GSMS05N15

150V N-Channel Enhancement Mode MOSFET

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.

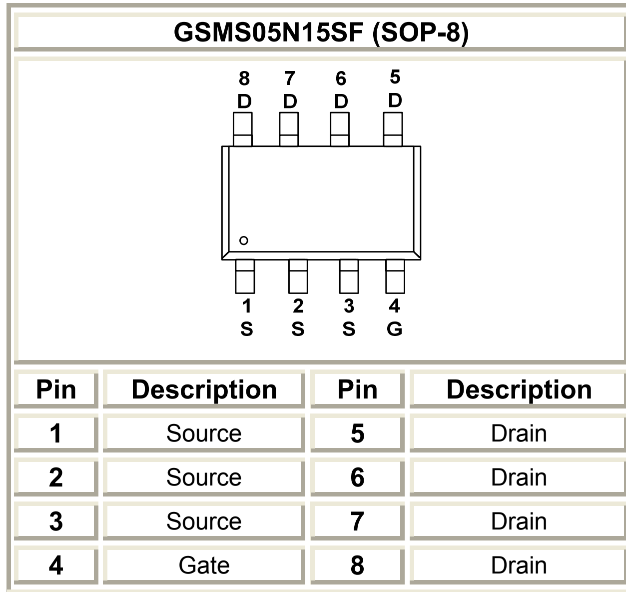
Features

- 150V, 5A, $R_{DS(ON)}$=65mΩ@V_{GS}=10V
- V_{GS} Guarantee ±25V
- Improved dv/dt capability
- Fast switching
- Green Device Available
- SOP-8 package design

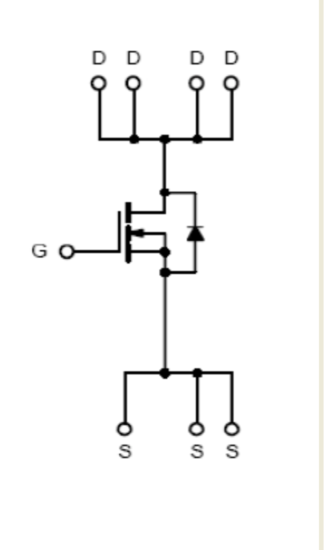
Applications

- Notebook
- Load Switch
- LED applications
- Li battery pack application

Packages & Pin Assignments

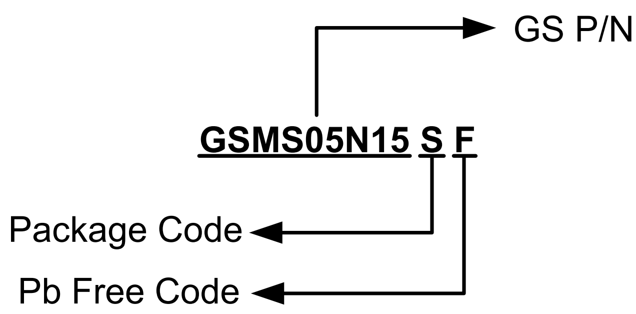


Pin	Description	Pin	Description
1	Source	5	Drain
2	Source	6	Drain
3	Source	7	Drain
4	Gate	8	Drain



