

GSMDC2209V

20V P-Channel Dual 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

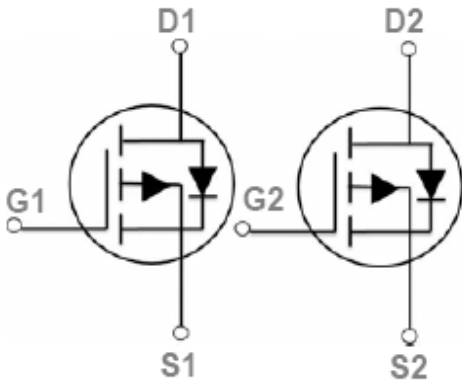
- -20V, -7.5A, $R_{DS(ON)}=33m\Omega@V_{GS}=-4.5V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- DFN3X3-8L package design

Applications

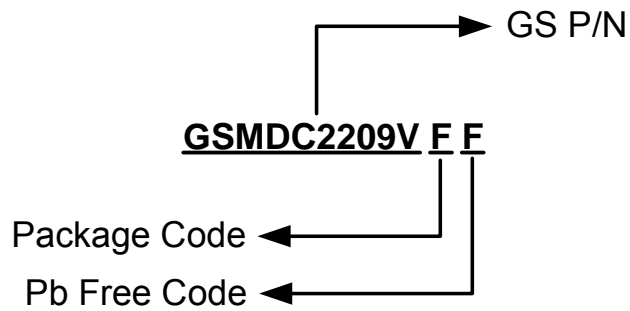
- MB / VGA / Vcore
- POL Applications
- Networking

Packages & Pin Assignments

GSMDC2209VFF (DFN3X3-8L)	
 <p style="text-align: center;">Top Views</p>	
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

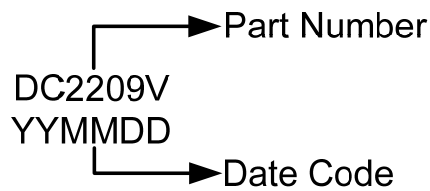


Ordering Information



Part Number	Package
GSMDC2209VFF	DFN3X3-8L

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	-7.5
		T _A =100°C	-4.5
I _{DM}	Pulsed Drain Current	-30	A
P _D	Power Dissipation (T _A =25°C)	2.5	W
	Power Dissipation (Derate above 25°C)	0.2	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	5	°C/W

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 =-250μA	-20			V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =-1mA		-0.02		V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.3	-0.6	-1	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient			2		mV/°C
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	μA
		V _{DS} =-16V, V _{GS} =0V, T _J =125°C			-10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			-7.5	A
I _{SM}	Pulsed Source Current				-15	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-4A		28	33	mΩ
		V _{GS} =-2.5V, I _D =-3A		37	45	
		V _{GS} =-1.8V, I _D =-2A		49	65	
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-3A		8.5		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 =-4A		16.1	25	nC
Q _{gs}	Gate-Source Charge			1.8	3.6	
Q _{gd}	Gate-Drain Charge			3.8	7	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz		1440	2100	pF
C _{oss}	Output Capacitance			155	230	
C _{rss}	Reverse Transfer Capacitance			115	170	
t _{d(on)}	Turn-On Time	V _{DD} =-10V, I _D =-1A, V _{GS} =-4.5V, R _G =25Ω		8.2	16	ns
t _r				30	57	
t _{d(off)}	Turn-Off Time			71	135	
t _f				20	38	

