

GSMD10N20

200V 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.

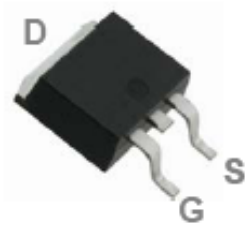
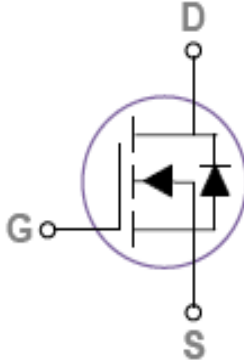
Features

- 200V, 8A, $R_{DS(ON)}=400m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- V_{GS} Guaranteed $\pm 25V$
- Green Device Available
- TO-252-2L package design

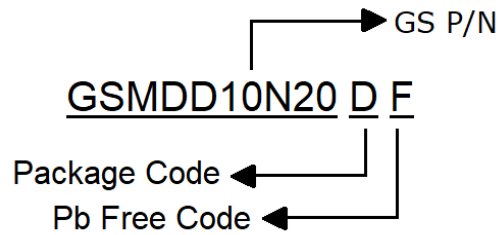
Applications

- Notebook
- Load Switch
- LED Applications
- Li Battery Pack Application

Packages & Pin Assignments

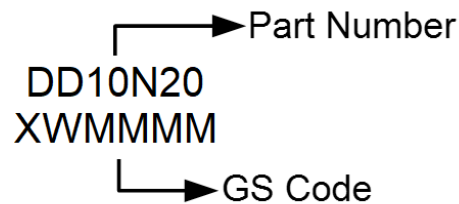
GSMD10N20DF (TO-252-2L)	
 Top View	
Description	
Gate	
Source	
Drain	

Ordering Information



Part Number	Package	Quantity Reel
GSMDD10N20DF	TO-252-2L	2500 PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V _{DS}	Drain-Source Voltage	200	V
V _{GS}	Gate-Source Voltage	±25	V
I _D	Continuous Drain Current	T _A =25°C	8
		T _A =100°C	5
I _{DM}	Pulsed Drain Current	32	A
P _D	Power Dissipation (T _A =25°C)	50	W
	Power Dissipation (Derate above 25°C)	0.4	W/°C
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
R _{θJA}	Thermal Resistance-Junction to Ambient	62	°C/W
R _{θJC}	Thermal Resistance-Junction to Case	2.5	°C/W

Note 1: Repetitive Rating : Pulsed width limited by maximum junction temperature.

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	200			V
△BV _{DSS} /△T _J	BV _{DSS} Temperature Coefficient	Reference to 25℃, I _D =1mA		0.08		V/℃
V _{GS(th)}	Gate Threshold Voltage	V _D S=V _G S,I _D =250uA	2	3	4	V
△V _{GS(th)}	V _{GS(th)} Temperature Coefficient			-6		mV/℃
I _{GSS}	Gate Leakage Current	V _D S=0V,V _G S=±25V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _D S=160V,V _G S=0V			1	uA
		V _D S=160V,V _G S=0V, T _J =125℃			30	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			8	A
I _{SM}	Pulsed Source Current				32	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V,I _D =4A		320	400	mΩ
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =1A			1.3	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V,I _S =1A, di/dt=100A/us		67		ns
Q _{rr}	Reverse Recovery Charge			114		nC
Dynamic						
Q _g	Total Gate Charge	V _D S=100V,V _G S=10V, I _D =4A		10	15	nC
Q _{gs}	Gate-Source Charge			2.6	4	
Q _{gd}	Gate-Drain Charge			2.5	5	
C _{iss}	Input Capacitance	V _D S=30V,V _G S=0V, f=1MHz		500	730	pF
C _{oss}	Output Capacitance			41	60	
C _{rss}	Reverse Transfer Capacitance			16	30	
t _{d(on)}	Turn-On Time	V _{DD} =30V,I _D =1A, V _G S=10V,R _G =6Ω		9	16	ns
t _r				8	15	
t _{d(off)}	Turn-Off Time			18	33	
t _f				3	6	
R _g	Gate Resistance	V _D S=0V,V _G S=0V, f=1MHz		3	6	Ω

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

Note 3: Essentially independent of operating temperature.