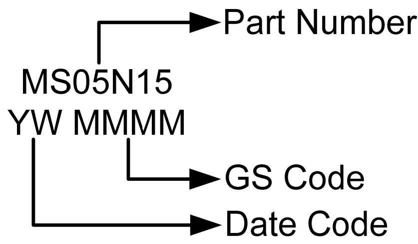
GSMS05N15

Ordering Information



Part Number	Package	Quantity
GSMS05N15SF	SOP-8	4000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		150	V
V_{GSS}	Gate-Source Voltage		±25	V
I_D	Continuous Drain Current	T_A=25°C	5	A
		T_A=100°C	3.2	
I_{DM}	Pulsed Drain Current		20	A
P_D	Power Dissipation		3.6	W
T_J	Operating Junction Temperature Range		-55 to 150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		35	°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	2.0		4.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient	V_{DS}=V_{GS},I_D=250uA		-2.5		mV/ °C
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C, I_D=1mA		0.02		V/°C
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=125°C			30	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=5A		52	65	mΩ
		V_{GS}=5V,I_D=3A		60	80	mΩ
V_{SD}	Diode Forward Voltage	I_S=1A,V_{GS}=0V			1.3	V
t_{rr}	Reverse Recovery Time	I_S=1A,V_{GS}=0V, di/dt=100A/us		55		ns
Q_{rr}	Reverse Recovery Charge	T_J=25°C		130		nC
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=75V, V_{GS}=0V,f=1MHz		1340		pF
C_{oss}	Output Capacitance			134		pF
C_{rss}	Reverse Transfer Capacitance			60		pF
Q_g	Total Gate Charge	V_{DS}=75V, V_{GS}=10V,I_D=4.1A		30		nC
Q_{gs}	Gate-Source Charge			7		nC
Q_{gd}	Gate-Drain Charge			10		nC
$t_{d(on)}$	Turn-On Time	V_{DD}=75V,I_D=4.1A, V_{GS}=10V,R_G=6Ω		15		ns
t_r				10		ns
$t_{d(off)}$	Turn-Off Time			34		ns
t_f				12		ns

Typical Performance Characteristics

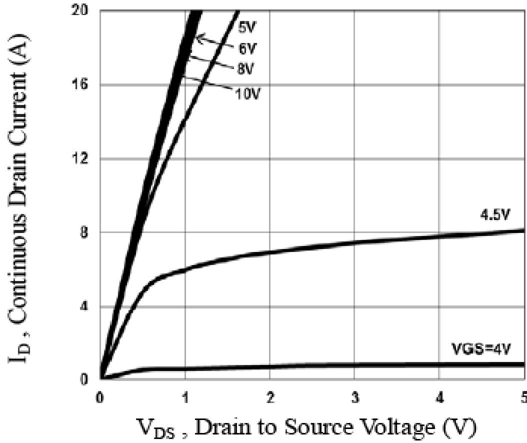


Fig.1 Output Characteristics

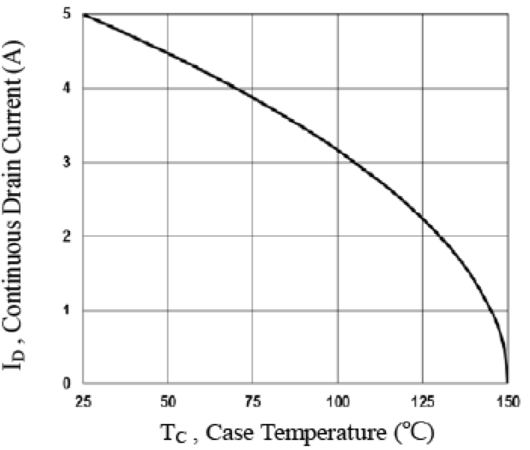


Fig.2 Continuous Drain Current vs. T_c

Typical Performance Characteristics (Continue)

