

GSMDC0966X

100V 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.

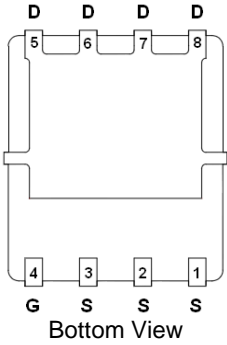
Features

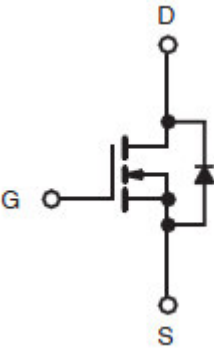
- 100V, 45A, $R_{DS(ON)}=18m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- DFN5X6-8L package design

Applications

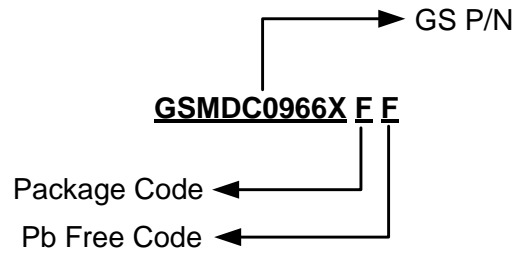
- Networking
- Load Switch
- LED Applications

Packages & Pin Assignments

GSMDC0966XFF (DFN5X6-8L)	
 <p>Bottom View</p>	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

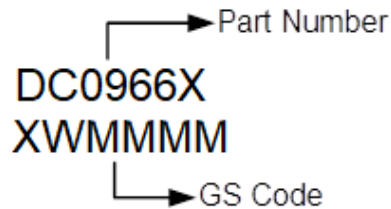


Ordering Information



Part Number	Package
GSMDC0966XFF	DFN5X6-8L

Marking Information



Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate –Source Voltage	±20	V
I _D	Continuous Drain Current	T _A =25°C	45
		T _A =100°C	28
I _{DM}	Pulsed Drain Current	180	A
EAS	Single Pulse Avalanche Energy	45	mJ
IAS	Single Pulse Avalanche Current	30	A
P _D	Power Dissipation (T _A =25°C)	135	W
	Power Dissipation (Derate above 25°C)	1.08	W/°C
T _J	Operating Junction Temperature Range	-50 to +150	°C
T _{STG}	Storage Temperature Range	-50 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	62	°C/W
R _{θJC}	Thermal Resistance-Junction to Case	0.92	°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 =250uA	100			V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA		0.05		V/°C
V _{GS(th)}	Gate Threshold Voltage		1	2	3	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient	V _{DS} =V _{GS} , I _D =250uA		-5		mV/°C
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V, T _J =125°C			10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			45	A
I _{SM}	Pulsed Source Current				90	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =16A		15	18	mΩ
		V _{GS} =6V, I _D =8A		17	22	
		V _{GS} =4.5V, I _D =8A		25	38	
g _{Fs}	Forward Transconductance	V _{DS} =10V, I _D =3A		10		S
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A			1	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =10V, I _D =5A		36.8	68	nC
Q _{gs}	Gate-Source Charge			9.3	18	
Q _{gd}	Gate-Drain Charge			9.8	19	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz		1820	3300	pF
C _{oss}	Output Capacitance			170	340	
C _{rss}	Reverse Transfer Capacitance			90	180	
t _{d(on)}	Turn-On Time	V _{DD} =50V, I _D =1A, V _{GS} =10V, R _G =6Ω		20	40	ns
t _r				15	30	
t _{d(off)}	Turn-Off Time			45	80	
t _f				21	40	
R _g	Gate Resistance		V _{DS} =0V, V _{GS} =0V, f=1MHz		1.35	

