GSMDC4960X

40V 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

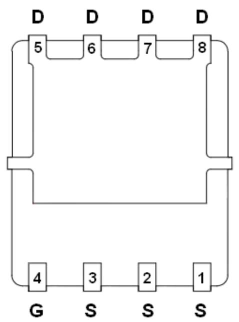
- 40V, 100A, $R_{DS(ON)}$=2.8mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- DFN5X6-8L package design

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR

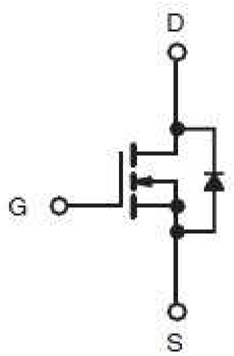
Packages & Pin Assignments

GSMDC4960XFF (DFN5X6-8L)



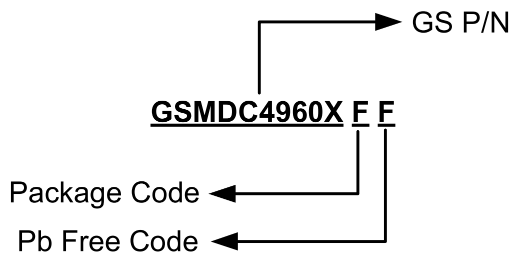
Bottom View

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



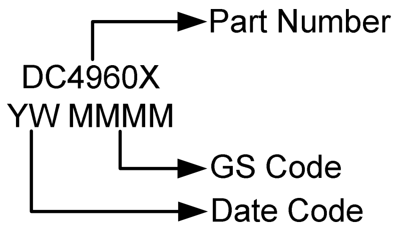
GSMDC4960X

Ordering Information



Part Number	Package	Quantity
GSMDC4960XFF	DFN5X6-8L	3000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		40	V
V_{GS}	Gate –Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25℃	100	A
		T_C=100℃	63	
I_{DM}	Pulsed Drain Current (Note 1)		400	A
EAS	Single Pulse Avalanche Energy (Note 2)		312	mJ
IAS	Single Pulse Avalanche Current (Note 2)		79	A
P_D	Power Dissipation (T_C=25℃)		135	W
	Power Dissipation (Derate above 25℃)		1.08	W/℃
T_J	Operating Junction Temperature Range		-55 to +150	℃
T_{STG}	Storage Temperature Range		-55 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.92	℃/W

Note 1: Repetitive Rating: Pulsed width limited by maximum junction temperature.
Note 2: V_{DD}=25V, V_{GS}=10V, L=0.1mH, IAS=79A, 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	40			V
△BV_{DSS}/△T_J	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA		0.03		V/℃
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.2	1.6	2.5	V
△$V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient	V_{DS}=V_{GS},I_D=250uA		-5		mV/℃
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V,V_{GS}=0V			1	uA
		V_{DS}=32V,V_{GS}=0V, T_J=125℃			10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			100	A
I_{SM}	Pulsed Source Current				200	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=25A		2.2	2.8	mΩ
		V_{GS}=4.5V,I_D=12A		2.6	3.5	
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=2A		16		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1	V
Dynamic						
Q_g	Total Gate Charge (Note 3,4)	V_{DS}=20V,V_{GS}=4.5V, I_D=10A		44.4	80	nC
Q_{gs}	Gate-Source Charge (Note 3,4)			9.6	18	
Q_{gd}	Gate-Drain Charge (Note 3,4)			16	30	
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		4940	7800	pF
C_{oss}	Output Capacitance			425	800	
C_{rss}	Reverse Transfer Capacitance			170	330	
$t_{d(on)}$	Turn-On Time (Note 3,4)	V_{DD}=20V,I_D=1A, V_{GS}=10V,R_G=6Ω		28	50	ns
t_r				3.2	6.5	
$t_{d(off)}$	Turn-Off Time (Note 3,4)			89	160	
t_f				14	28	
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V, f=1MHz		1.4	2.8	Ω

