

GSMDEC2210V

20V Dual N-Channel MOSFETs

Product Description

These Dual 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

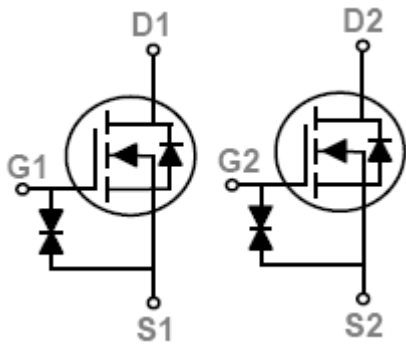
- 20V, 30A, $R_{DS(ON)}=12m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- ESD Protection Diode Embedded
- 100% EAS guaranteed
- Green Device Available
- DFN3X3-8L package design

Applications

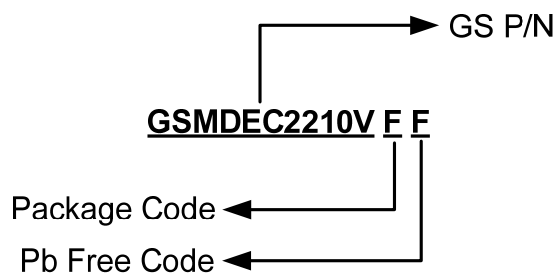
- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR
- Li-Battery Protection

Packages & Pin Assignments

GSMDEC2210VFF (DFN3X3-8L)	
 Top View	
Pin	Description
1	Source 1
2	Gate 1
3	Source 2
4	Gate 2
5	Drain 2
6	Drain 2
7	Drain 1
8	Drain 1

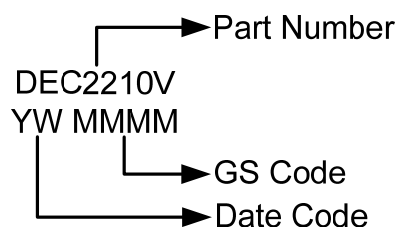


Ordering Information



Part Number	Package	Quantity
GSMDEC2210VFF	DFN3X3-8L	3000 pcs

Marking Information



Absolute Maximum Ratings

T_A=25°C 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	T _A =25°C	30	A
		T _A =100°C	19	
I _{DM}	Pulsed Drain Current		120	A
P _D	Power Dissipation (T _A =25°C)		26	W
	Power Dissipation (Derate above 25°C)		0.21	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		62	°C/W
R _{θJC}	Thermal Resistance-Junction to Case		4.8	°C/W

Note 1: Repetitive Rating : Pulsed width limited by maximum junction temperature.

Electrical Characteristics

T_A=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	20			V
△BV _{DSS} /△T _J	BV _{DSS} Temperature Coefficient	Reference to 25℃, I _D =1mA		0.02		V/℃
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	0.3	0.6	1	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient			2		mV/℃
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =±10V			±100	nA
I _{DSS}	Zero Gate Voltage Drain 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		10	12	mΩ
		V _{GS} =2.5V,I _D =3A		11	14	
		V _{GS} =1.8V,I _D =2A		13	20	
g _{FS}	Forward Transconductance	V _{DS} =10V,I _S =5A		12		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =10V,V _{GS} =4.5V, I _D =5A		16.9	26	nC
Q _{gs}	Gate-Source Charge			1.1	3	
Q _{gd}	Gate-Drain Charge			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	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			41.8	79	
t _f				13.2	25	

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

Note 3: Essentially independent of operating temperature.

