

# GSM6202S

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM6202S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

### Features

- 30V/15A,  $R_{DS(ON)}=5.2m\Omega@V_{GS}=10V$
- 30V/10A,  $R_{DS(ON)}=7.0m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN5X6-8L package design

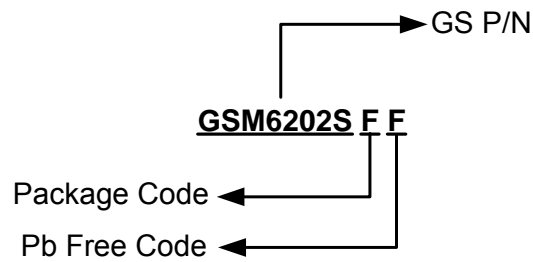
### Applications

- Notebook PC Core-Low Side/High Side

### Packages & Pin Assignments

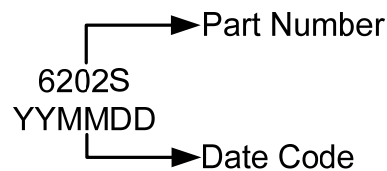
GSM6202SFF (DFN5X6-8L)	
Bottom View	
Pin	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain

## Ordering Information



Part Number	Package	Quantity Reel
GSM6202SFF	DFN5X6-8L	2500 PCS

## Marking Information



## Absolute Maximum Ratings

T<sub>A</sub>=25°C Unless otherwise noted

