GSMDC0956Z

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

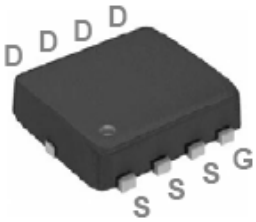
- 100V, 10A, $R_{DS(ON)}$=115mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed
- Green Device Available
- DFN3X3-8L package design

Applications

- Motor Drive
- Power Tools
- LED Lighting

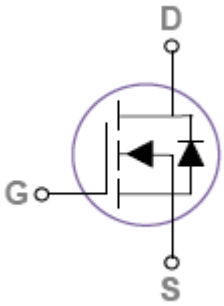
Packages & Pin Assignments

GSMDC0956ZFF (DFN3X3-8L)

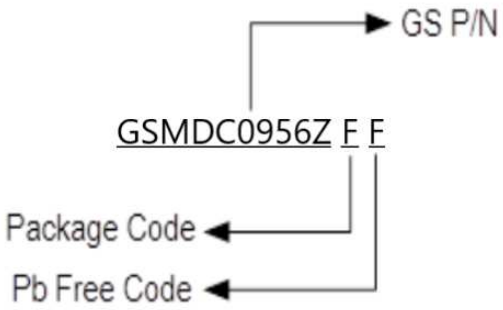


Top View

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

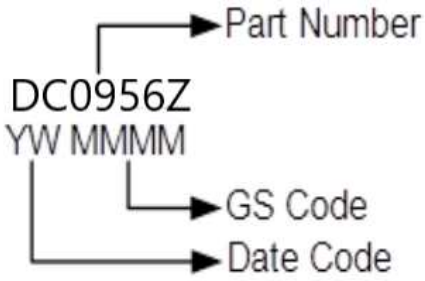


Ordering Information



Part Number	Package	Quantity
GSMDC0956ZFF	DFN3X3-8L	5000 PCS

Marking Information



Absolute Maximum Ratings

T_C=25ºC 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_C=25℃	10	A
		T_C=100℃	6.3	
I_{DM}	Pulsed Drain Current (Note 1)		40	A
EAS	Single Pulse Avalanche Energy (Note 2)		6	mJ
IAS	Single Pulse Avalanche Current (Note 2)		11	A
P_D	Power Dissipation (T_C=25℃)		29.8	W
	Power Dissipation (Derate above 25℃)		0.24	W/℃
T_J	Operating Junction Temperature Range		-50 to +150	℃
T_{STG}	Storage Temperature Range		-50 to +150	℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4.2	℃/W

Note 1: Repetitive Rating: Pulsed width limited by maximum junction temperature.
Note 2: V_{DD}=25V, V_{GS}=10V, L=0.1mH, IAS=11A, 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	100			V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA		0.09		V/℃
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.2	1.6	2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-5		mV/℃
I_{GSS}	Gate-Source Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V, T_J=125℃			10	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			10	A
I_{SM}	Pulsed Source Current				20	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS} =10V,I_D=10A		90	115	mΩ
		V_{GS} =4.5V,I_D=8A		95	120	
g_{FS}	Forward Transconductance	V_{DS}=10V,I_D=10A		8.7		S
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1	V
t_{rr}	Reverse Recovery Time (Note 3,4)	V_{GS}=0V,I_S=1A, di/dt=100A/us		38		ns
Q_{rr}	Reverse Recovery Charge (Note 3,4)			27		nC
Dynamic						
Q_g	Total Gate Charge (Note 3,4)	V_{DS}=50V,V_{GS}=10V, I_D=2A		20	40	nC
Q_{gs}	Gate-Source Charge (Note 3,4)			3.2	6	
Q_{gd}	Gate-Drain Charge (Note 3,4)			3.6	7	
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V, f=1MHz		1400	2800	pF
C_{oss}	Output Capacitance			60	120	
C_{rss}	Reverse Transfer Capacitance			35	70	
$t_{d(on)}$	Turn-On Time (Note 3,4)	V_{DD}=50V,I_D=1A, V_{GS}=10V,R_G=3.3Ω		18	36	ns
t_r				4	8	
$t_{d(off)}$	Turn-Off Time (Note 3,4)			40	80	
t_f				3	6	
R_g	Gate Resistance	V_{DS}=0V,V_{GS}=0V, f=1MHz		2	4	Ω

