GSMDC2604Z

20V 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

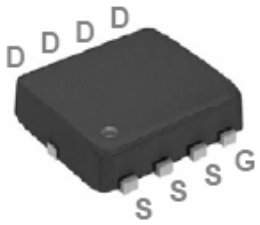
- 20V, 80A, $R_{DS(ON)}$=3.5mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- DFN3X3-8L package design

Applications

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

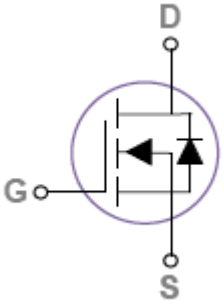
Packages & Pin Assignments

GSMDC2604ZFF (DFN3X3-8L)

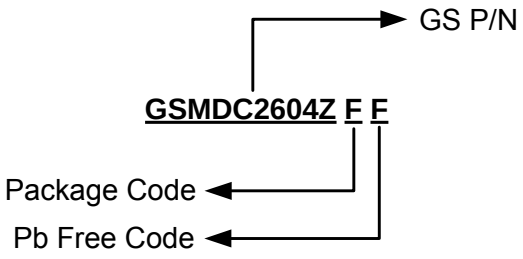


Top View

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

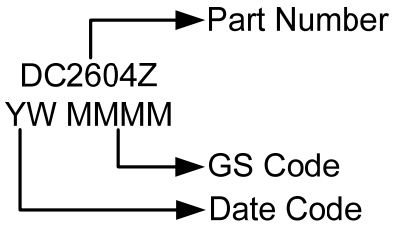


Ordering Information



Part Number	Package	Quantity
GSMDC2604ZFF	DFN3X3-8L	3000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current (Chip Limitation)	T_C=25℃	80	A
		T_C=100℃	51	
I_{DM}	Pulsed Drain Current		320	A
P_D	Power Dissipation (T_C=25℃)		66	W
	Power Dissipation (Derate above 25℃)		0.53	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		2	℃/W

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	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	0.3	0.65	1	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±12V			±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			80	A
I_{SM}	Pulsed Source Current				160	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V,I_D=15A		2.8	3.5	mΩ
		V_{GS}=2.5V,I_D=10A		3.5	4.5	
		V_{GS}=1.8V,I_D=6A		5	7	
g_{FS}	Forward Transconductance	V_{DS}=5V,I_D=5A		35		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		52	100	nC
Q_{gs}	Gate-Source Charge			6.6	12	
Q_{gd}	Gate-Drain Charge			13.8	28	
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1MHz		3870	5500	pF
C_{oss}	Output Capacitance			580	850	
C_{rss}	Reverse Transfer Capacitance			340	600	
$t_{d(on)}$	Turn-On Time	V_{DD}=10V,I_D=1A, V_{GS}=4.5V,R_G=3.3Ω		20.2	40	ns
t_r				31.2	60	
$t_{d(off)}$	Turn-Off Time			68.5	120	
t_f				21.2	42	
R_g	Gate Resistance	V_{GS}=0V,V_{DS}=0V, f=1MHz		1.3	2.6	Ω

Note 1: Repetitive Rating : Pulsed width limited by maximum junction temperature.
Note 2: The data tested by pulsed , pulse width≦300us, duty cycle≦2%.
Note 3: Essentially independent of operating temperature.