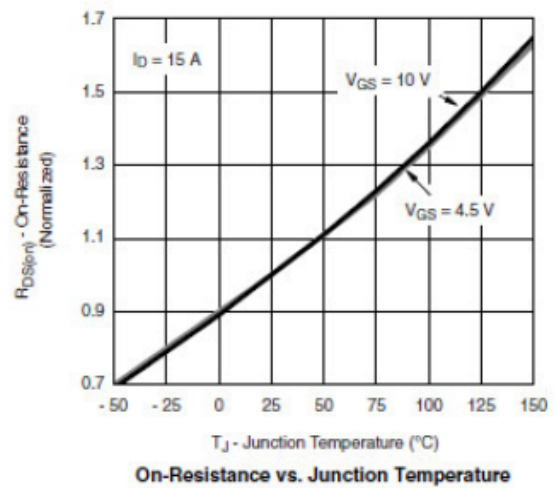
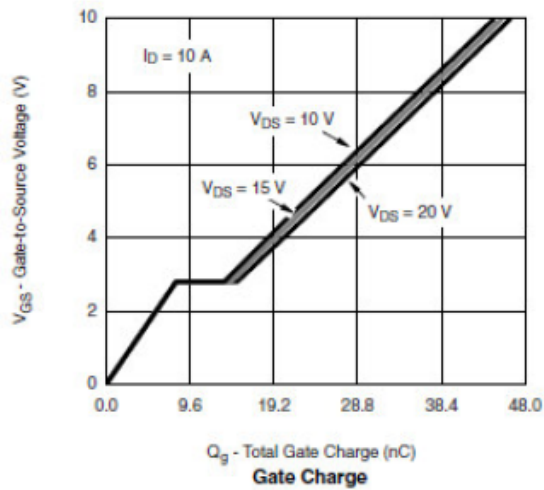
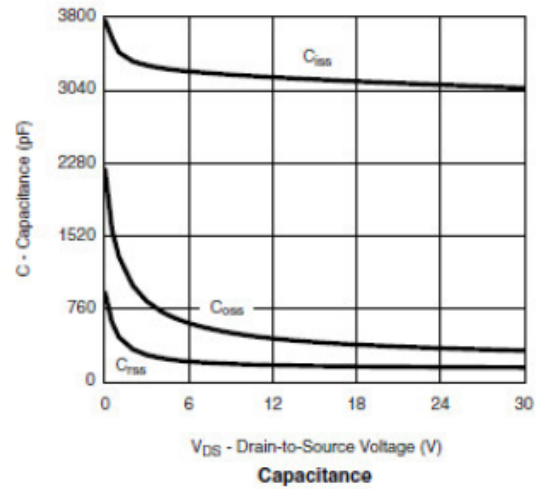
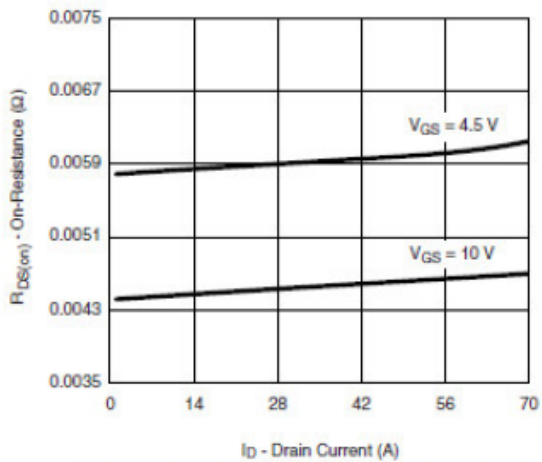
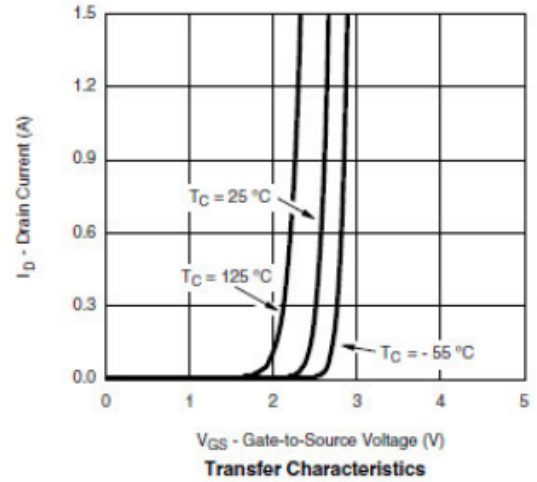
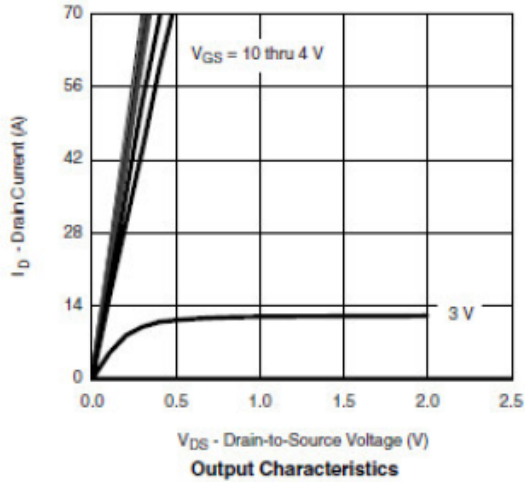
Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	30	V
V <sub>GSS</sub>	Gate –Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current (T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	23
		T <sub>A</sub> =70°C	18
I <sub>DM</sub>	Pulsed Drain Current	70	A
I <sub>S</sub>	Continuous Source Current (Diode Conduction)	40	A
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	48
		T <sub>A</sub> =70°C	31
T <sub>J</sub>	Operating Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	120	°C/W

