

# GSM8412

## 100V N-Channel Enhancement Mode MOSFET

### Product Description

GSM8412, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

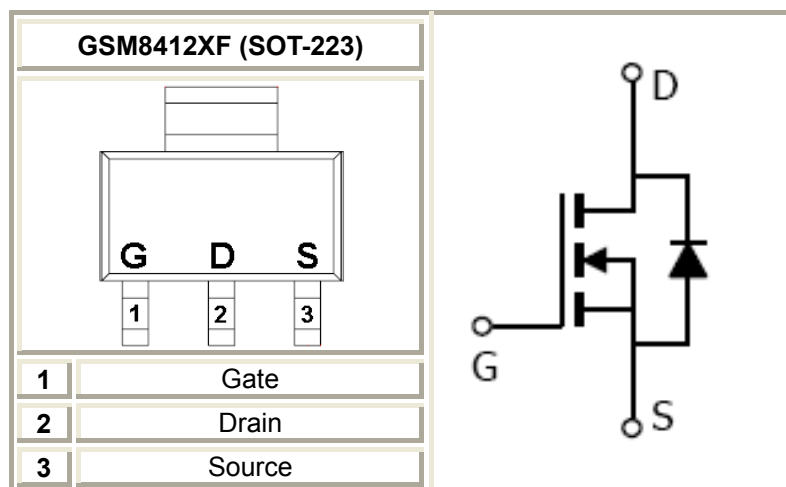
### Features

- 100V/3.6A,  $R_{DS(ON)}=300m\Omega@V_{GS}=10V$
- 100V/3.0A,  $R_{DS(ON)}=310m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOT-223 package design

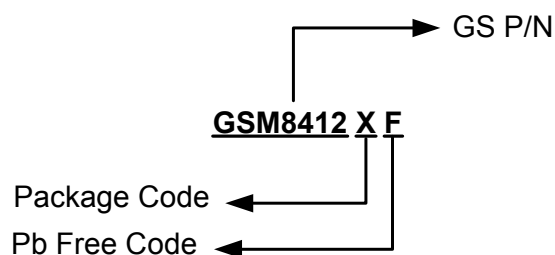
### Applications

- Motor and Load Control
- Power Management in White LED System
- Push Pull Converter
- LCD TV Inverter & AC/DC Inverter Systems.

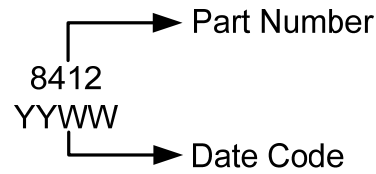
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking	Quantity Reel
GSM8412XF	SOT-223	8412YYWW	2500PCS

