

# GSMDS04N15

## 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.

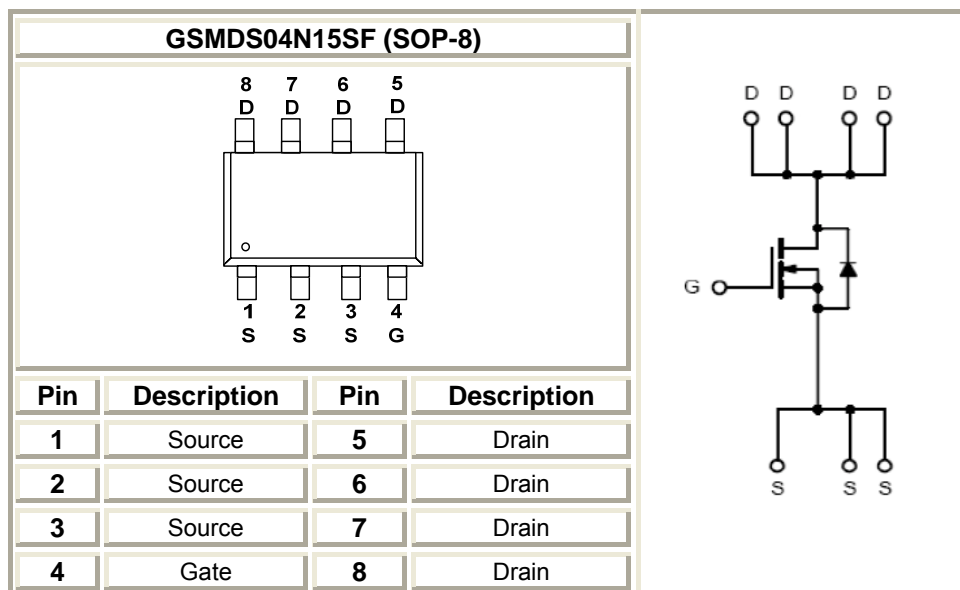
### Features

- 150V, 4A,  $R_{DS(ON)}=65m\Omega@V_{GS}=10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- SOP-8 package design

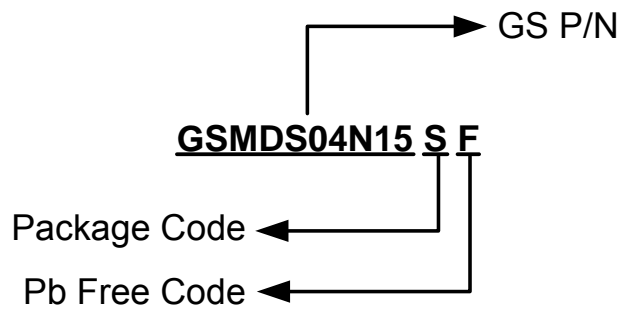
### Applications

- Notebook
- Load Switch
- LED applications

### Packages & Pin Assignments

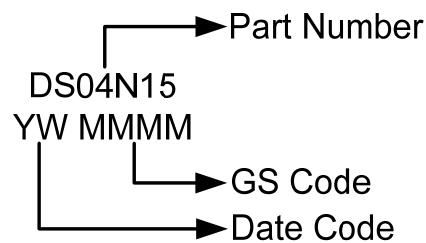


## Ordering Information



Part Number	Package	Quantity
GSMDS04N15SF	SOP-8	4000 PCS

## Marking Information



## Absolute Maximum Ratings

(T<sub>A</sub>=25°C unless otherwise noted)