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

Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

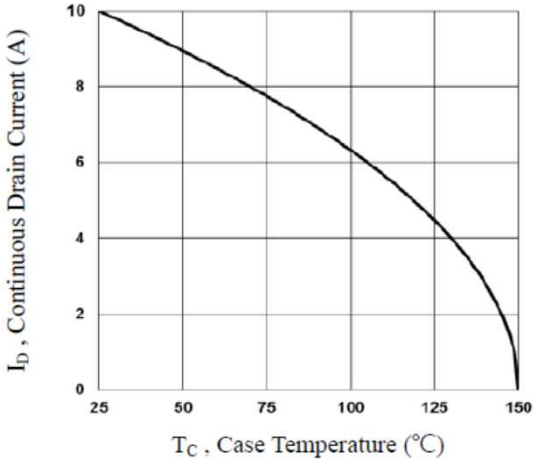


Fig.1 Continuous Drain Current vs. T_c

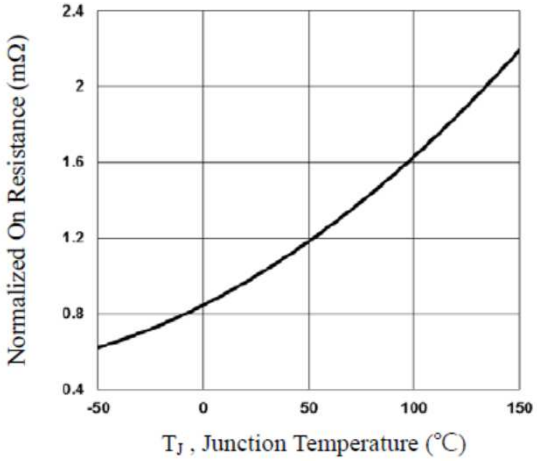


Fig.2 Normalized RDSON vs. T_J

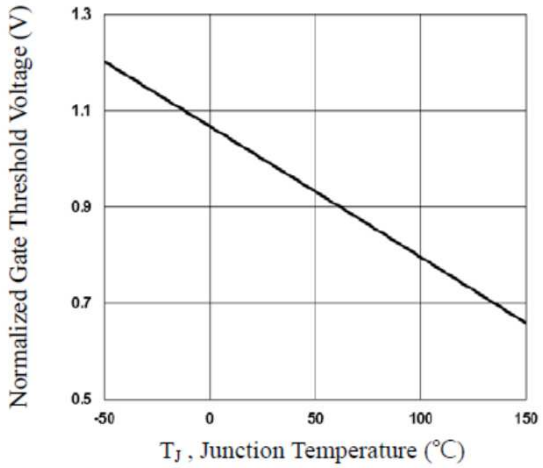


Fig.3 Normalized V_{th} vs. T_J

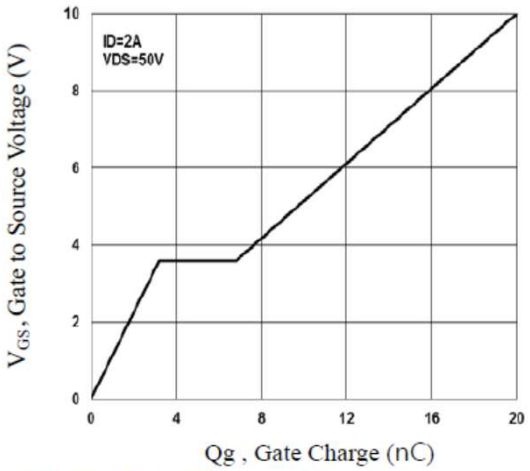


Fig.4 Gate Charge Waveform

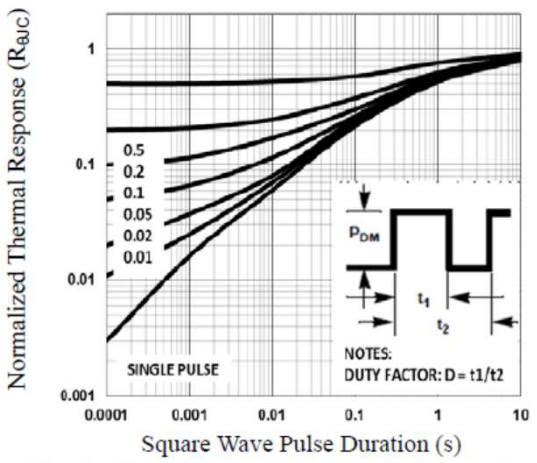


