

GSMDS02N15

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.

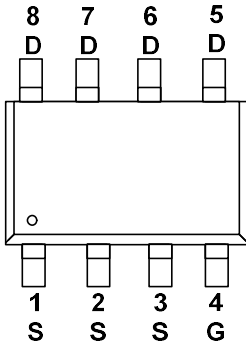
Features

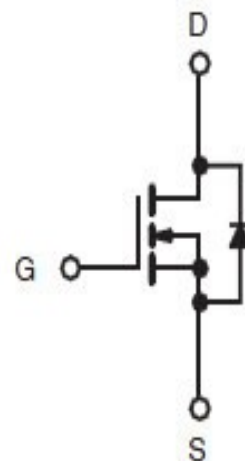
- 150V, 1.2A, $R_{DS(ON)}=480m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS guaranteed

Applications

- Networking
- Load Switch
- LED applications

Packages & Pin Assignments

GSMDS02N15SF (SOP-8)	
 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 Reel
GSMDS02N15SF	SOP-8	4000 PCS

Marking Information

Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$ Unless otherwise noted

Symbol	Parameter	Typical	Unit
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_A=25^{\circ}\text{C}$	A
		$T_A=100^{\circ}\text{C}$	
I_{DM}	Pulsed Drain Current	4.8	A
P_D	Power Dissipation ($T_A=25^{\circ}\text{C}$)	1.56	W
	Power Dissipation (Derate above 25°C)	0.012	W/ $^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-50 to +150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-50 to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	80	$^{\circ}\text{C/W}$

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	150	---	---	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	2	3	4	V
I _{GSS}	Gate Source Leakage Current	V _{DS} =0V,V _{GS} =±20V	---	---	±100	nA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =150V,V _{GS} =0V	---	---	1	uA
		V _{DS} =120V,V _{GS} =0V, T _J =125°C	---	---	10	
I _S	Continuous Source Current	V _G =V _D =0V, Force Current			1.2	A
I _{SM}	Pulsed Source Current				2.4	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V,I _D =1A	---	380	480	mΩ
		V _{GS} =6V,I _D =0.5A	---	410	520	
g _{FS}	Forward Transconductance	V _{DS} =10V,I _D =1A	---	1.7	---	S
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =1A, T _J =25°C	---	---	1	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =75V,V _{GS} =10V, I _D =1A		8.1	16	nC
Q _{gs}	Gate-Source Charge			2	4	
Q _{gd}	Gate-Drain Charge			2.7	5.4	
C _{iSS}	Input Capacitance	V _{DS} =25V,V _{GS} =0V, F=1MHz		350	700	pF
C _{oSS}	Output Capacitance			34	68	
C _{rSS}	Reverse Transfer Capacitance			26	52	
t _{d(on)}	Turn-On Time	V _{DD} =75V,I _D =1A, V _{GS} =10V,R _G =10Ω		8.2	16	ns
t _r				5.8	12	
t _{d(off)}	Turn-Off Time			14.8	28	
t _f				8	16	
R _g	Gate Resistance	V _{DS} =0V,V _{GS} =0V, F=1MHz	---	2	4	Ω