Typical Performance Characteristics

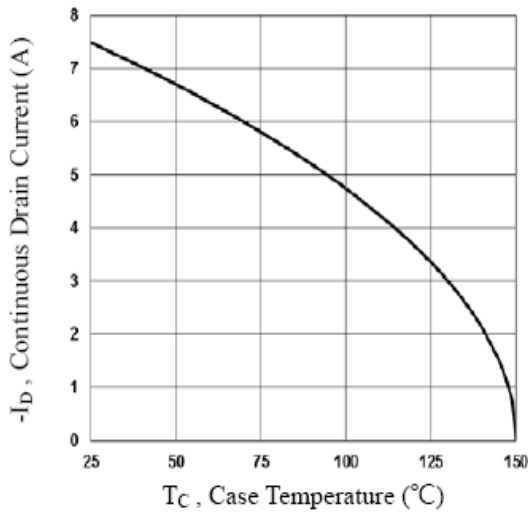


Fig.1 Continuous Drain Current vs. T_c

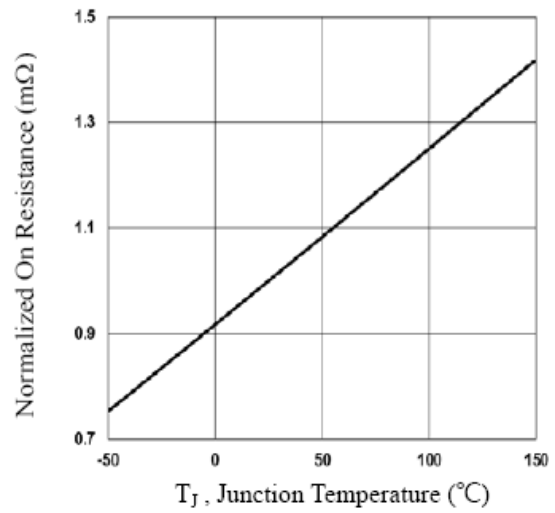


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

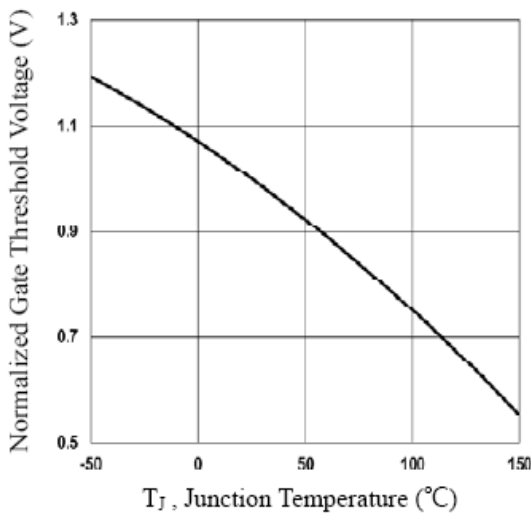


Fig.3 Normalized V_{th} vs. T_j

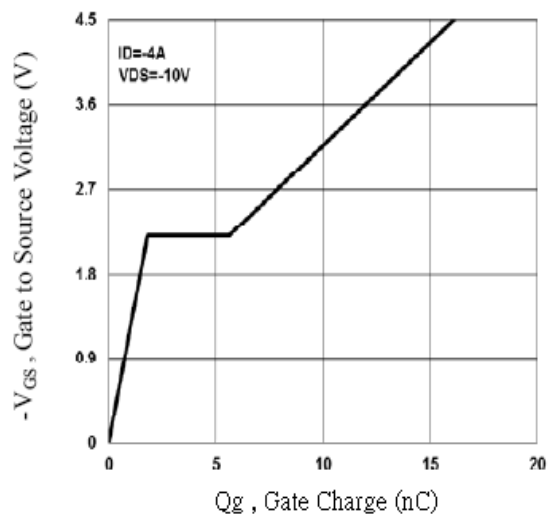


Fig.4 Gate Charge Waveform

