

# GSM1073KX7F

## 20V P-Channel Enhancement Mode MOSFET

### Product Description

GSM1073KX7F, 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.

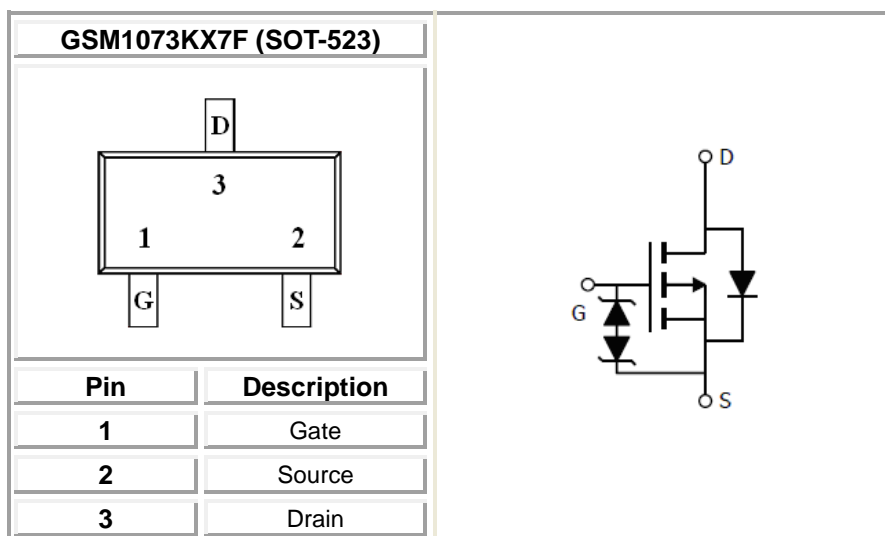
### Features

- -20V/-0.5A,  $R_{DS(ON)}=800m\Omega@V_{GS}=-4.5V$
- -20V/-0.2A,  $R_{DS(ON)}=1100m\Omega@V_{GS}=-2.5V$
- -20V/-0.1A,  $R_{DS(ON)}=1800m\Omega@V_{GS}=-1.8V$
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- SOT-523 package design

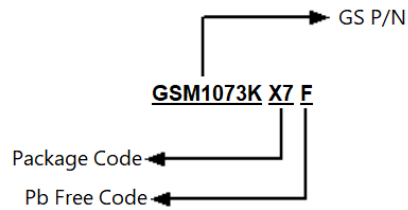
### Applications

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

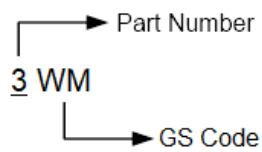
### Packages & Pin Assignments



## Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM1073KX7F	SOT-523	3WM

## Absolute Maximum Ratings

( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Symbol	Parameter	Typical	Unit	
$V_{DSS}$	Drain-Source Voltage	-20	V	
$V_{GSS}$	Gate-Source Voltage	$\pm 8$	V	
$I_D$	Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$T_A=25^{\circ}\text{C}$	-0.5	A
		$T_A=70^{\circ}\text{C}$	-0.4	A
$I_{DM}$	Pulsed Drain Current	-1.5	A	
$P_D$	Power Dissipation	$T_A=25^{\circ}\text{C}$	0.3	W
		$T_A=70^{\circ}\text{C}$	0.2	W
$R_{\theta JA}$	Thermal Resistance Junction to ambient	450	$^{\circ}\text{C}/\text{W}$	
$T_J$	Operating Junction Temperature Range	-55 to +150	$^{\circ}\text{C}$	
$T_{STG}$	Storage Temperature Range	-55 to +150	$^{\circ}\text{C}$	

## 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> =-250μA	-20			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.3		-1.0	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V			±10	μA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			-30	
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.5A		565	800	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.2A		780	1100	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-0.1A		1010	1800	
		V <sub>GS</sub> =-1.5V, I <sub>D</sub> =-0.1A		1250	2600	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.3A		0.8		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-0.5A, V <sub>GS</sub> =0V			-1.3	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.25A		0.58		nC
Q <sub>gs</sub>	Gate-Source Charge			0.1		
Q <sub>gd</sub>	Gate-Drain Charge			0.13		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V f=1MHz		59.8		pF
C <sub>oss</sub>	Output Capacitance			12.1		
C <sub>rss</sub>	Reverse Transfer Capacitance			6.4		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =-10V, R <sub>L</sub> =47Ω, I <sub>D</sub> =-0.2A V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =10Ω		5.1		ns
t <sub>r</sub>				8.1		
t <sub>d(off)</sub>	Turn-Off Time			28.4		
t <sub>f</sub>				20.7		

