GSM6907Z

60V 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

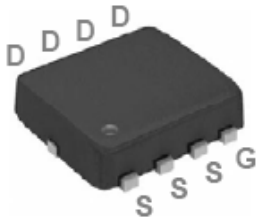
- -60V, -14A, $R_{DS(ON)}$=65mΩ@V_{GS}=-10V
- Fast switching
- Suit for -1.8V Gate Drive Applications
- Green Device Available
- Improved dv/dt capability

Applications

- Motor Drive
- Power Tools
- LED Lighting

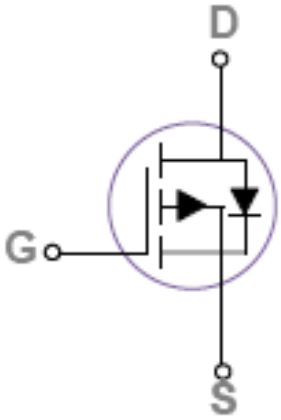
Packages & Pin Assignments

GSM6907ZFF (DFN3X3-8L)

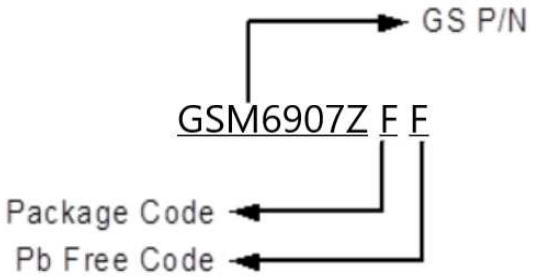


Top View

Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

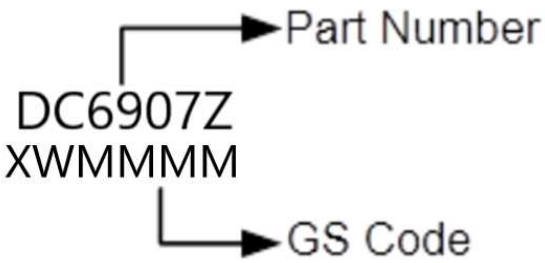


Ordering Information



Part Number	Package	Quantity
GSM6907ZFF	DFN3X3-8L	5000pcs

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		-60	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25℃	-14	A
		T_C=100℃	-8.9	
I_{DM}	Pulsed Drain Current[1]		-56	A
EAS	Single Pulse Avalanche Energy[2]		31	mJ
IAS	Single Pulse Avalanche Current[2]		-25	A
P_D	Power Dissipation (T_C=25℃)		33.8	W
	Power Dissipation-Derate above 25℃		0.27	W/℃
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		3.7	℃/W

Electrical Characteristics

T_J=25℃ Unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-60			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-1.2	-1.6	-2.2	
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-60V,V_{GS}=0V			-1	uA
		V_{DS}=-48V,V_{GS}=0V T_J=125℃			-10	
I_S	Continuous Source Current	V_G=V_D=0V,Force Current			-14	A
I_{SM}	Pulsed Source Current				-28	A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS} =-10V,I_D=-8A		54	65	mΩ
		V_{GS} =-4.5V,I_D=-6A		70	90	
g_{FS}	Forward Transconductance	V_{DS}=-10V,I_D=-3A		7		S
V_{SD}	Diode Forward Voltage	I_S=-1A,V_{GS}=0V			-1	V
Dynamic						
Q_g	Total Gate Charge[3,4]	V_{DS}=-30V,V_{GS}=-10V, I_D=-3A		16.4	23	nC
Q_{gs}	Gate-Source Charge[3,4]			2.8	4	
Q_{gd}	Gate-Drain Charge[3,4]			3.6	6	
C_{iss}	Input Capacitance	V_{DS}=-30V,V_{GS}=0V, f=1MHz		870	1260	pF
C_{oss}	Output Capacitance			70	100	
C_{rss}	Reverse Transfer Capacitance			42	60	
$t_{d(on)}$	Turn-On Time[3,4]	V_{DD}=-30V,I_D=-1A, V_{GS}=-10V,R_G=6Ω		8.3	16	ns
t_r				29.6	56	
$t_{d(off)}$	Turn-Off Time[3,4]			51.7	98	
t_f				15.6	30	
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		16	32	Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=-25V,V_{GS}=-10V,L=0.1mH,IAS=-25A.,R_G=25Ω,Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

