

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.

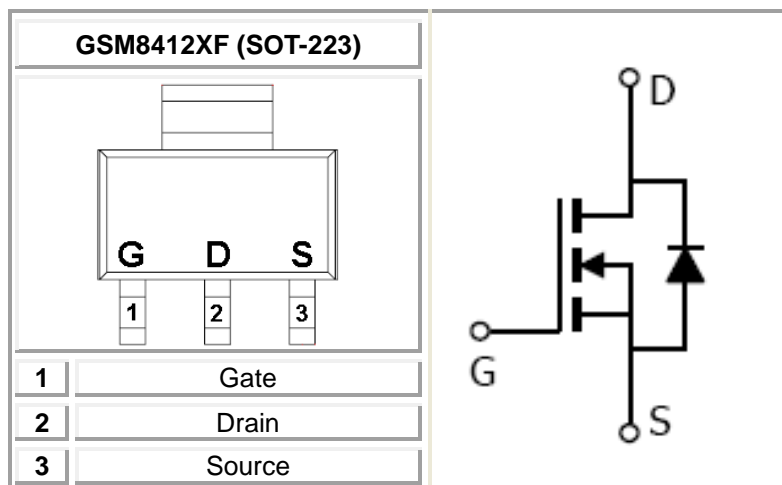
Features

- 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

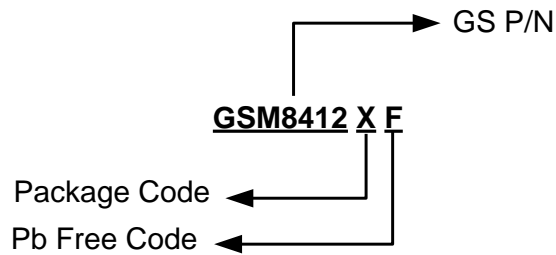
Applications

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

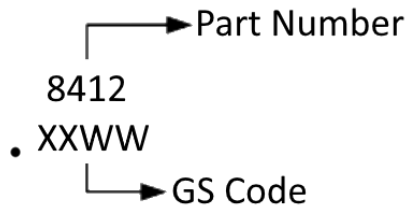
Packages & Pin Assignments



Ordering Information



Marking Information



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

Absolute Maximum Ratings

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

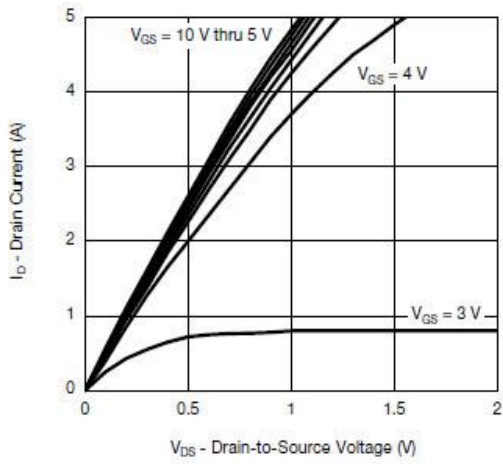
Symbol	Parameter	Typical	Unit	
V _{DSS}	Drain-Source Voltage	100	V	
V _{GSS}	Gate –Source Voltage	±20	V	
I _D	Continuous Drain Current($T_J=150^\circ\text{C}$)	$T_A=25^\circ\text{C}$	3.6	A
		$T_A=70^\circ\text{C}$	2.6	
I _{DM}	Pulsed Drain Current	8	A	
I _S	Continuous Source Current(Diode Conduction)	1.6	A	
P _D	Power Dissipation	$T_A=25^\circ\text{C}$	2.8	W
		$T_A=70^\circ\text{C}$	1.2	
T _J	Operating Junction Temperature	150	°C	
T _{STG}	Storage Temperature Range	-55/150	°C	
R _{θJA}	Thermal Resistance-Junction to Ambient	120	°C/W	