## Absolute Maximum Ratings

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

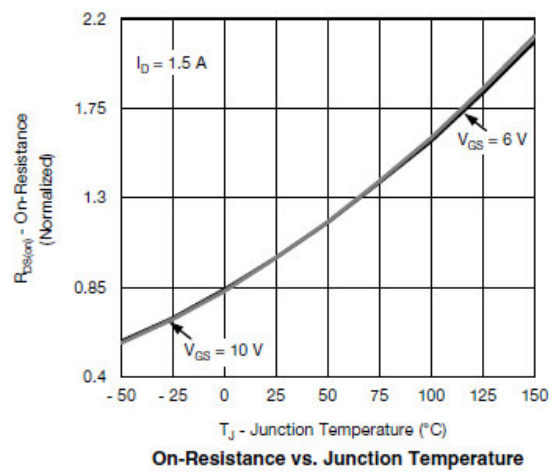
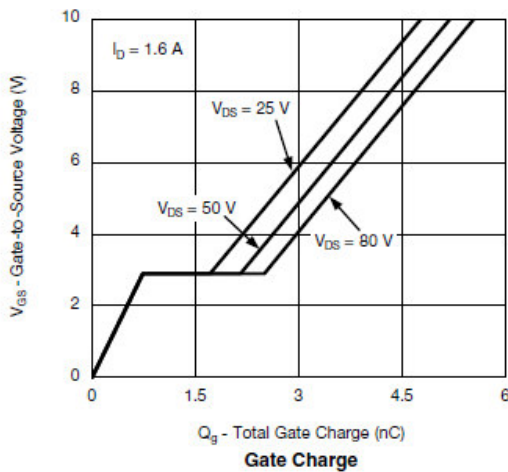
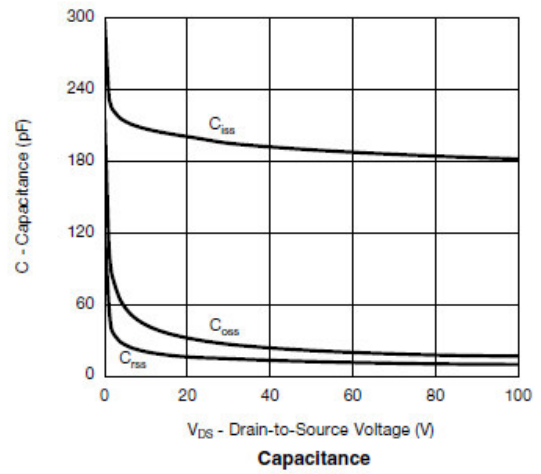
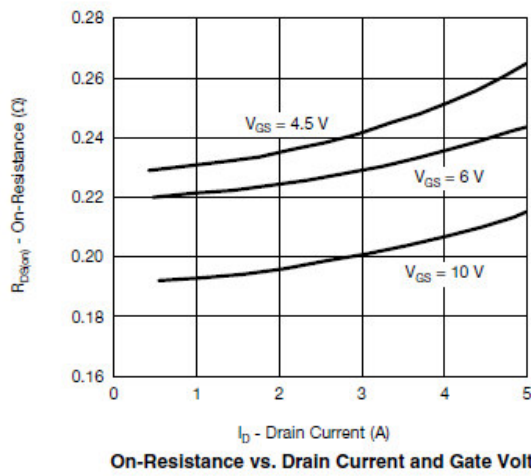
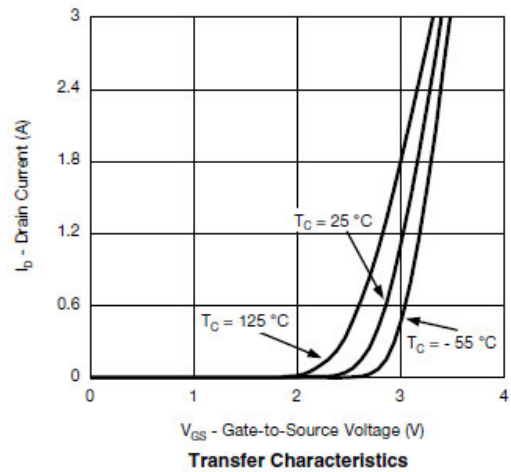
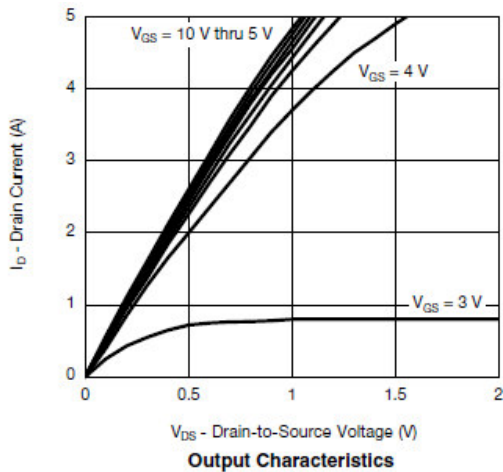
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	100	V	
V <sub>GSS</sub>	Gate –Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	3.6	A
		T <sub>A</sub> =70°C	2.6	
I <sub>DM</sub>	Pulsed Drain Current	8	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	1.6	A	
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	2.8	W
		T <sub>A</sub> =70°C	1.2	
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

