GSM1072KX7F

20V N-Channel Enhancement Mode MOSFET

Product Description

GSM1072KX7F, 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 low in-line power loss are needed in commercial industrial surface mount applications.

Features

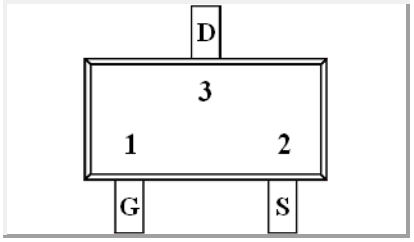
- 20V/0.5A, $R_{DS(ON)}$=300mΩ@V_{GS}=4.5V
- 20V/0.4A, $R_{DS(ON)}$=450mΩ@V_{GS}=2.5V
- 20V/0.2A, $R_{DS(ON)}$=800mΩ@V_{GS}=1.8V
- 20V/0.1A, $R_{DS(ON)}$=1200mΩ@V_{GS}=1.5V
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- ESD Protected
- SOT-523 package design

Applications

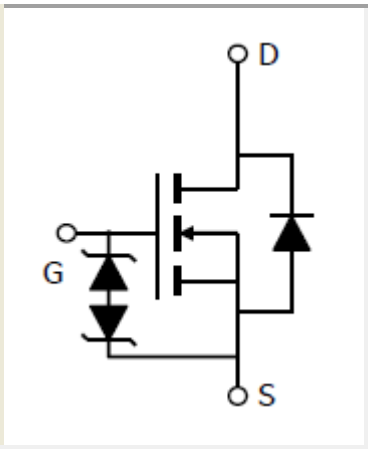
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Packages & Pin Assignments

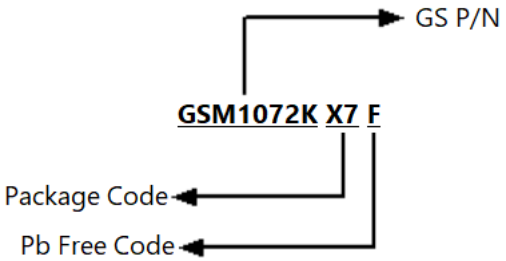
GSM1072KX7F (SOT-523)



1	Gate
2	Source
3	Drain



Ordering Information



Marking Information

Part Number	Package	Part Marking
GSM1072KX7F	SOT-523	2WM

Absolute Maximum Ratings

(T_A=25ºC unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate –Source Voltage		±10	V
I_D	Continuous Drain Current	T_A=25ºC	0.7	A
		T_A=70ºC	0.5	
I_{DM}	Pulsed Drain Current		1.0	A
I_S	Continuous Source Current(Diode Conduction)		0.3	A
P_D	Power Dissipation	T_A=25ºC	0.27	W
		T_A=70ºC	0.18	
T_J	Operating Junction Temperature		-55/150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		463	℃/W

Electrical Characteristics

(T_A=25ºC unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.3		1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±10V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 16V, V_{GS}=0V			1	uA
		V_{DS}= 16V, V_{GS}=0V, T_J=85ºC			30	
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=4.5V, I_D=0.5A		210	300	mΩ
		V_{GS}=2.5V, I_D=0.4A		285	450	
		V_{GS}=1.8V, I_D=0.2A		430	800	
		V_{GS}=1.5V, I_D=0.1A		710	1200	
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=0.4A			1.2	S
V_{SD}	Diode Forward Voltage	I_S=0.5A, V_{GS}=0V			1.3	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=16V, V_{GS}=0V f=1MHz		60.7		pF
C_{oss}	Output Capacitance			9.7		
C_{rss}	Reverse Transfer Capacitance			5.4		
Qg	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_D≡0.25A		0.73		nC
Qgs	Gate-Source Charge			0.93		
Qgd	Gate-Drain Charge			0.12		
td(on)	Turn-On Time	V_{DD}=10V, R_L=47Ω, I_D≡0.2A V_{GEN}=4.5V, R_G=10Ω		5.1		ns
tr				7.4		
td(off)	Turn-Off Time			26.7		
tf				12.3		