Typical Performance Characteristics

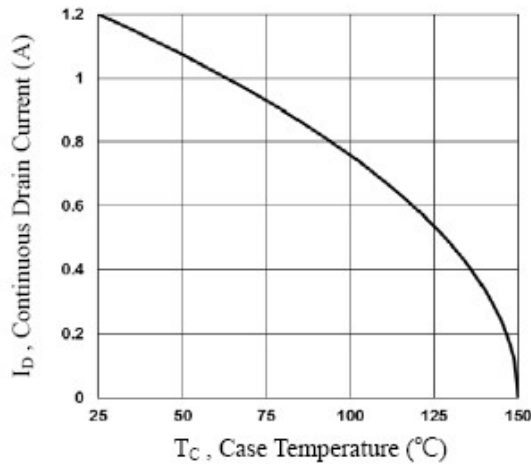


Fig.1 Continuous Drain Current vs. T_C

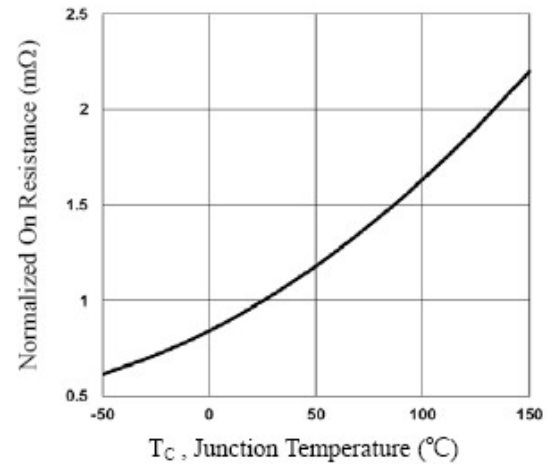


Fig.2 Continuous Drain Current vs. T_C

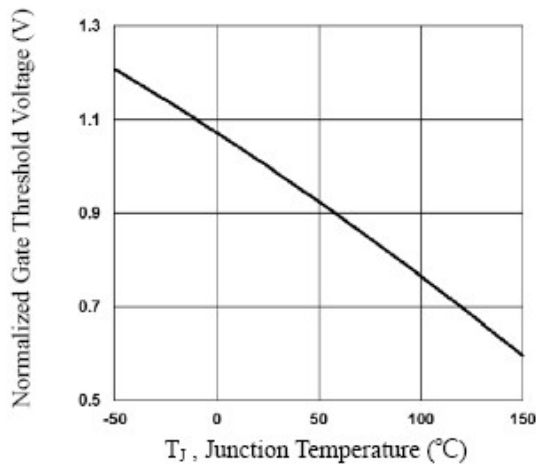


Fig.3 Normalized V_{th} vs. T_J

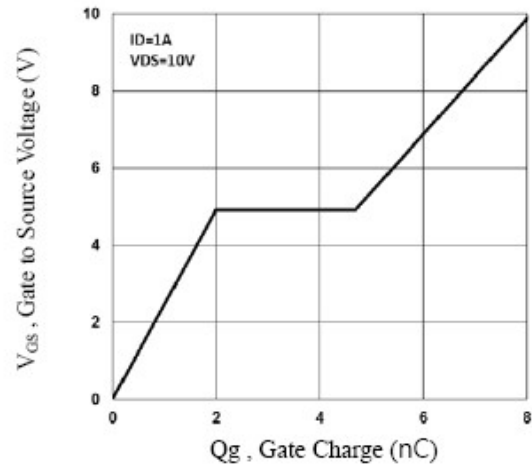


Fig.4 Gate Charge Waveform

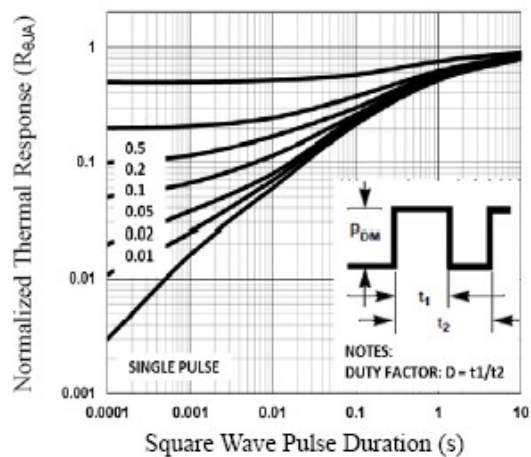


Fig.5 Normalized Transient Impedance

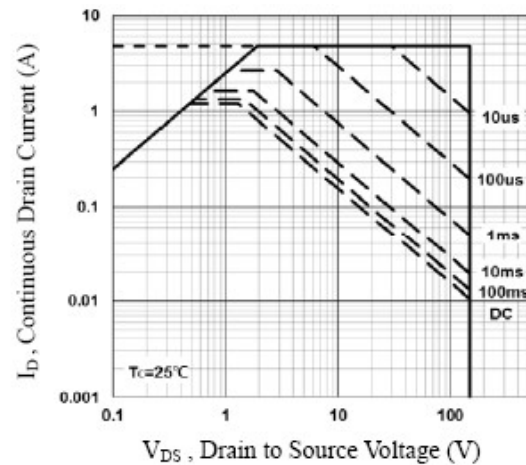


Fig.6 Maximum Safe Operation Area

Typical Performance Characteristics (Continue)

