

# GSM7002SWX5F

## 60V N-Channel MOSFETs

### 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.

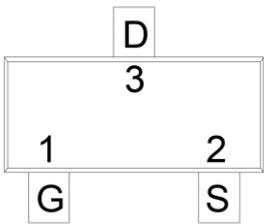
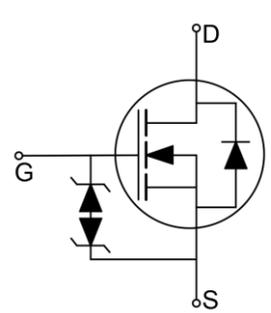
### Features

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

### Applications

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

### Packages & Pin Assignments

SOT-323		Equivalent Circuit
 <p style="text-align: center;">Top Views</p>		
Pin	Description	
1	Gate	
2	Source	
3	Drain	

## Ordering and Marking Information

Ordering Information			
Part Number	Package	Part Marking	Quantity / Reel
GSM7002SWX5F	SOT-323	K□□	3,000 PCS
<b>GSM7002SE\W</b> 1 2 - <b>Product Code:</b> GSM7002SW - <b>Package Code:</b> 1 is <b>X5</b> for SOT-323 - <b>Green Level:</b> 2 is <b>F</b> for RoHS Compliant and Halogen Free			
Marking Information			
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 20px;"> <b>K</b>□□         </div> <div>           - <b>Product Code:</b>            K            - <b>GS Code:</b>            □□         </div> </div>			

## Absolute Maximum Ratings (T<sub>C</sub>=25°C Unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>DS</sub>	Drain-Source Voltage	60	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Drain Current-Continuous (T <sub>A</sub> = 25°C)	250	mA
	Drain Current-Continuous (T <sub>A</sub> = 70°C)	200	mA
I <sub>DM</sub>	Pulsed Drain Current (Note1)	1	A
P <sub>D</sub>	Power Dissipation T <sub>A</sub> = 25°C	300	mW
	Power Dissipation T <sub>A</sub> = 70°C	190	mW
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	417	°C/W
T <sub>J</sub>	Junction Temperature Range	-55 to 150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C

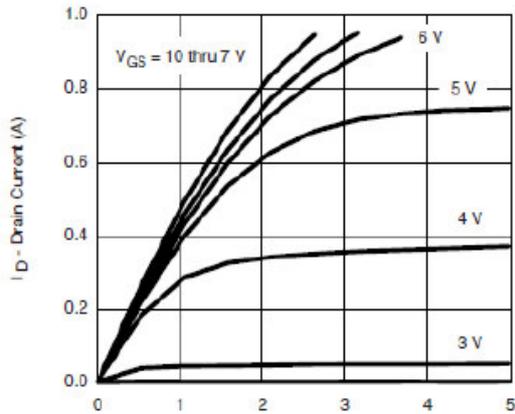
## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

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

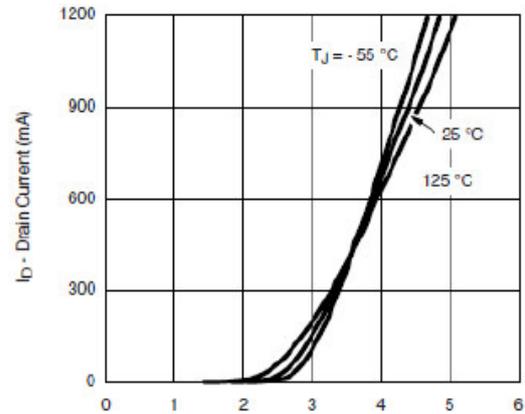
**Note :**

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

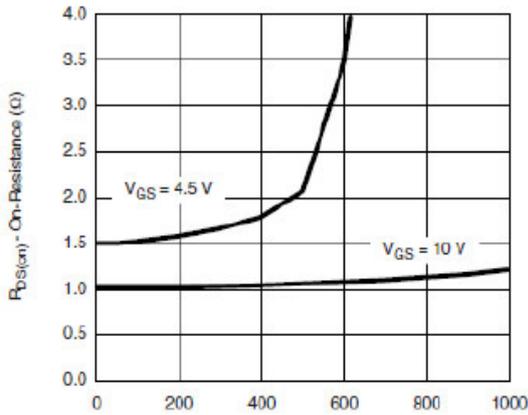
## Typical Performance Characteristics



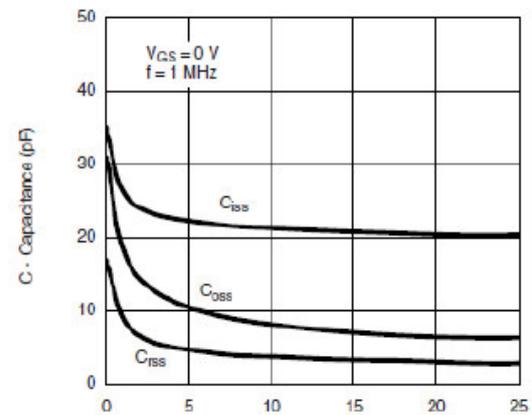
$V_{GS} = 10$  thru 7 V  
Output Characteristics



