

GSM7002SW

60V N-Channel Enhancement Mode MOSFET

Product Description

GSM7002SW, 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.

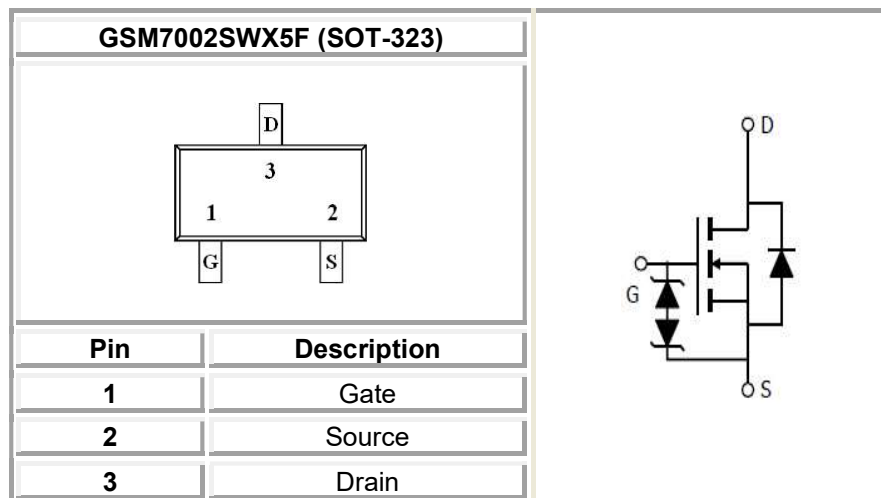
Features

- 60V/0.5A, $R_{DS(ON)}=3.0\Omega@V_{GS}=10V$
- 60V/0.3A, $R_{DS(ON)}=4.0\Omega@V_{GS}=4.5V$
- Fast switching
- ESD Protected up to 2KV
- Green Device Available

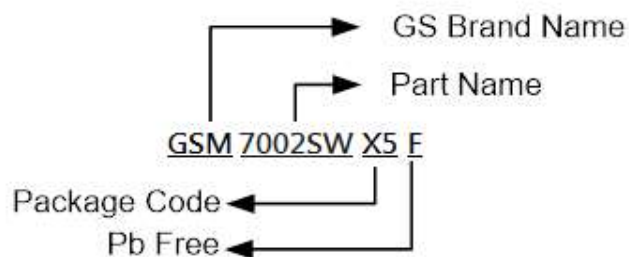
Applications

- load switch
- Notebook
- Battery Protection
- Hand-held Instruments

Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity
GSM7002SWX5F	SOT-323	KXW	3000 PCS

Absolute Maximum Ratings

T_C=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current-Continuous (T _A = 25°C)	250	mA
	Drain Current-Continuous (T _A = 70°C)	200	mA
I _{DM}	Pulsed Drain Current (Note1)	1.2	A
P _D	Power Dissipation T _A = 25°C	300	mW
	Power Dissipation T _A = 70°C	190	mW
R _{θJA}	Thermal Resistance-Junction to Ambient	417	°C/W
T _J	Junction Temperature Range	-55 to 150	°C
T _{STG}	Storage Temperature Range	-55 to 150	°C

