

# GSM7002W

## 60V N-Channel Enhancement Mode MOSFET

### Product Description

The GSM7002W is the N-Channel enhancement mode field effect transistors are produced using high cell density DMOS technology.

These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance.

They can be used in most applications requiring up to 115mA DC. These products are particularly suited for low voltage, low current applications such as small servo motor control, power MOSFET gate drivers, and other switching applications.

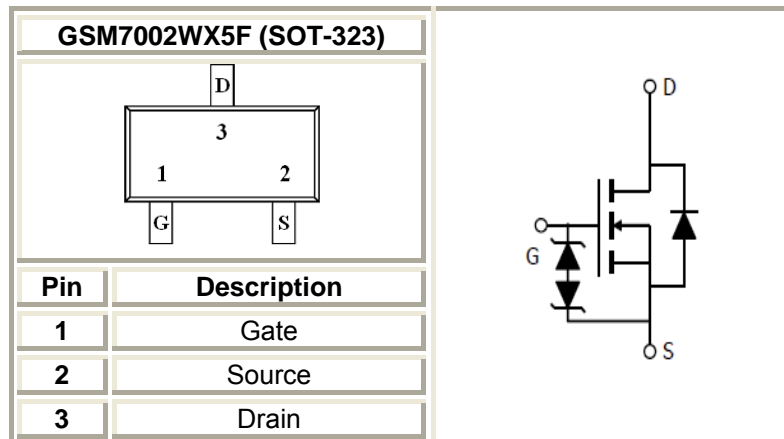
### Features

- 60V/0.50A ,  $R_{DS(ON)} = 7.5\Omega @ V_{GS}=10V$
- 60V/0.05A ,  $R_{DS(ON)} = 7.5\Omega @ V_{GS}=5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD Protected : 1000V
- SOT-323(SC-70) package design

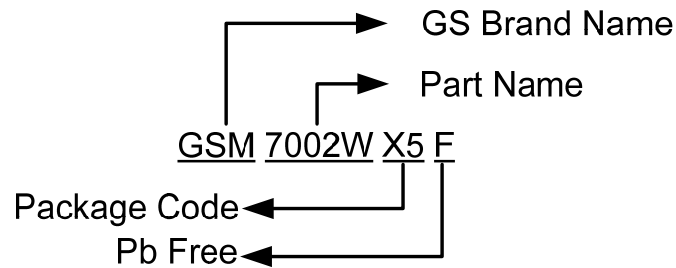
### Applications

- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- High saturation current capability. Direct Logic-Level Interface: TTL/CMOS
- Battery Operated Systems
- Solid-State Relays

### Packages & Pin Assignments



## Ordering Information



## Marking Information

Part Number	Package	Part Marking
GSM7002WX5F	SOT-323(SC-70)	6C

## Absolute Maximum Ratings

T<sub>A</sub>=25°C Unless otherwise noted

Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	60	V
V <sub>GSS</sub>	Gate-Source Voltage - Continuous	±20	V
I <sub>D</sub>	Drain Current-Continuous	T <sub>A</sub> =25°C (Note 1)	115
		T <sub>A</sub> =100°C (Note 1)	75
I <sub>DM</sub>	Drain Current-Pulsed (Note 2)	800	mA
P <sub>D</sub>	Total Device Dissipation FR-5 Board (Note 3) T <sub>A</sub> =25°C Derate above 25°C	225	mW
		1.8	mW/°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	556	°C/W
P <sub>D</sub>	Total Device Dissipation Alumina Substrate (Note 4) T <sub>A</sub> =25°C Derate above 25°C	300	mW
		2.4	mW/°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	417	°C/W
T <sub>J</sub>	Junction Temperature Range	-55/150	°C
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C

Note 1. The Power Dissipation of the package may result in a lower continuous drain current