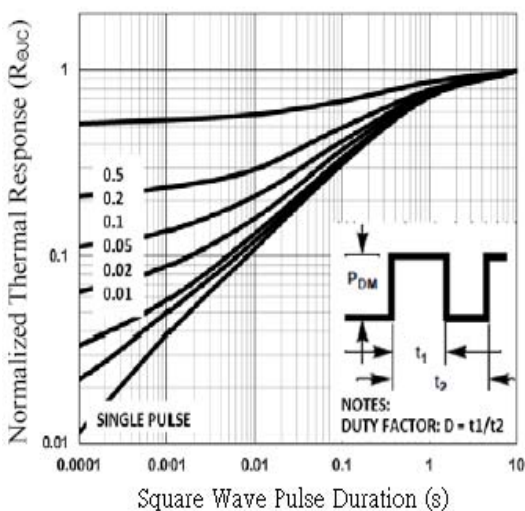


Fig.5 Normalized Transient Response

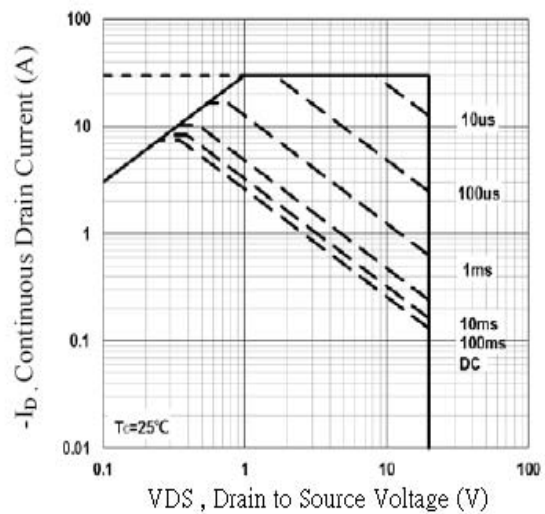
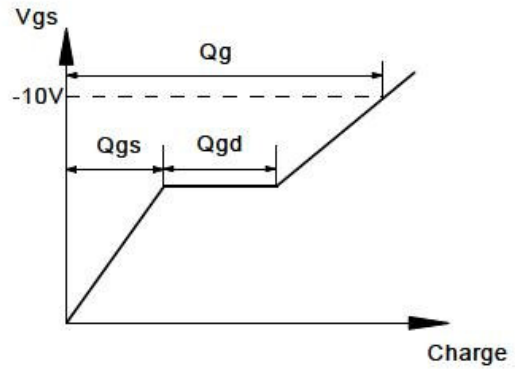
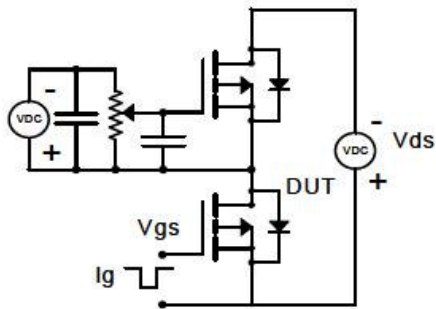


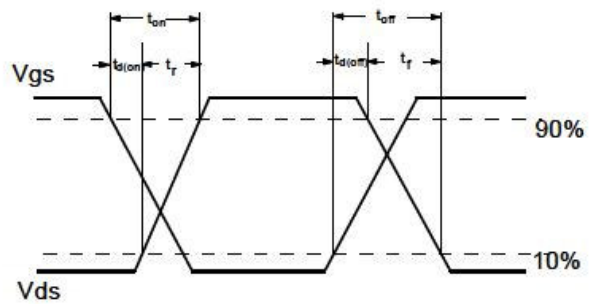
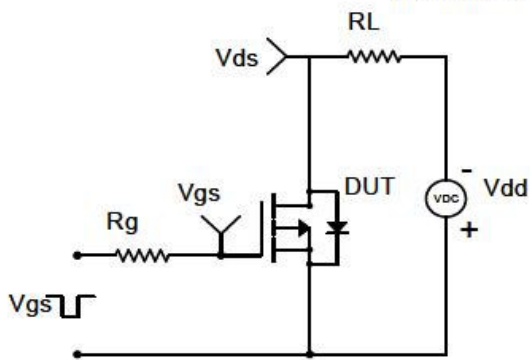
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