Electrical Characteristics

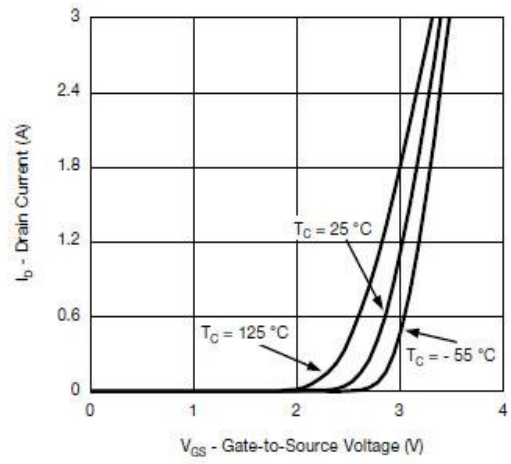
(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	100			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0		2.0	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 80V, V _{GS} =0V			1	uA
		V _{DS} = 80V, V _{GS} =0V , T _J =85°C			10	
I _{D(on)}	On-State Drain Current	V _{DS} ≥ 5.0V, V _{GS} =4.5V	5			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =3.6A		284	300	mΩ
		V _{GS} =4.5V, I _D =3.0A		288	310	
g _{FS}	Forward Transconductance	V _{DS} =20V, I _D =1.5A		2		S
V _{SD}	Diode Forward Voltage	I _S =1.3A, V _{GS} =0V		0.85	1.2	V
Dynamic						
Q _g	Total Gate Charge	V _{DS} =50V, V _{GS} =4.5V, I _D =1.6A		2.8	5.8	nC
Q _{gs}	Gate-Source Charge			0.75		
Q _{gd}	Gate-Drain Charge			1.4		
C _{ISS}	Input Capacitance	V _{DS} =50V, V _{GS} =0V f=1MHz		200		pF
C _{OSS}	Output Capacitance			22		
C _{RSS}	Reverse Transfer Capacitance			13		
t _{d(on)}	Turn-On Time	V _{DD} =50V, R _L =39Ω I _D =1.3A, V _{GEN} =4.5V R _G =1.0Ω		25	50	ns
t _r				20	50	
t _{d(off)}	Turn-Off Time			15	30	
t _f				10	25	