## Typical Performance Characteristics

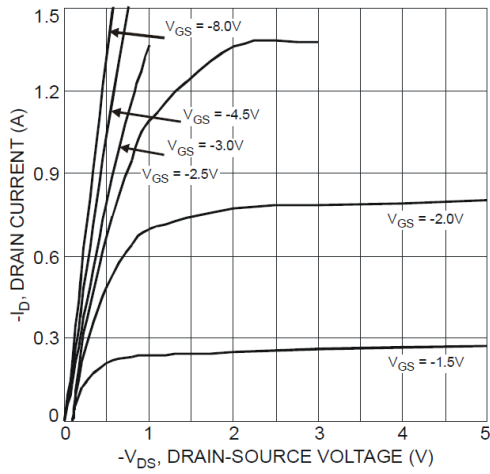


Fig. 1 Typical Output Characteristics

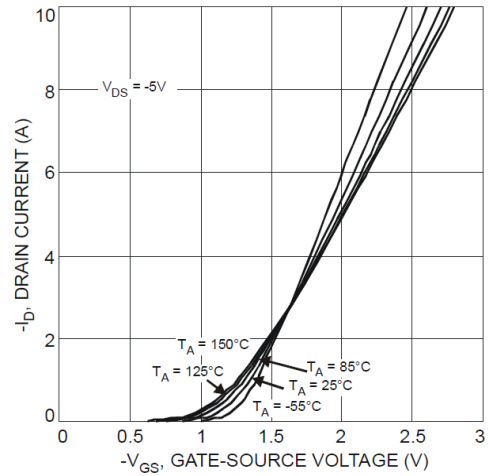


Fig. 2 Typical Transfer Characteristics

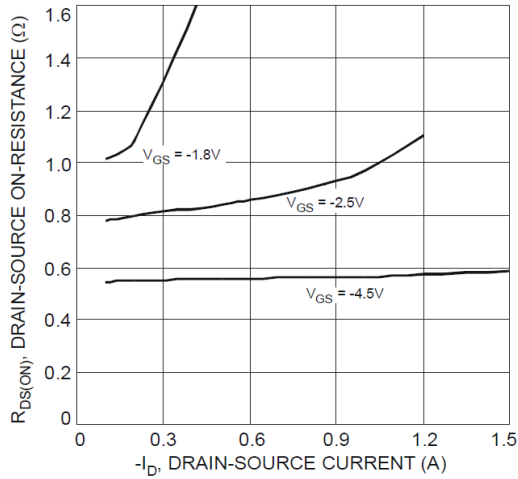


Fig. 3 Typical On-Resistance vs.  $I_D$  and  $V_{GS}$

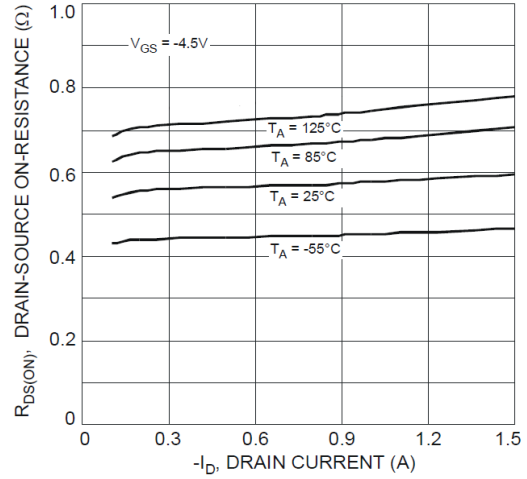


Fig. 4 Typical Drain-Source On-Resistance vs.  $I_D$  and  $T_J$

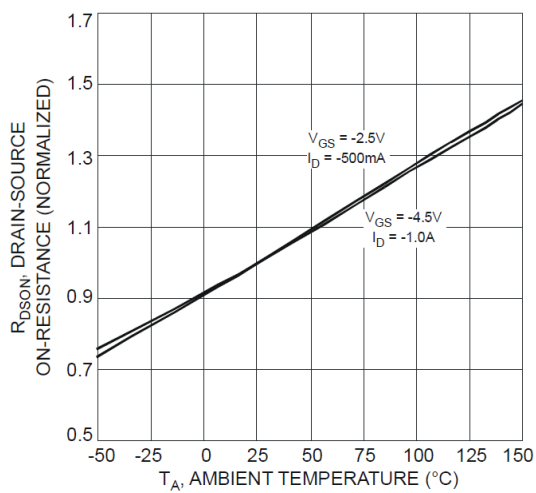


Fig. 5 On-Resistance Variation with  $T_J$

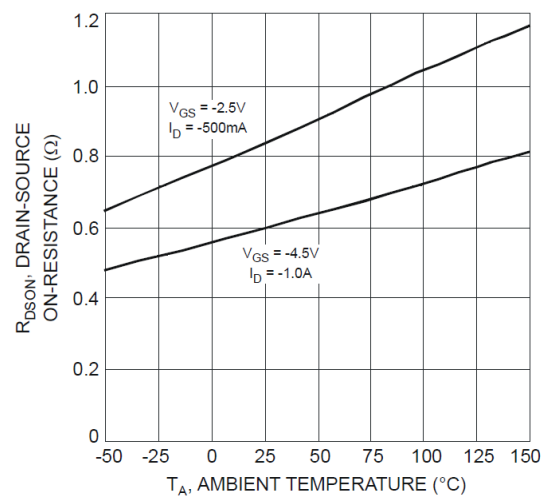


Fig. 6 On-Resistance Variation with  $T_J$