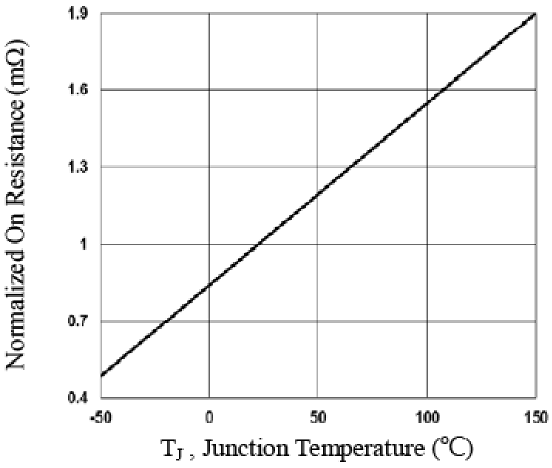


Fig.3 Normalized RDSON vs. T_J

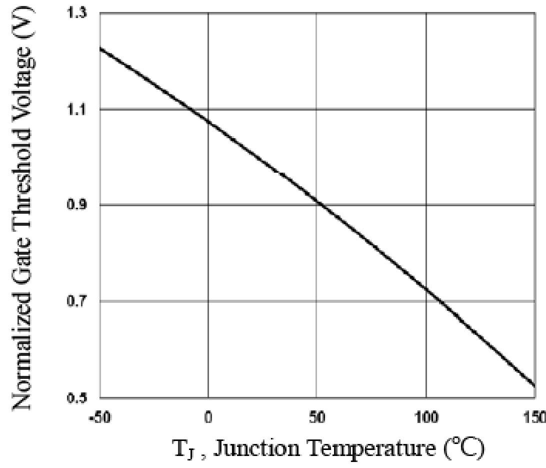


Fig.4 Normalized V_{th} vs. T_J

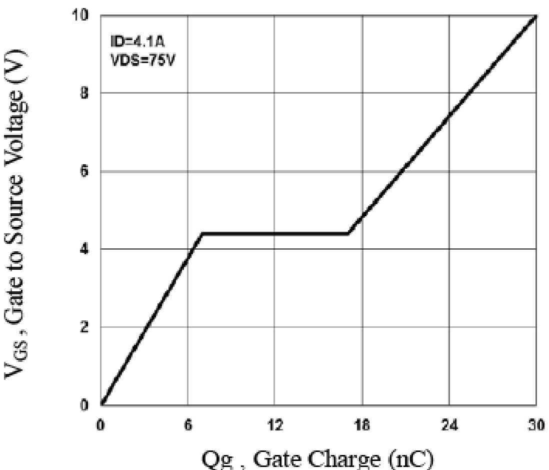


Fig.5 Gate Charge Waveform

