GSMD35N15

150V 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

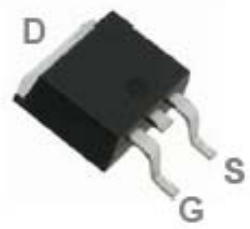
- 150V, 35A, $R_{DS(ON)}$=46mΩ@V_{GS}=10V
- Improved dv/dt capability
- Fast switching
- V_{GS} Guaranteed ±25V
- Green Device Available
- TO-252-2L package design

Applications

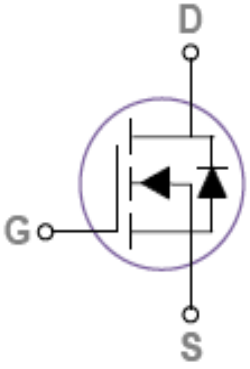
- Motor Drive
- DC-DC Switching
- LED Applications
- Power Tools

Packages & Pin Assignments

GSMD35N15DF (TO-252-2L)

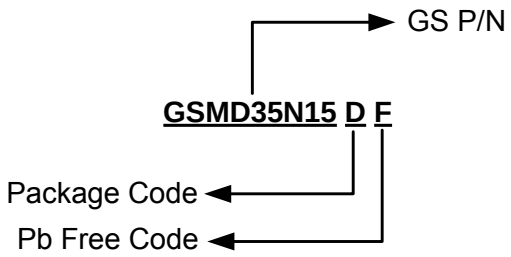


Top View



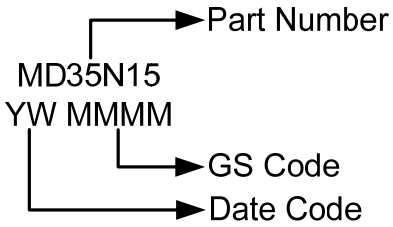
Description
Gate
Source
Drain

Ordering Information



Part Number	Package	Quantity Reel
GSMD35N15DF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_A=25ºC Unless otherwise noted

Symbol	Parameter		Typical	Unit
V_{DS}	Drain-Source Voltage		150	V
V_{GS}	Gate-Source Voltage		±25	V
I_D	Continuous Drain Current	T_A=25℃	35	A
		T_A=100℃	22	
I_{DM}	Pulsed Drain Current		140	A
EAS	Single Pulse Avalanche Energy		100	mJ
IAS	Single Pulse Avalanche Current		14.2	A
P_D	Power Dissipation (T_A=25℃)		114	W
	Power Dissipation (Derate above 25℃)		0.91	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		50	℃/W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.1	℃/W

Note 1: Repetitive Rating : Pulsed width limited by maximum junction temperature.
Note 2: V_{DD}=50V,V_{GS}=10V,L=1mH,I_{AS}=10A,R_G=25Ω,Starting T_J=25℃.

Electrical Characteristics

T_A=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	150			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	2	3	4	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-11		mV/℃
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±25V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V,V_{GS}=0V			1	uA
		V_{DS}=120V,V_{GS}=0V, T_J=85℃			30	
I_S	Continuous Source Current	V_G=V_D=0V, Force Current			35	A
I_{SM}	Pulsed Source Current				140	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS} =10V,I_D=10A		35	46	mΩ
		V_{GS} =6V,I_D=8A		40	52	
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_S=1A			1	V
gfs	Forward Transconductance	V_{DS}=10V,I_D=17A		53		S
t_{rr}	Reverse Recovery Time	V_{GS}=0V,I_S=1A, di/dt=100A/us		60		ns
Q_{rr}	Reverse Recovery Charge			165		nC
Dynamic						
Q_g	Total Gate Charge	V_{DS}=75V,V_{GS}=10V, I_D=10A		40	56	nC
Q_{gs}	Gate-Source Charge			9	14	
Q_{gd}	Gate-Drain Charge			12	18	
C_{iss}	Input Capacitance	V_{DS}=30V,V_{GS}=0V, f=1MHz		1900	2760	pF
C_{oss}	Output Capacitance			200	290	
C_{rss}	Reverse Transfer Capacitance			87	130	
$t_{d(on)}$	Turn-On Time	V_{DD}=30V,I_D=1A, V_{GS}=10V,R_G=6Ω		16	29	ns
t_r				12	22	
$t_{d(off)}$	Turn-Off Time			48	87	
t_f				16	29	

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

Note 4: Essentially independent of operating temperature.

