

# GSM7002Y

## 60V N-Channel Enhancement Mode MOSFET

### Product Description

GSM7002Y, 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.

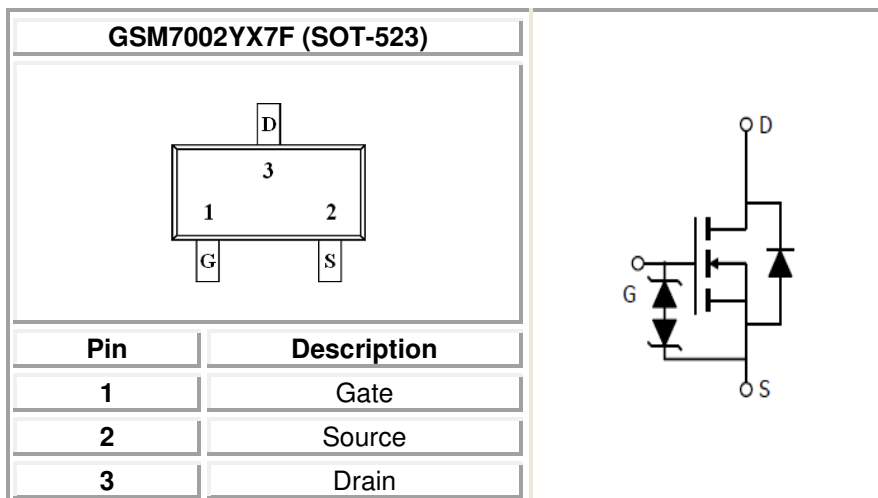
### Features

- 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

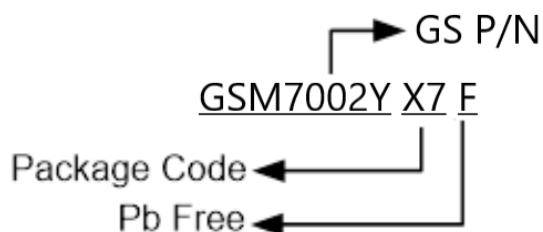
### Applications

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

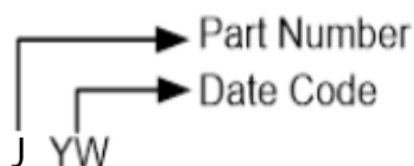
### Packages & Pin Assignments



## Ordering Information



## Marking Information



Part Number	Package	Part Marking	Quantity
GSM7002YX7F	SOT-523	JYW	3000 PCS

## Absolute Maximum Ratings

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

Symbol	Parameter	Typical	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>C</sub> = 25°C)	500	mA
	Drain Current-Continuous (T <sub>C</sub> = 70°C)	300	mA
I <sub>DM</sub>	Pulsed Drain Current (Note1)	1.2	A
P <sub>D</sub>	Power Dissipation T <sub>C</sub> = 25°C	300	mW
	Power Dissipation T <sub>C</sub> = 70°C	200	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

