GSMDC3902X

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, 130A, $R_{DS(ON)}$=1.6mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- DFN5X6-8L package design

Applications

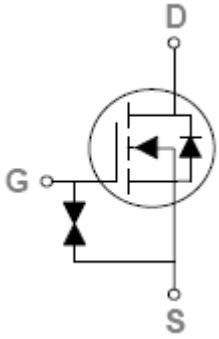
- MB / VGA / Server Vcore
- POL Applications
- SMPS 2nd SR
- BMS System

Packages & Pin Assignments

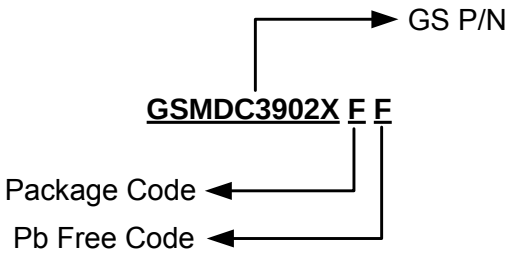
GSMDC3902XFF (DFN5X6-8L)

Top View

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

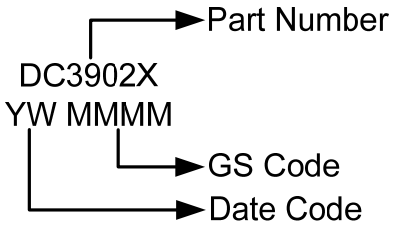


Ordering Information



Part Number	Package	Quantity
GSMDC3902XFF	DFN5X6-8L	3000 PCS

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℃	130	A
		T_C=100℃	82	
I_{DM}	Pulsed Drain Current (Note 1)		260	A
EAS	Single Pulse Avalanche Energy (Note 2)		245	mJ
IAS	Single Pulse Avalanche Current (Note 2)		70	A
P_D	Power Dissipation (T_C=25℃)		166	W
	Power Dissipation (Derate above 25℃)		1.33	W/℃
T_J	Operating Junction Temperature Range		-55 to +175	℃
T_{STG}	Storage Temperature Range		-55 to +175	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.9	℃/W

Note 1: Repetitive Rating: Pulsed width limited by maximum junction temperature.
Note 2: V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=70A, R_G=25Ω, Starting T_J=25℃.