Typical Performance Characteristics

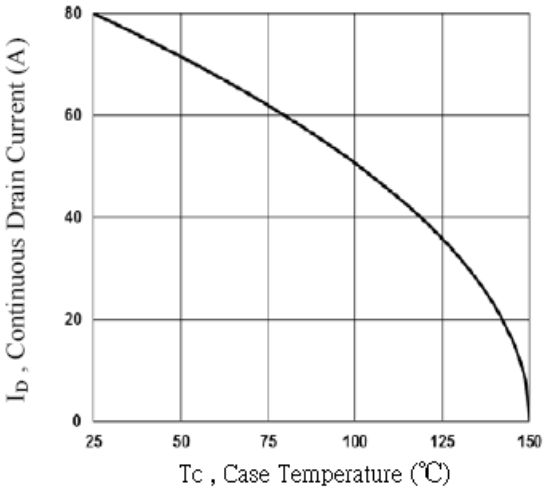


Fig.1 Continuous Drain Current vs. T_c

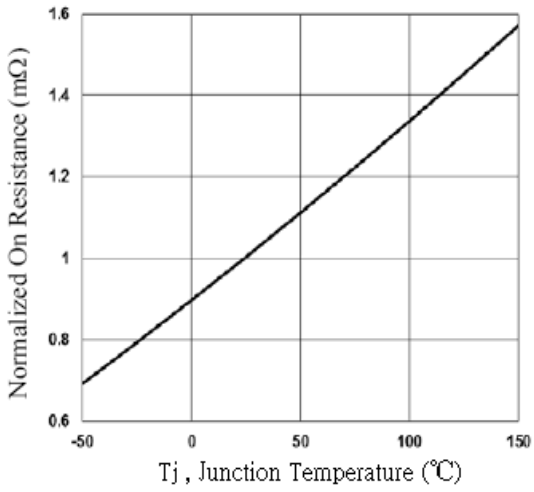


Fig.2 Normalized RDSON vs. T_J

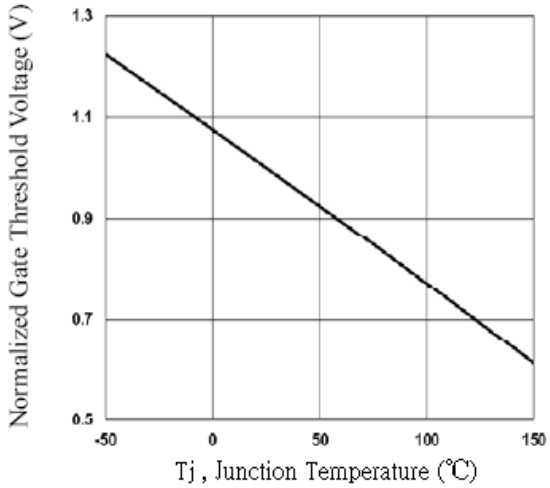


Fig.3 Normalized V_{th} vs. T_J

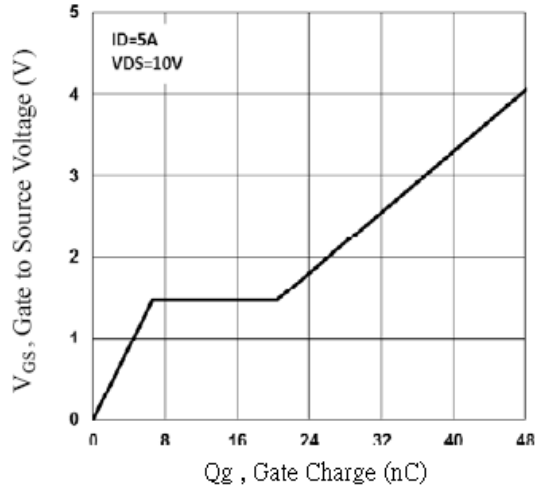


Fig.4 Gate Charge Waveform

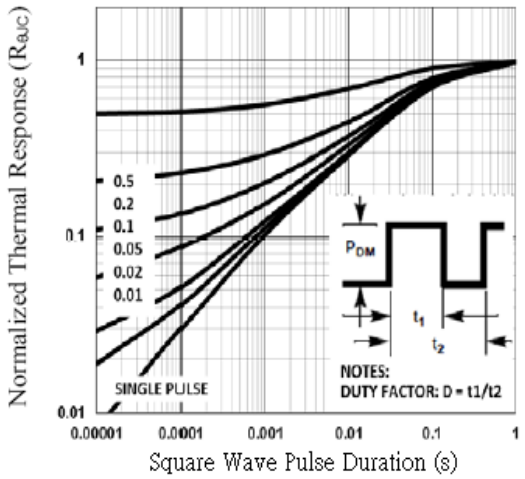


Fig.5 Normalized Transient Impedance

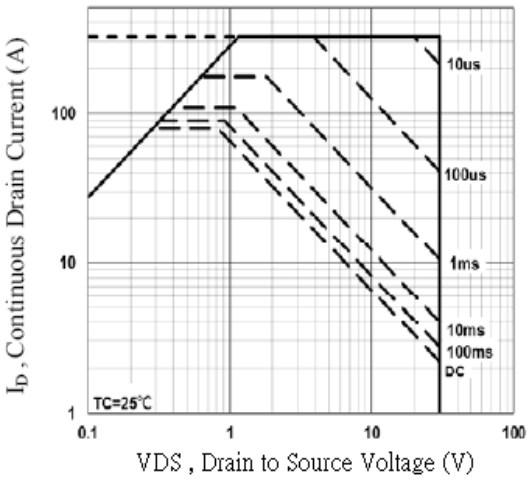
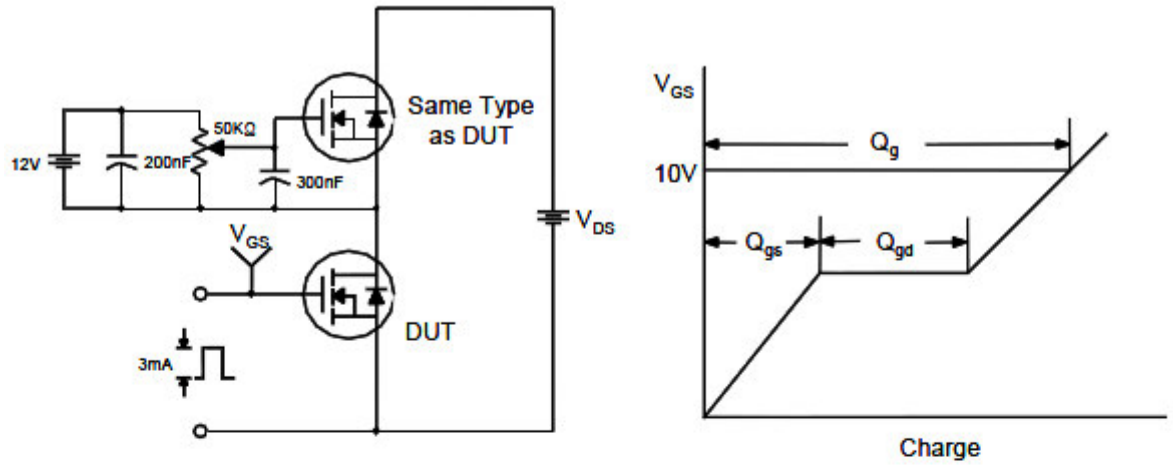


