

GSM1012

20V N-Channel Enhancement Mode MOSFET

Product Description

The GSM1012 is the N-Channel enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance.

These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching, low in-line power loss, and resistance to transients are needed.

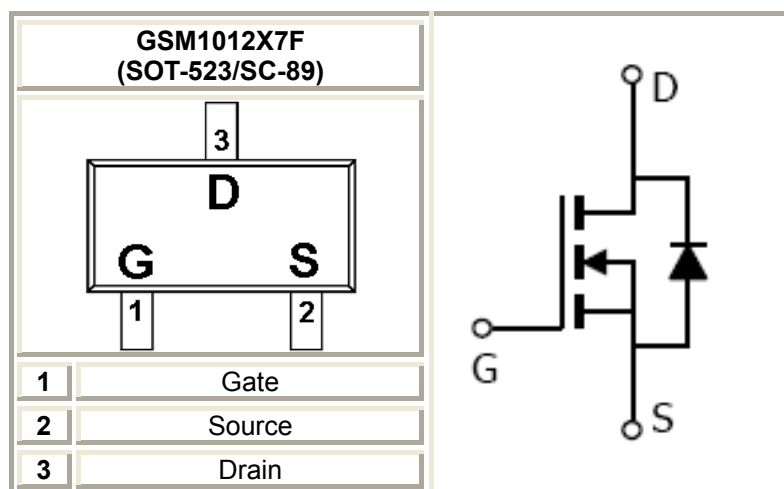
Features

- N-Channel
20V/0.65A, $R_{DS(ON)}=380m\Omega@V_{GS}=4.5V$
20V/0.55A, $R_{DS(ON)}=450m\Omega@V_{GS}=2.5V$
20V/0.45A, $R_{DS(ON)}=800m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-523 (SC-89) package design

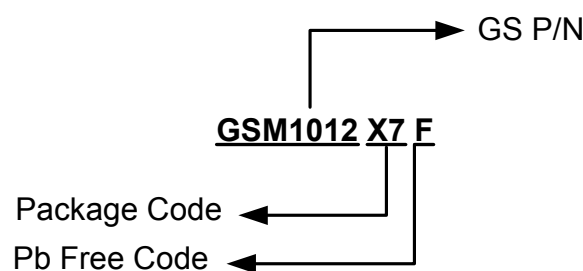
Applications

- Drivers: Relays/Solenoids/Lamps/Hammers
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

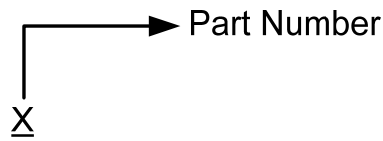
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM1012X7F	SOT-523	X

Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

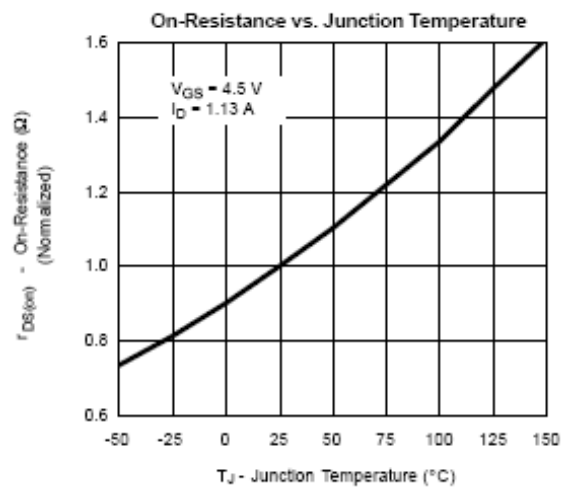
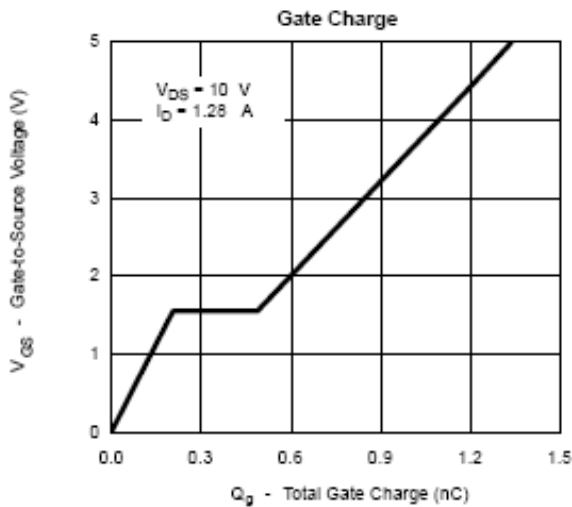
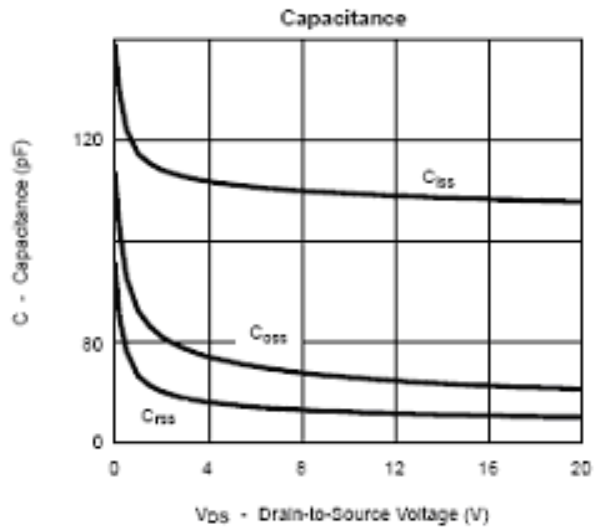
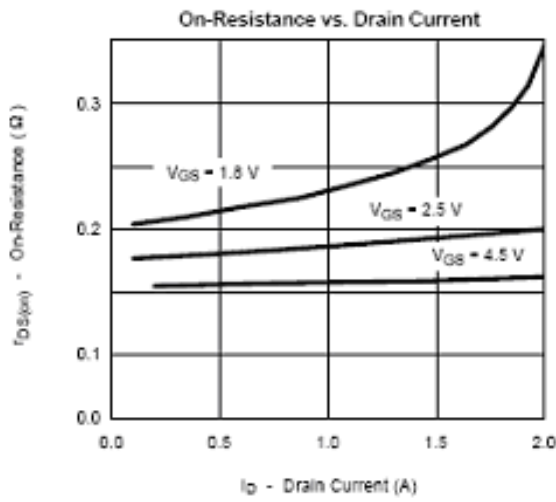
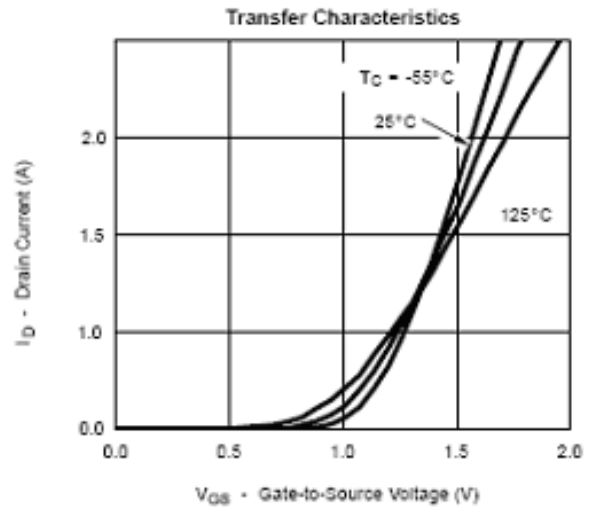
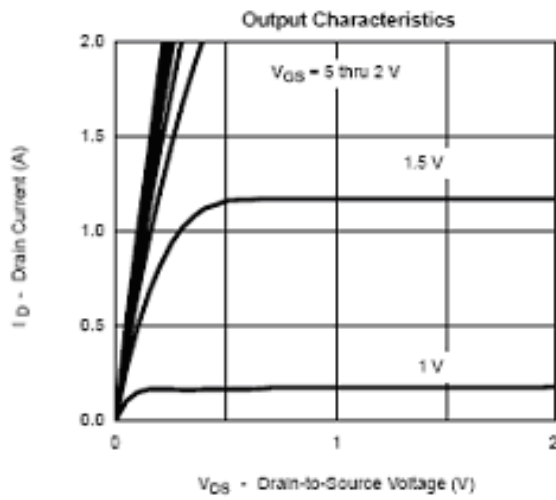
Symbol	Parameter	Typical	Unit	
V _{DSS}	Drain-Source Voltage	20	V	
V _{GSS}	Gate –Source Voltage	±12	V	
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	0.65	A
		T _A =80°C	0.45	
I _{DM}	Pulsed Drain Current	1.0	A	
I _S	Continuous Source Current(Diode Conduction)	0.3	A	
P _D	Power Dissipation	T _A =25°C	0.27	W
		T _A =70°C	0.16	
T _J	Operating Junction Temperature	-55/150	°C	
T _{STG}	Storage Temperature Range	-55/150	°C	