Typical Performance Characteristics

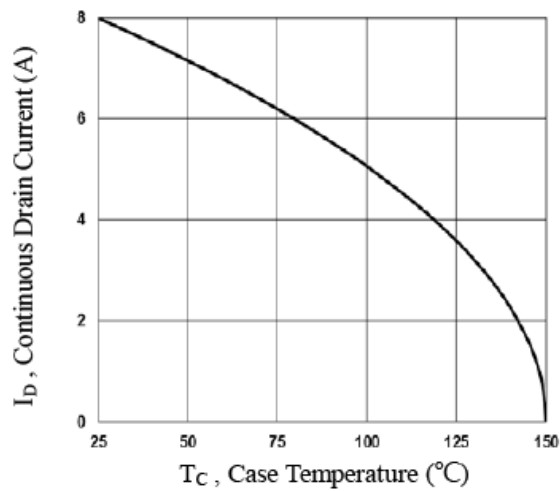


Fig.1 Continuous Drain Current vs. T_C

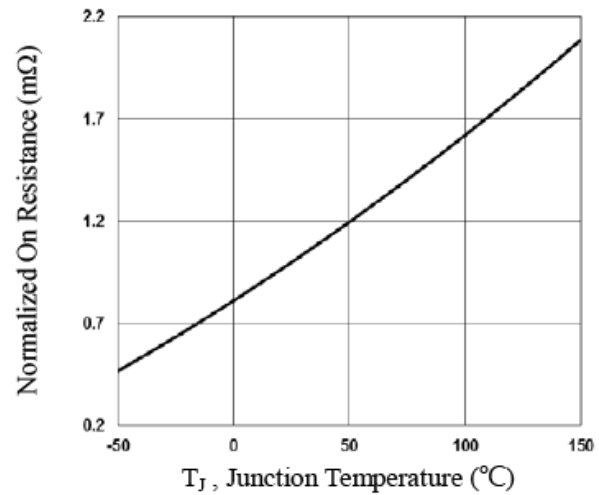


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

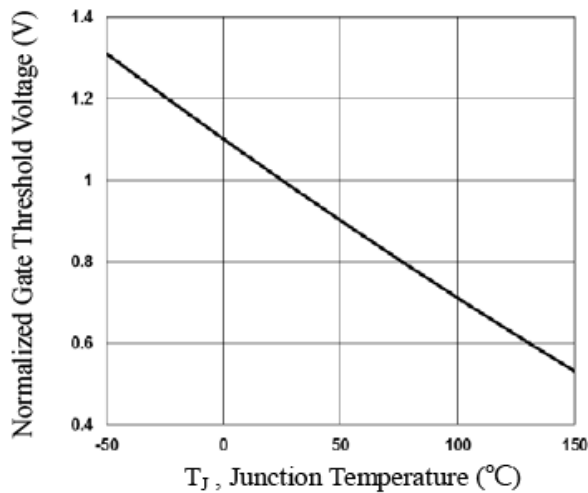


Fig.3 Normalized V_{th} vs. T_J