Fig.5 Normalized Transient Impedance

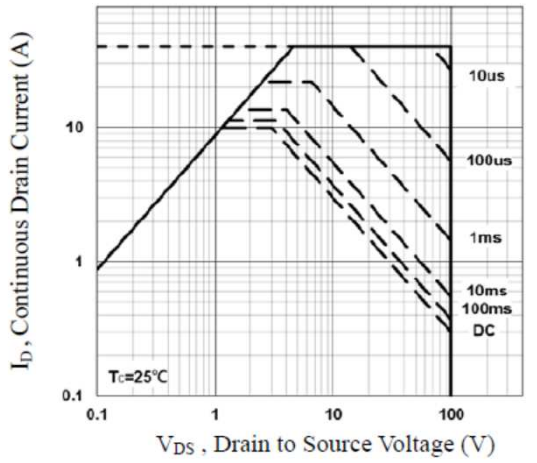
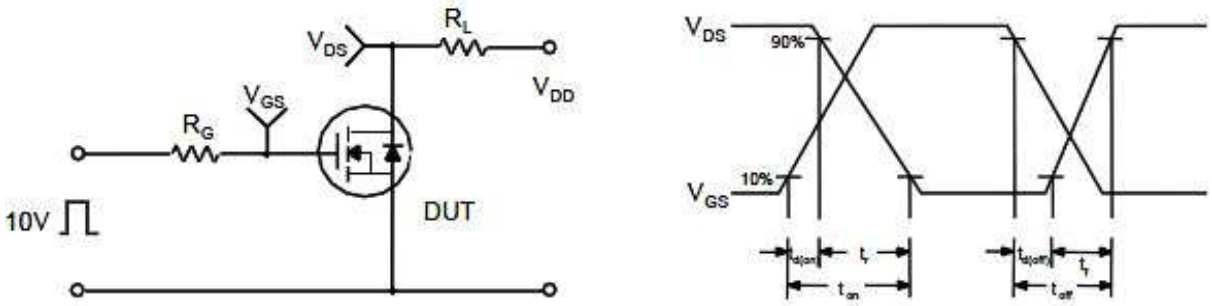


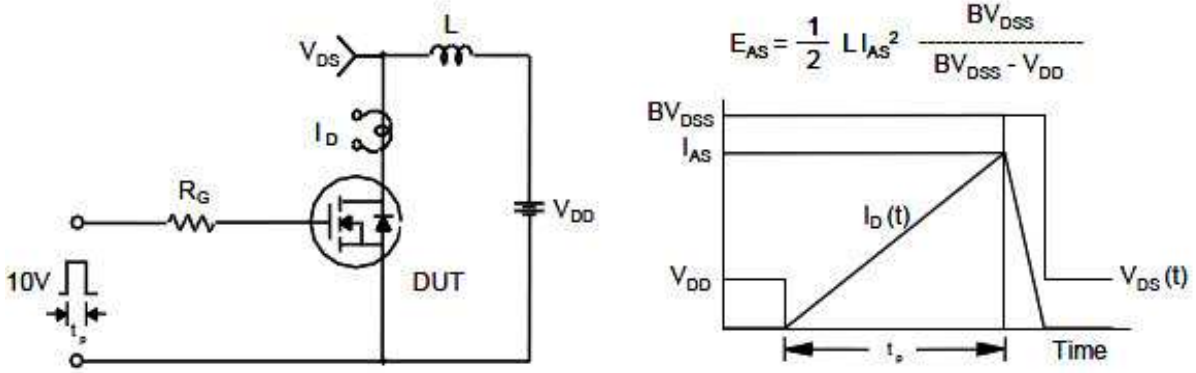
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

Resistive Switching Test Circuit & Waveforms

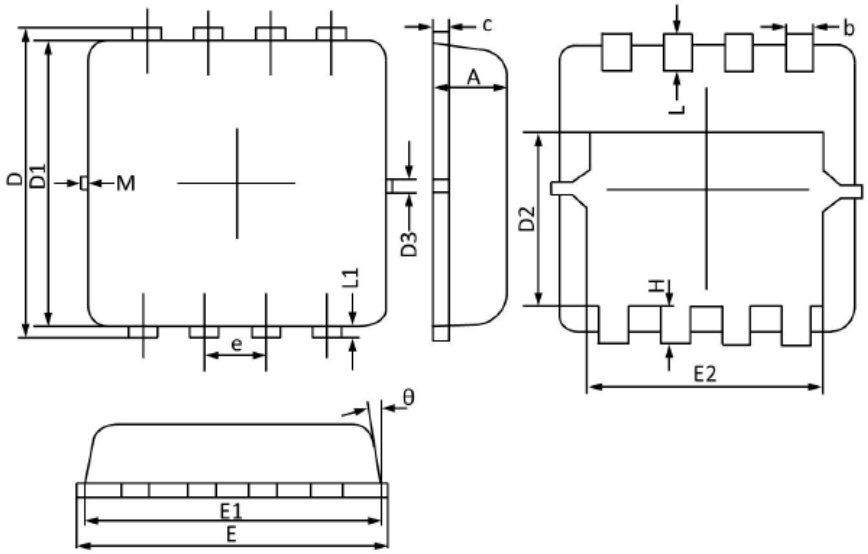


Unclamped Inductive Switching Test Circuit & Waveforms



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)	

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