Typical Performance Characteristics

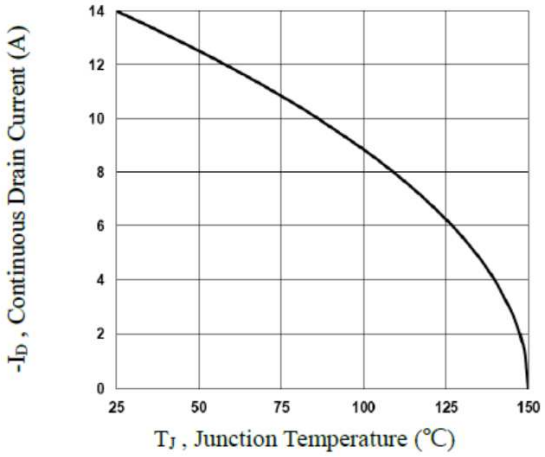


Fig.1 Continuous Drain Current vs. T_C

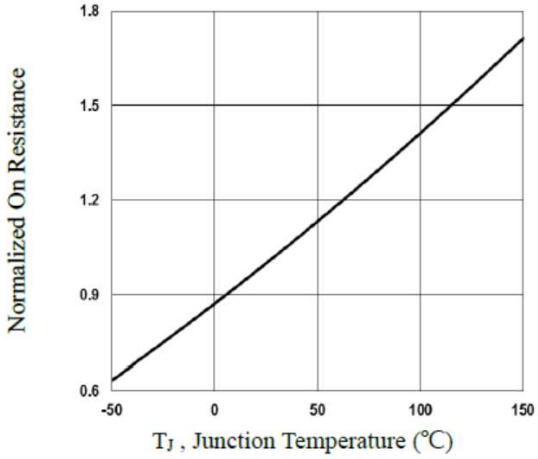


Fig.2 Normalized RDSON vs. T_J

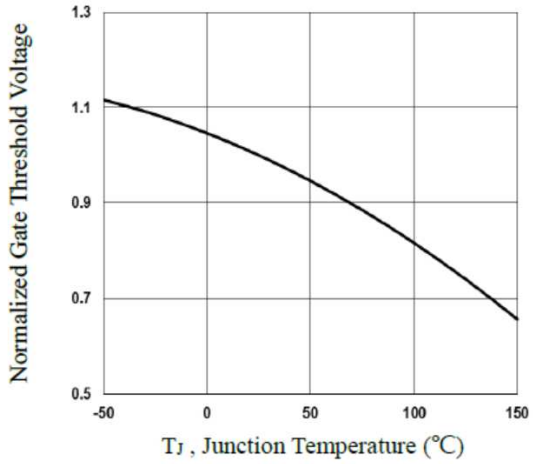


Fig.3 Normalized V_{th} vs. T_J

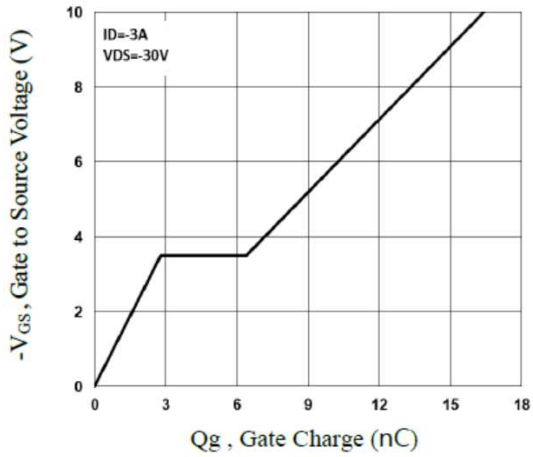


Fig.4 Gate Charge Waveform

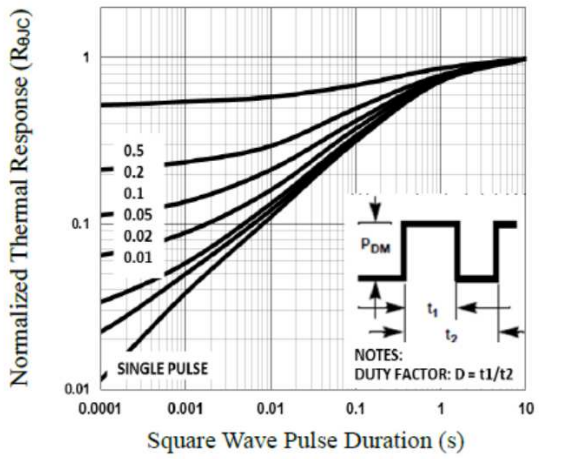


Fig.5 Normalized Transient Impedance

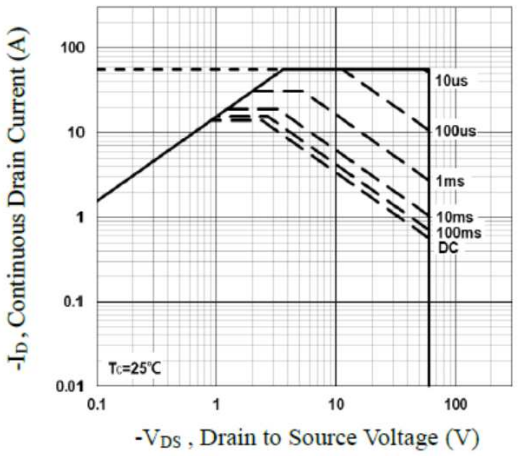


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