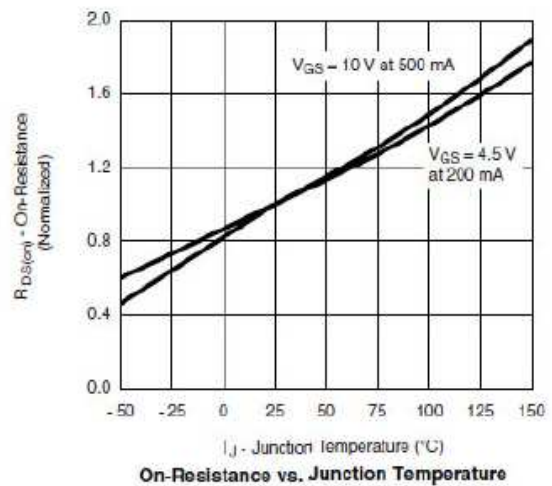
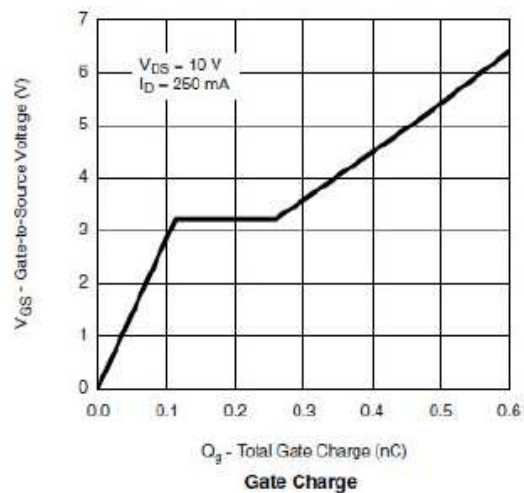
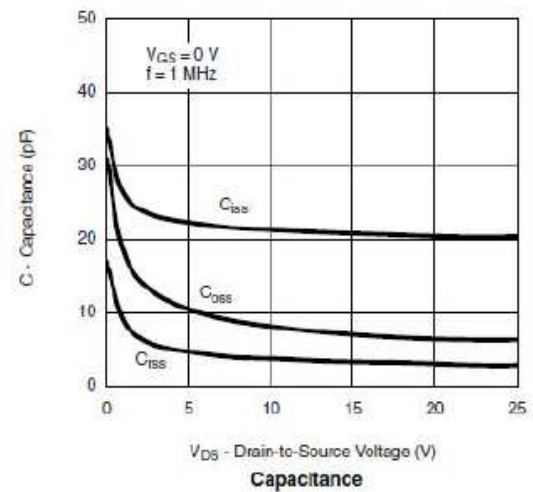
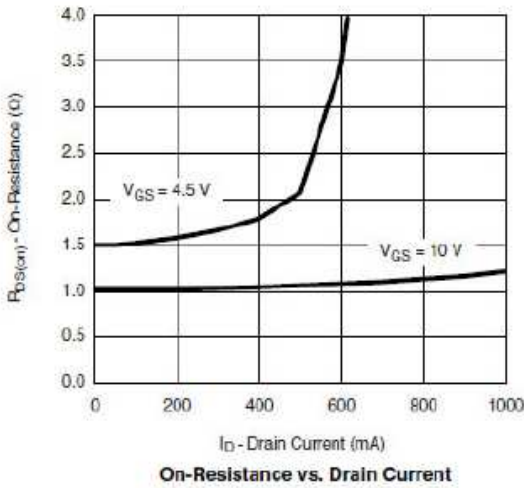
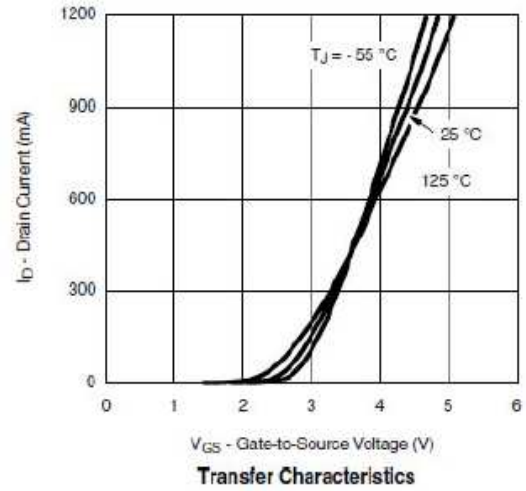
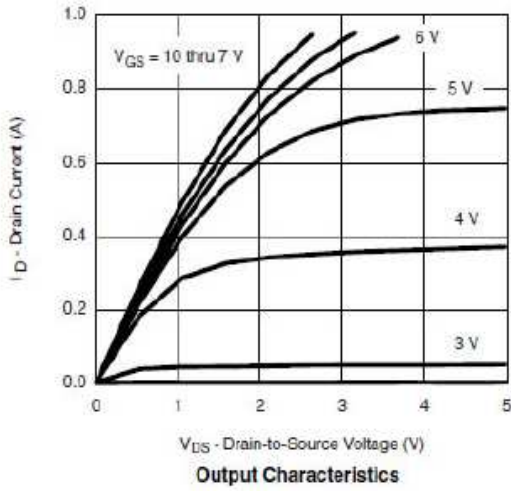
T<sub>J</sub>=25°C unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	-	-	V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	1		2	V
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V,	-	-	±10	μA
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	μA
		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</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