Typical Performance Characteristics

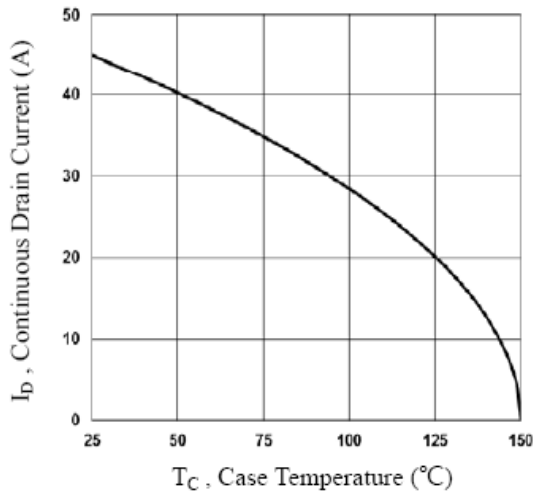


Fig.1 Continuous Drain Current vs. T_C

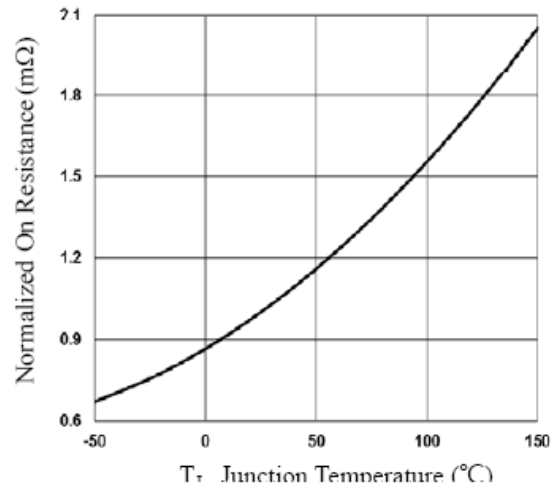


Fig.2 Normalized RDSON vs. T_J

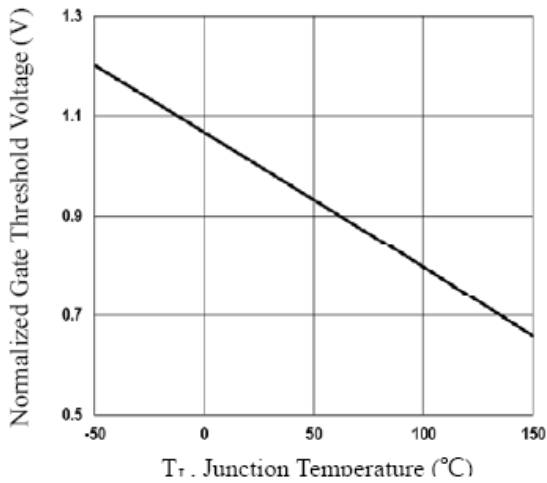


Fig.3 Normalized V_{th} vs. T_J

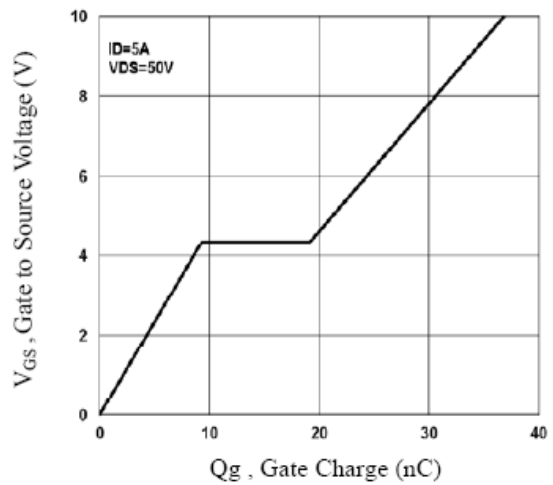