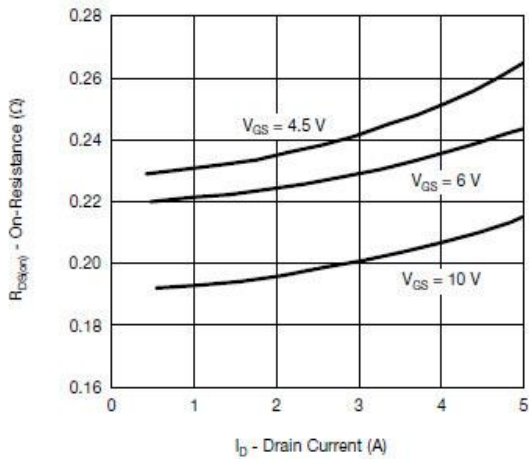
Typical Performance Characteristics



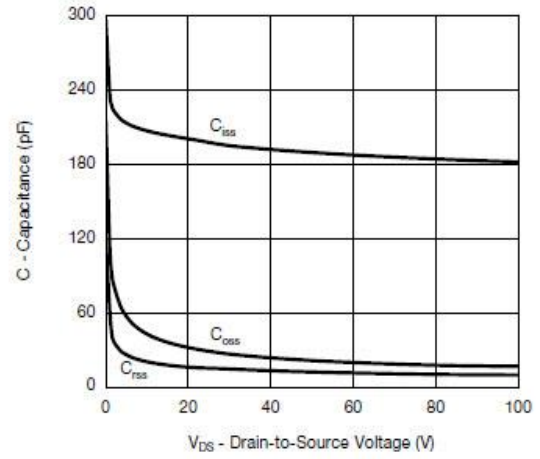
Output Characteristics



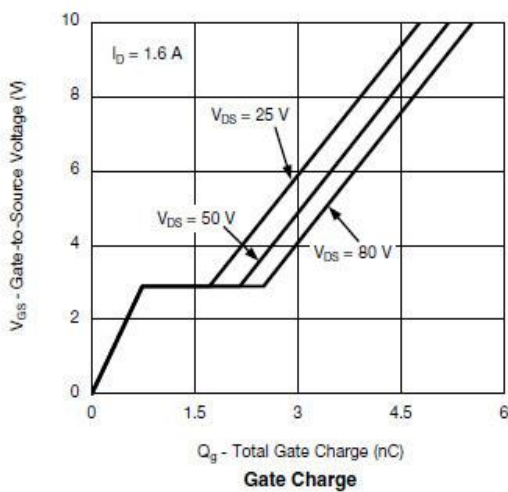
Transfer Characteristics



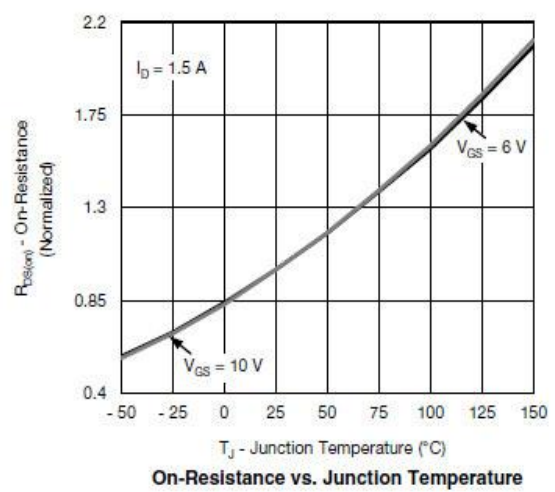
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

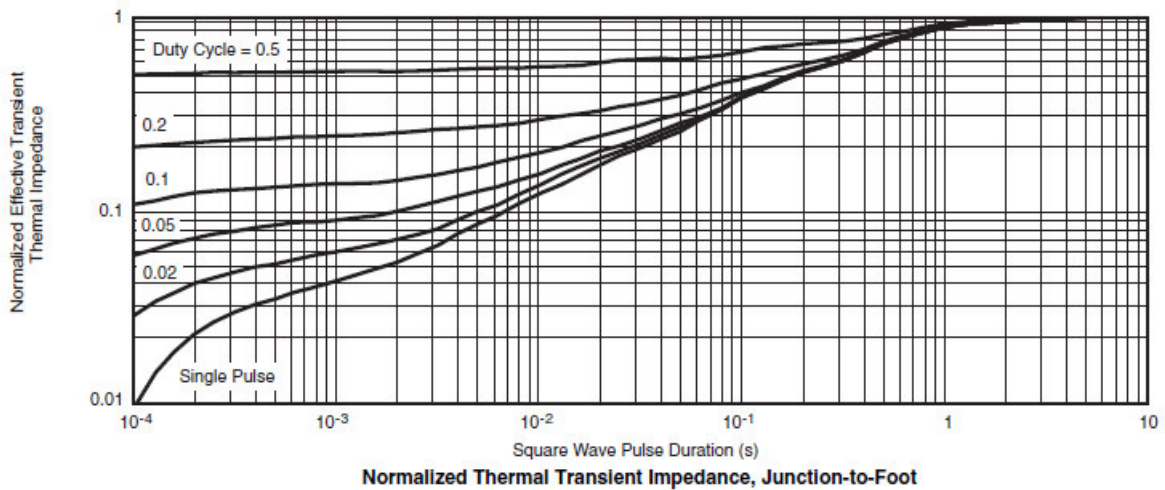
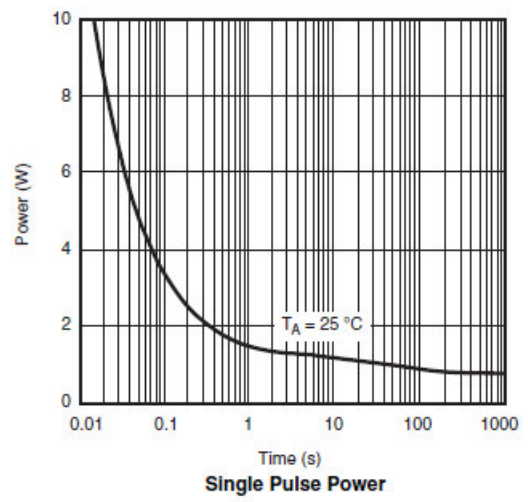
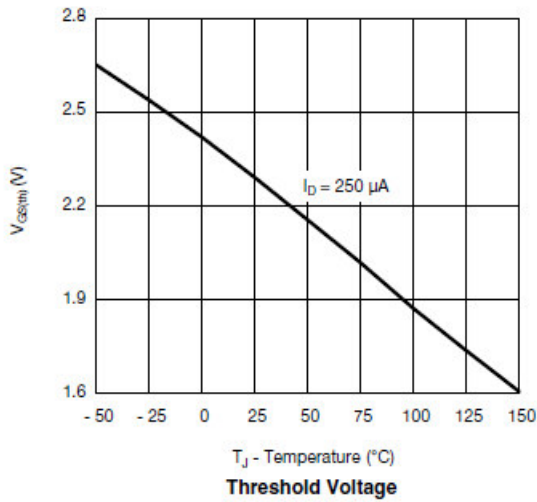
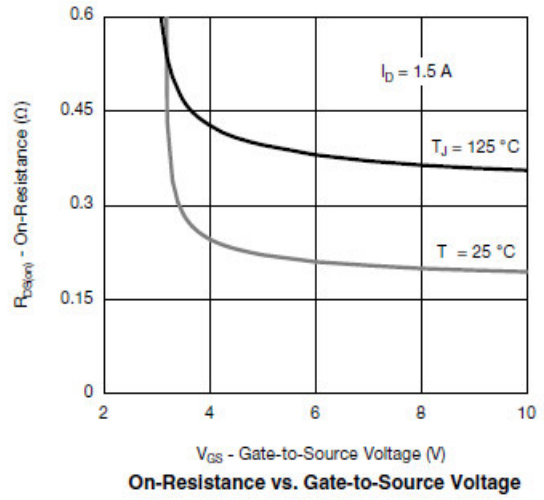
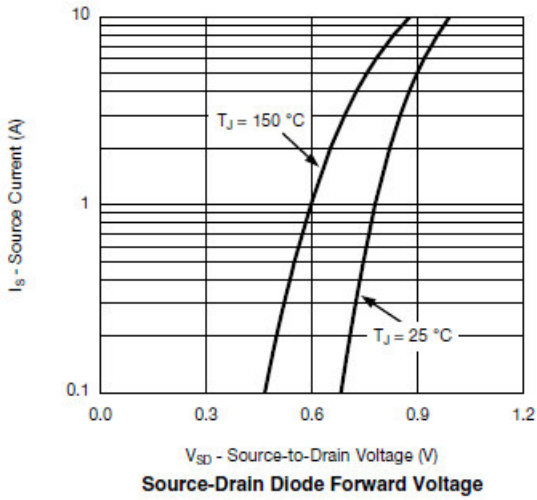