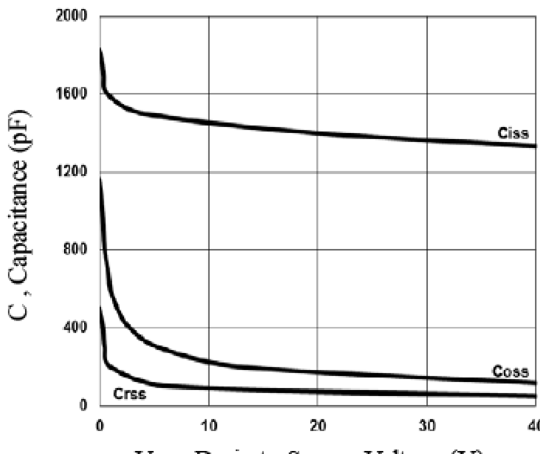


Fig.6 Capacitance Characteristics

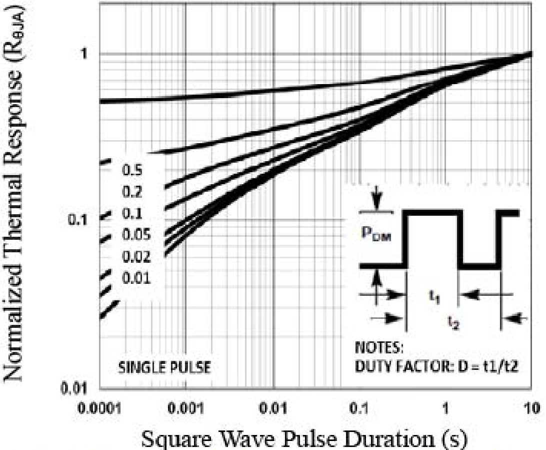


Fig.7 Normalized Transient Impedance

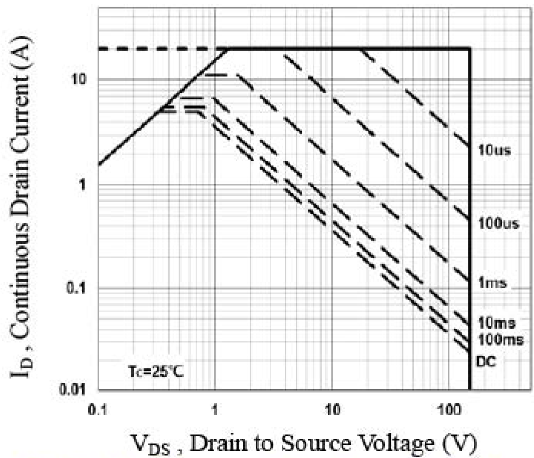
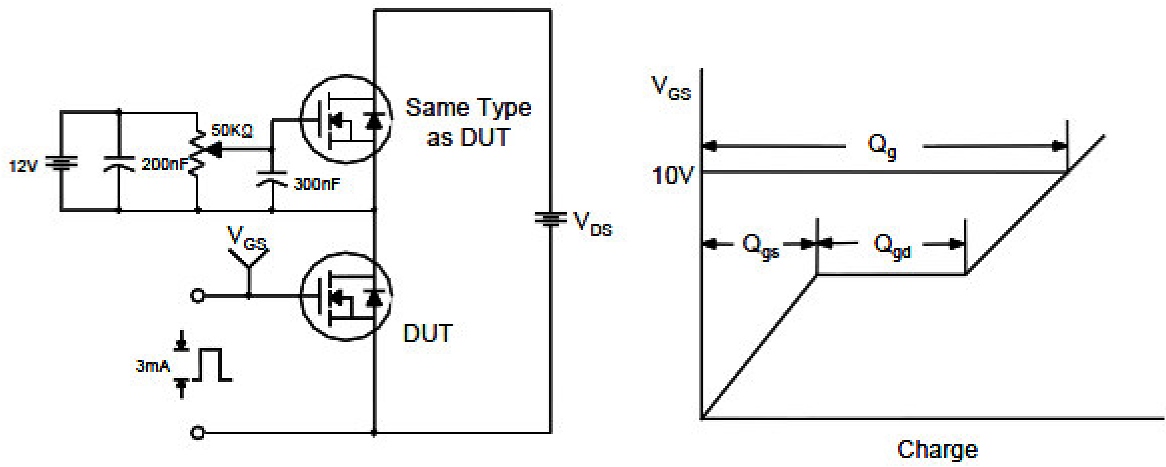