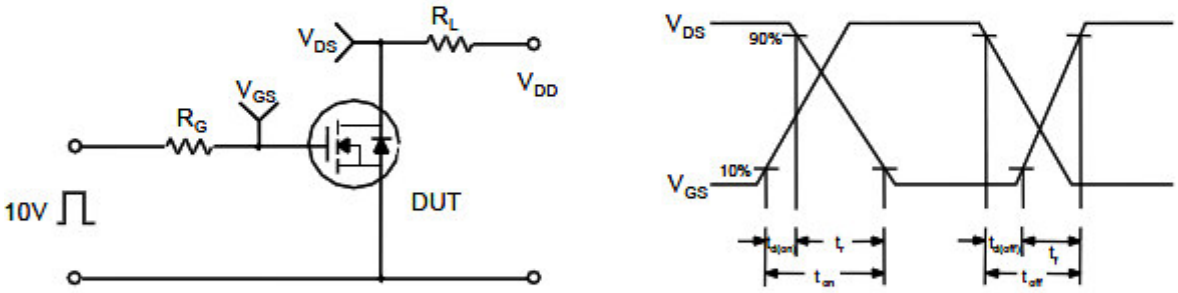
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

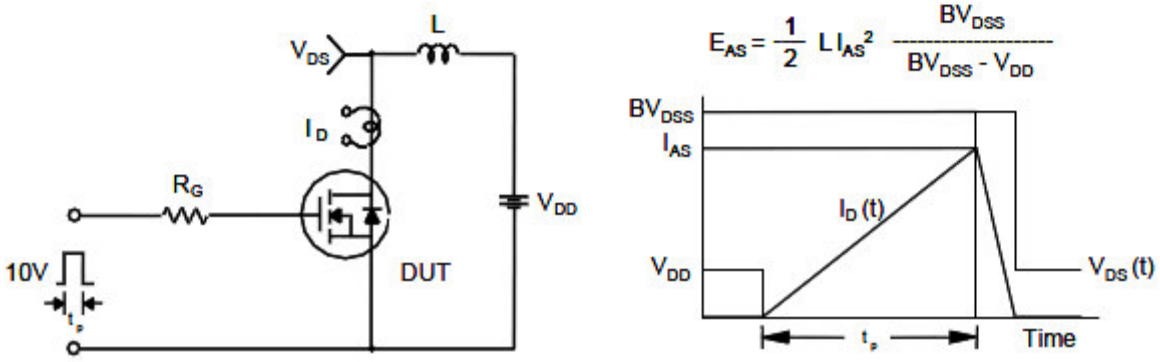
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

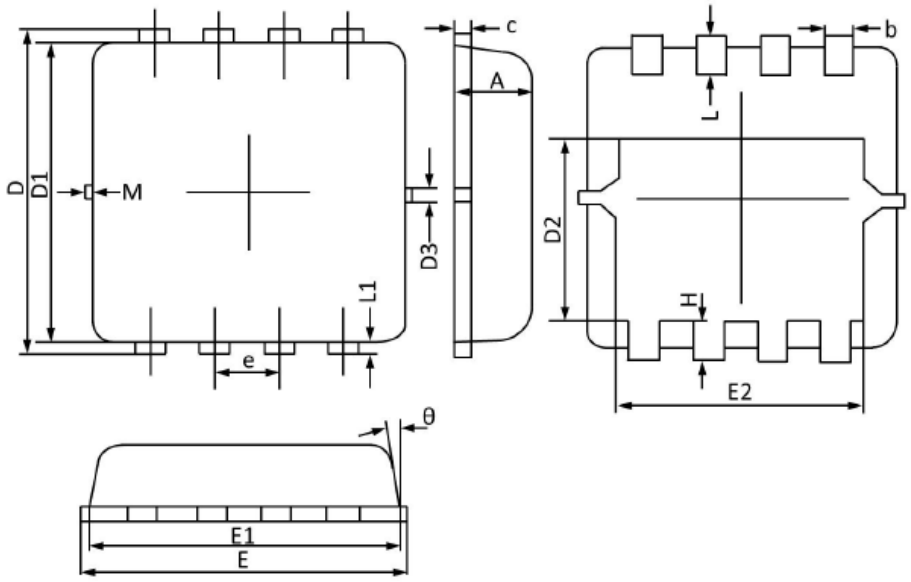


Unclamped Inductive Switching Test Circuit & Waveforms



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)	
θ	0°	12°	0°	12°
M	0.150 (REF)		0.006 (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