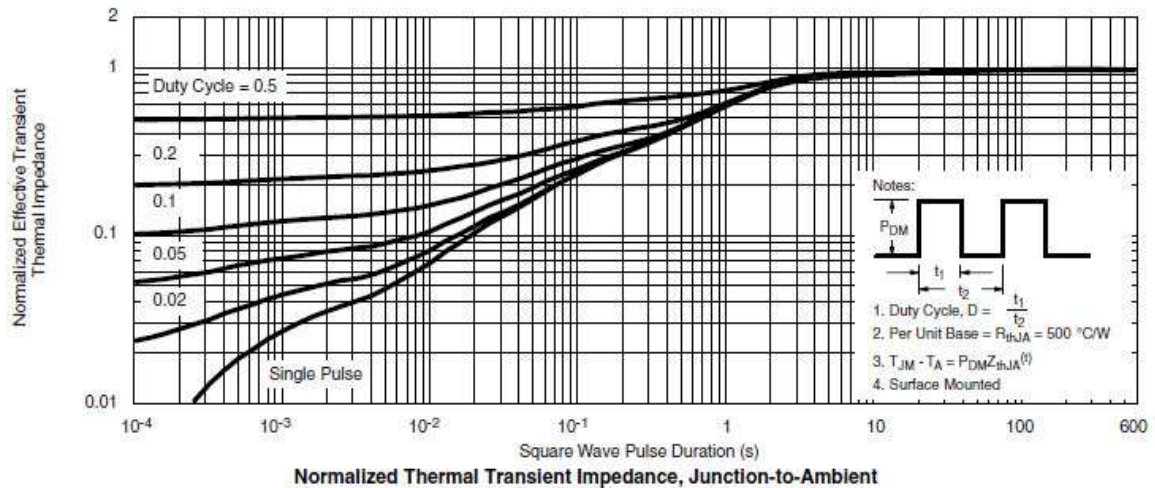
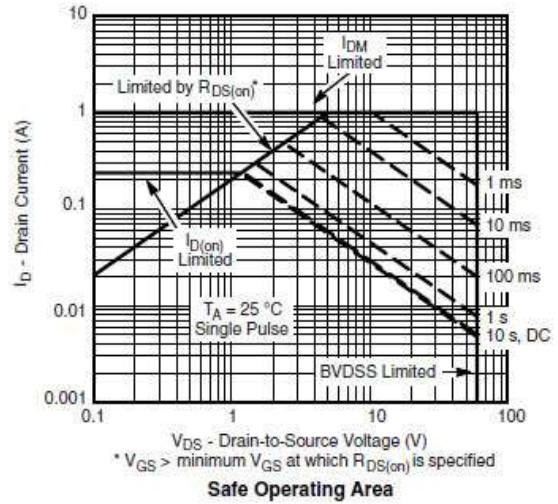
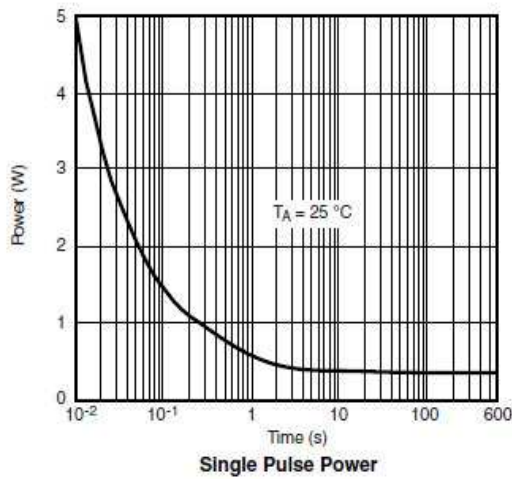
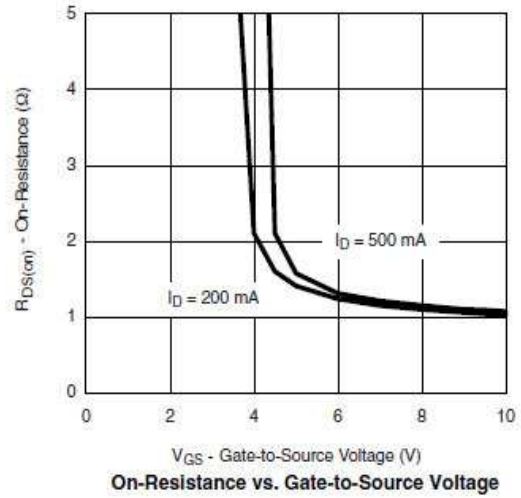
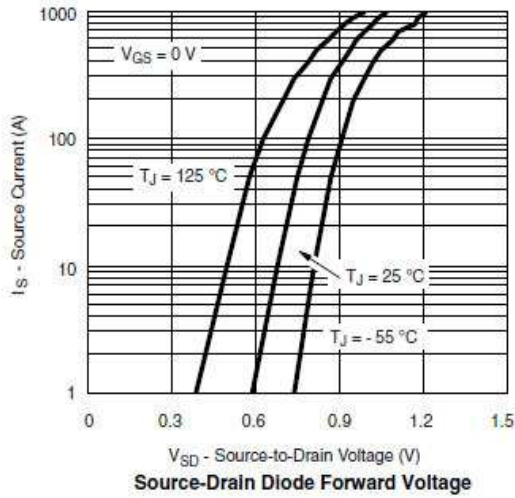
Note :

