GSM3910Z

30V 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

- 30V, 35A, $R_{DS(ON)}$=12mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available

Applications

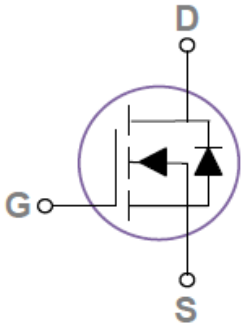
- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

Packages & Pin Assignments

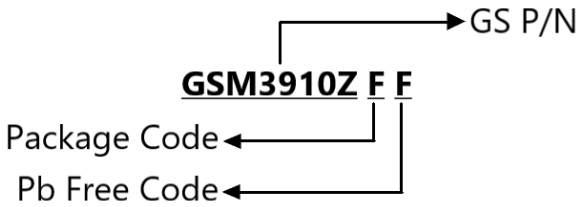
GSM3910ZFF (DFN3X3-8L)

Top View

Pin No	Symbol	Description
1,2,3	S	Source
4	G	Gate
5,6,7,8	D	Drain

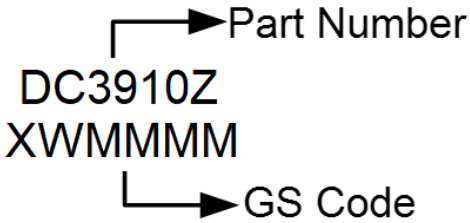


Ordering Information



Part Number	Package	Quantity
GSM3910ZFF	DFN3x3-8L	5000pcs

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25℃	35	A
		T_C=100℃	22	
I_{DM}	Pulsed Drain Current[1]		140	A
EAS	Single Pulse Avalanche Energy[2]		13	mJ
IAS	Single Pulse Avalanche Current[2]		16	A
P_D	Power Dissipation (T_C=25℃)		27	W
	Power Dissipation (Derate above 25℃)		0.21	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		4.6	℃/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	30			V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA		0.04		V/℃
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1.2	1.8	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-4.0		mV/℃
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=30V, V_{GS}=0V T_J=25℃			1	uA
		V_{DS}=30V, V_{GS}=0V, T_J=125℃			10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			35	A
I_{SM}	Pulsed Source Current[3]				70	
$R_{DS(on)}$	Drain-Source On-Resistance[3]	V_{GS}=10V, I_D=10A		9.4	12	mΩ
		V_{GS}=4.5V, I_D=5A,		13	18	
g_{FS}	Forward Transconductance	V_{DS}=10V, I_D=3A		6.4		S
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V, I_S=1A			1	V
Dynamic						
Q_g	Total Gate Charge[3,4]	V_{DS}=15V, V_{GS}=4.5V, I_D=5A		7.4	12	nC
Q_{gs}	Gate-Source Charge[3,4]			2.3	5	
Q_{gd}	Gate-Drain Charge[3,4]			3	6	
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		620	900	pF
C_{oss}	Output Capacitance			85	125	
C_{rss}	Reverse Transfer Capacitance			60	90	
$t_{d(on)}$	Turn-On Time[3,4]	V_{DD}=15V, I_D=1A, V_{GS}=10V, R_G=6Ω		3.8	7	ns
t_r	Rise Time[3,4]			10	19	
$t_{d(off)}$	Turn-Off Time[3,4]			22	42	
t_f	Fall Time[3,4]			6.6	13	
Rg	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		2.8	5.6	Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, IAS=16A., 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

