GSM2310KZ

20V 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.

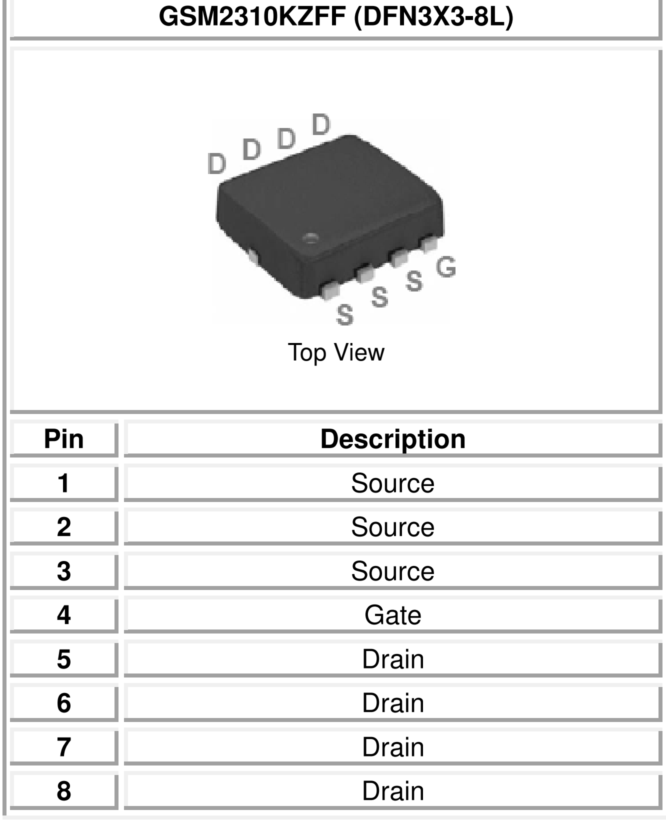
Features

- 20V, 30A, $R_{DS(ON)}$=10mΩ@V_{GS}=10V
- Improved dv/dt capability
- ESD Protection Diode Embedded
- Green Device Available
- DFN3X3-8L package design

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR
- Li-Battery Protection

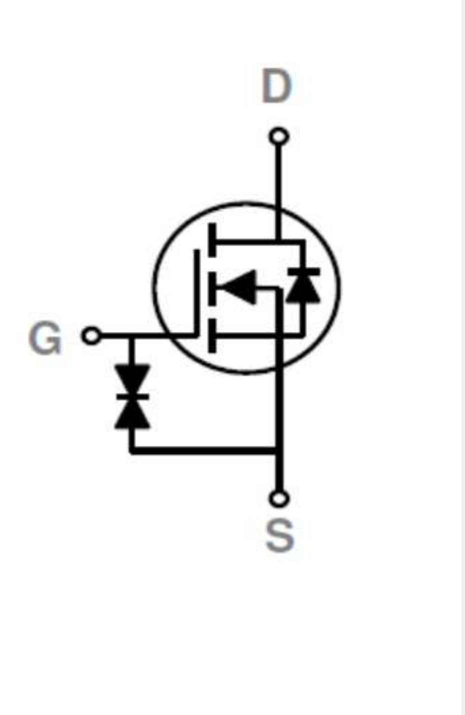
Packages & Pin Assignments



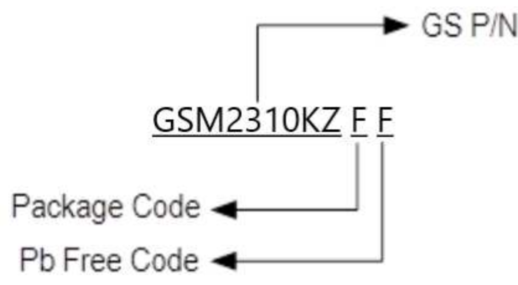
GSM2310KZFF (DFN3X3-8L)