Note 2. Pulse Test : Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

Note 3. FR-5 = 1.0 x 0.75 x 0.062 in

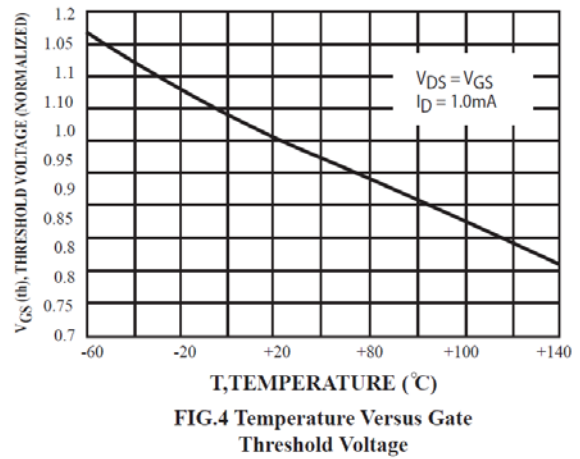
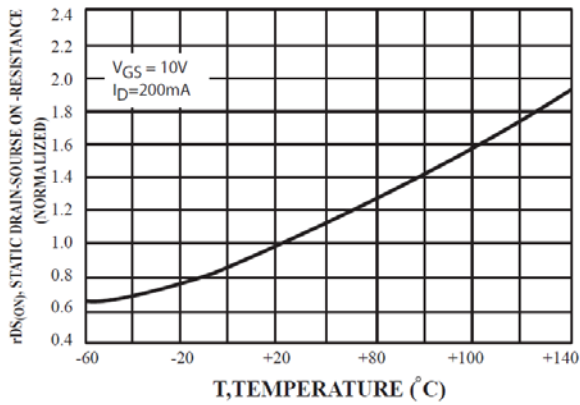
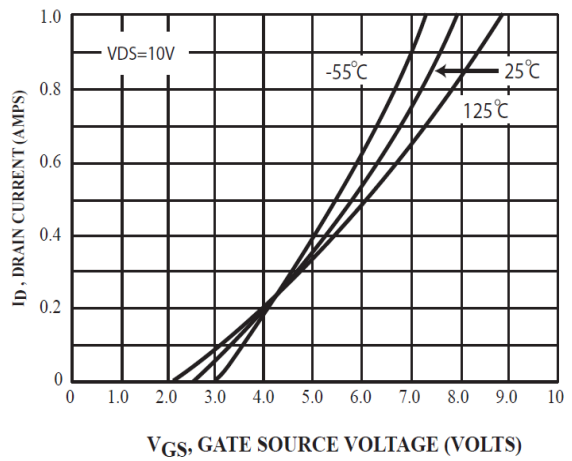
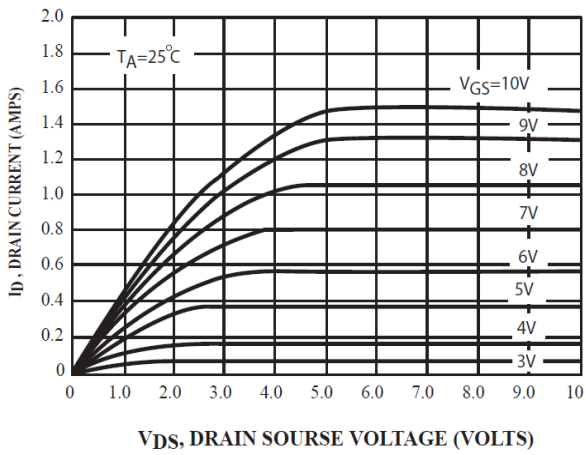
Note 4. Alumina = 0.4 x 0.3 x 0.025 in 99.5% alumina

## Electrical Characteristics

T<sub>A</sub>=25°C unless otherwise noted

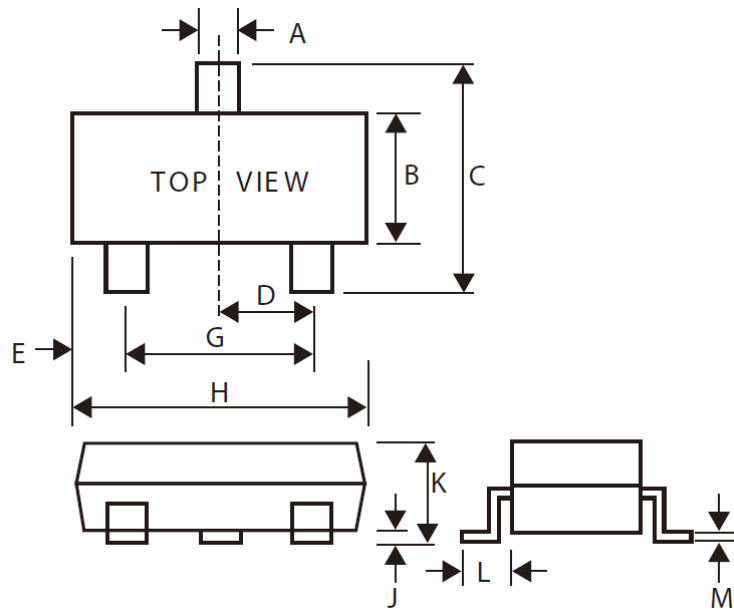
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =10uA	60	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.0	1.6	2.5	
I <sub>GSS</sub>	Gate-Body Leakage Current Forward	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±1	uA
I <sub>D(ON)</sub>	On-State Drain Current	V <sub>DS</sub> =2.0V, V <sub>GS</sub> =10V	0.5	-	-	A
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>A</sub> =25°C	-	-	1.0	uA
		V <sub>DS</sub> =60V, V <sub>GS</sub> =0V, T <sub>A</sub> =125°C	-	-	500	
V <sub>DS(ON)</sub>	Static Drain-Source On-State Voltage	V <sub>GS</sub> =5V, I <sub>D</sub> =0.05A	-	-	0.375	V
		V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A	-	-	3.75	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =5V, I <sub>D</sub> =0.05A	-	1.8	7.5	Ω
		V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A	-	1.4	7.5	
V <sub>SD</sub>	Diode Forward On-Voltage	I <sub>S</sub> =0.115A, V <sub>GS</sub> =0V	-	-	1.5	V
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =2.0V, I <sub>D</sub> =0.2A	80	-	-	mS
<b>Dynamic</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 25V, f =1MHz, V <sub>GS</sub> =0V	-	17	50	pF
C <sub>oss</sub>	Output Capacitance		-	10	25	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	2.5	5.0	
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =25V, I <sub>D</sub> =0.5A, R <sub>L</sub> =50Ω, V <sub>GEN</sub> =10V, R <sub>GEN</sub> =25Ω	-	7	20	ns
t <sub>d(off)</sub>	Turn-Off Time		-	11	40	

## Typical Performance Characteristics



Package Dimension

### SOT-323 PLASTIC PACKAGE







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



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