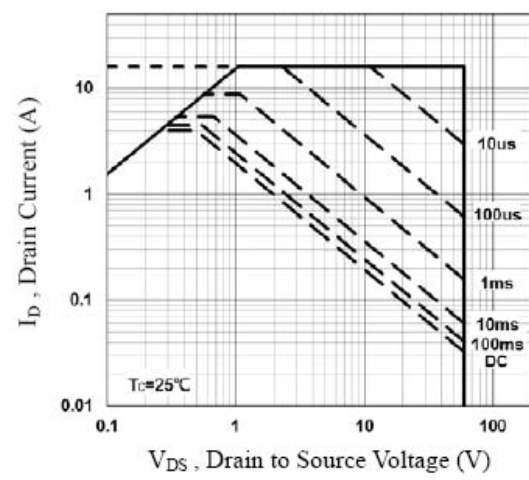
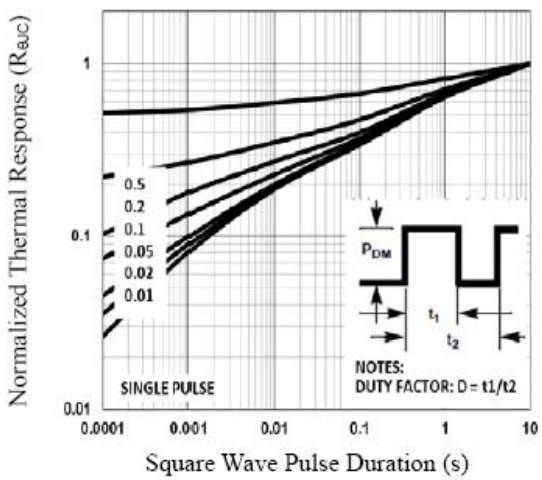
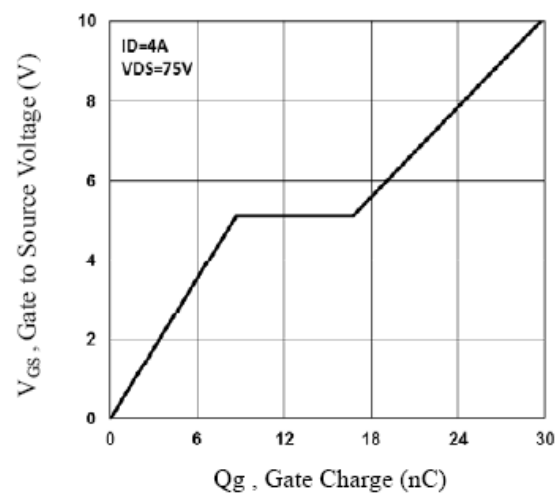
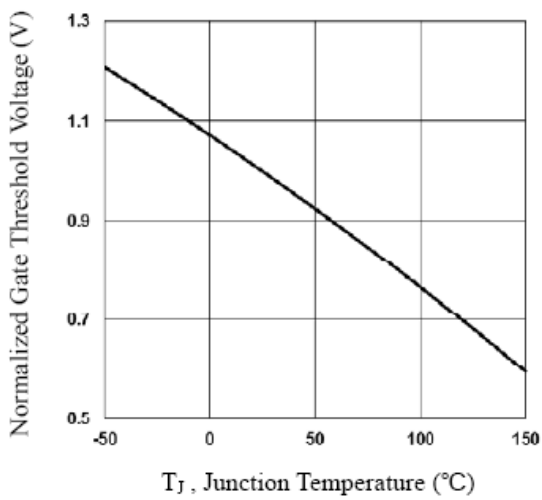
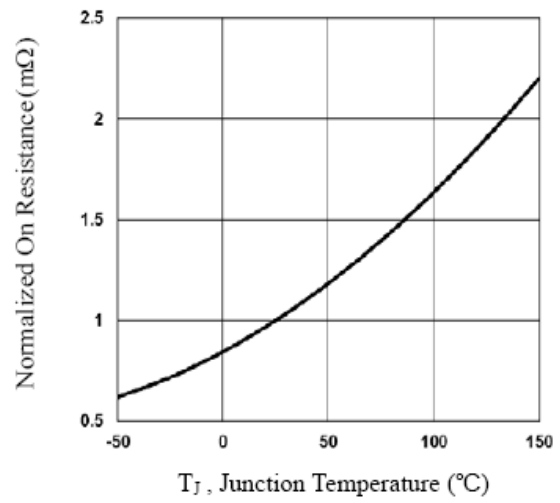
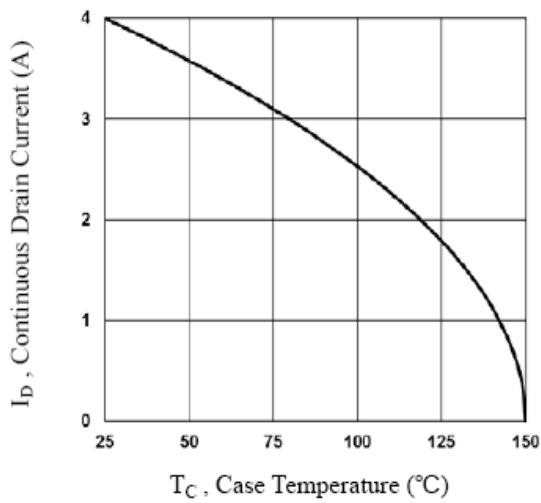
Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	150	V
V <sub>GSS</sub>	Gate-Source Voltage	±25	V
I <sub>D</sub>	Continuous Drain Current	T <sub>A</sub> =25°C	4
		T <sub>A</sub> =100°C	2.5
I <sub>DM</sub>	Pulsed Drain Current	16	A
P <sub>D</sub>	Power Dissipation (T <sub>A</sub> =25°C)	2.5	W
	Power Dissipation-Derate above 25°C	0.02	W/°C
T <sub>J</sub>	Operating Junction Temperature Range	-50 to 150	°C
T <sub>STG</sub>	Storage Temperature Range	-50 to 150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	50	°C/ W