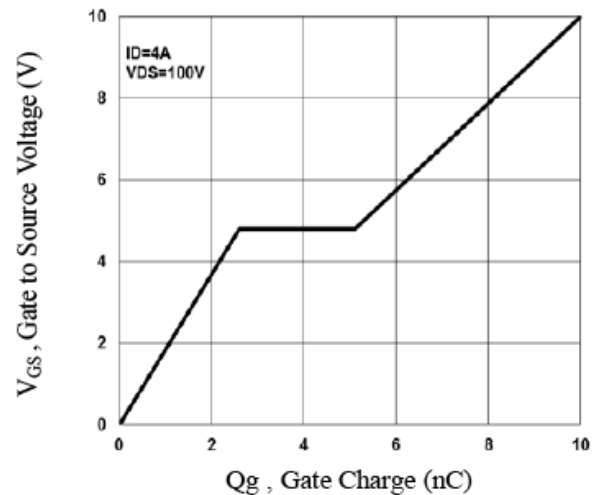


Fig.4 Gate Charge Waveform

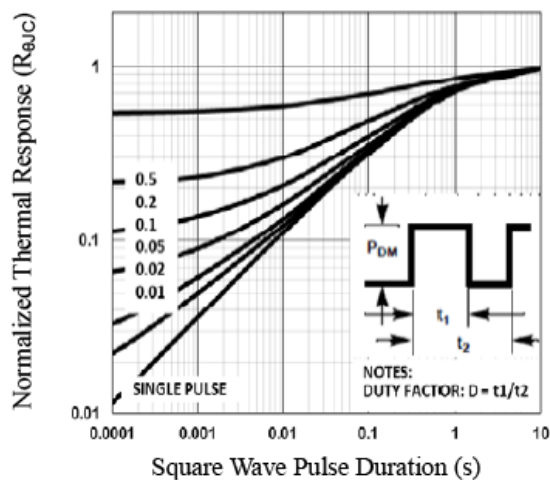


Fig.5 Normalized Transient Impedance

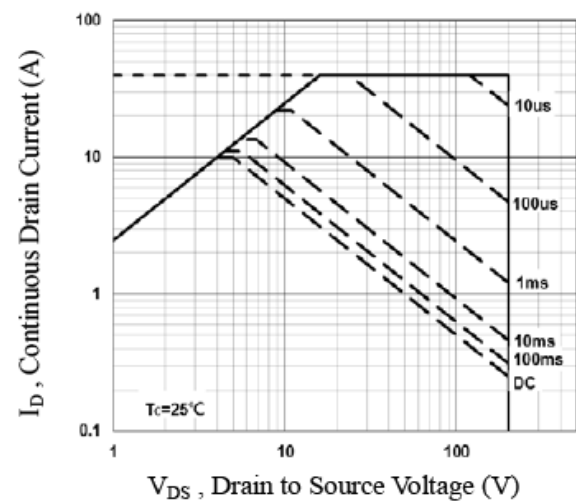
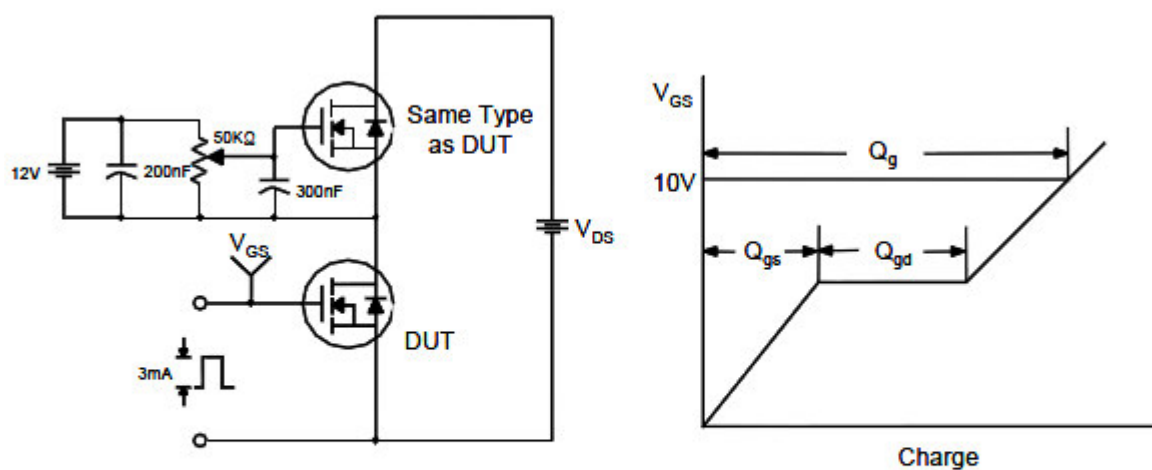


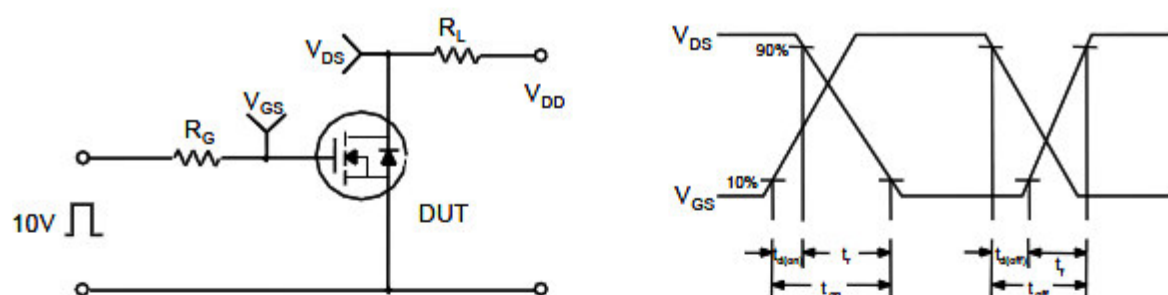
Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