Typical Performance Characteristics

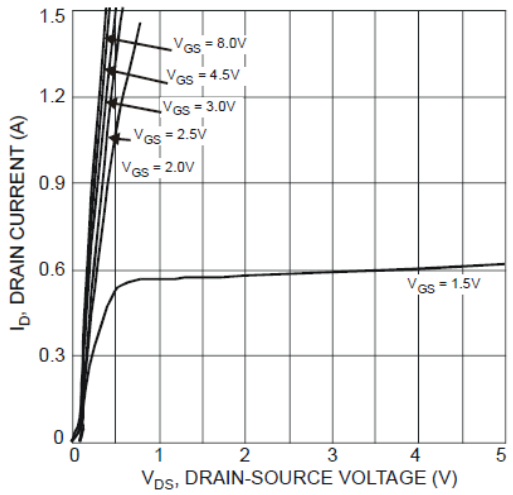


Fig. 1 Typical Output Characteristics

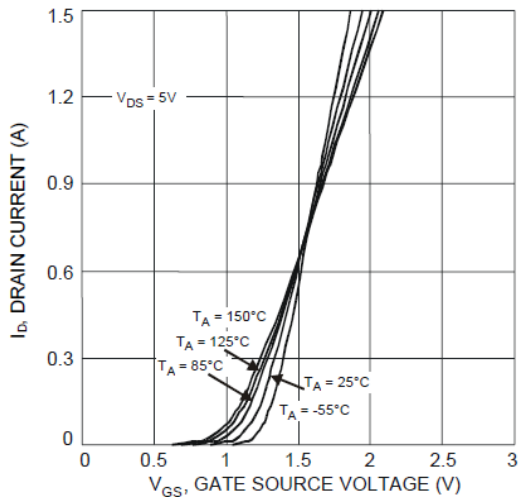


Fig. 2 Typical Transfer Characteristics

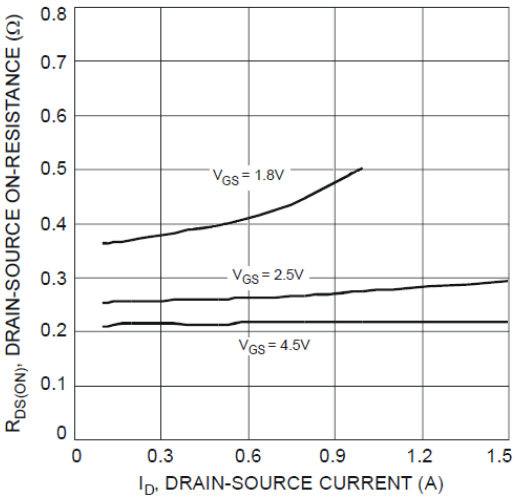


Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

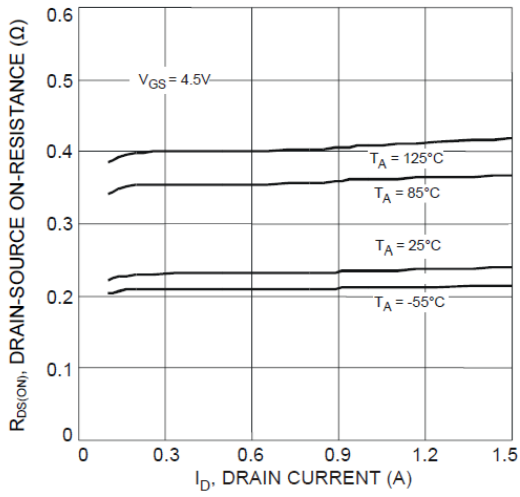


Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

