GSM1023

20V P-Channel Enhancement Mode MOSFET

Product Description

GSM1023, P-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 low in-line power loss are needed in commercial industrial surface mount applications.

Features

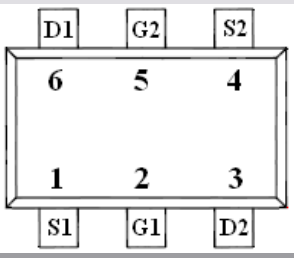
- -20V/-0.45A,$R_{DS(ON)}$=620mΩ@V_{GS}=-4.5V
- -20V/-0.35A,$R_{DS(ON)}$=860mΩ@V_{GS}=-2.5V
- -20V/-0.25A,$R_{DS(ON)}$=1450mΩ@V_{GS}=-1.8V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-563 package design

Applications

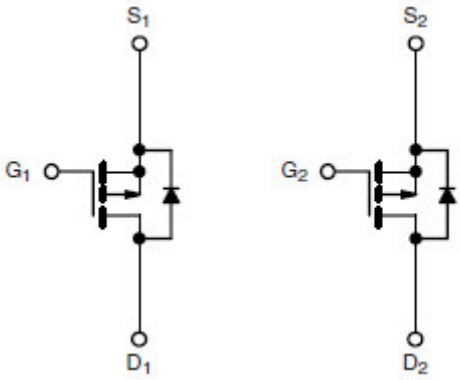
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Packages & Pin Assignments

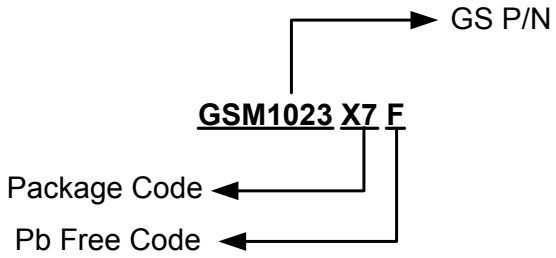
GSM1023X7F (SOT-563)



1	Source1	4	Source2
2	Gate1	5	Gate2
3	Drain2	6	Drain1

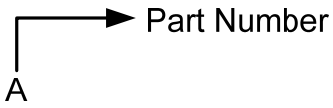


Ordering Information



Part Number	Package	Quantity Reel
GSM1023X7F	SOT-563	3000 PCS

Marking Information



Absolute Maximum Ratings

(T_A=25ºC unless otherwise noted)

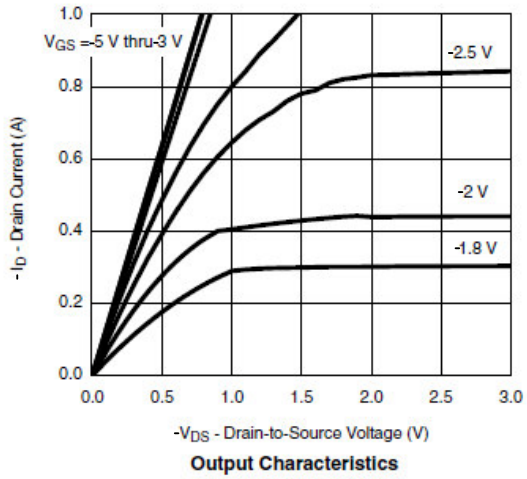
Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate –Source Voltage		±12	V
I_D	Continuous Drain Current(T_J=150℃)	T_A=25ºC	-0.45	A
		T_A=70ºC	-0.25	
I_{DM}	Pulsed Drain Current		-1.0	A
I_S	Continuous Source Current(Diode Conduction)		-0.3	A
P_D	Power Dissipation	T_A=25ºC	0.27	W
		T_A=70ºC	0.16	
T_J	Operating Junction Temperature		-55/150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC

Electrical Characteristics

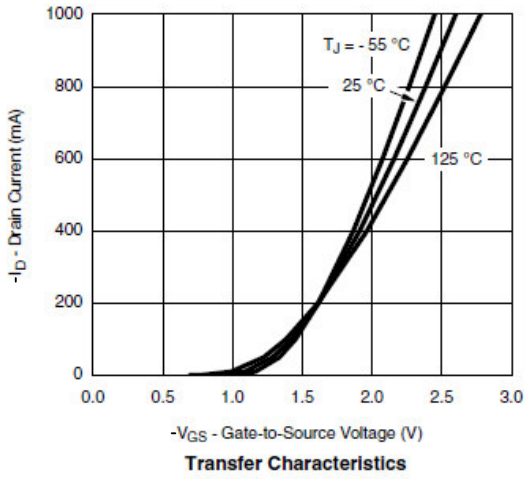
(T_A=25ºC unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-0.4		-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	uA
		V_{DS}= -20V, V_{GS}=0V,T_J=85ºC			-5	
$I_{D(on)}$	On-State Drain Current	V_{DS}≦-5V,V_{GS}=-4.5V	0.7			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-4.5V,I_D=-0.45A		500	620	mΩ
		V_{GS}=-2.5V,I_D=-0.35A		700	860	
		V_{GS}=-1.8V,I_D=-0.25A		1000	1450	
g_{fs}	Forward Transconductance	V_{DS}=-10V,I_D=-0.4A		1		S
V_{SD}	Diode Forward Voltage	I_S=-0.15A,V_{GS}=0V		0.65	1.2	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=-10V,V_{GS}=0V f=1MHz		70	100	pF
C_{oss}	Output Capacitance			20		
C_{rss}	Reverse Transfer Capacitance			10		
Q_g	Total Gate Charge	V_{DS}=-10V,V_{GS}=-4.5V I_D=-0.25A		1.0	1.3	nC
Q_{gs}	Gate-Source Charge			0.1		
Q_{gd}	Gate-Drain Charge			0.3		
$t_{d(on)}$	Turn-On Time	V_{DD}=-10V,R_L=30Ω I_D=-0.2A,V_{GEN}=-4.5V R_G=10Ω		10	15	ns
t_r				10	15	
$t_{d(off)}$	Turn-Off Time			40	60	
t_f				30	50	