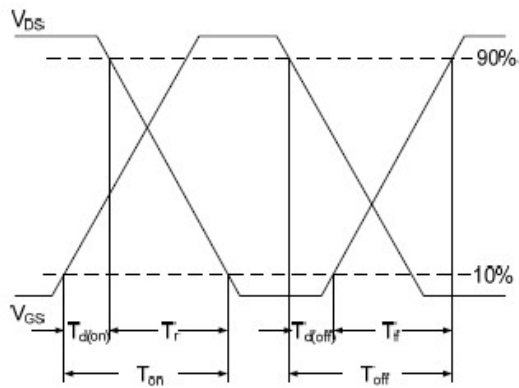


Fig.7 Switching Time Waveform

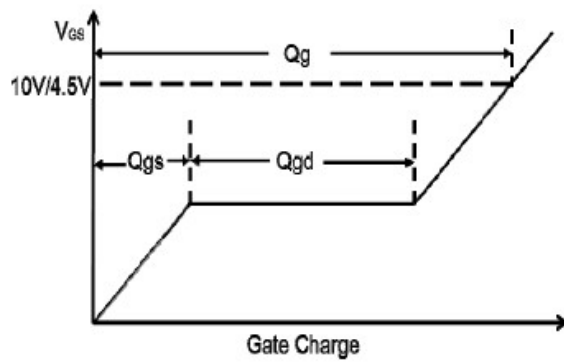
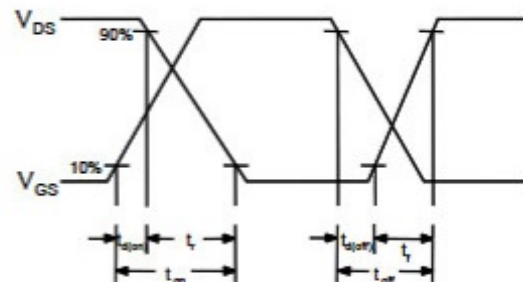
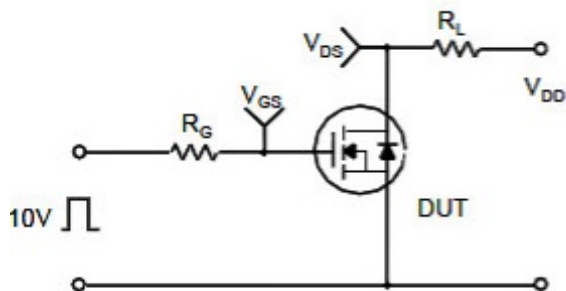
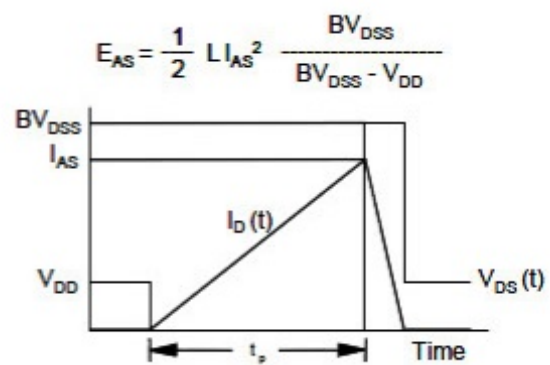
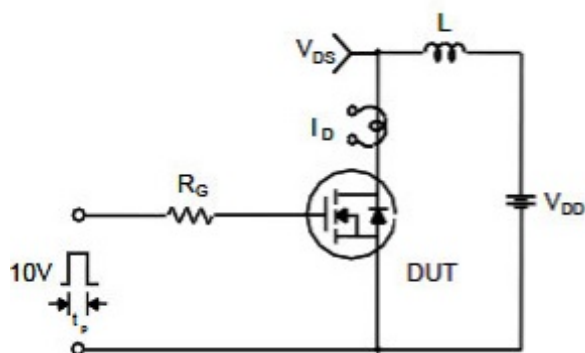


Fig.8 Gate Charge Waveform

Resistive Switching Test Circuit & Waveforms

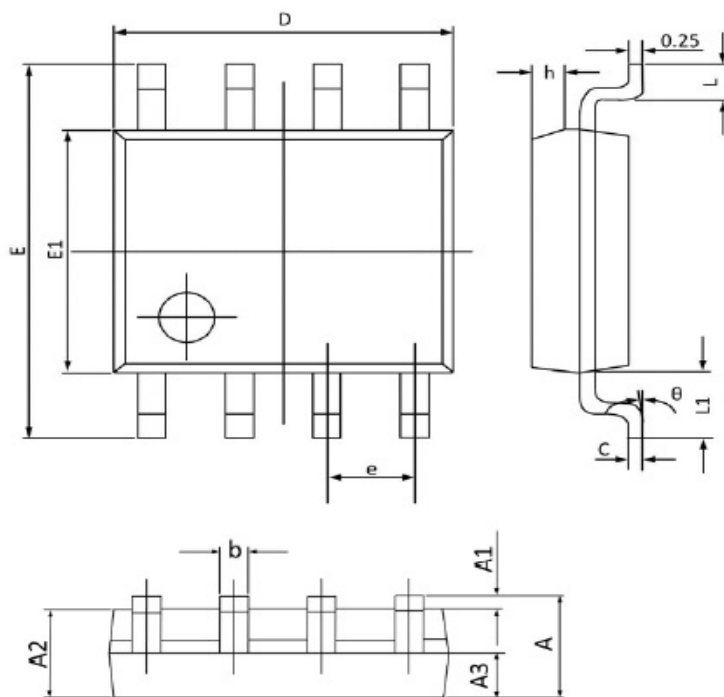


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOP-8



Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270 (BSC)		0.050 (BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050 (BSC)		0.041 (BSC)	
θ	0°	8°	0°	8°

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