Typical Performance Characteristics

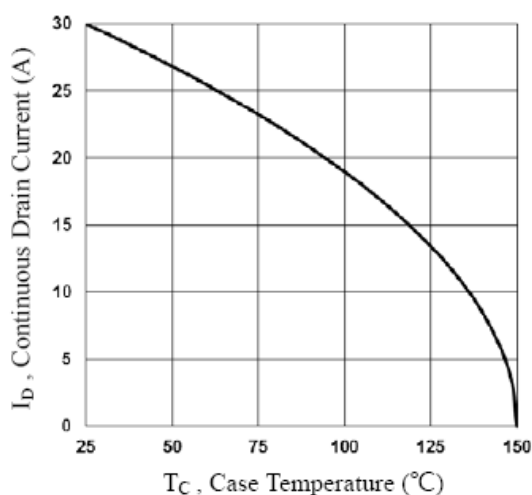


Fig.1 Continuous Drain Current vs. T_C

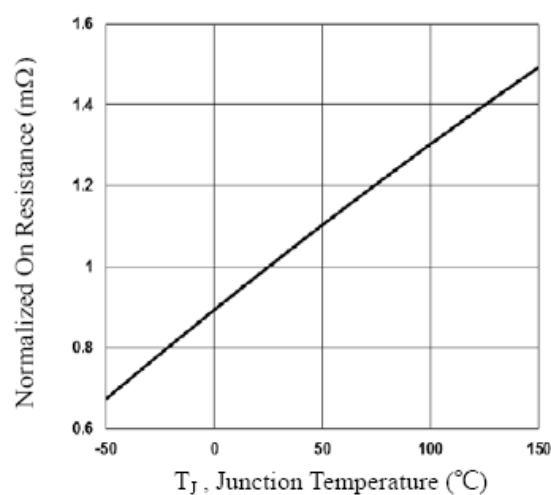


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

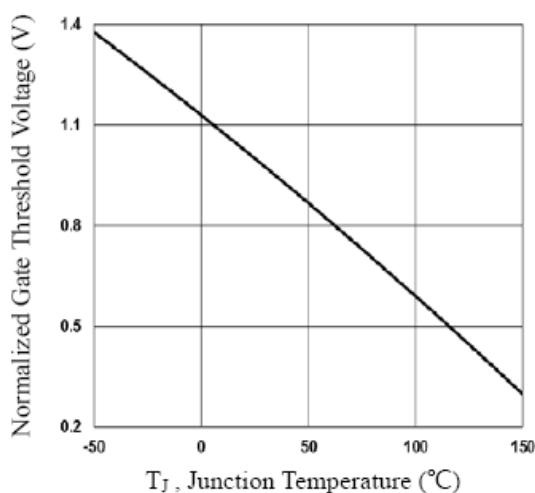


Fig.3 Normalized V_{th} vs. T_J

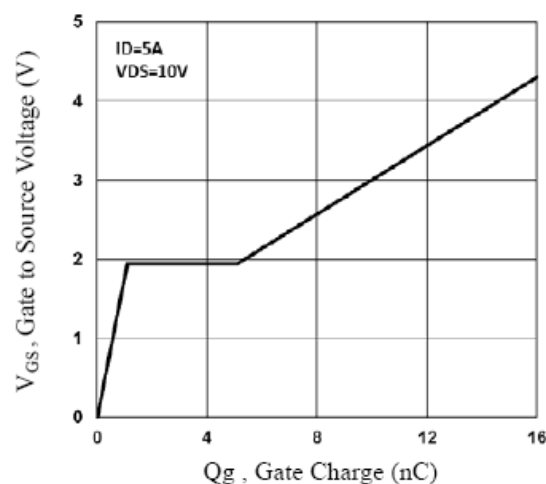


Fig.4 Gate Charge Waveform

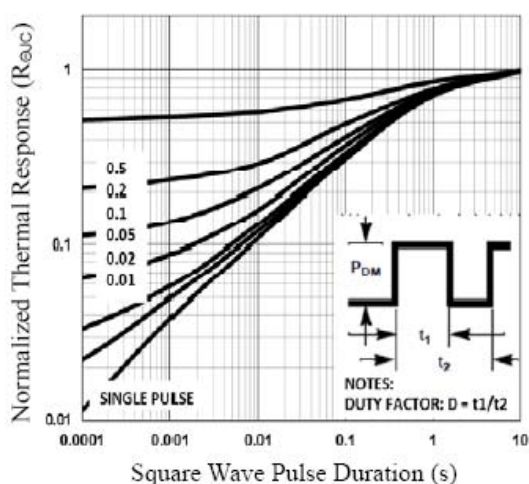


Fig.5 Normalized Transient Response

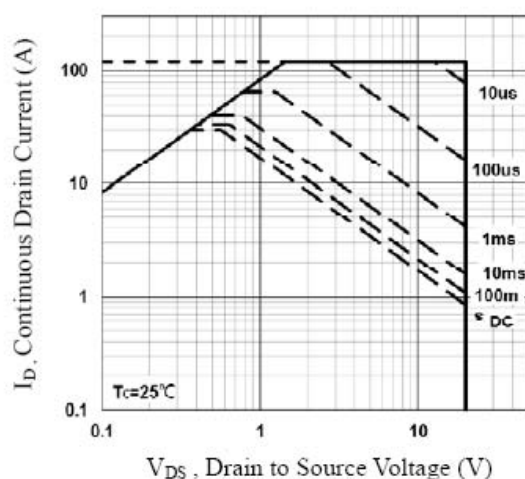
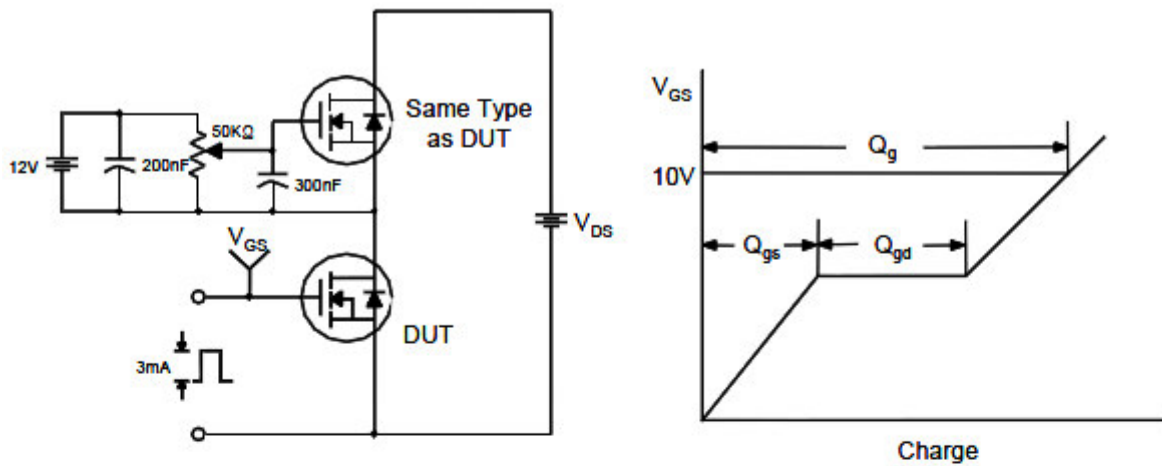