Top View

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

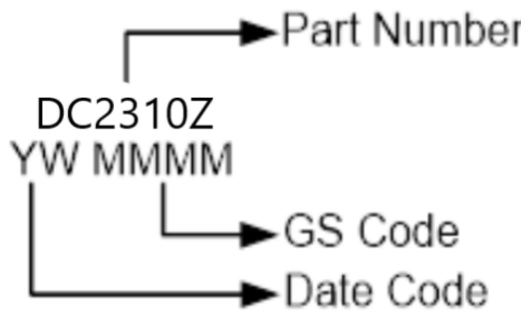


Ordering Information



Part Number	Package	Quantity
GSM2310KZFF	DFN3X3-8L	5000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current (Chip Limitation)	T_C=25℃	30	A
		T_C=100℃	19	
I_{DM}	Pulsed Drain Current[1]		120	A
P_D	Power Dissipation (T_C=25℃)		26	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	℃
$R_{θJA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{θJC}$	Thermal Resistance-Junction to Case		4.8	℃/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	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.3	0.6	1	V
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V,V_{GS}=±10V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V,V_{GS}=0V			1	uA
		V_{DS}=16V,V_{GS}=0V, T_J=125℃			10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			30	A
I_{SM}	Pulsed Source Current				60	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V,I_D=5A		8	10	mΩ
		V_{GS}=2.5V,I_D=3A		9.5	12	
		V_{GS}=1.8V,I_D=2A		12	17	
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=5A		12		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1	V
Dynamic						
Q_g	Total Gate Charge[2,3]	V_{DS}=10V,V_{GS}=4.5V, I_D=5A		16.9	26	nC
Q_{gs}	Gate-Source Charge[2,3]			1.1	3	
Q_{gd}	Gate-Drain Charge[2,3]			4	7	
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1MHz		1020	1480	pF
C_{oss}	Output Capacitance			160	240	
C_{rss}	Reverse Transfer Capacitance			110	160	
$t_{d(on)}$	Turn-On Time[2,3]	V_{DD}=10V,I_D=1A, V_{GS}=4.5V,R_G=25Ω		6.8	13	ns
t_r				20	38	
$t_{d(off)}$	Turn-Off Time[2,3]			41.8	79	
t_f				13.2	25	
R_g	Gate Resistance	V_{GS}=0V,V_{DS}=0V, f=1MHz		2	4	Ω