Electrical Characteristics

T_J=25℃ Unless otherwise noted

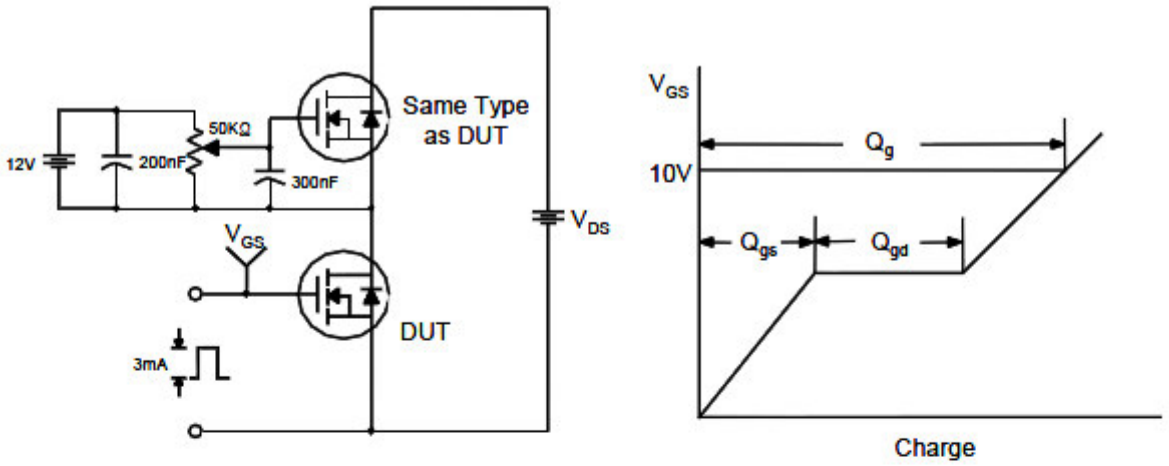
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1	1.6	2.5	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V			1	uA
		V_{DS}=24V,V_{GS}=0V, T_J=125℃			10	
I_S	Continuous Source Current (Note 3)	V_G=V_D=0V, Force Current			130	A
I_{SM}	Pulsed Source Current (Note 3)				200	
$R_{DS(on)}$	Drain-Source On-Resistance (Note 3)	V_{GS}=10V,I_D=30A		1.2	1.6	mΩ
		V_{GS}=4.5V,I_D=15A		1.8	2.4	
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=15A		30		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1	V
EAS	Single Pulse Avalanche Energy	V_{DD}=25V,L=0.1mH, I_{AS}=30A	45			mJ
Dynamic						
Q_g	Total Gate Charge (Note 3,4)	V_{DS}=15V,V_{GS}=4.5V, I_D=10A		64.8		nC
Q_{gs}	Gate-Source Charge (Note 3,4)			16.2		
Q_{gd}	Gate-Drain Charge (Note 3,4)			21		
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		7720		pF
C_{oss}	Output Capacitance			945		
C_{rss}	Reverse Transfer Capacitance			436		
$t_{d(on)}$	Turn-On Time (Note 3,4)	V_{DD}=15V,I_D=15A, V_{GS}=10V,R_G=3.3Ω		24		ns
t_r				60		
$t_{d(off)}$	Turn-Off Time (Note 3,4)			90		
t_f				32		
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V, f=1MHz		1.2		Ω

Note 3: The data tested by pulsed, pulse width≦300us, duty cycle≦2%.

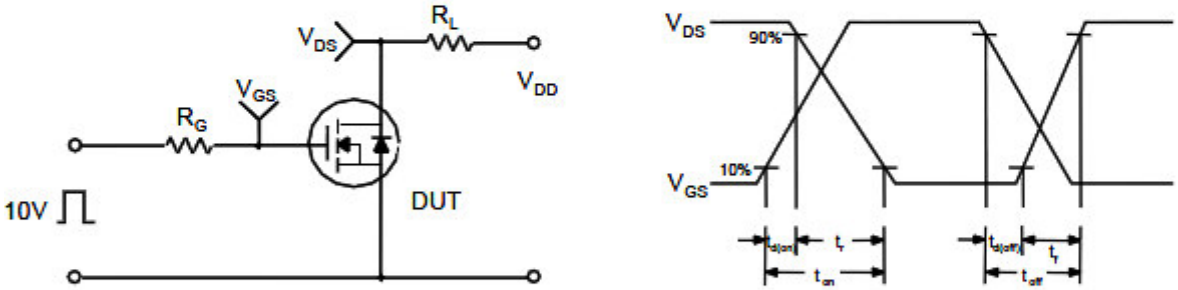
Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

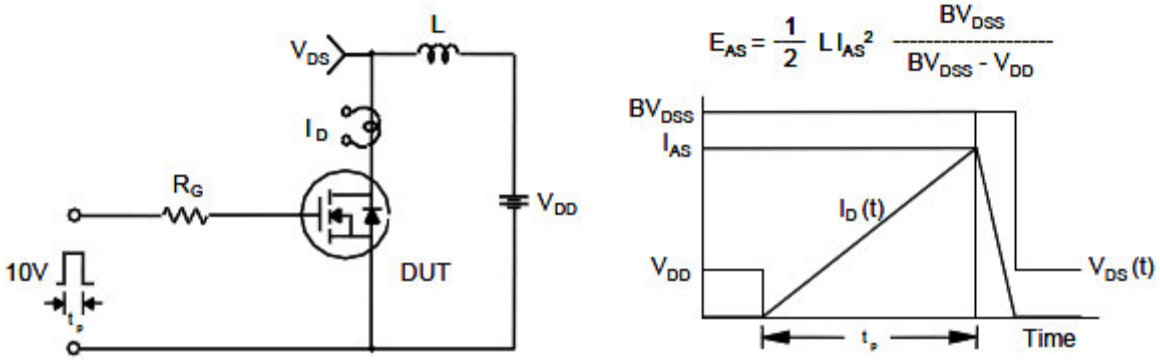
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