Electrical Characteristics

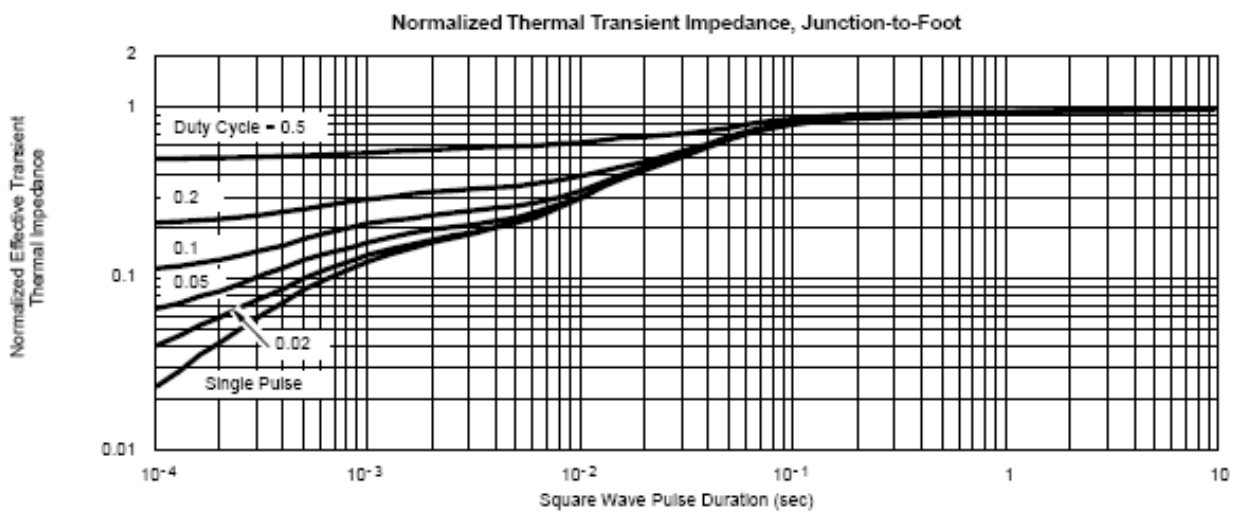
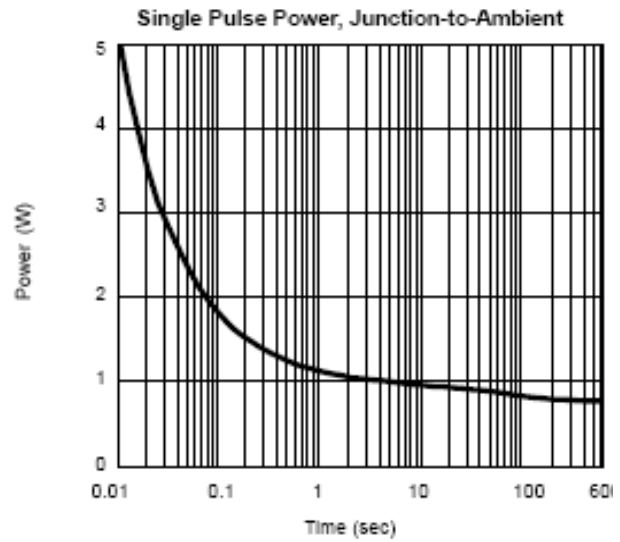
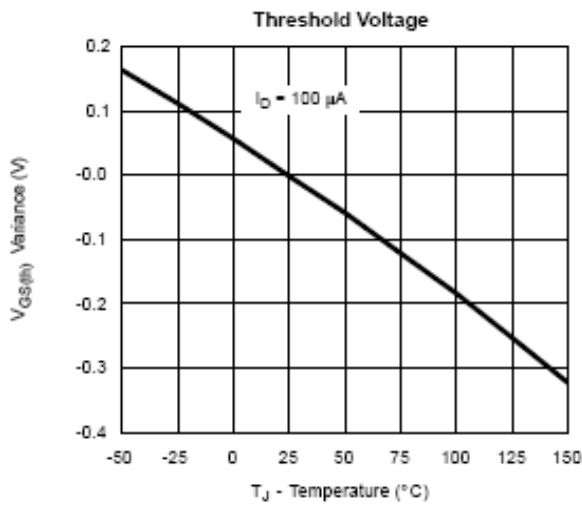
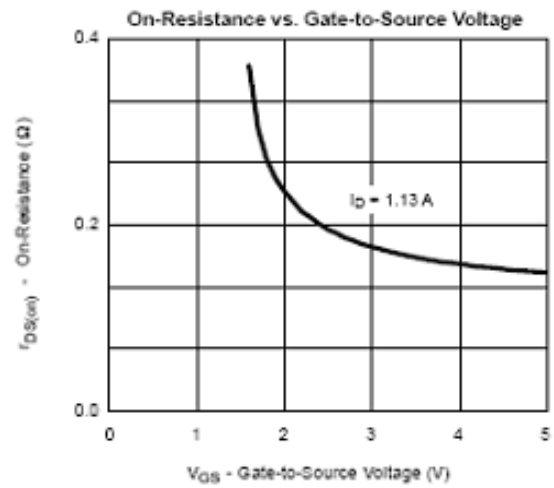
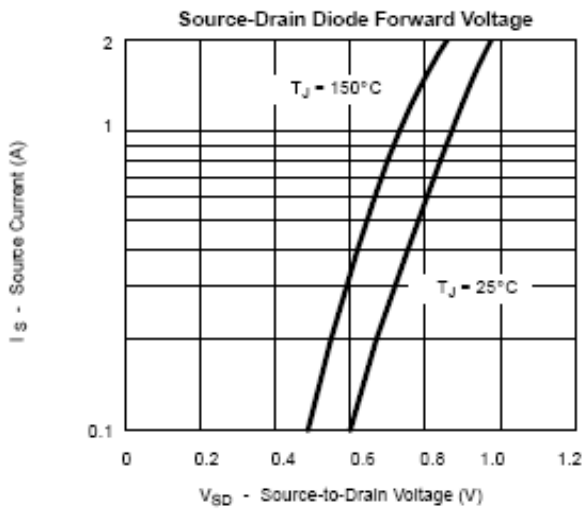
(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit	
Static							
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	20			V	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.35		1.0		
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			100	nA	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 20V, V _{GS} =0V			1	μA	
		V _{DS} = 20V, V _{GS} =0V, T _J =55°C			5		
I _{D(on)}	On-State Drain Current	V _{DS} ≥ 4.5V, V _{GS} =5V	0.7			A	
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.65A		260	380	mΩ	
		V _{GS} =2.5V, I _D =0.55A		320	450		
		V _{GS} =1.8V, I _D =0.45A		420	800		
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =0.4A		1.0		S	
V _{SD}	Diode Forward Voltage	I _S =0.15A, V _{GS} =0V		0.8	1.2	V	
Dynamic							
Q _g	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D ≅0.6A		1.2	1.5	nC	
Q _{gs}	Gate-Source Charge			0.2			
Q _{gd}	Gate-Drain Charge			0.3			
t _{d(on)}	Turn-On Time	V _{DD} =10V, R _L =10Ω, I _D ≅0.5A V _{GEN} =4.5V, R _G =6Ω		5	10	ns	
t _r				8	15		
t _{d(off)}			Turn-Off Time		10		18
t _f					1.2		2.8

