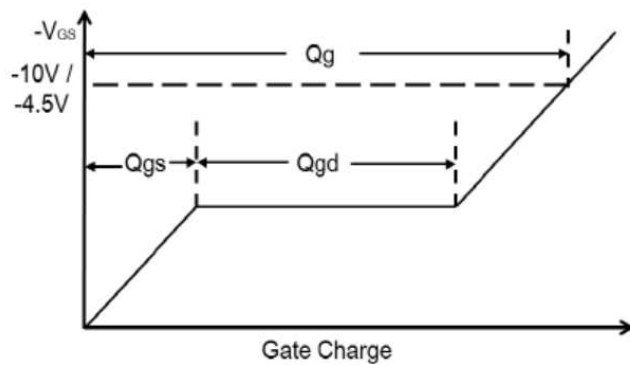
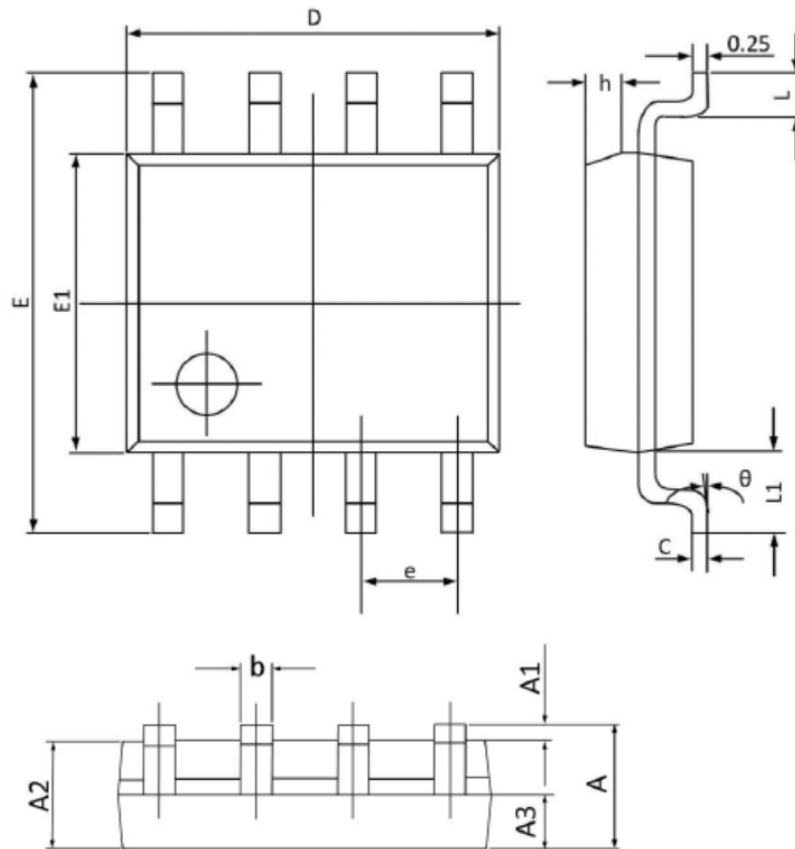


Fig.11 Gate Charge Waveform

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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