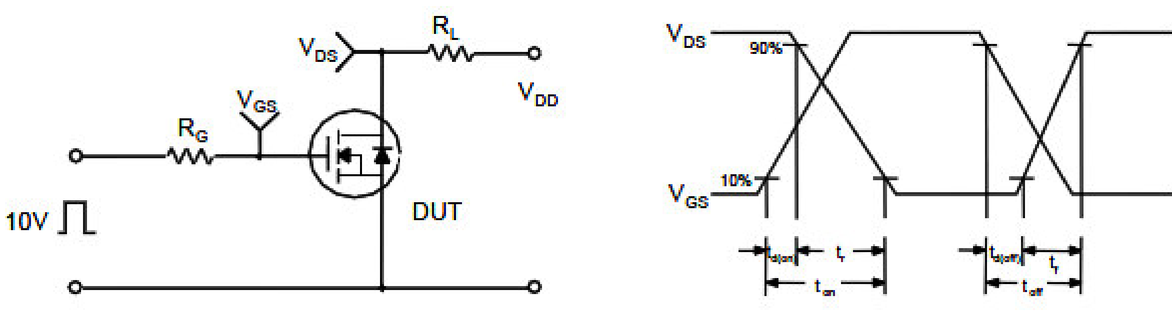
Fig.8 Maximum Safe Operation Area

Typical Characteristics

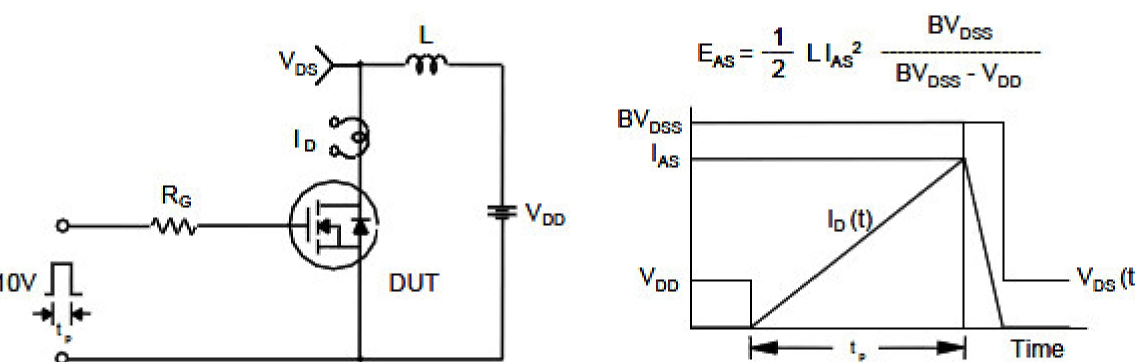
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

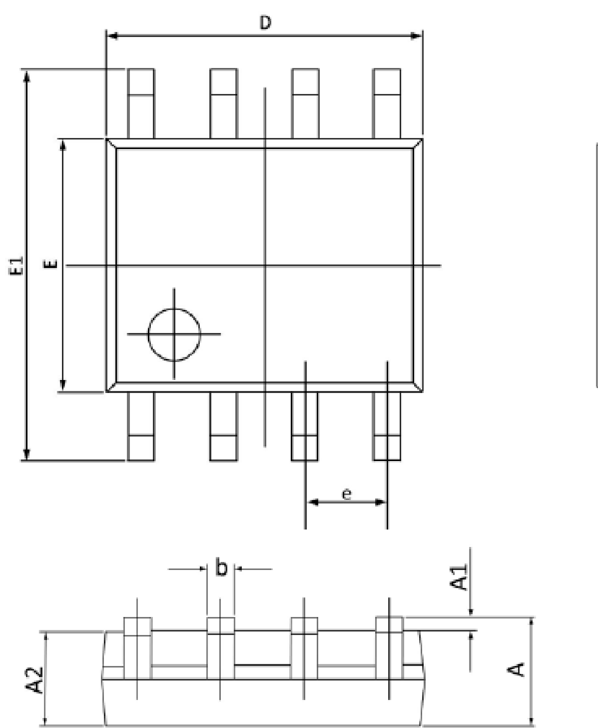


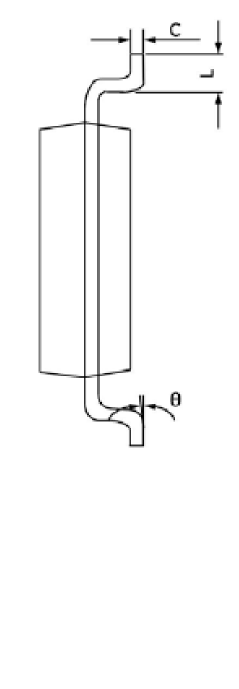
Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOP-8





Dimensions				
Symbol	**Millimeters**		**Inches**	
	Min	**Max**	**Min**	**Max**
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.35	1.55	0.053	0.061
b	0.33	0.51	0.013	0.020
c	0.17	0.25	0.006	0.010
D	4.70	5.10	0.185	0.200
E	3.80	4.00	0.150	0.157
E1	5.80	6.20	0.228	0.244
e	1.27(BSC)		0.050(BSC)	
L	0.40	1.27	0.016	0.050
θ	0º	8º	0º	8º

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