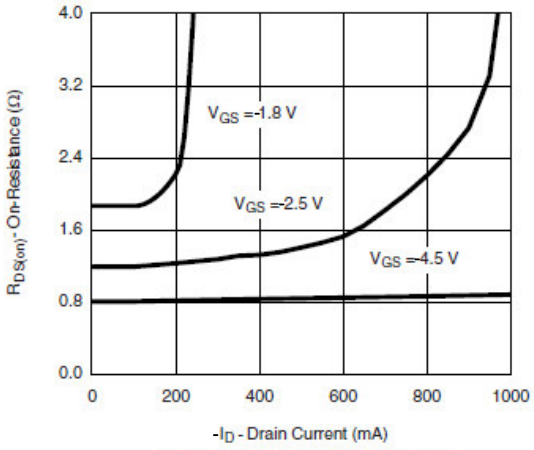
Typical Performance Characteristics



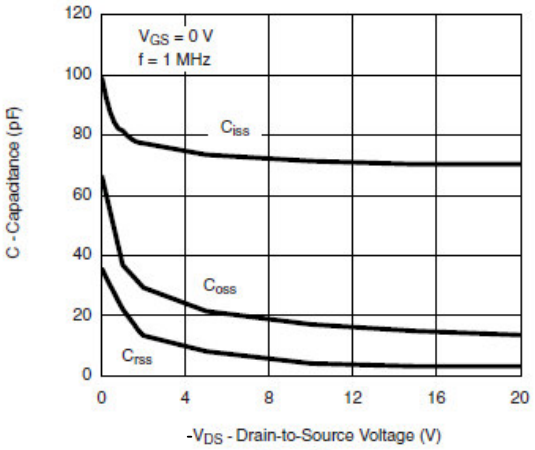
Output Characteristics



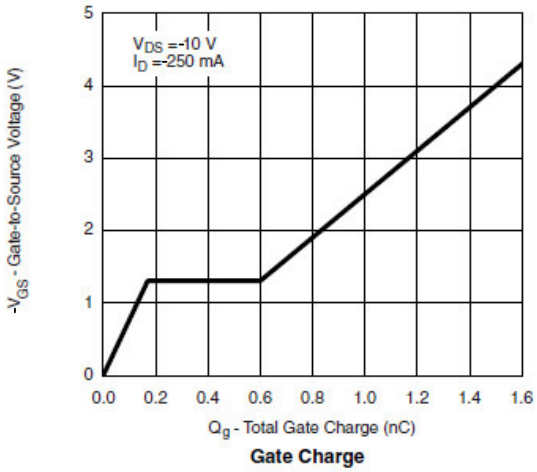
Transfer Characteristics



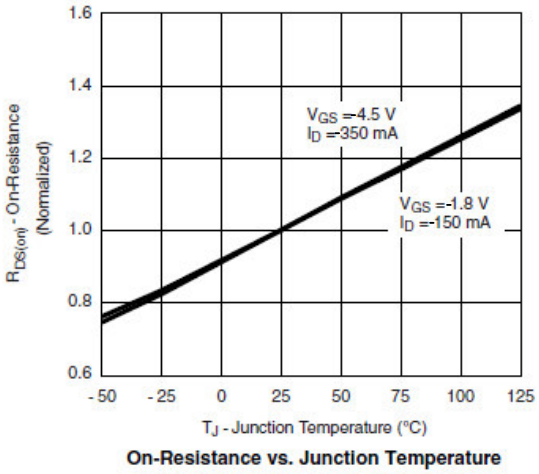
On-Resistance vs. Drain Current



Capacitance

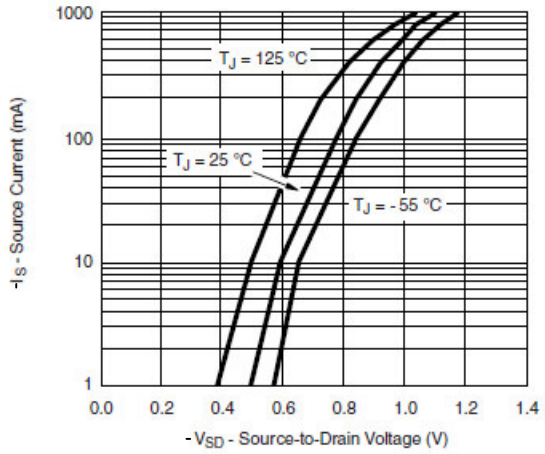


Gate Charge

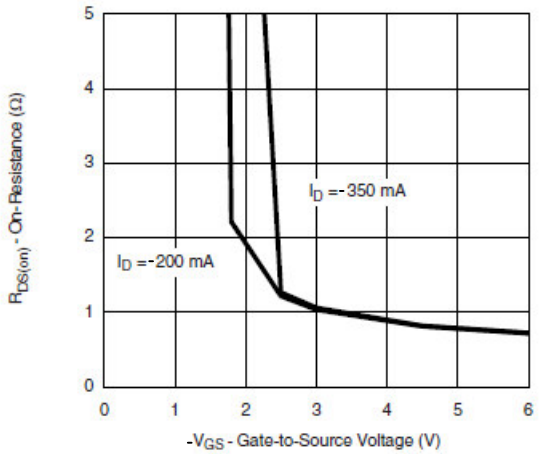


On-Resistance vs. Junction Temperature

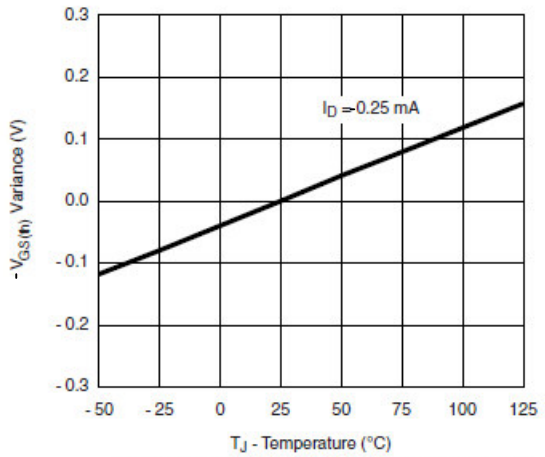
Typical Performance Characteristics (continue)