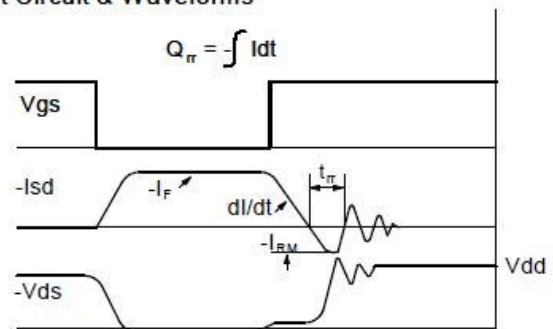
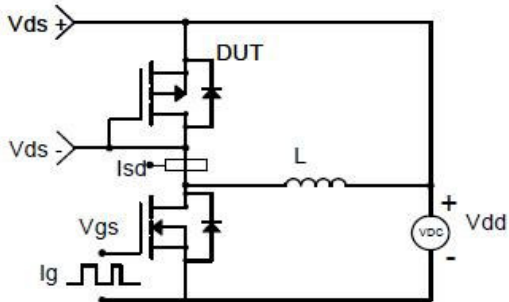
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

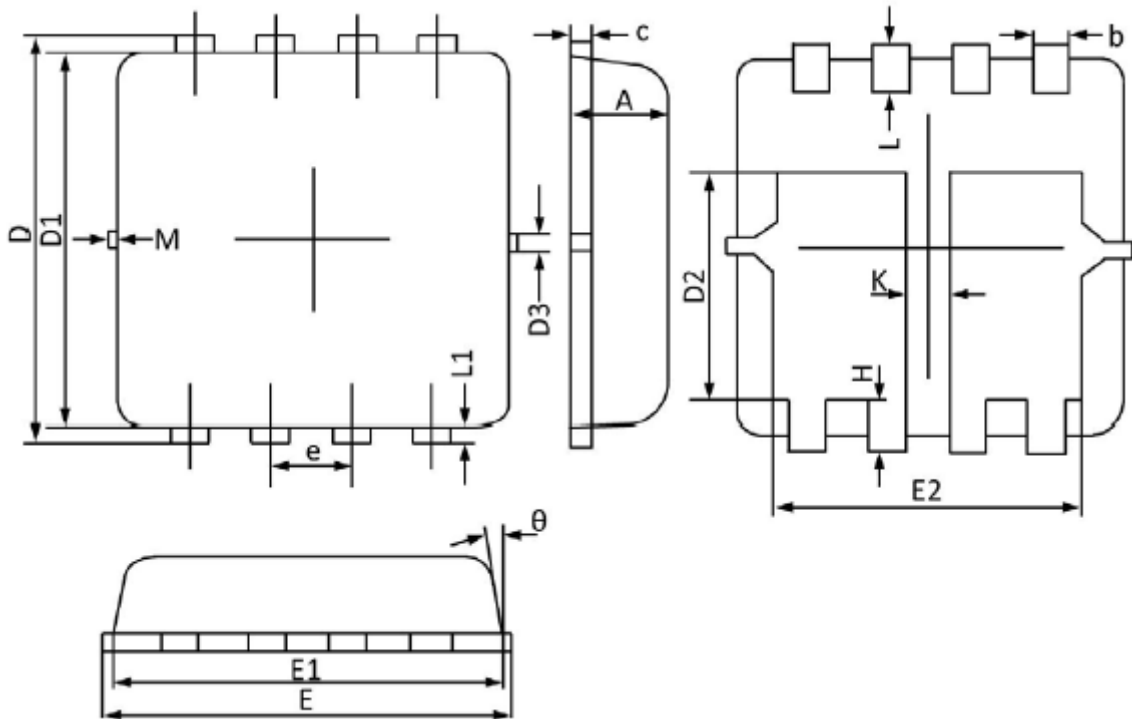


Diode Recovery Test Circuit & Waveforms



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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