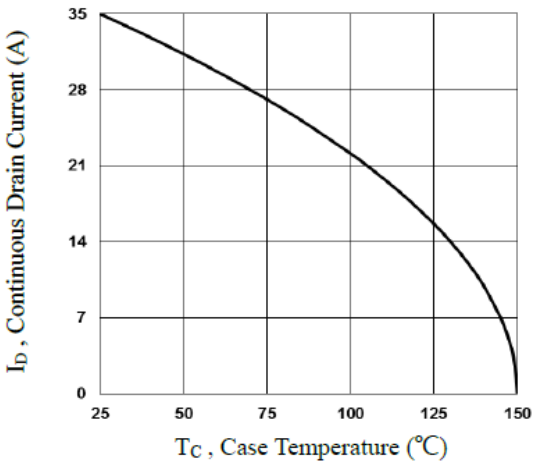


Fig.1 Continuous Drain Current vs. T_C

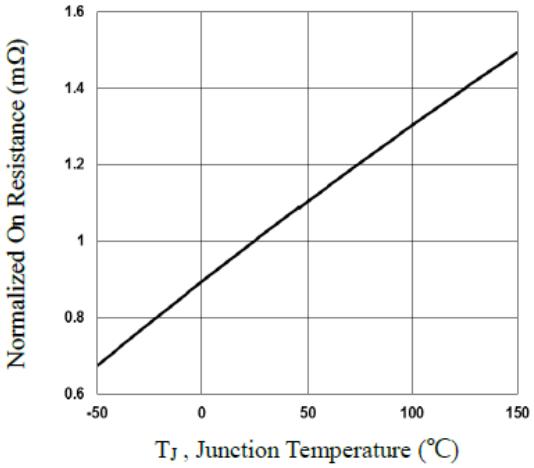


Fig.2 Normalized RDSON vs. T_J

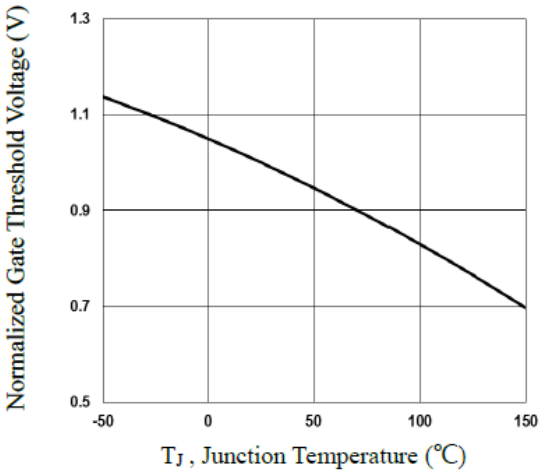


Fig.3 Normalized V_{th} vs. T_J

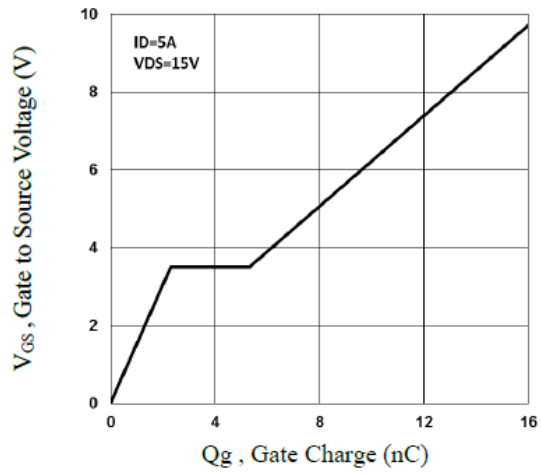


Fig.4 Gate Charge Waveform

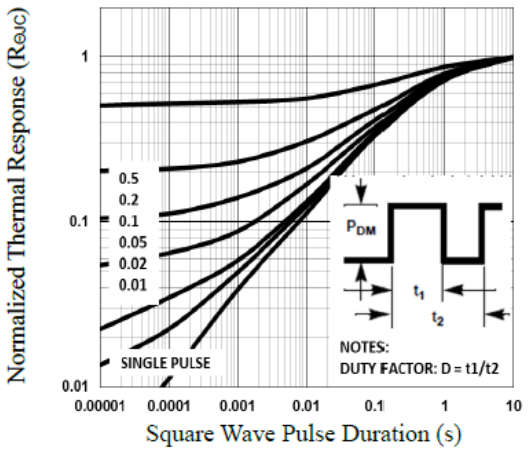


Fig.5 Normalized Transient Response