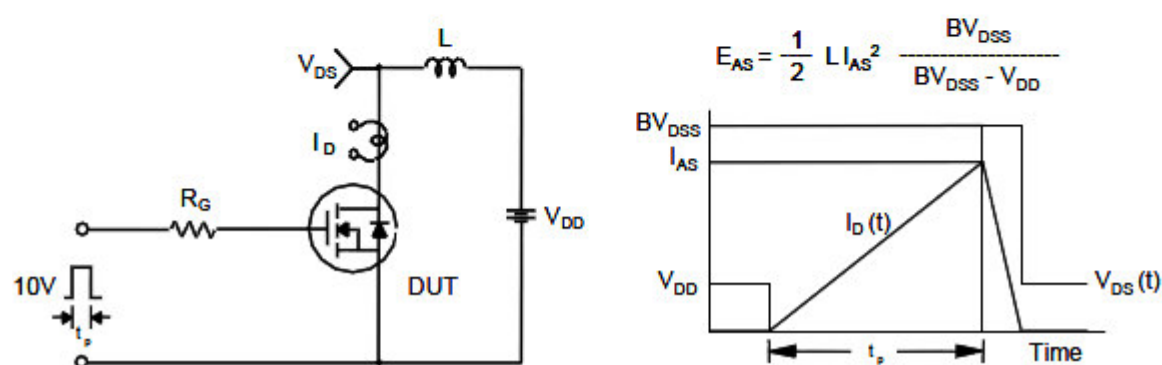
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

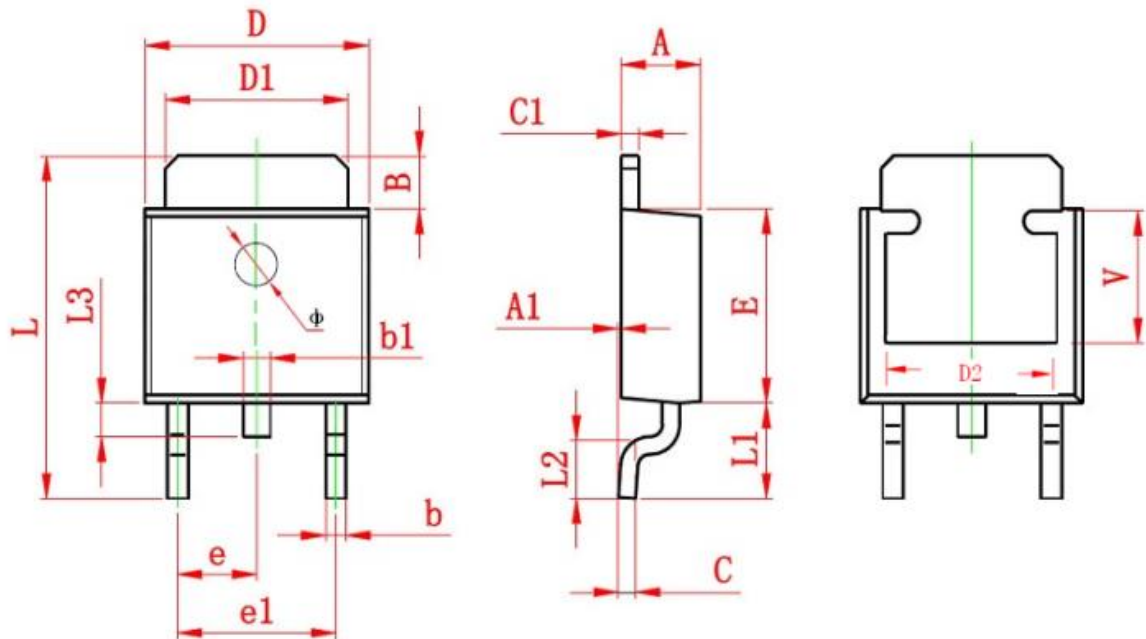


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

TO-252-2L



Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.200	2.400	0.087	0.094
A1	0.000	0.13	0.000	0.0051
B	0.89	1.27	0.035	0.05
b	0.64	0.88	0.0252	0.0346
b1	0.64	0.88	0.0252	0.0346
C	0.430	0.58	0.017	0.023
C1	0.430	0.60	0.017	0.0236
D	6.350	6.730	0.250	0.265
D1	5.200	5.520	0.205	0.217
E	5.200	6.220	0.205	0.244
e	2.300 TYP		0.091 TYP	
e1	4.500	4.700	0.177	0.185
L	9.400	10.400	0.37	0.409
L1	3.10 REF		0.122 REF	
L2	1.400	1.780	0.055	0.070
L3	0.600	1.000	0.024	0.039
L4	0.600	1.10	0.024	0.043
V	5.350 REF		0.211 REF	
D2	4.830 REF		0.190 REF	

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CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihs District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587