Electrical Characteristics

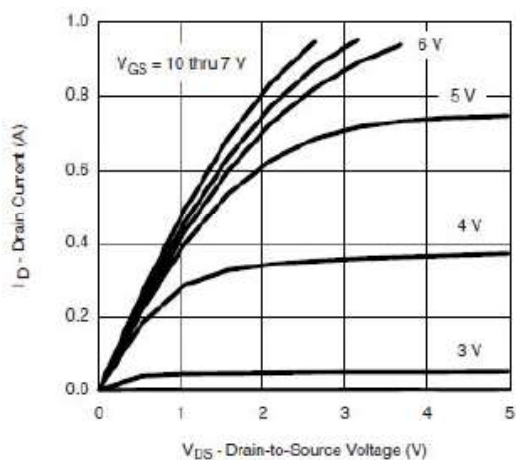
$T_J=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1		2	V
I _{GSS}	Gate–Source Leakage Current	V _{GS} =±20V, V _{DS} =0V,	-	-	±10	uA
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V, V _{GS} =0V, T _J =25°C	-	-	1	uA
		V _{DS} =60V, V _{GS} =0V, T _J =85°C	-	-	30	
R _{DS(on)}	Static Drain–Source On–Resistance	V _{GS} =10V, I _D =500mA	-	1.9	3	Ω
		V _{GS} =4.5V, I _D =300mA	-	2.4	4	
Dynamic						
C _{iss}	Input Capacitance	V _{DS} = 25V, f =1MHz, V _{GS} =0V	-	30		pF
C _{oss}	Output Capacitance		-	8		
C _{rss}	Reverse Transfer Capacitance		-	5		
Q _g	Total Gate Charge	V _{DD} =10V, I _D =0.25A, V _{GS} =4.5V		500		pC
Q _{gs}	Gate-Source Charge			100		
Q _{gd}	Gate-Drain Charge			150		
t _{d(on)}	Turn-On Time	V _{DD} =30V, I _D =0.2A, R _G =10Ω, V _{GEN} =4.5V, R _L =150Ω		10	20	ns
t _r				35	50	
t _{d(off)}	Turn-Off Time			20	30	
t _f				40	60	
V _{SD}	Diode Forward Voltage	I _S =0.2A, V _{GS} =0V	-	0.7	1.3	V
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =0.2A		0.2		S
I _S	Continuous Source Current	V _G = V _D =0V, Force Current	-	-	450	mA

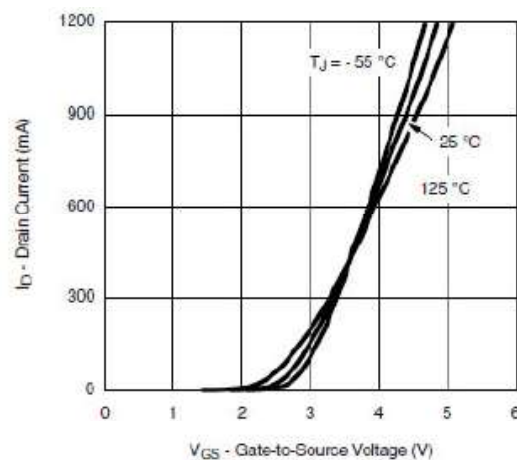
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