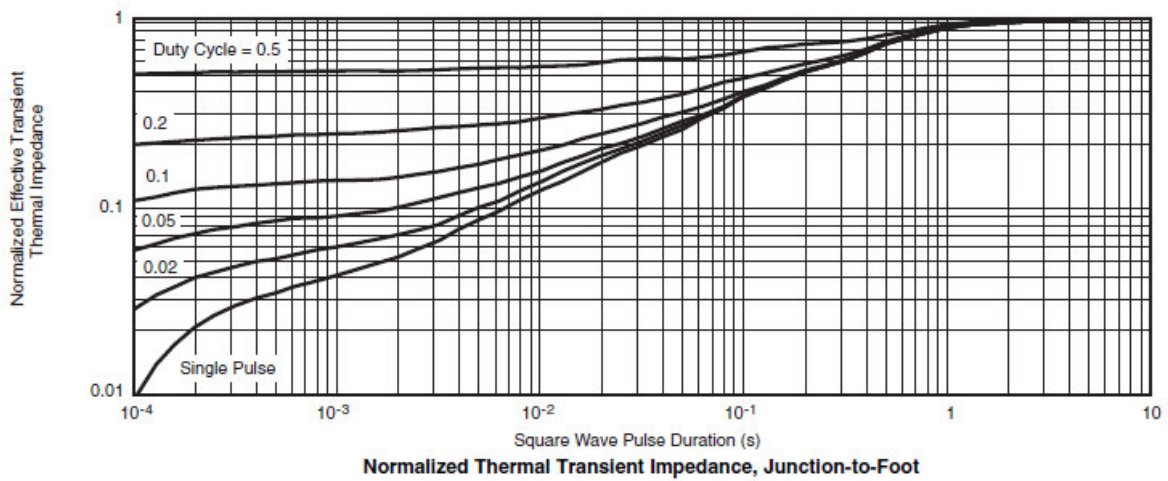
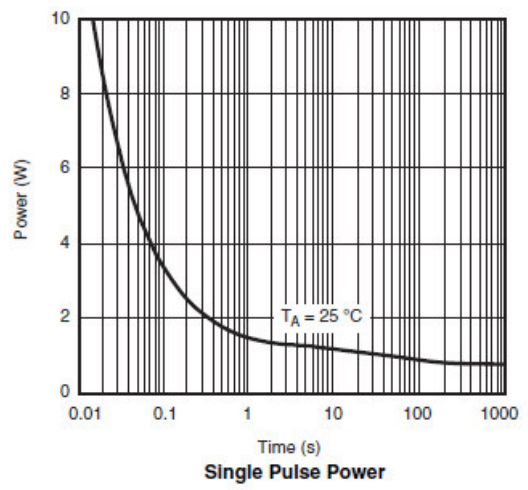
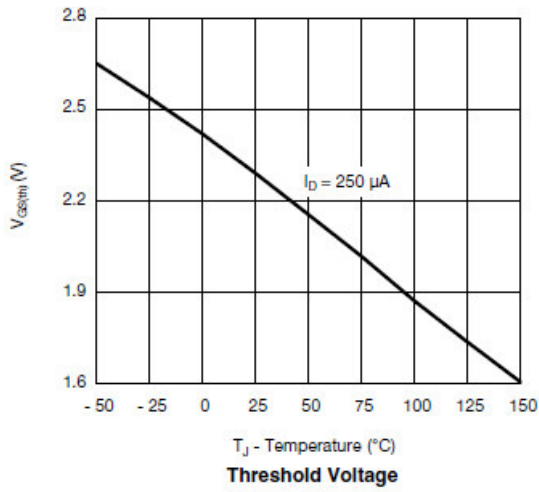
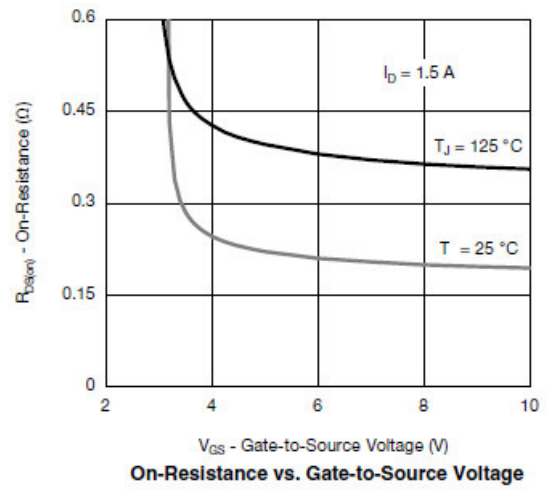
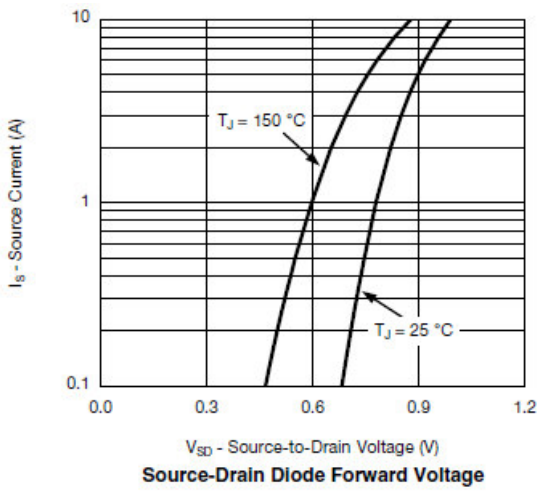
(T<sub>A</sub>=25°C Unless otherwise noted)