Typical Performance Characteristics

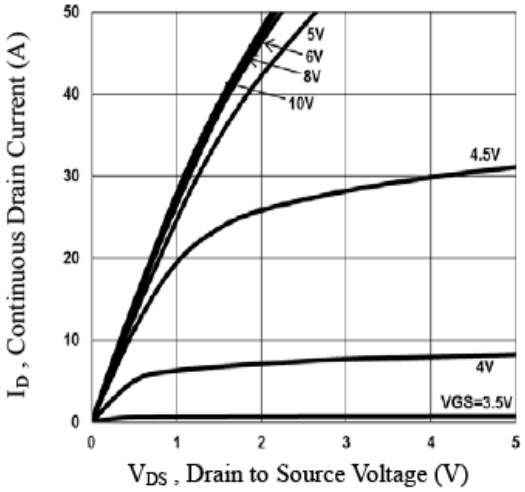


Fig.1 Output Characteristics

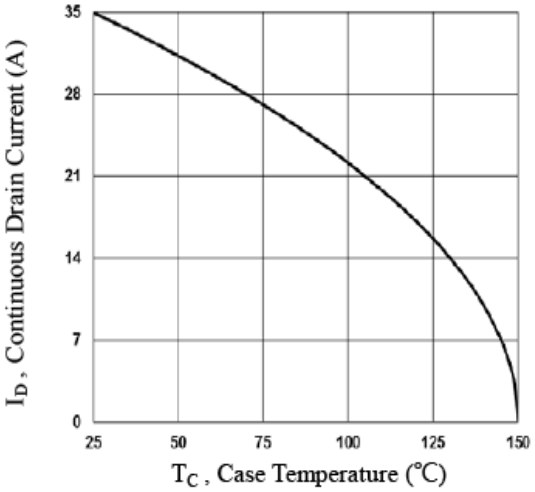


Fig.2 Continuous Drain Current vs. T_c

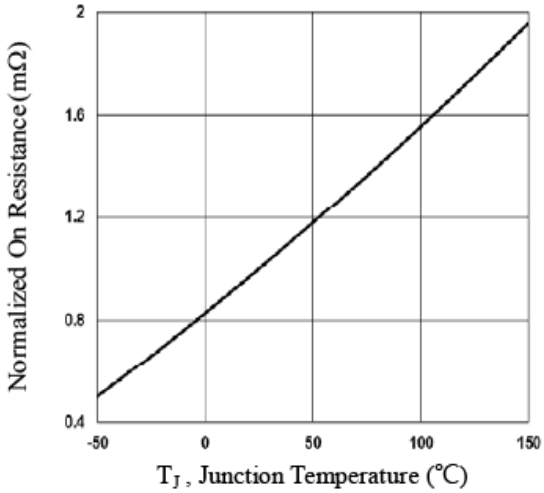


Fig.3 Normalized RDSON vs. T_J

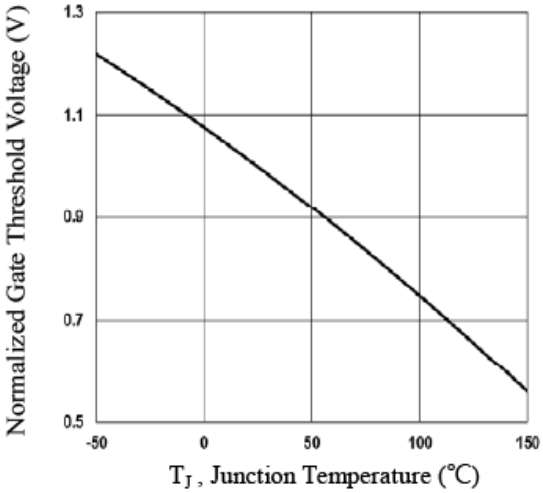


Fig.4 Normalized V_{th} vs. T_J

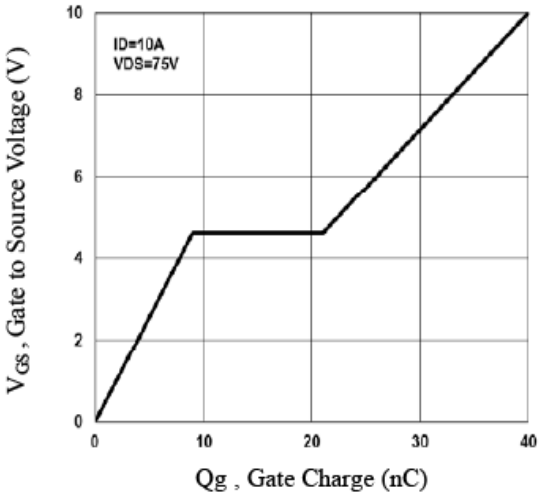