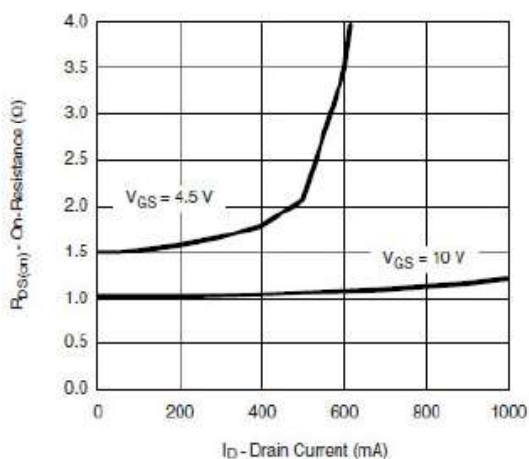
Typical Performance Characteristics



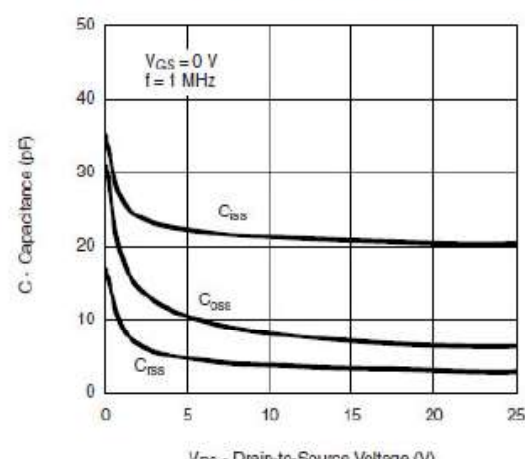
Output Characteristics



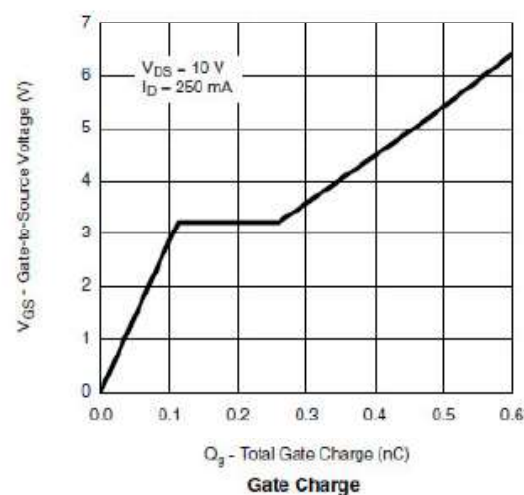
Transfer Characteristics



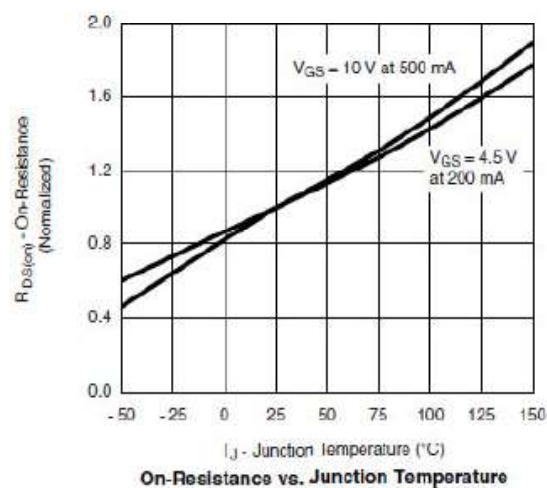
On-Resistance vs. Drain Current



Capacitance

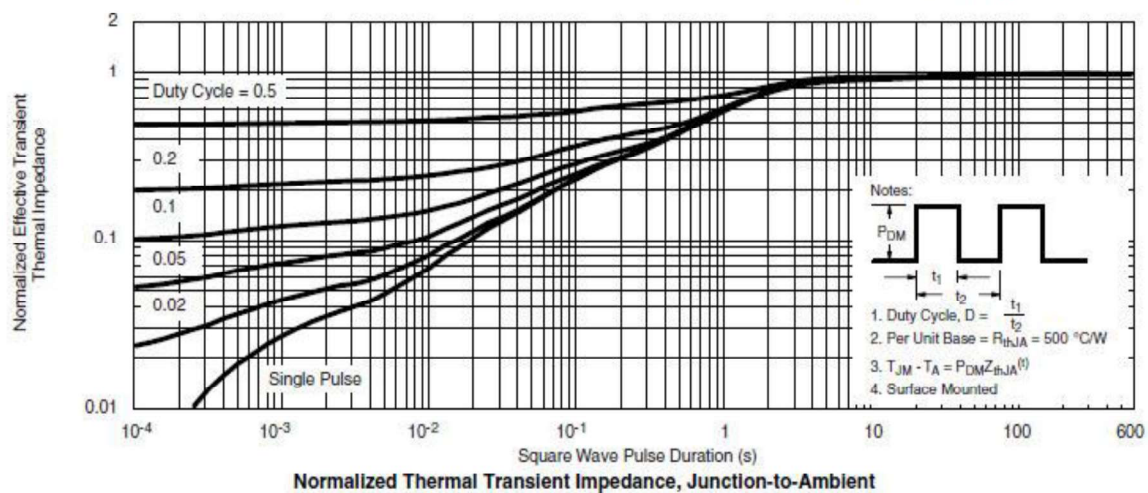
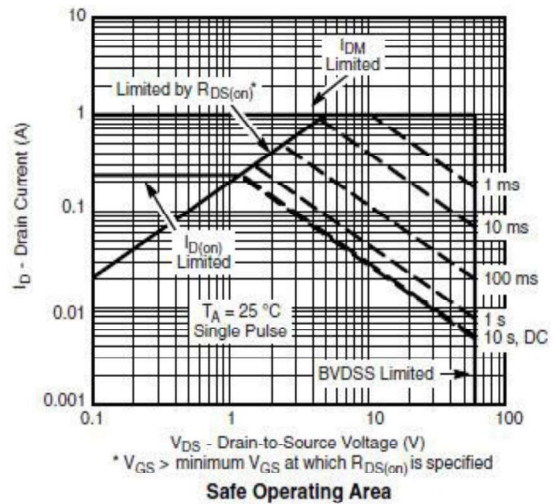
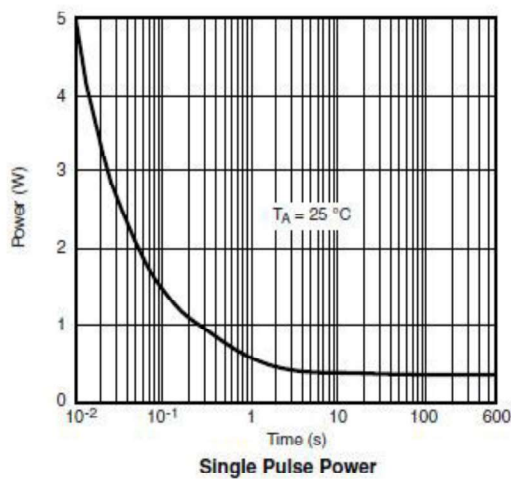
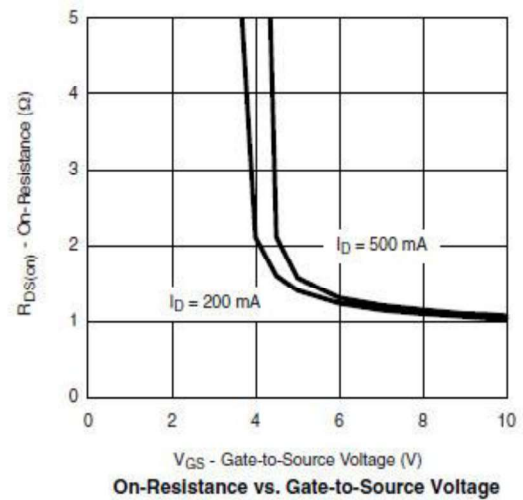
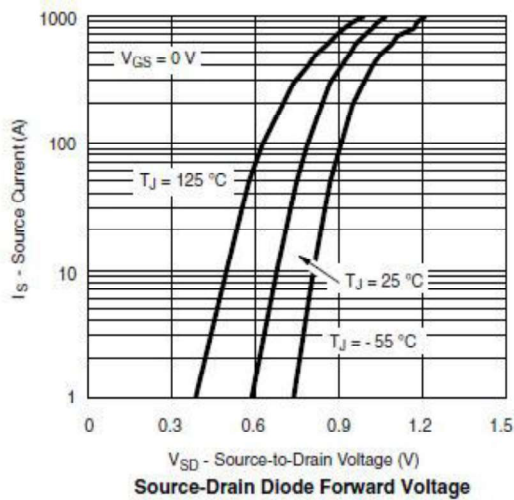