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

Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

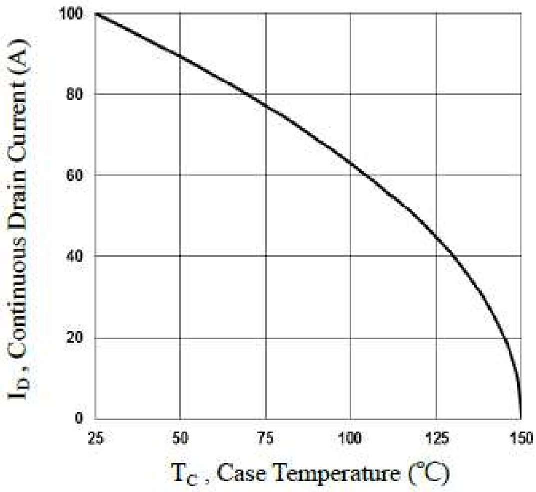


Fig.1 Continuous Drain Current vs. T_C

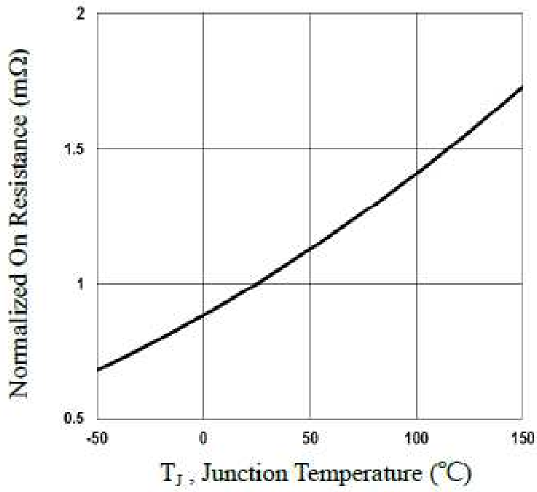


Fig.2 Normalized RDSON vs. T_J

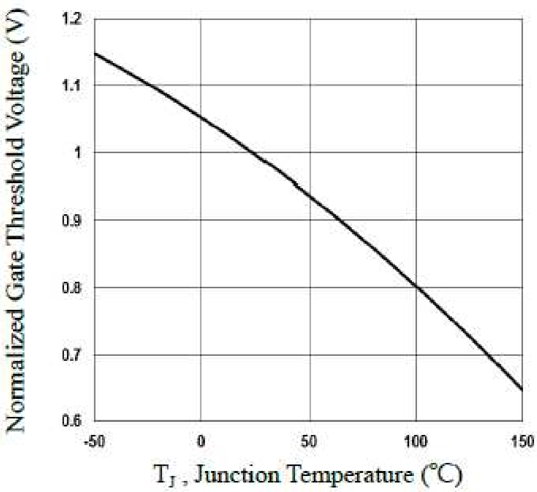


Fig.3 Normalized V_{th} vs. T_J

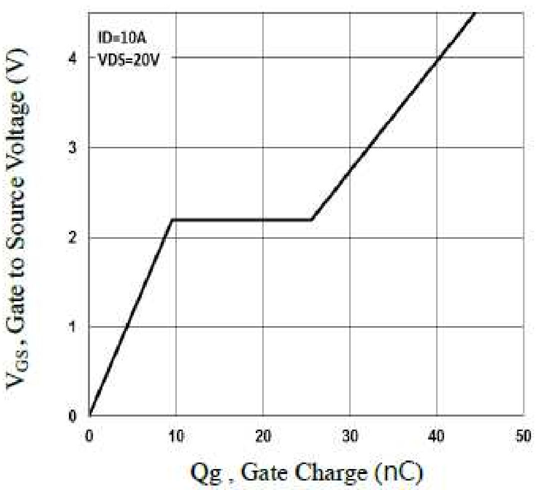


Fig.4 Gate Charge Waveform

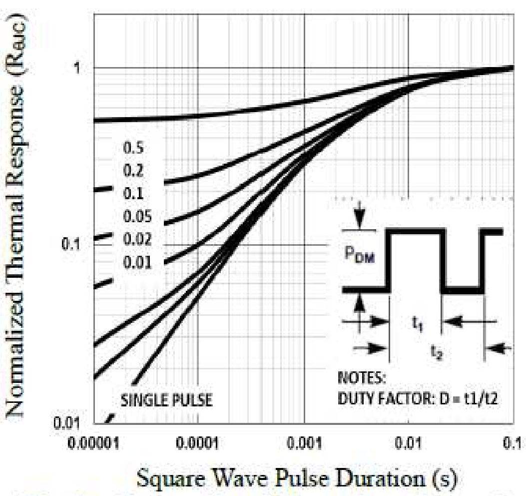