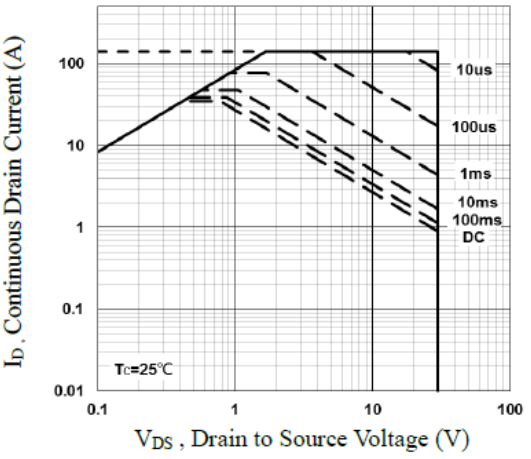


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

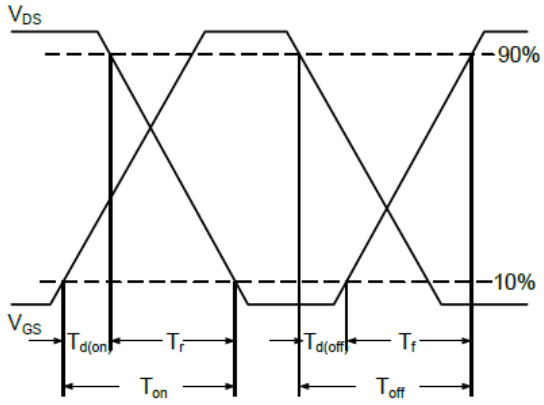


Fig.7 Switching Time Waveform

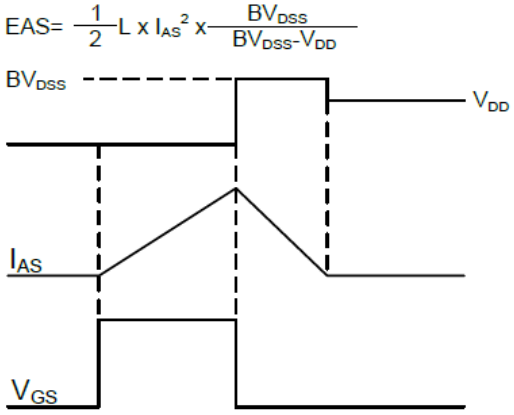
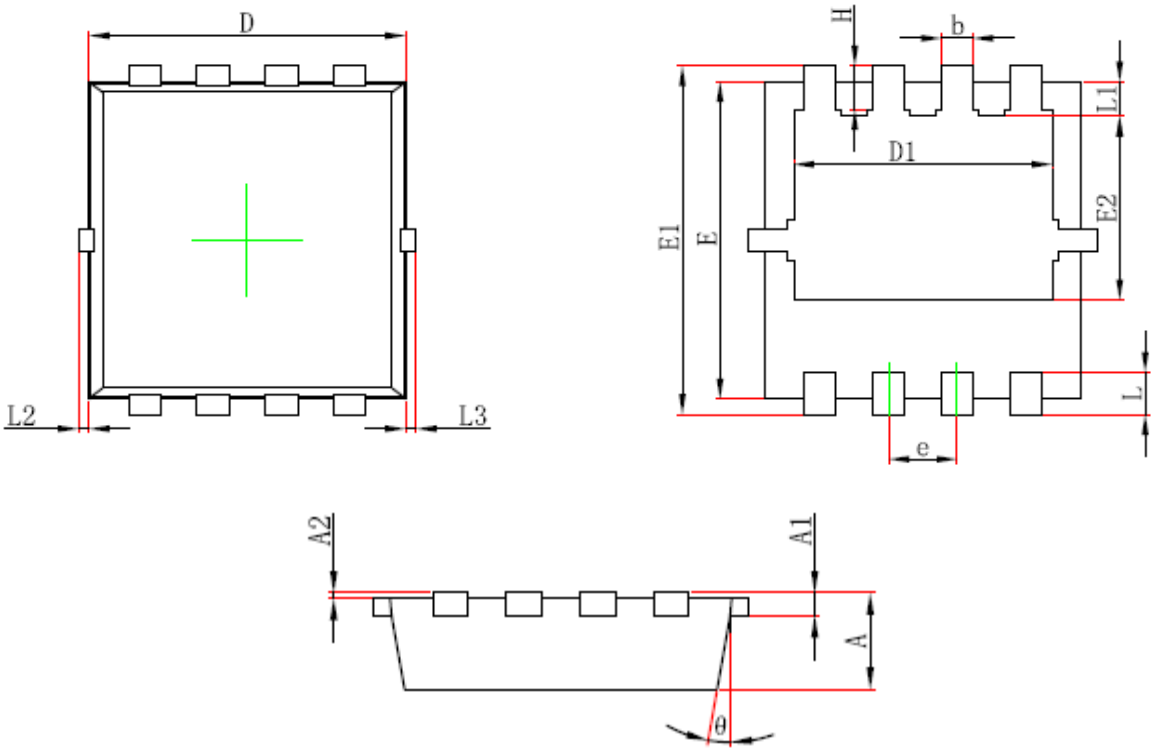


Fig.8 EAS Waveform

Package Dimension

DFN3X3-8L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13	9°	13°

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