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

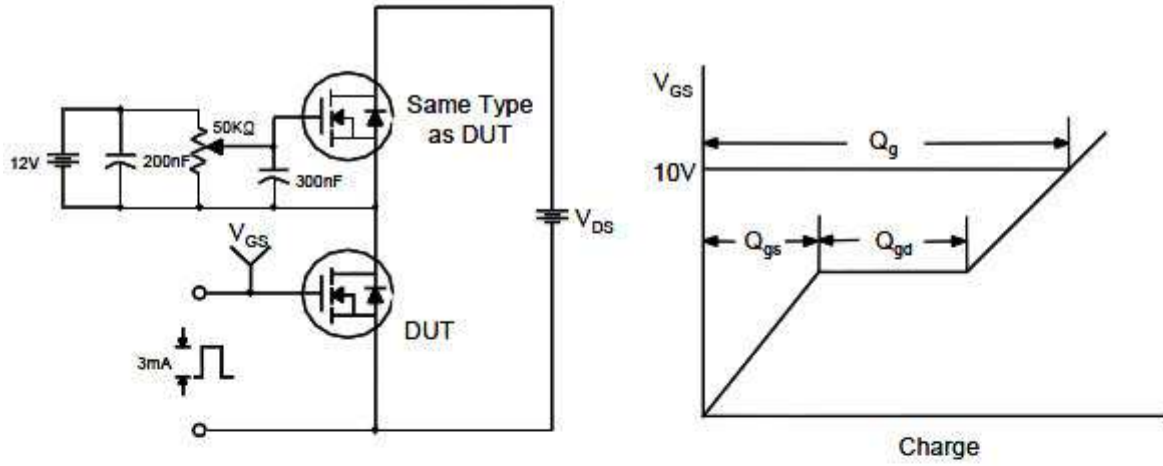


## Typical Performance Characteristics (Continue)

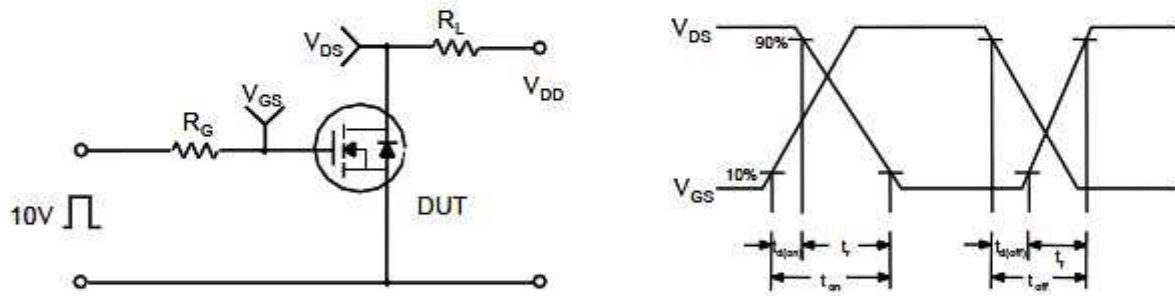


## Typical Characteristics

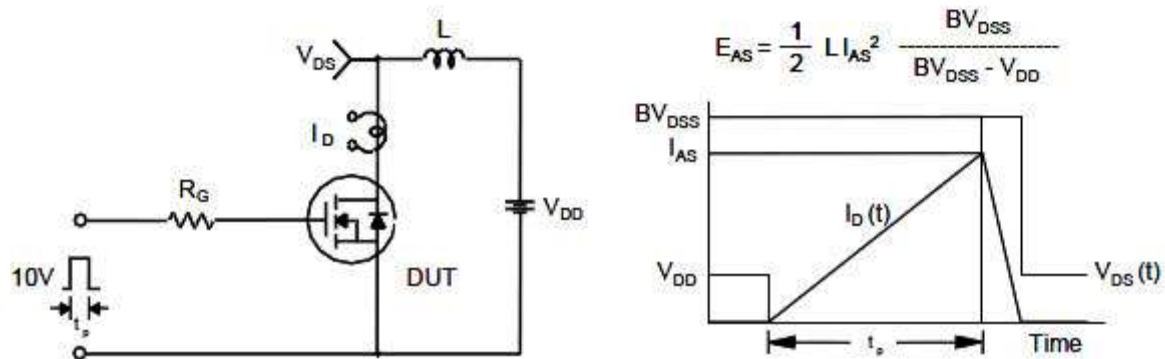