Fig.5 Gate Charge Waveform

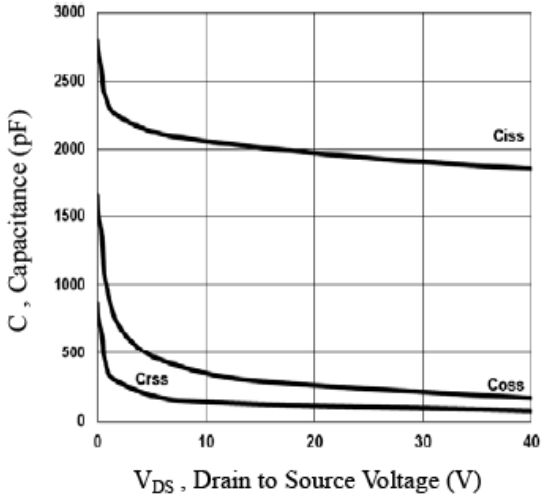


Fig.6 Capacitance Characteristics

Typical Performance Characteristics (Continue)

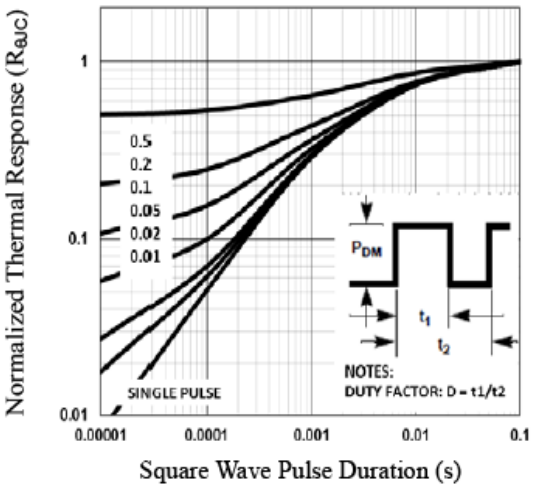


Fig.7 Normalized Transient Impedance

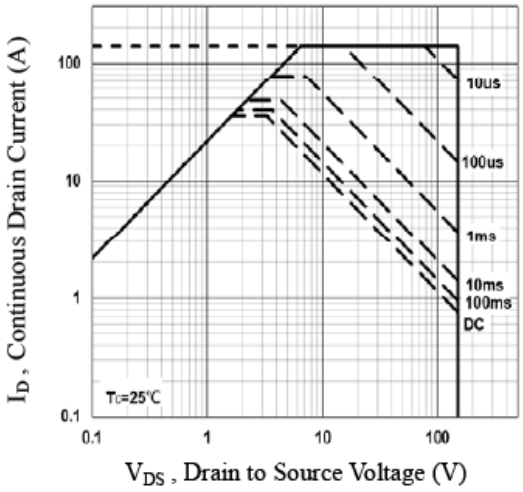
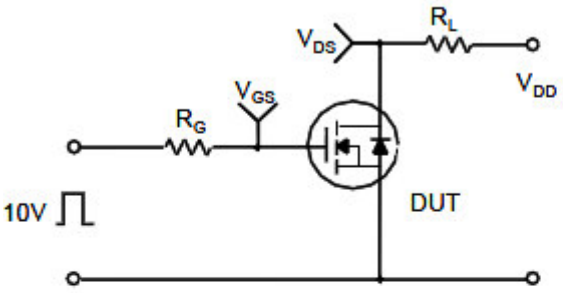
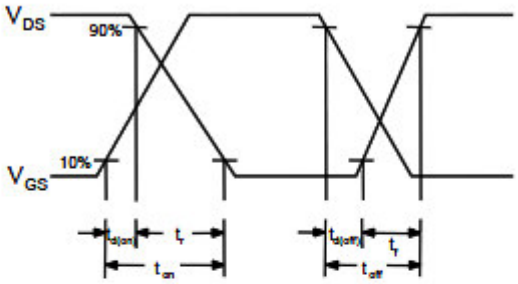