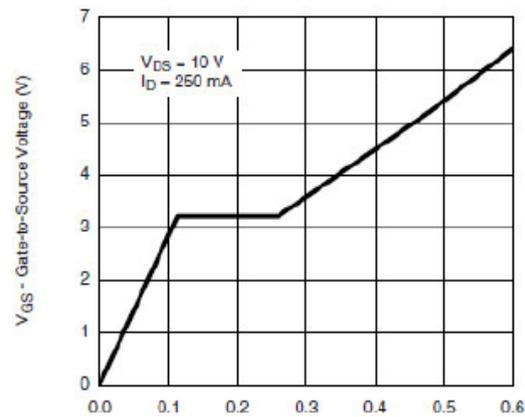
Transfer Characteristics



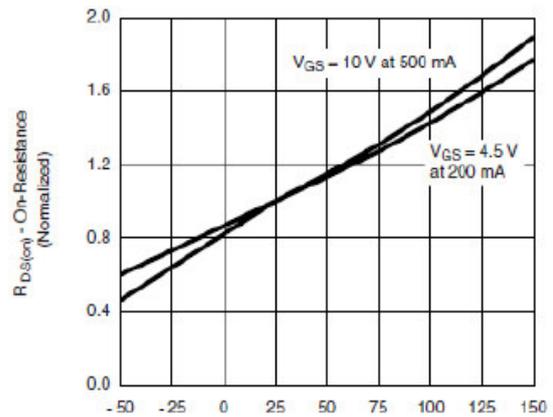
On-Resistance vs. Drain Current



Capacitance

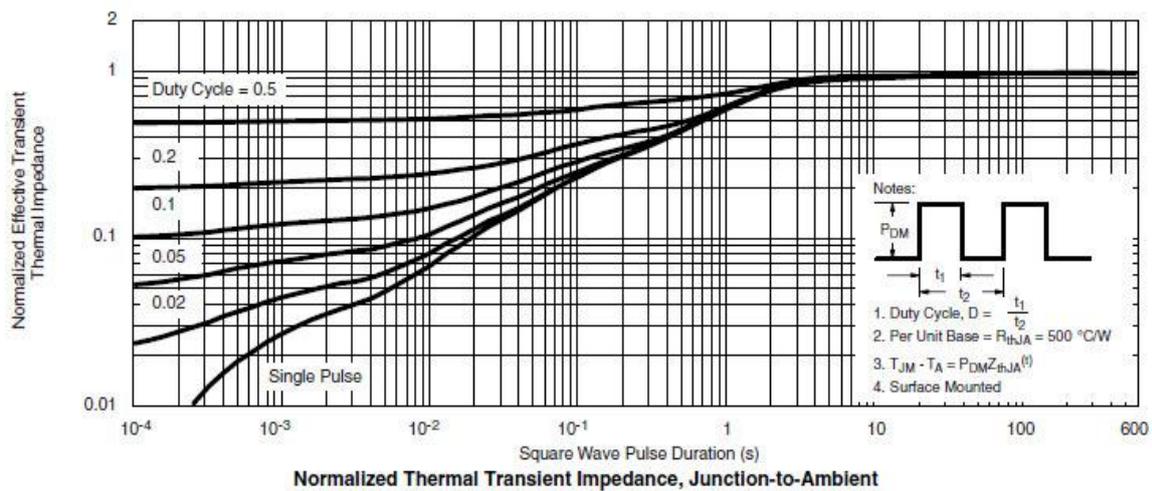
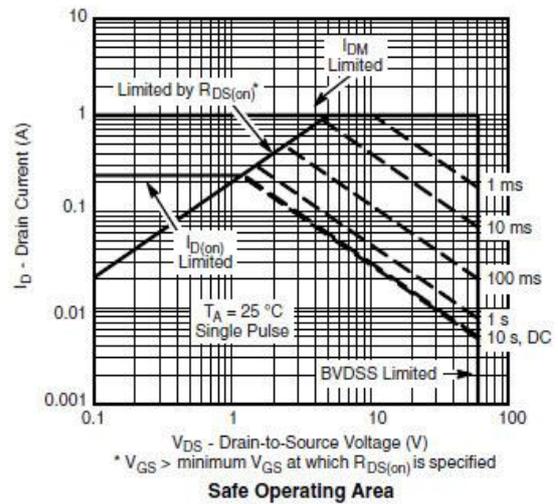
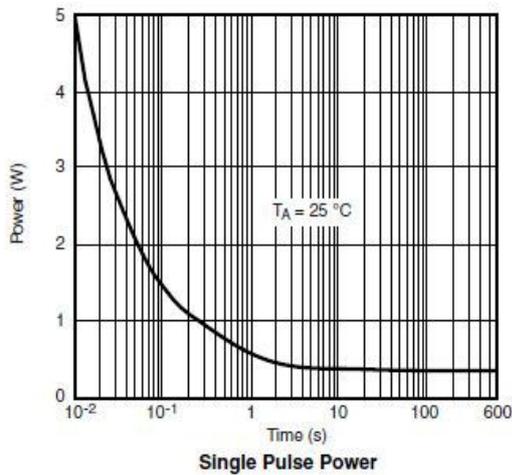
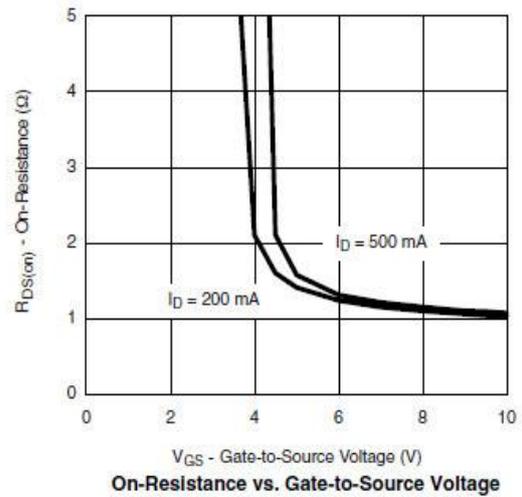
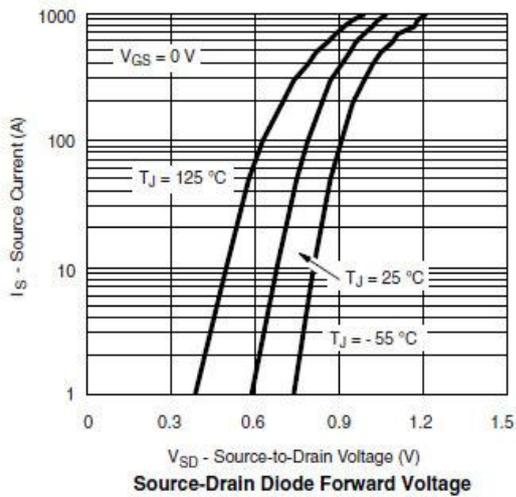


Gate Charge



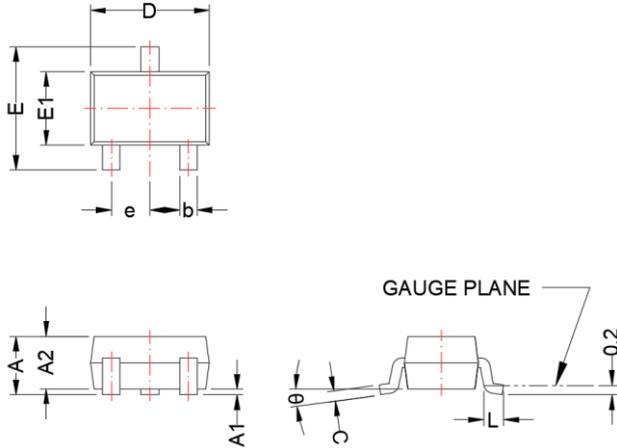
On-Resistance vs. Junction Temperature

## Typical Performance Characteristics (Continue)

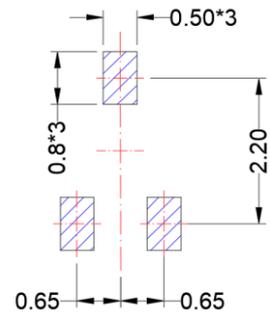


# SOT-323

## Package Dimension



## Recommended Land Pattern



Unit:mm

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.039
b	0.20	0.40	0.008	0.016
c	0.08	0.26	0.003	0.010
D	1.80	2.20	0.071	0.087
E	1.80	2.40	0.071	0.094
E1	1.15	1.35	0.045	0.053
e	0.65 BSC		0.026 BSC	
L	0.26	0.45	0.010	0.018
θ	0°	8°	0°	8°

**NOTE:**

Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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