Fig.4 Gate Charge Characteristics

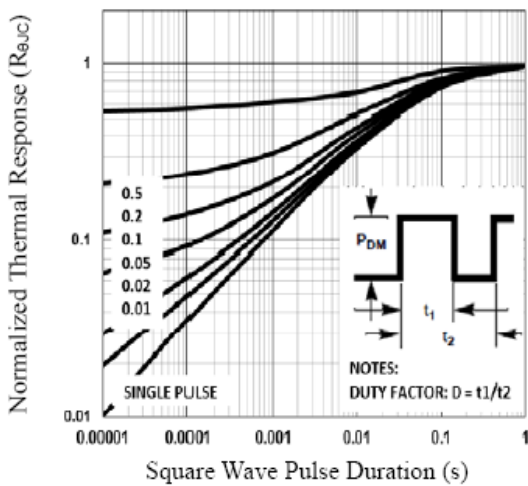


Fig.5 Normalized Transient Impedance

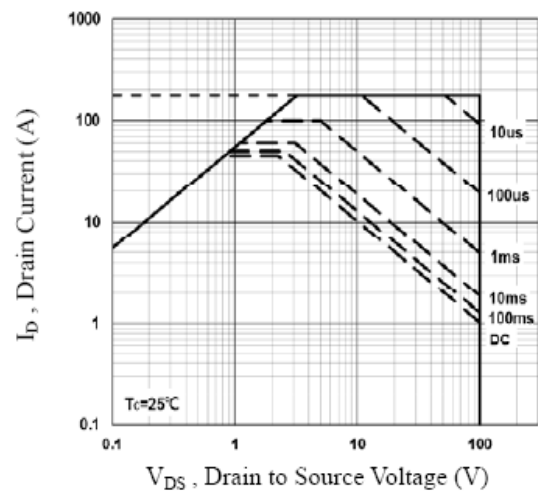
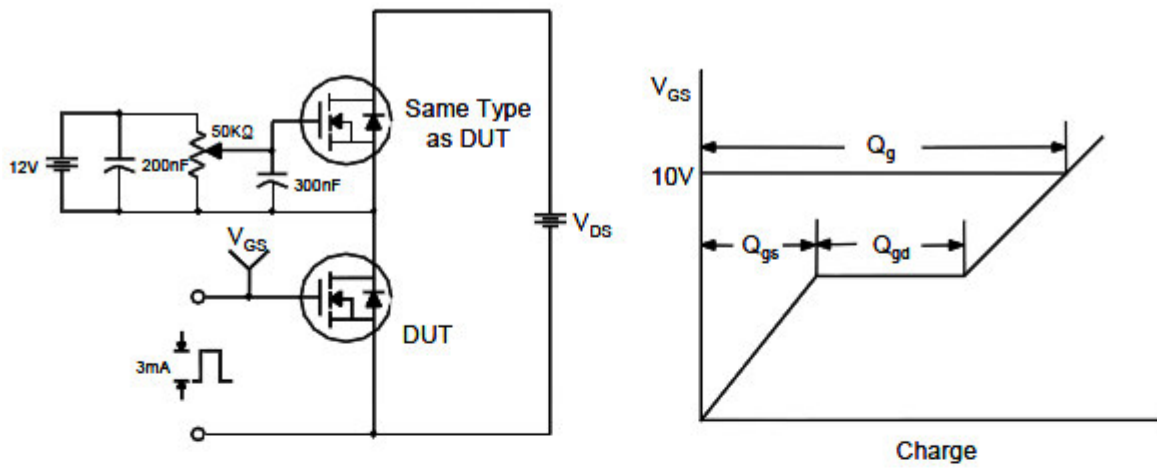


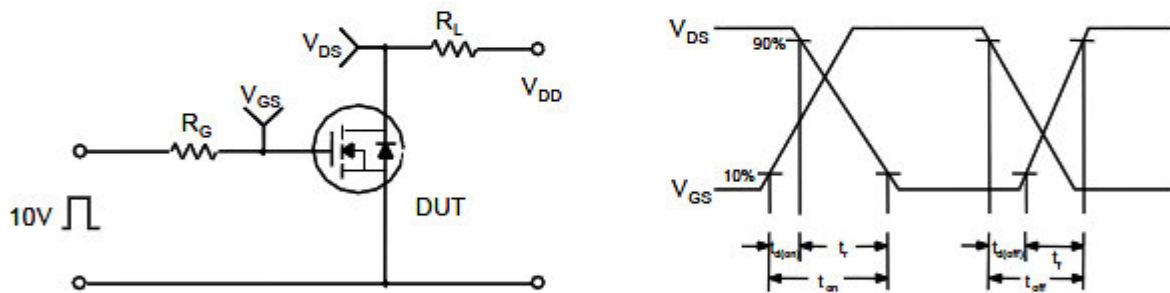
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