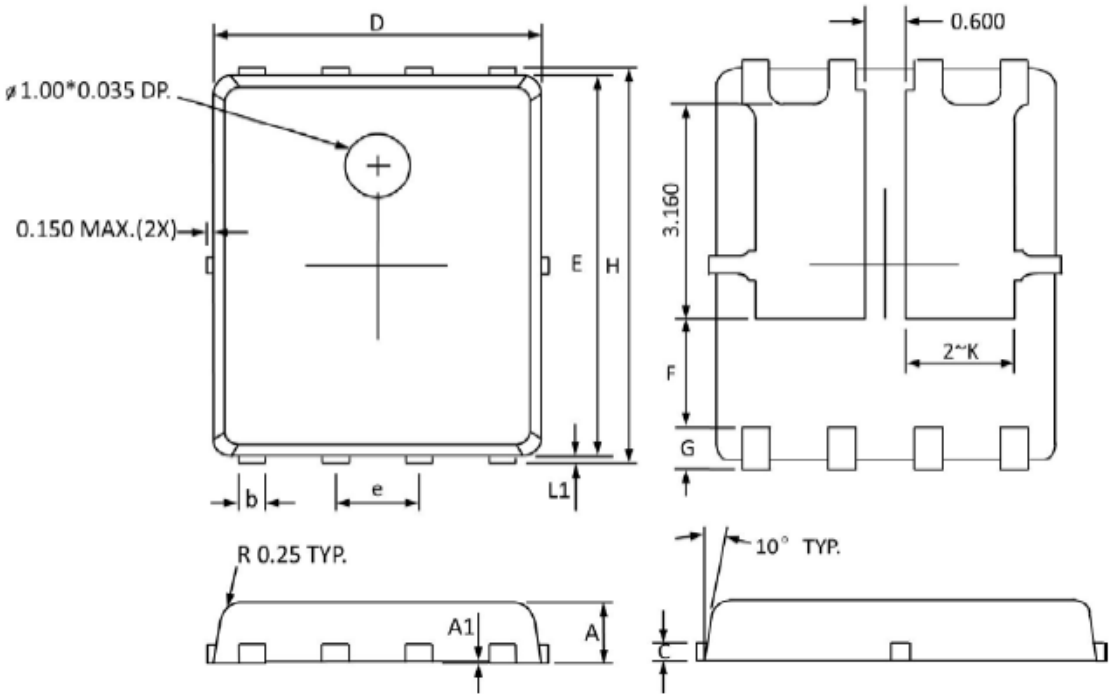


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

DFN5X6-8L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.800	1.000	0.032	0.039
A1	0.000	0.005	0.000	0.000
b	0.350	0.490	0.014	0.019
C	0.254 (REF)		0.010 (REF)	
D	4.900	5.100	0.193	0.200
E	5.700	5.900	0.225	0.232
e	1.27 (BSC)		0.050 (BSC)	
F	1.600 (REF)		0.063 (REF)	
G	0.600 (REF)		0.024 (REF)	
H	5.950	6.200	0.235	0.244
L1	0.100	0.180	0.004	0.007
K	1.600 (REF)		0.063 (REF)	

NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

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

Shenzhen Branch(China)	
	1113 B Building, Happiness Washington, Baoan Nan Road, Luohu District, Shenzhen City, China
	0755-22208941
	sales_cn@gs-power.com

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