Typical Performance Characteristics

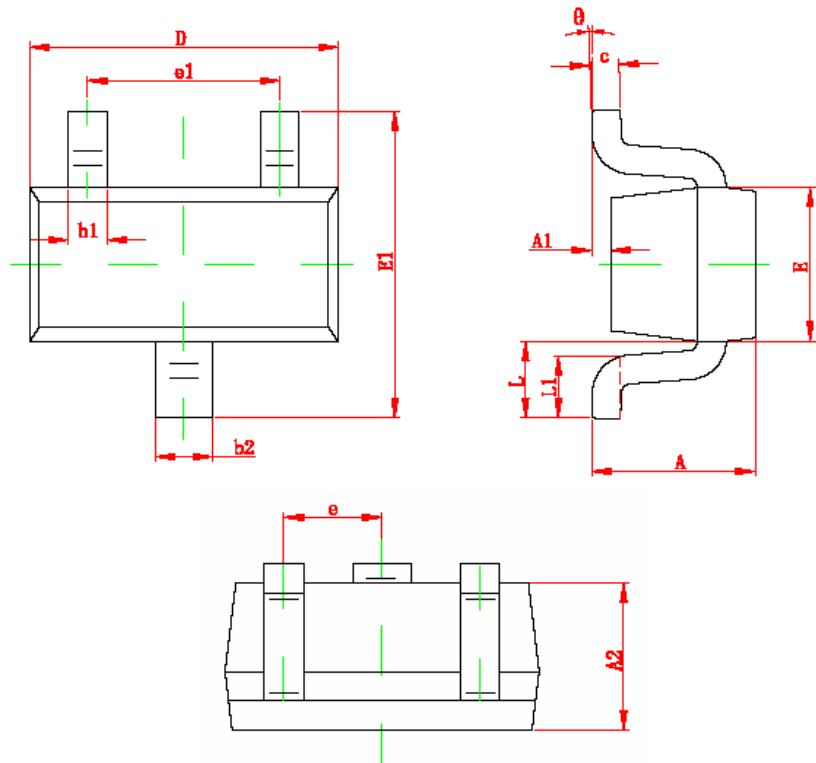


Typical Performance Characteristics(continue)



Package Dimension

SOT-523











Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.325	0.010	0.013
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.750	0.850	0.030	0.033
E1	1.450	1.750	0.057	0.069
e	0.500(TYP)		0.020(TYP)	
e1	0.900	1.100	0.035	0.043
L	0.550(REF)		0.022(REF)	
L1	0.280	0.440	0.011	0.017
θ	0°	4°	0°	4°



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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

Wu-Xi Branch	
	No.21 Changjiang Rd., WND, Wuxi, Jiangsu, China (INFO. &. TECH. Science Park Building A 210 Room)
	86-510-85217051
	86-510-85211238
	sales_cn@gs-power.com

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