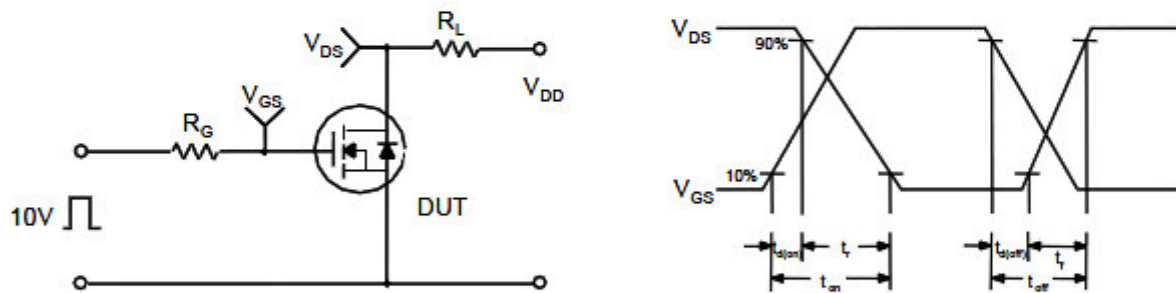
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

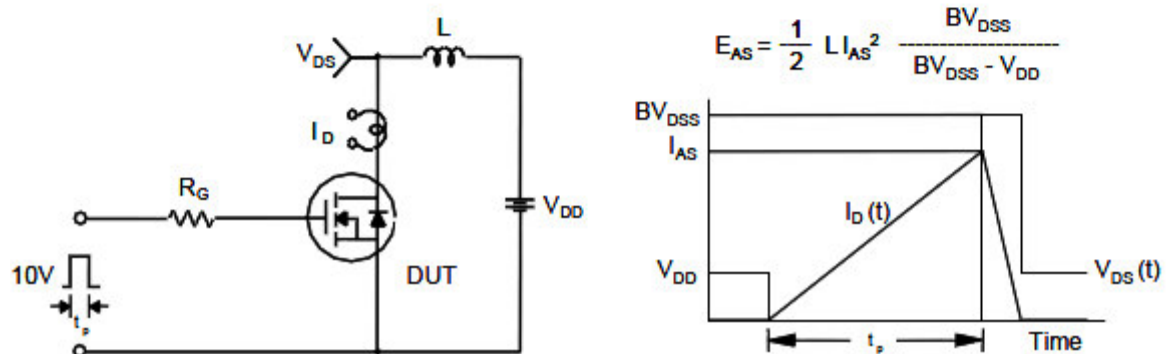
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

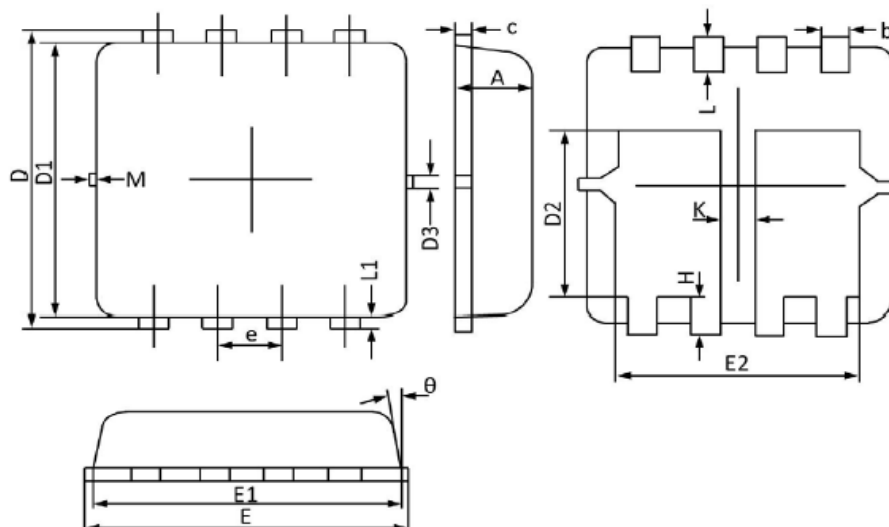


Unclamped Inductive Switching Test Circuit & Waveforms



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)	
K	0.300 (REF)		0.012 (REF)	
θ	0°	12°	0°	12°
M	0.150 (REF)		0.006 (REF)	

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