## Electrical Characteristics

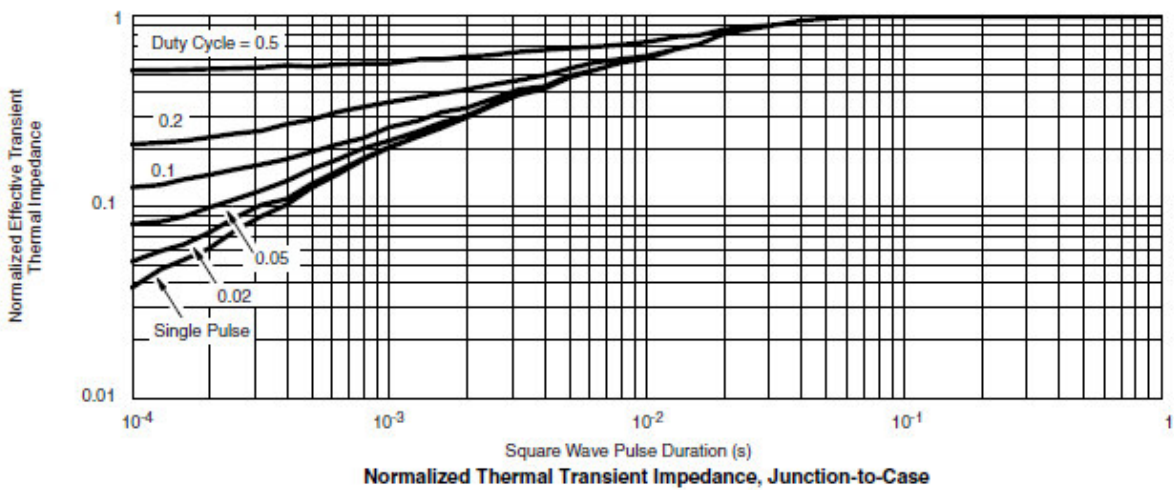
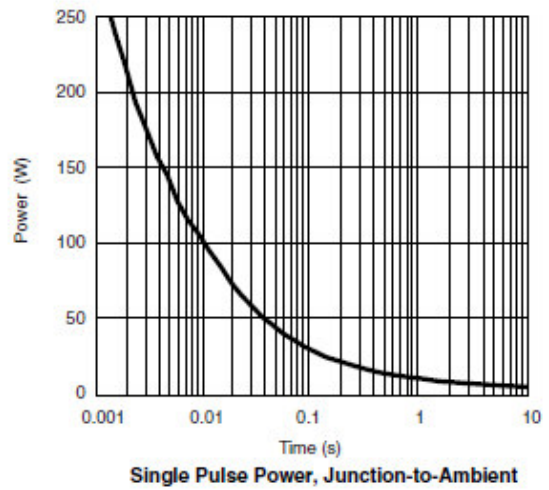
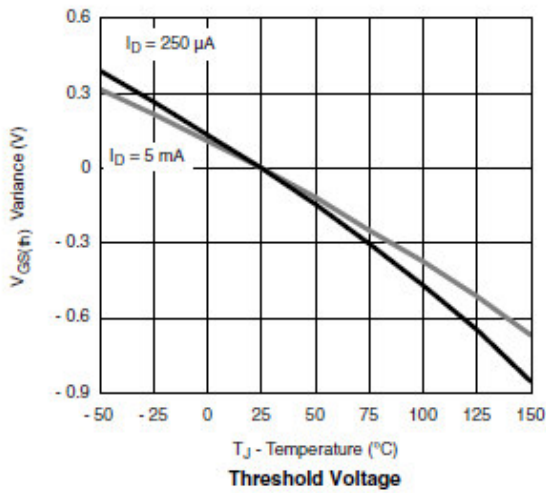
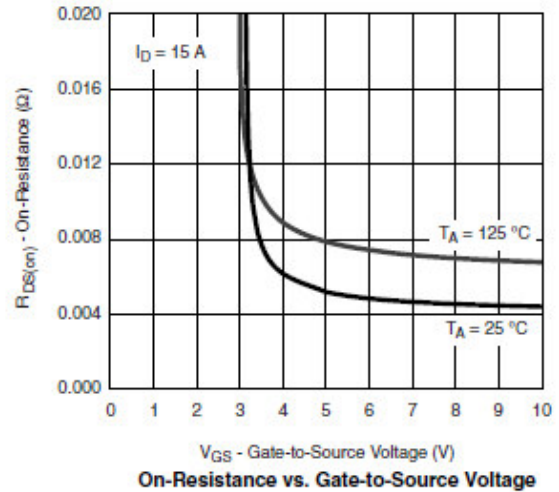
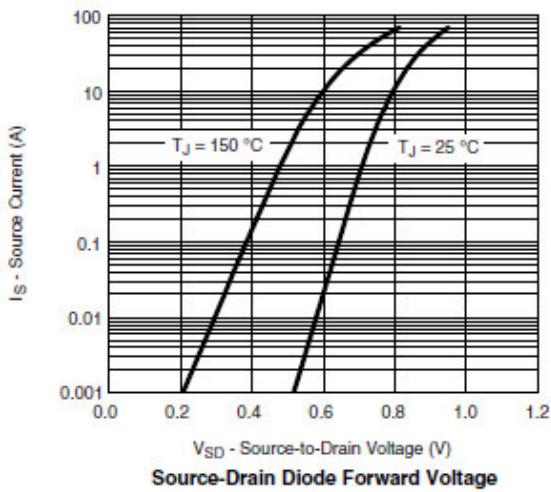
T<sub>A</sub>=25°C Unless otherwise noted