Gate Charge



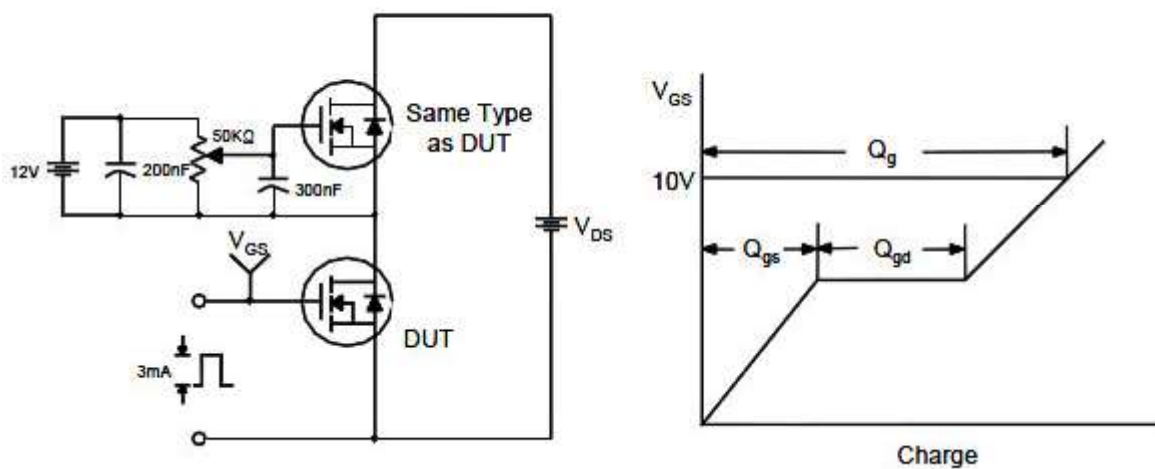
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (Continue)