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	100			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	
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> = 80V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> = 80V, 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> ≥ 5.0V, V <sub>GS</sub> =4.5V	5			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =3.6A		284	300	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.0A		288	310	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =20V, I <sub>D</sub> =1.5A		2		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1.3A, V <sub>GS</sub> =0V		0.85	1.2	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =1.6A		2.8	5.8	nC
Q <sub>gs</sub>	Gate-Source Charge			0.75		
Q <sub>gd</sub>	Gate-Drain Charge			1.4		
C <sub>ISS</sub>	Input Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V f=1MHz		200		pF
C <sub>OSS</sub>	Output Capacitance			22		
C <sub>RSS</sub>	Reverse Transfer Capacitance			13		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =50V, R <sub>L</sub> =39Ω I <sub>D</sub> =1.3A, V <sub>GEN</sub> =4.5V R <sub>G</sub> =1.0Ω		25	50	ns
t <sub>r</sub>				20	50	
t <sub>d(off)</sub>	Turn-Off Time			15	30	
t <sub>f</sub>				10	25	

## Typical Performance Characteristics

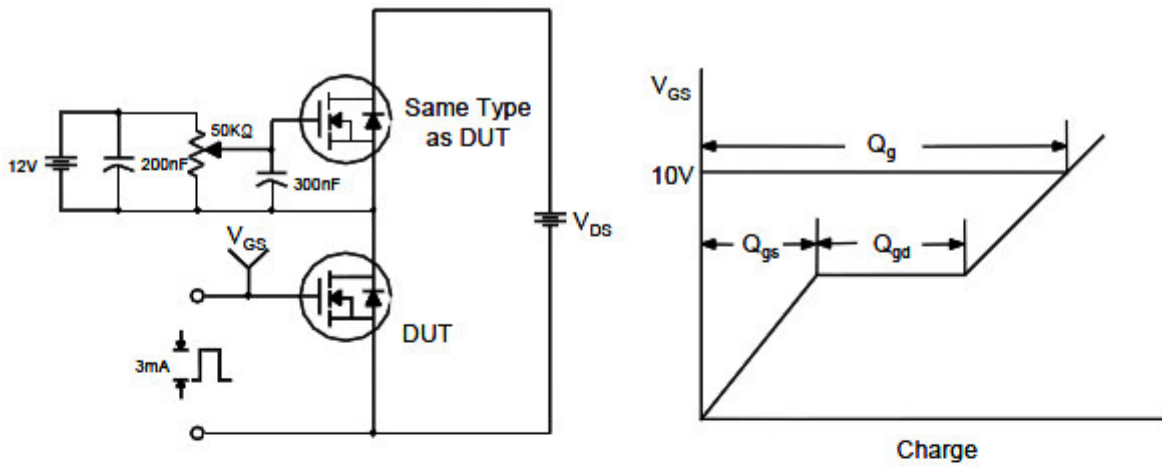


## Typical Performance Characteristics(continue)

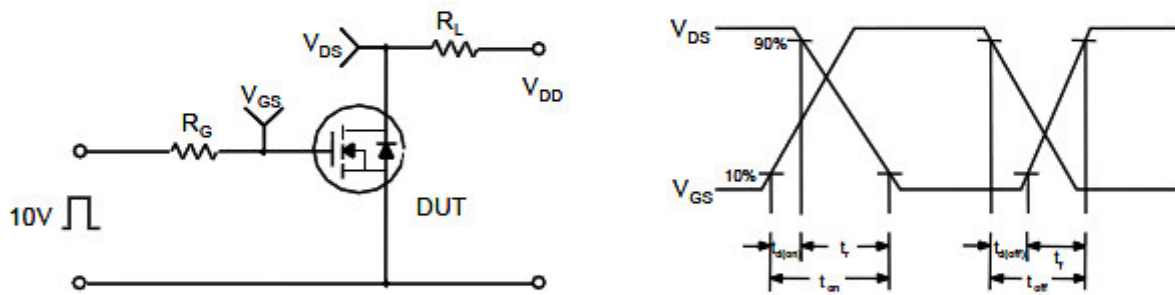


## Typical Performance Characteristics(continue)

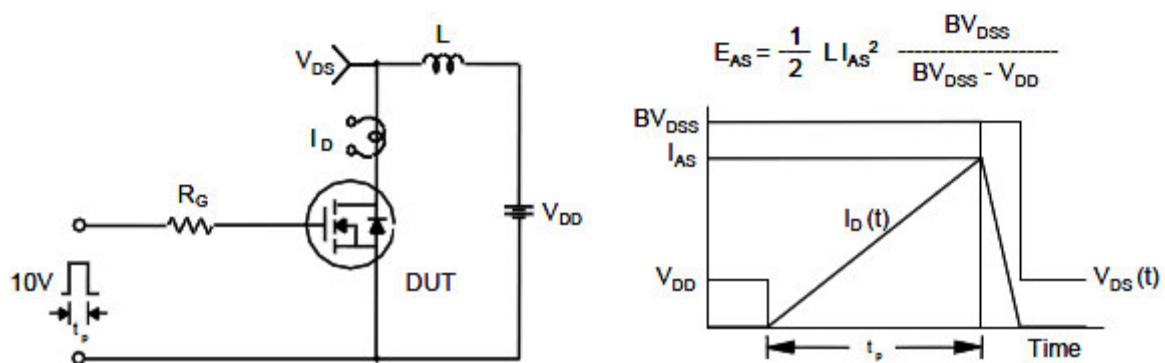
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

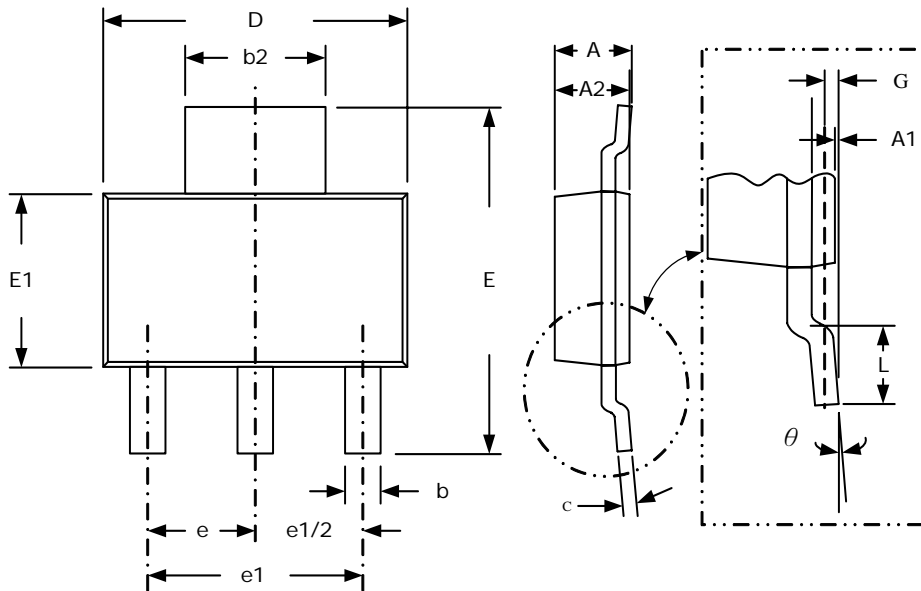


### Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

## SOT-223 PLASTIC PACKAGE



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
<b>A</b>	-	1.80	-	.071
<b>A1</b>	0.02	0.10	.001	.004
<b>A2</b>	1.55	1.65	.061	.065
<b>b</b>	0.66	0.84	.026	.033
<b>b2</b>	2.90	3.10	.114	.122
<b>c</b>	0.23	0.33	.009	.013
<b>D</b>	6.30	6.70	.248	.264
<b>E</b>	6.70	7.30	.264	.288
<b>E1</b>	3.30	3.70	.130	.146
<b>e</b>	2.30 (TYP)		.091 (TYP)	
<b>e1</b>	4.60 (TYP)		.181 (TYP)	
<b>L</b>	0.90	-	.035	-
<b>G</b>	0.25 (TYP)		.010 (TYP)	
<b><math>\theta</math></b>	0°	8°	0°	8°

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