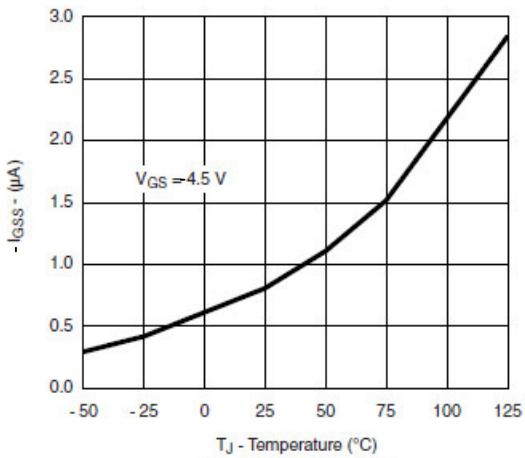
Source-Drain Diode Forward Voltage



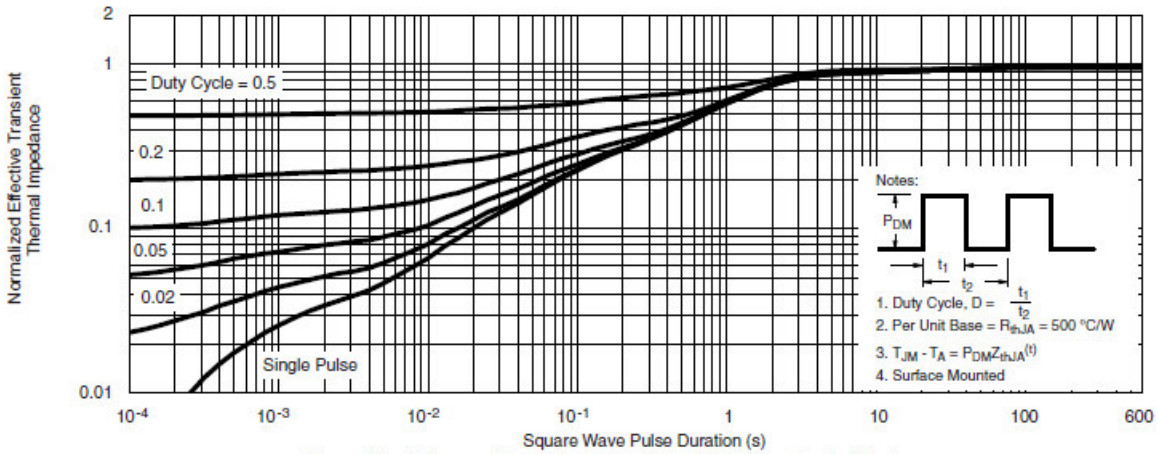
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage Variance vs. Temperature



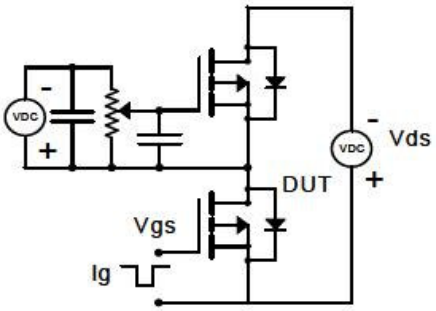
I_{GSS} vs. Temperature

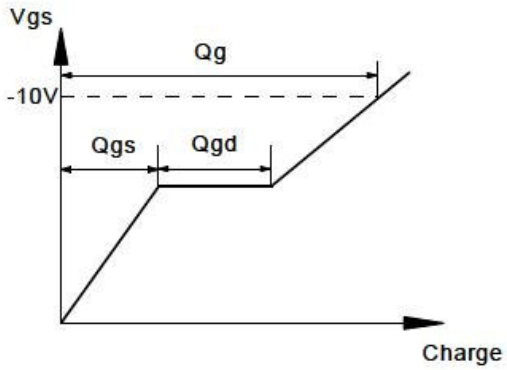


Normalized Thermal Transient Impedance, Junction-to-Ambient

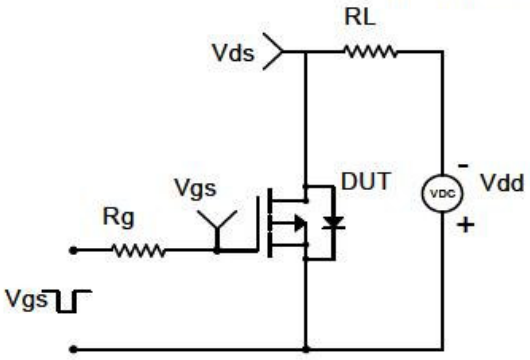
Typical Performance Characteristics (continue)