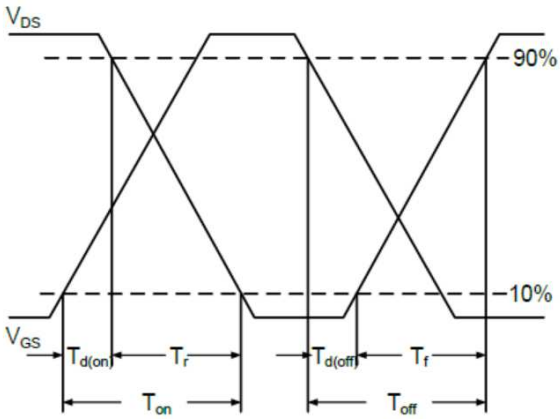


Fig.7 Switching Time Waveform

$$EAS = \frac{1}{2} L \times (-I_{AS})^2 \times \frac{-BVDSS}{-BVDSS-(-VDD)}$$

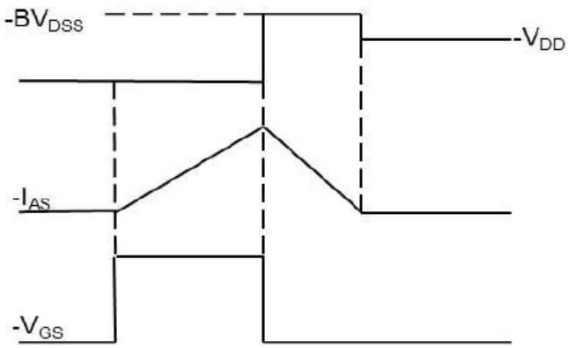
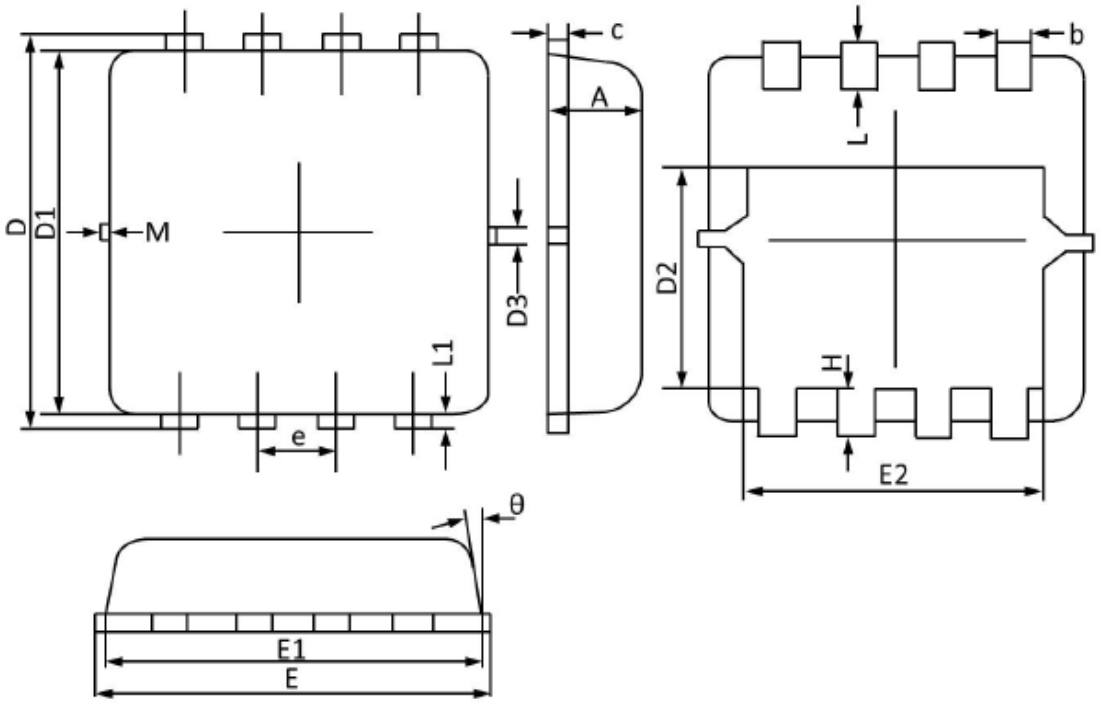


Fig.8 EAS Waveform

Package Dimension

DFN3X3-8L



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
θ	0°	12°	0°	12°
M	0.150 REF		0.006 REF	

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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
@	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587