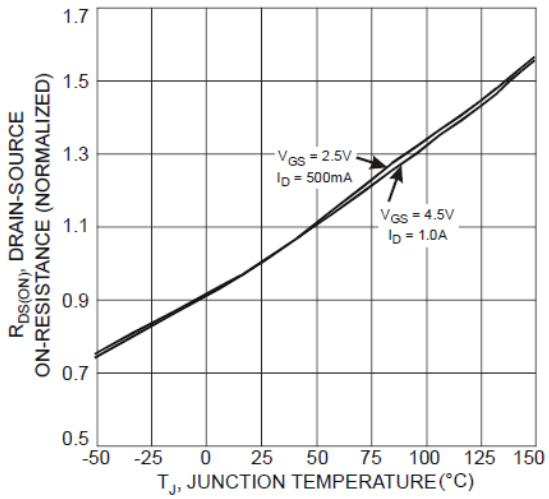


Fig. 5 On-Resistance Variation with T_J

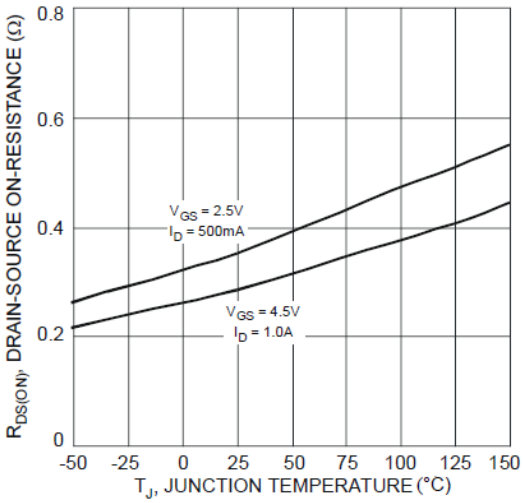


Fig. 6 On-Resistance Variation with T_J

Typical Performance Characteristics **(Continue)**

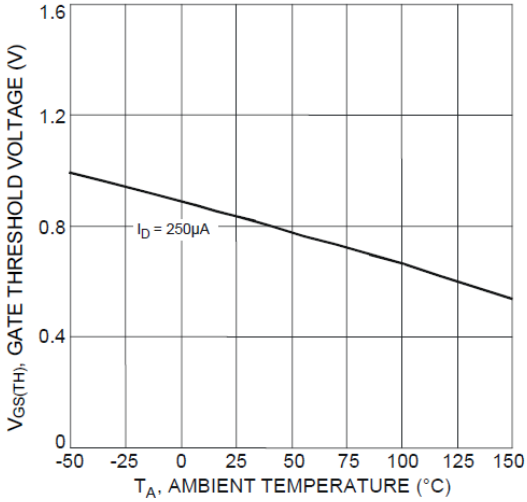


Fig. 7 Gate Threshold Variation vs. T_A

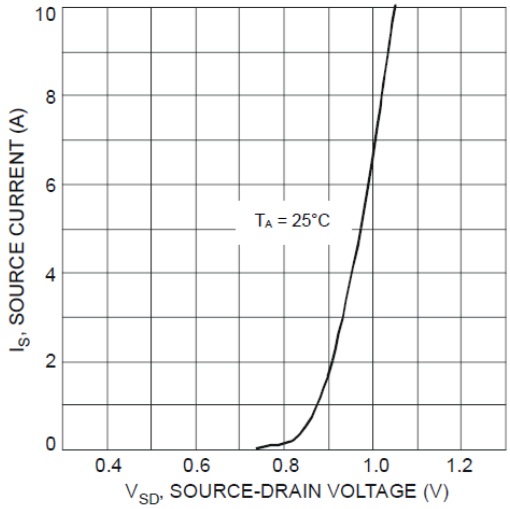


Fig. 8 Diode Forward Voltage vs. Current

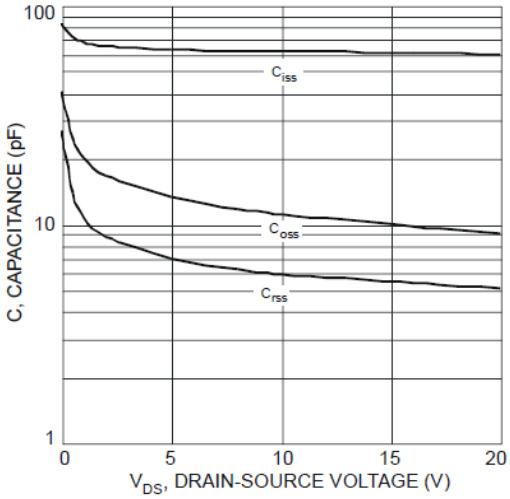