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

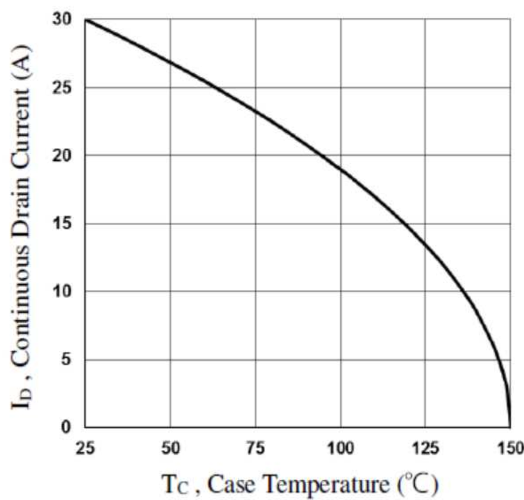


Fig.1 Continuous Drain Current vs. T_C

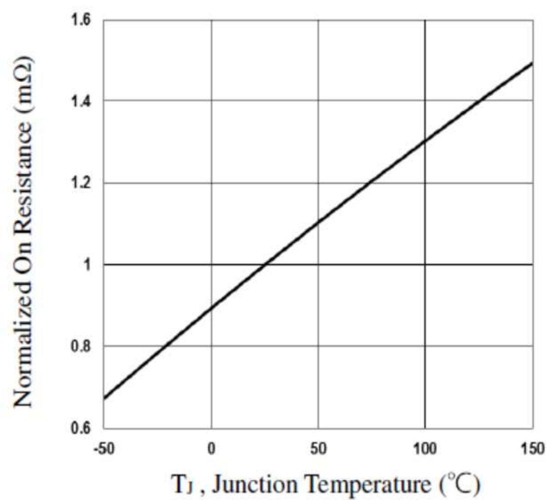


Fig.2 Normalized RDSON vs. T_J

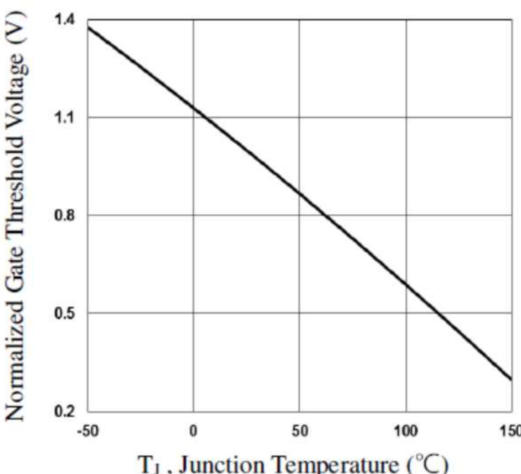


Fig.3 Normalized V_{th} vs. T_J

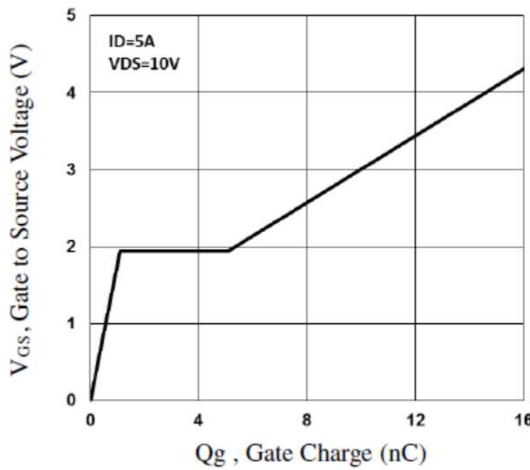


Fig.4 Gate Charge Waveform

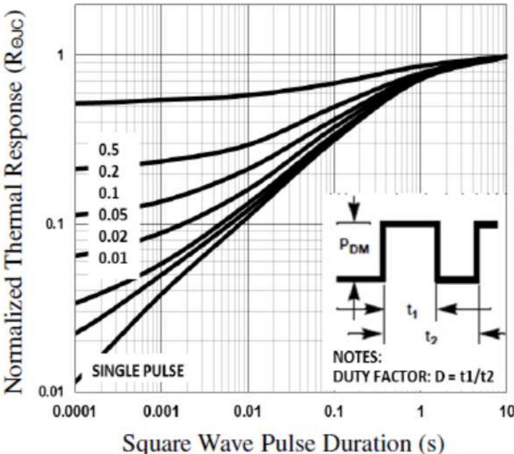


Fig.5 Normalized Transient Response

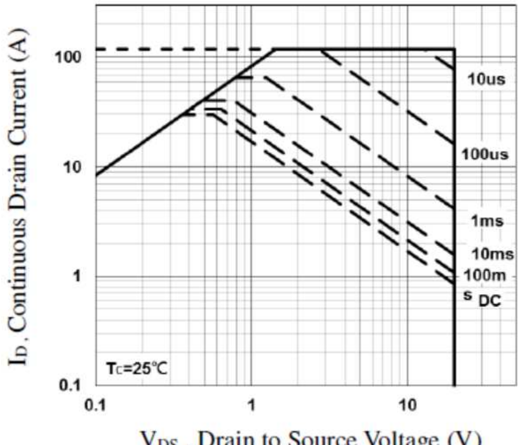


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

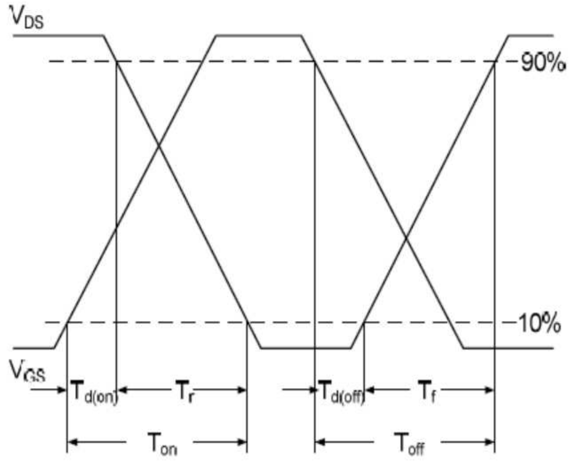


Fig.7 Switching Time Waveform

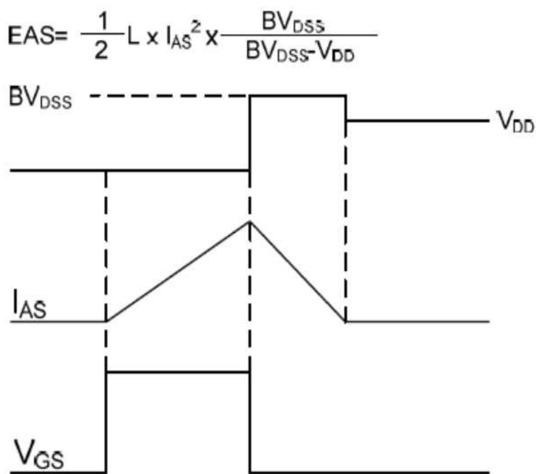
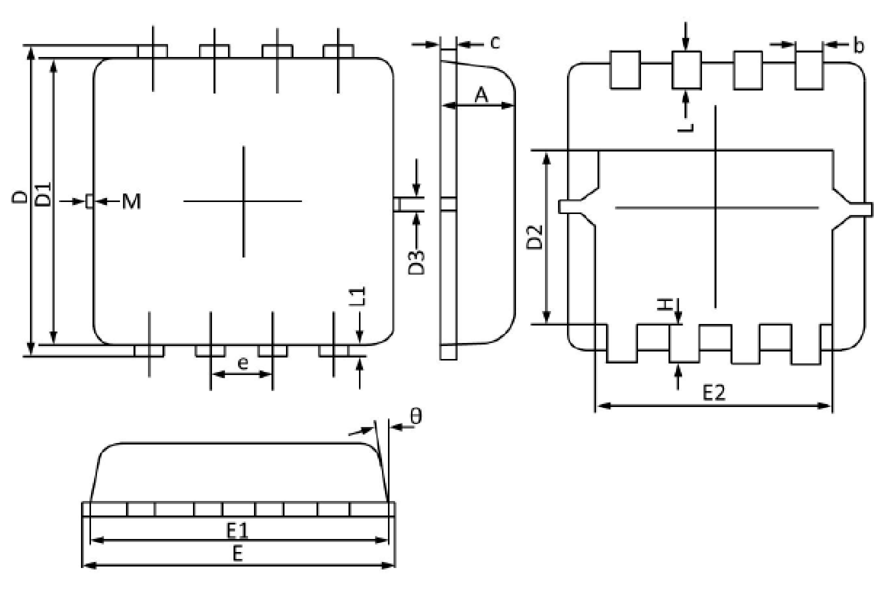


Fig.8 EAS Waveform

Package Dimension



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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