Gate Charge



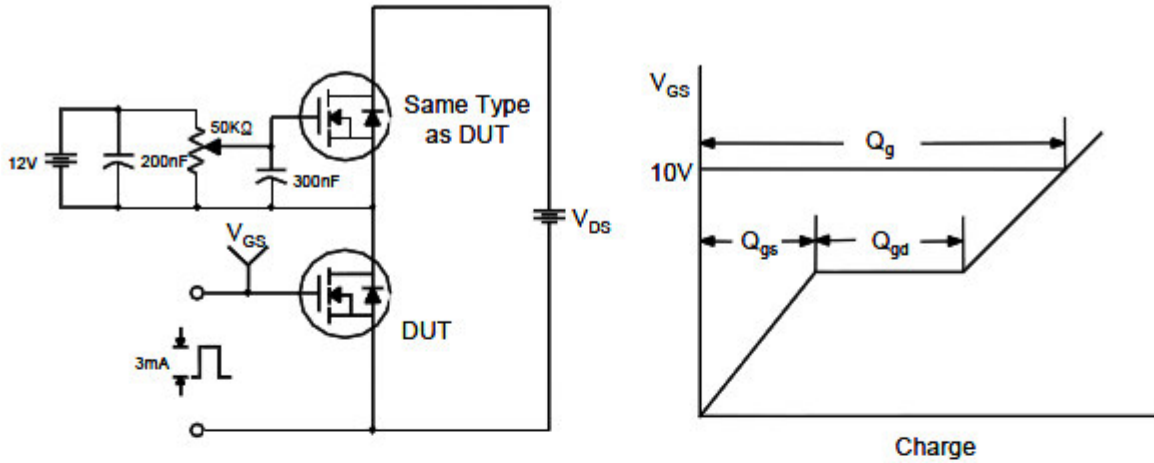
On-Resistance vs. Junction Temperature

Typical Performance Characteristics(continue)