Fig. 9 Typical Capacitance

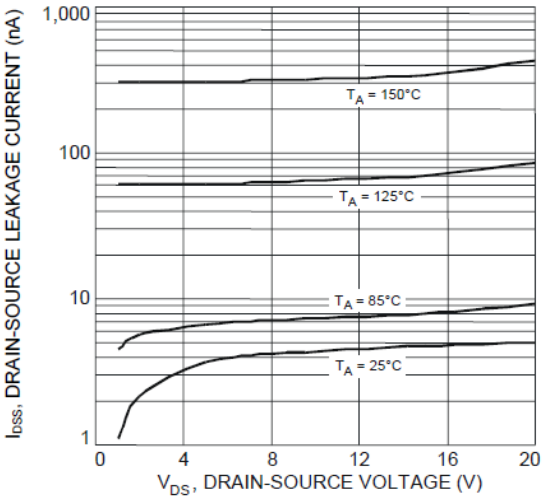


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

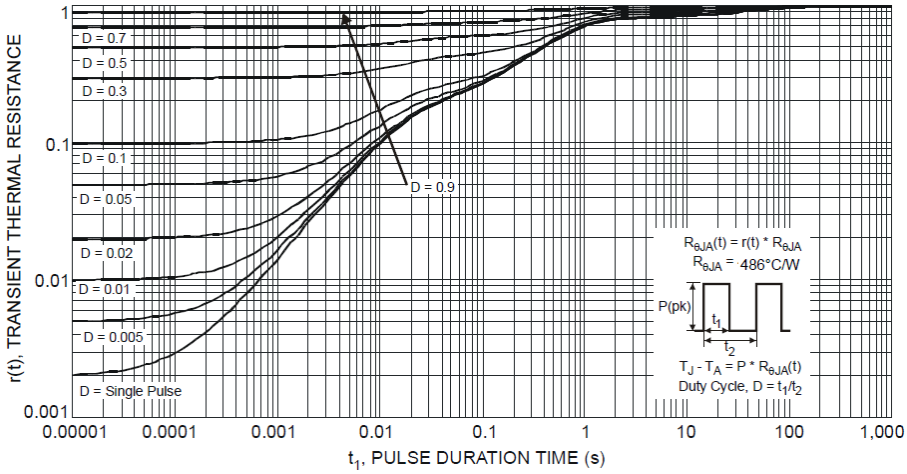
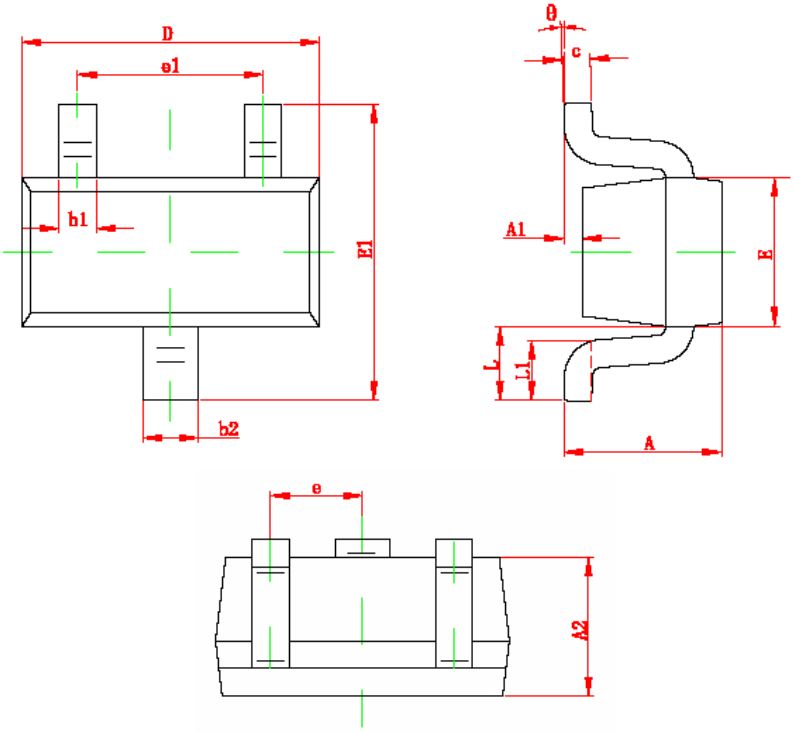


Fig. 11 Transient Thermal Response

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	0º	4º	0º	4º

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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