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> =250μA	30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		2.0	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			10	
I <sub>D(ON)</sub>	On-State Drain Current	V <sub>DS</sub> ≥5V, V <sub>GS</sub> =10V	30			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =15A		3.8	5.2	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		5.5	7.0	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =15V, I <sub>D</sub> =15A		78		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =3A, V <sub>GS</sub> =0V		0.8	1.3	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		22	35	nC
Q <sub>gs</sub>	Gate-Source Charge			8		
Q <sub>gd</sub>	Gate-Drain Charge			7		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz		3200		pF
C <sub>oss</sub>	Output Capacitance			420		
C <sub>rss</sub>	Reverse Transfer Capacitance			180		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =15V, R <sub>L</sub> =1.5Ω, I <sub>D</sub> =10A, V <sub>GEN</sub> =10V, R <sub>G</sub> =1Ω		15	30	ns
t <sub>r</sub>				10	20	
t <sub>d(off)</sub>	Turn-Off Time			35	60	
t <sub>f</sub>				10	20	

## Typical Performance Characteristics

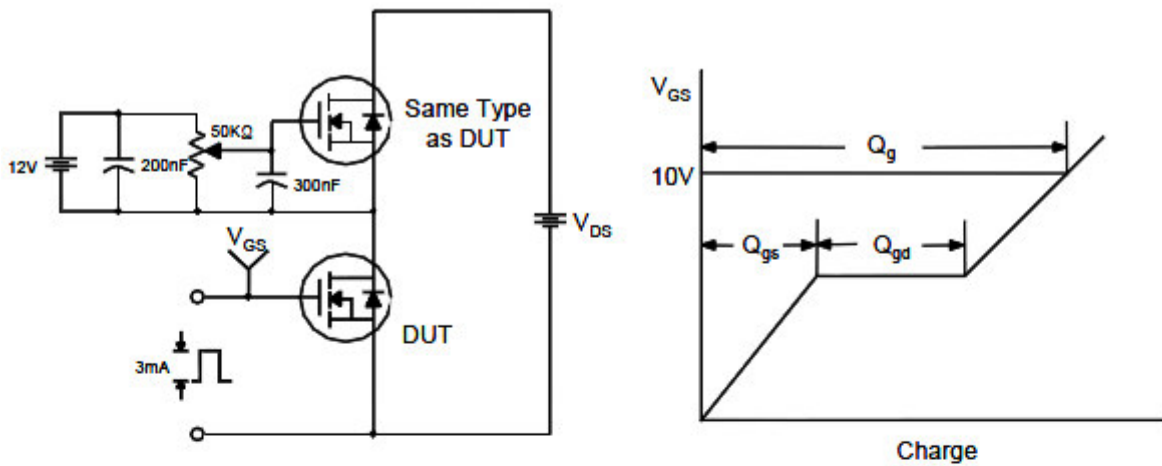


## Typical Performance Characteristics (Continue)

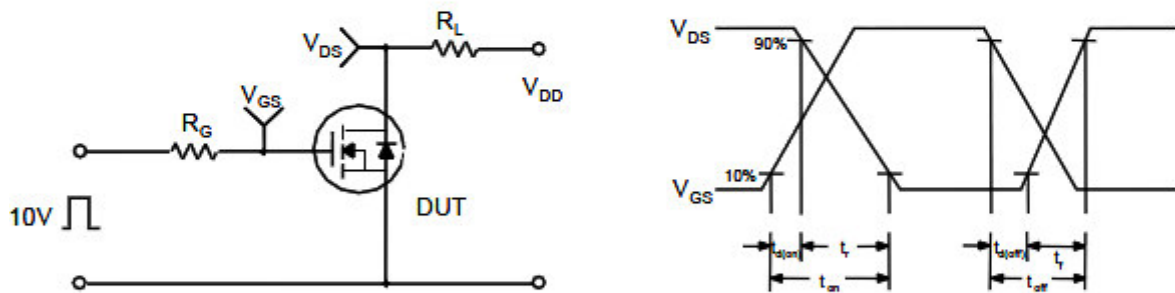


## Typical Performance Characteristics (Continue)

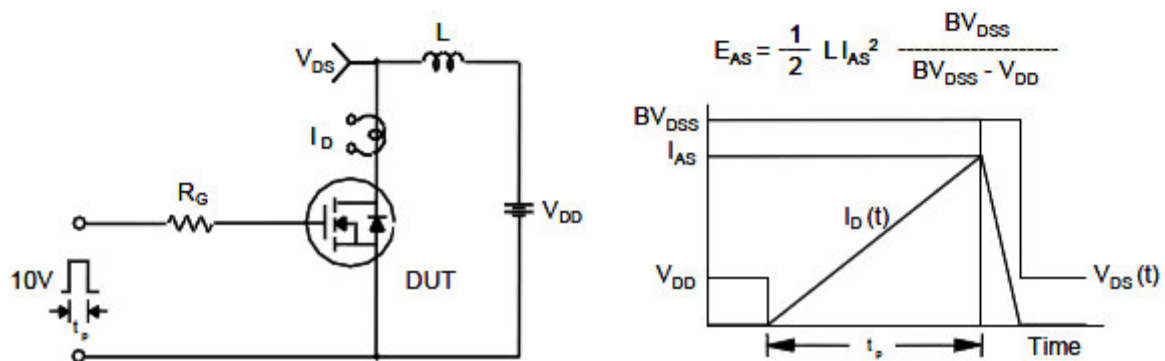
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

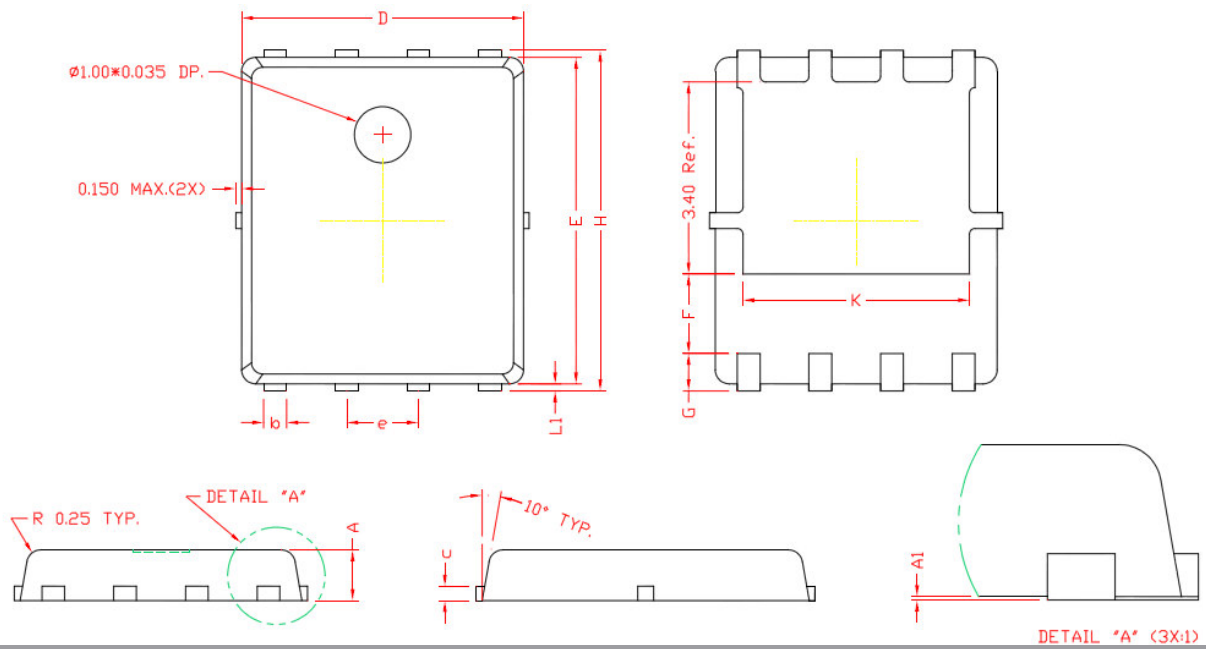


### Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### DFN5X6-8L







Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.001
b	0.35	0.49	0.013	0.019
c	0.254 (REF)		0.01 (REF)	
D	4.90	5.10	0.192	0.200
E	5.70	5.90	0.224	0.232
F	1.40 (REF)		0.055 (REF)	
e	1.27 (BSC)		0.050 (BSC)	
G	0.60 (REF)		0.023 (REF)	
H	5.95	6.20	0.234	0.244
K	4.00 (REF)		0.157 (REF)	
L1	0.10	0.18	0.003	0.007



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