Fig.5 Normalized Transient Impedance

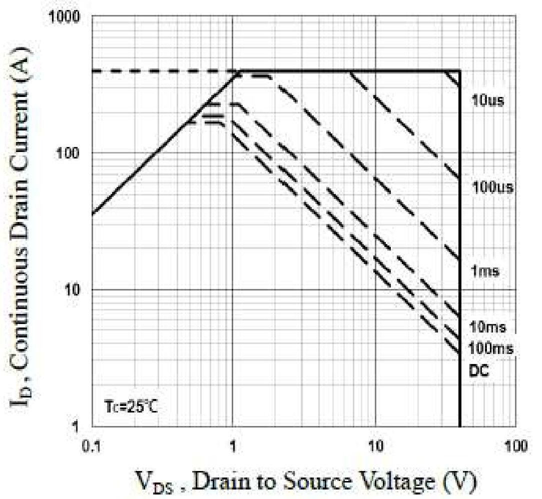


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics

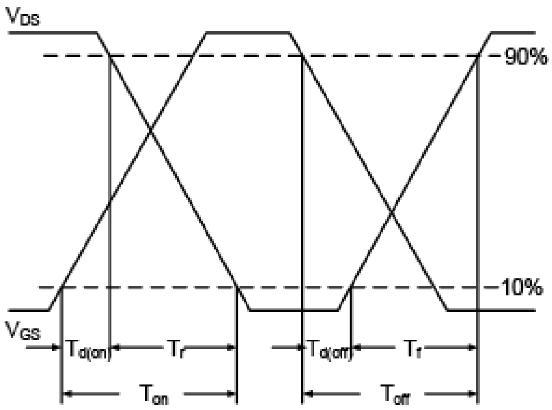


Fig.7 Switching Time Waveform

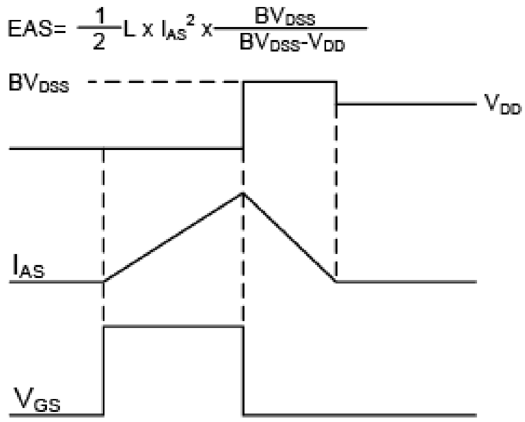
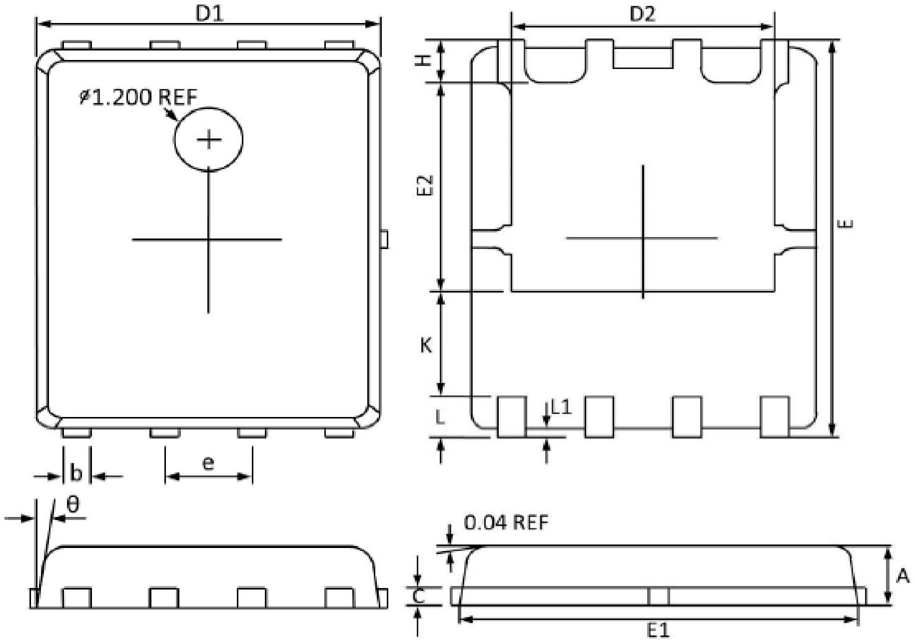


Fig.8 EAS Waveform

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°

NOTICE

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