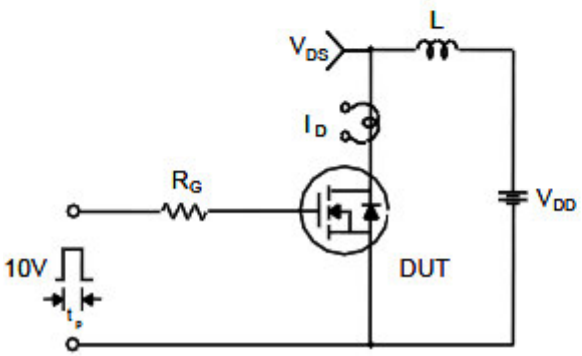
Fig.8 Maximum Safe Operation Area

Resistive Switching Test Circuit & Waveforms

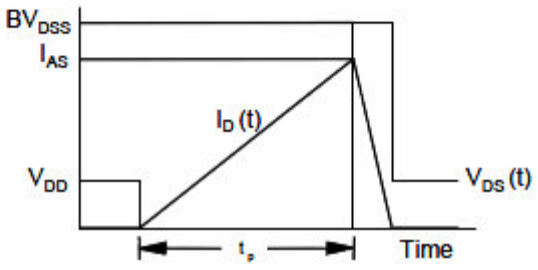




Unclamped Inductive Switching Test Circuit & Waveforms

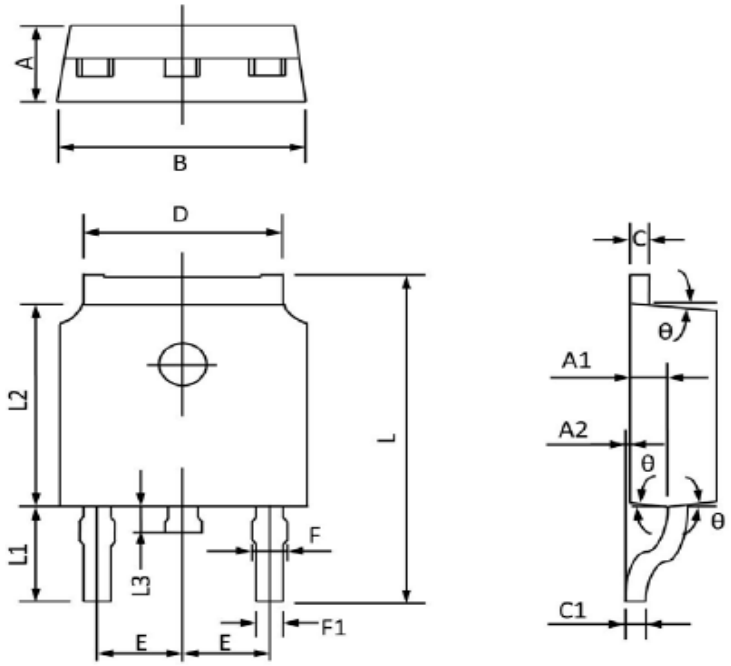


$$E_{AS} = \frac{1}{2} L I_{AS}^2 \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$



Package Dimension

TO-252-2L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.20	2.40	0.087	0.094
A1	0.91	1.11	0.036	0.044
A2	0.00	0.15	0.000	0.006
B	6.40	6.80	0.252	0.268
C	0.46	0.58	0.018	0.023
C1	0.46	0.58	0.018	0.023
D	5.10	5.50	0.201	0.217
E	2.186	2.386	0.086	0.094
F	0.60	0.94	0.024	0.037
F1	0.50	0.86	0.020	0.034
L	9.40	10.40	0.370	0.409
L1	2.40	3.00	0.094	0.118
L2	5.40	6.20	0.213	0.244
L3	0.60	1.20	0.024	0.047
θ	3°	9°	3°	9°

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