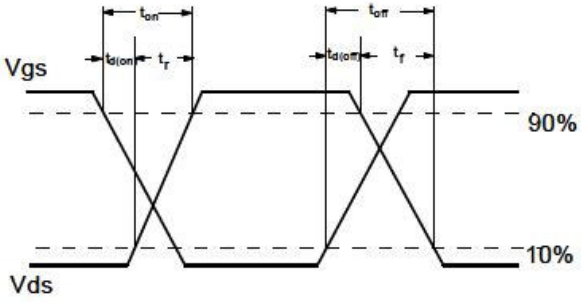
Gate Charge Test Circuit & Waveform



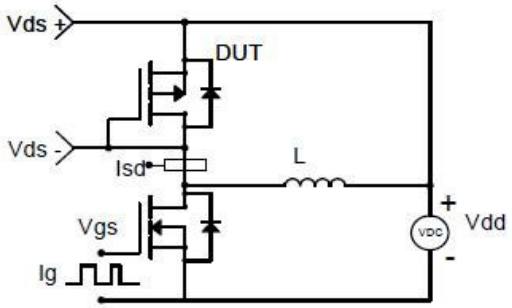


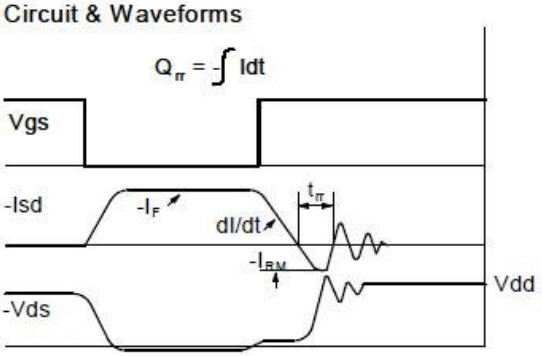
Resistive Switching Test Circuit & Waveforms





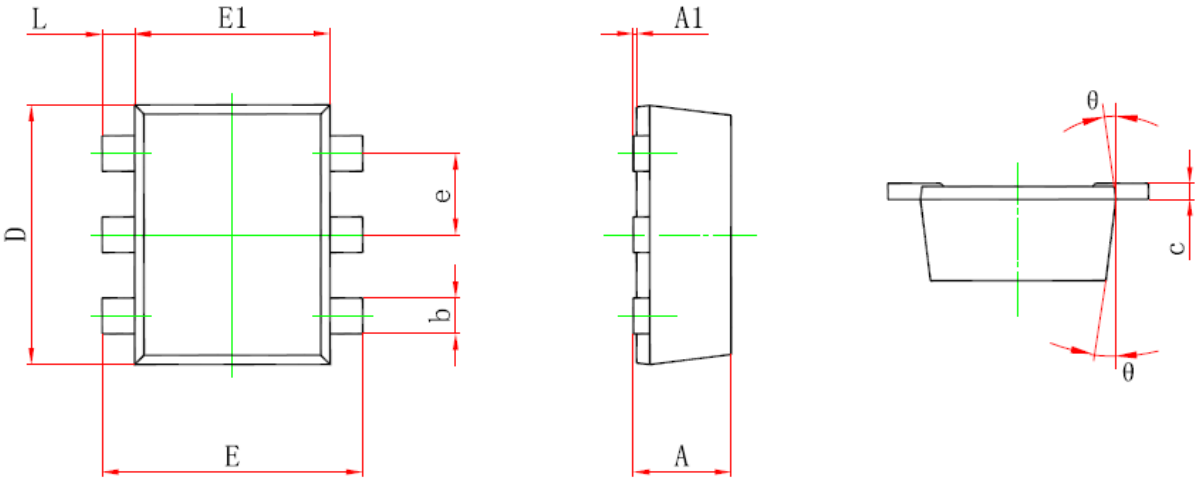
Diode Recovery Test Circuit & Waveforms





Package Dimension

SOT-563



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7° REF		7° REF	

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