## Electrical Characteristics

(T<sub>A</sub>=25°C unless otherwise noted)

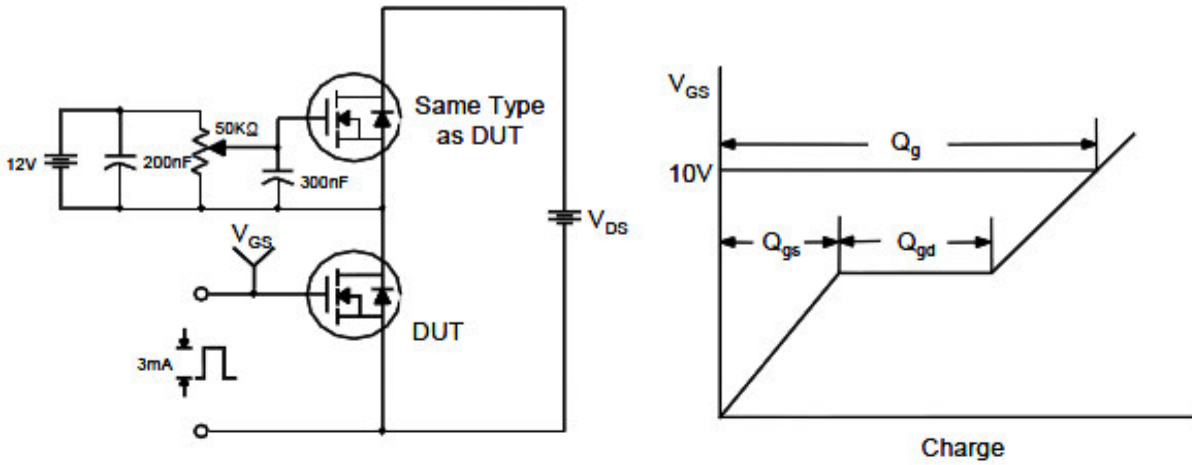
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	150			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	2	3	4	
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25°C, I <sub>D</sub> =1mA		0.07		V/°C
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±25V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =150V, V <sub>GS</sub> =0V			1	uA
		V <sub>DS</sub> =120V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C			10	
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current			4	A
I <sub>SM</sub>	Pulsed Source Current				8	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =4A		52	65	mΩ
		V <sub>GS</sub> =6V, I <sub>D</sub> =2A		60	85	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V			1	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =3A		8		S
<b>Dynamic</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, f=1MHz		1790	3000	pF
C <sub>oss</sub>	Output Capacitance			160	300	
C <sub>rss</sub>	Reverse Transfer Capacitance			82	150	
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =75V, V <sub>GS</sub> =10V, I <sub>D</sub> =4A		30	60	nC
Q <sub>gs</sub>	Gate-Source Charge			8.7	16	
Q <sub>gd</sub>	Gate-Drain Charge			8	16	
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =75V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω		14.5	28	ns
t <sub>r</sub>				19.2	18	
t <sub>d(off)</sub>	Turn-Off Time			33.6	60	
t <sub>f</sub>				22.8	25	
R <sub>g</sub>	Gate Resistance		V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		1.4	