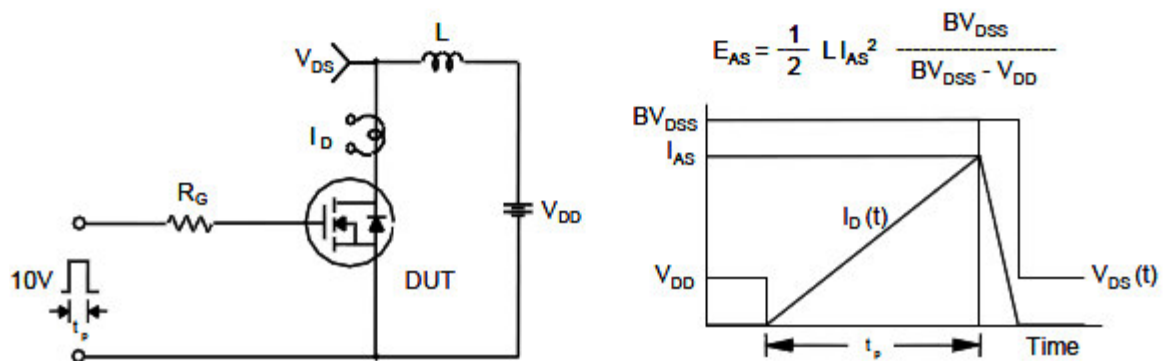
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

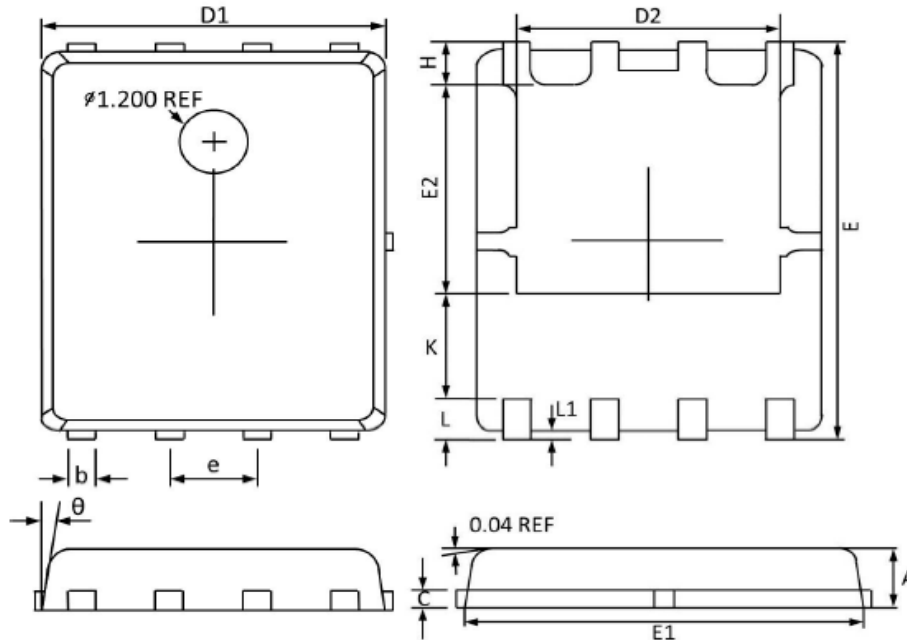


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

DFN5X6-8L







Dimensions



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.036	0.043
b	0.330	0.510	0.013	0.020
c	0.200	0.300	0.008	0.011
D1	4.800	5.100	0.189	0.201
D2	3.610	4.100	0.142	0.161
E	5.900	6.200	0.232	0.244
E1	5.700	5.900	0.224	0.232
E2	3.350	3.780	0.132	0.149
e	1.270 (BSC)		0.050 (BSC)	
H	0.410	0.700	0.016	0.028
K	1.100	1.500	0.043	0.059
L	0.510	0.710	0.020	0.028
L1	0.060	0.200	0.002	0.008
θ	0°	12°	0°	12°

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