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

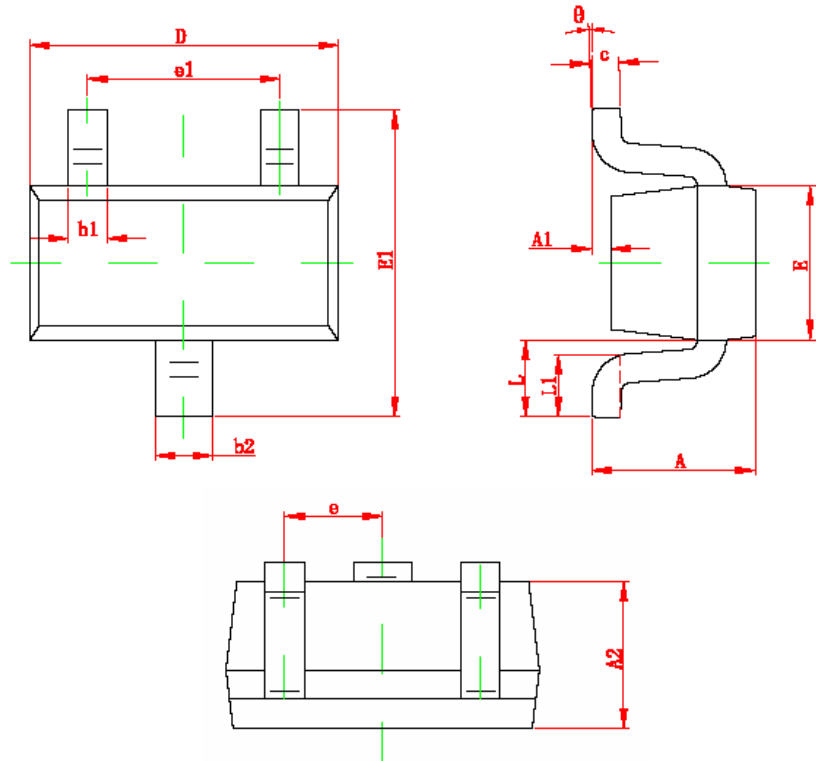


Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOT-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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