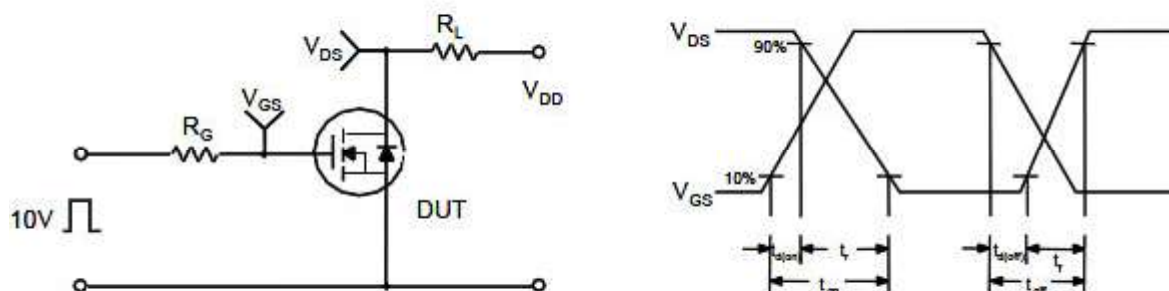


Typical Characteristics

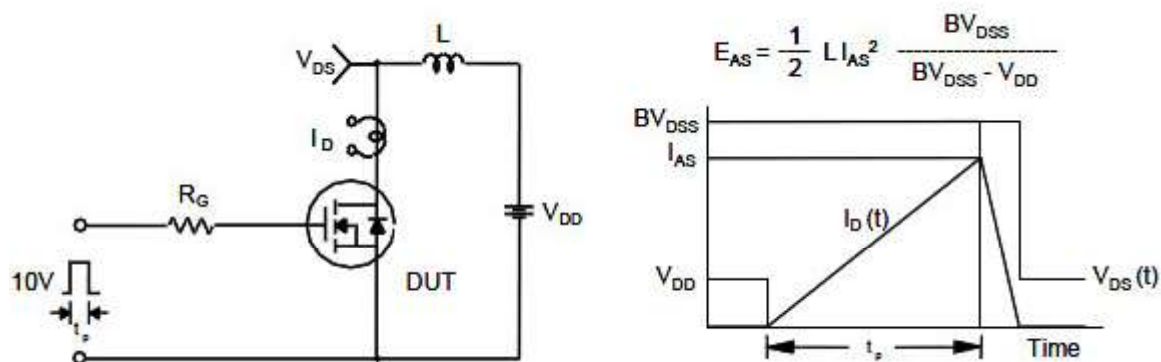
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

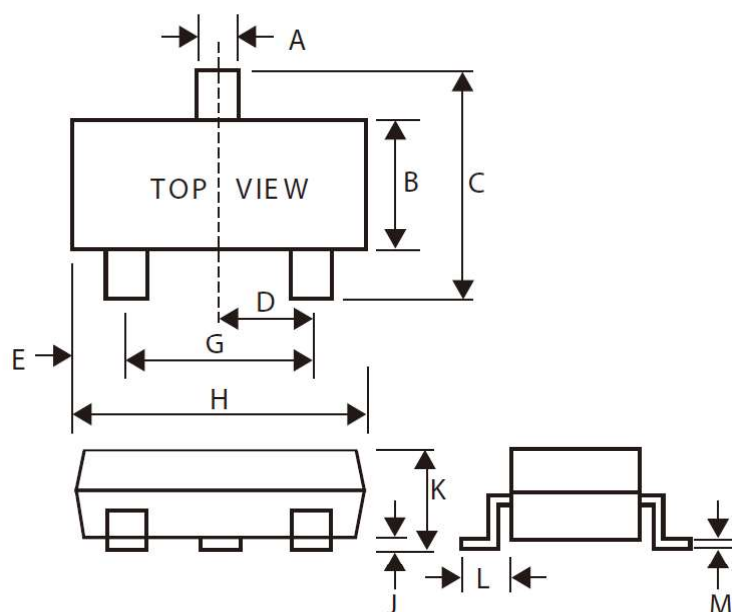


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOT-323



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.300	0.400	0.011	0.015
B	1.150	1.350	0.045	0.053
C	2.000	2.400	0.078	0.094
D	-	0.650	-	0.025
E	0.300	0.400	0.011	0.015
G	1.200	1.400	0.047	0.055
H	1.800	2.200	0.070	0.086
J	0.000	0.100	0.000	0.003
K	0.800	1.000	0.031	0.039
L	0.420	0.530	0.016	0.020
M	0.100	0.250	0.003	0.009

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