## Typical Performance Characteristics (continue)

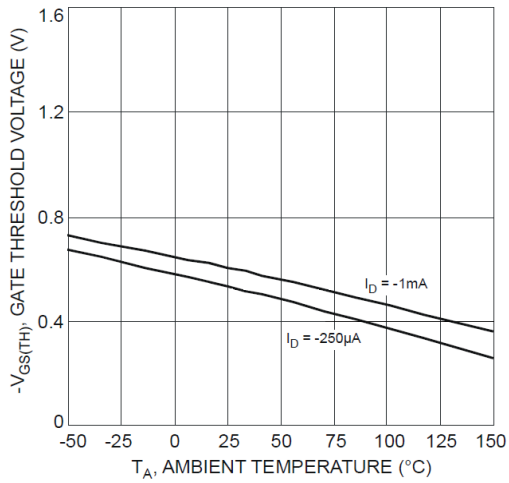


Fig. 7 Gate Threshold Variation vs.  $T_A$

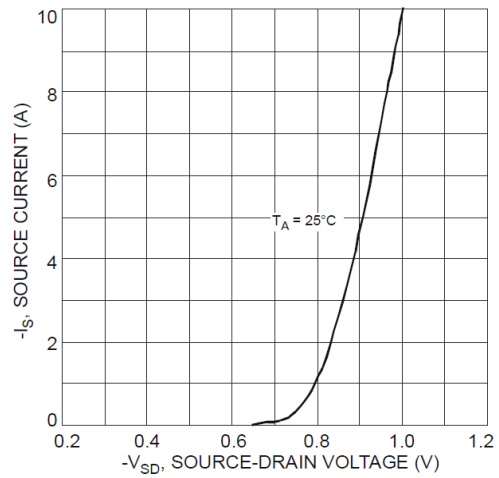


Fig. 8 Diode Forward Voltage vs. Current

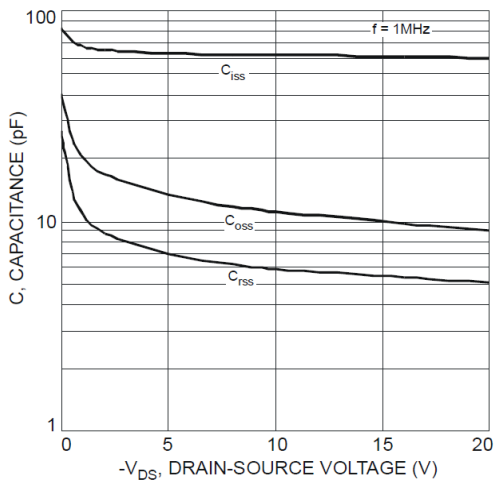


Fig. 9 Typical Capacitance

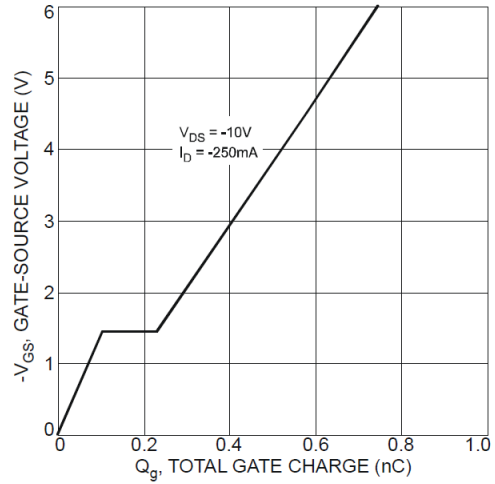


Fig. 10 Gate Charge Waveform

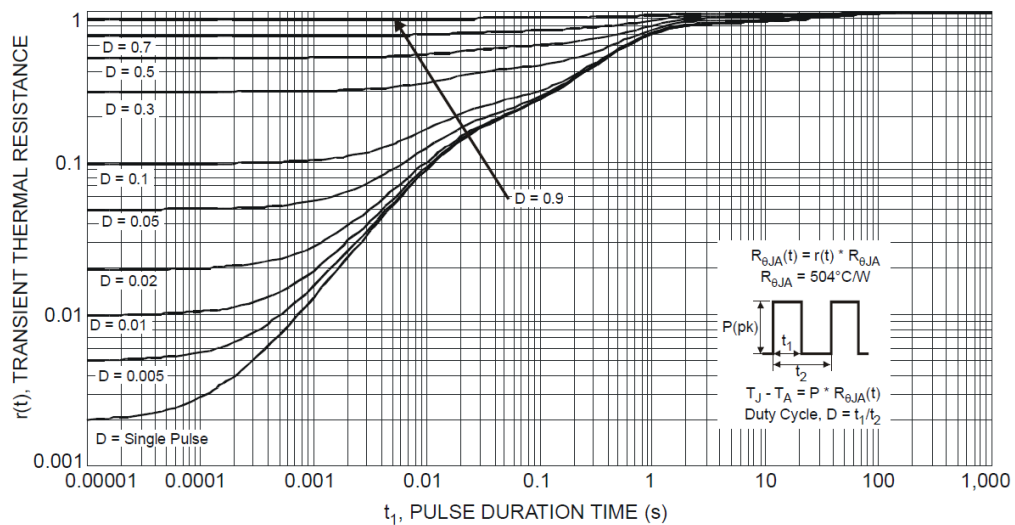
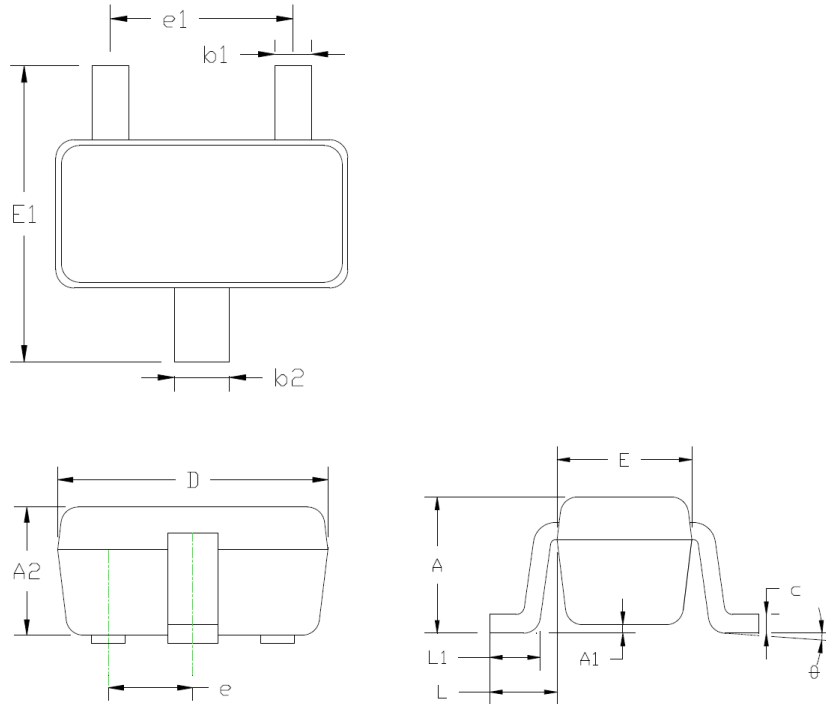


Fig. 11 Transient Thermal Response

## Package Dimension

# SOT-523









Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	0.700	0.900	0.028	0.035
<b>A1</b>	0.000	0.100	0.000	0.004
<b>A2</b>	0.700	0.800	0.028	0.031
<b>b1</b>	0.150	0.250	0.006	0.010
<b>b2</b>	0.250	0.350	0.010	0.013
<b>c</b>	0.100	0.200	0.004	0.009
<b>D</b>	1.500	1.700	0.059	0.067
<b>E</b>	0.700	0.900	0.028	0.035
<b>E1</b>	1.450	1.750	0.057	0.068
<b>e</b>	0.500 TYP		0.020 TYP	
<b>e1</b>	0.900	1.100	0.035	0.043
<b>L</b>	0.400 REF		0.021 REF	
<b>L1</b>	0.260	0.460	0.010	0.018
<b><math>\theta</math></b>	0°	8°	0°	8°

## NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.

## CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587