## Typical Performance Characteristics

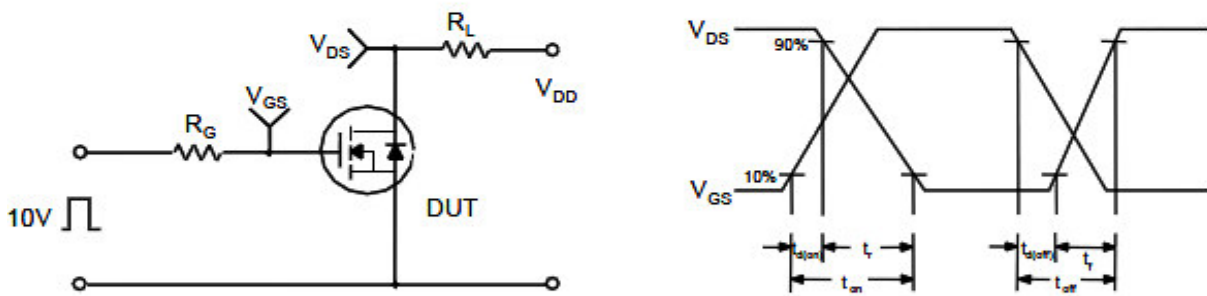


## Typical Characteristics

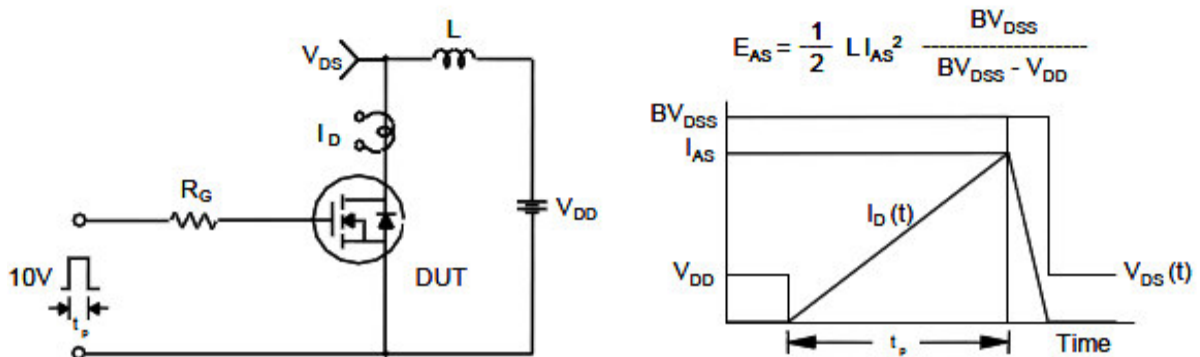
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

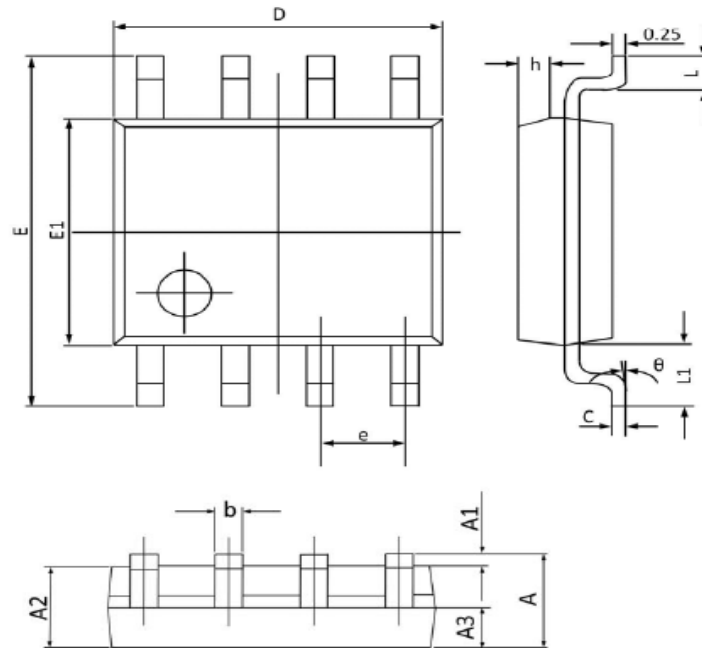


Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOP-8







Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.350	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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## CONTACT US

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

Shenzhen Branch(China)	
	1113 B Building, Happiness Washington, Baoan Nan Road, Luohu District, Shenzhen City, China
	0755-22208941
	sales_cn@gs-power.com

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