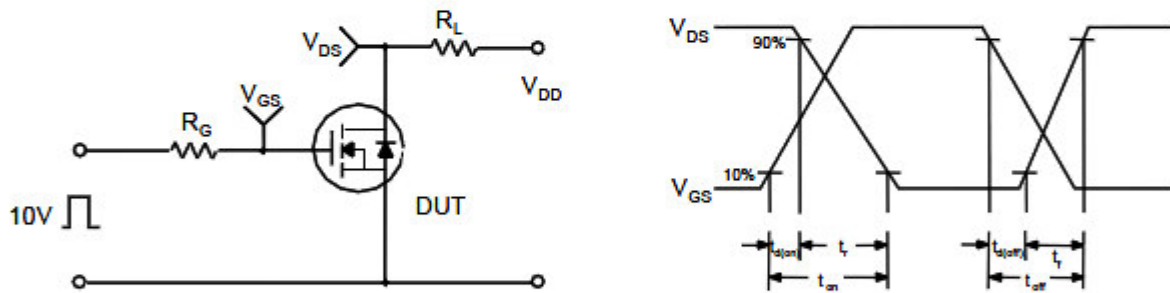


Typical Performance Characteristics(continue)

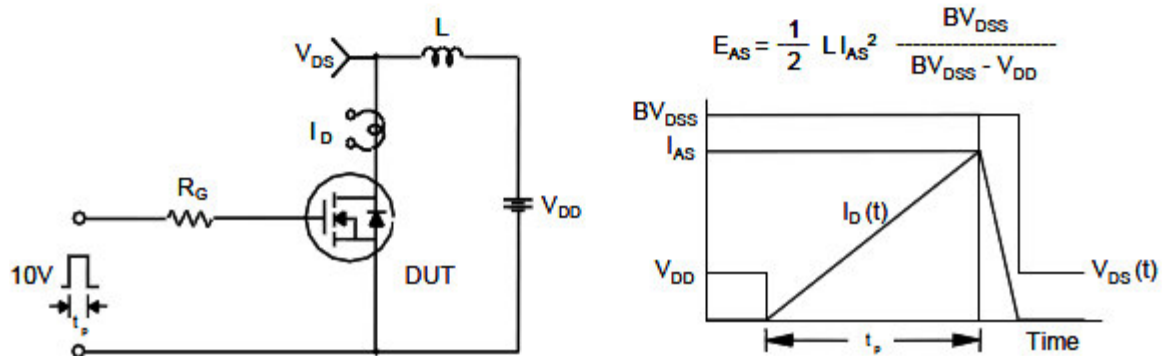
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

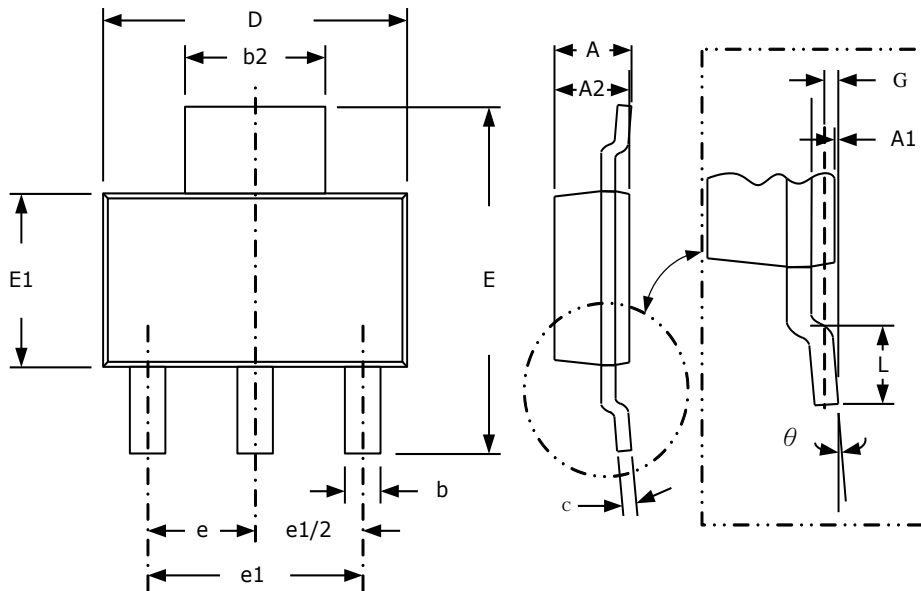


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-223 PLASTIC PACKAGE









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

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