

# GSM1073

## 20V P-Channel Enhancement Mode MOSFET

### Product Description

GSM1073, 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.

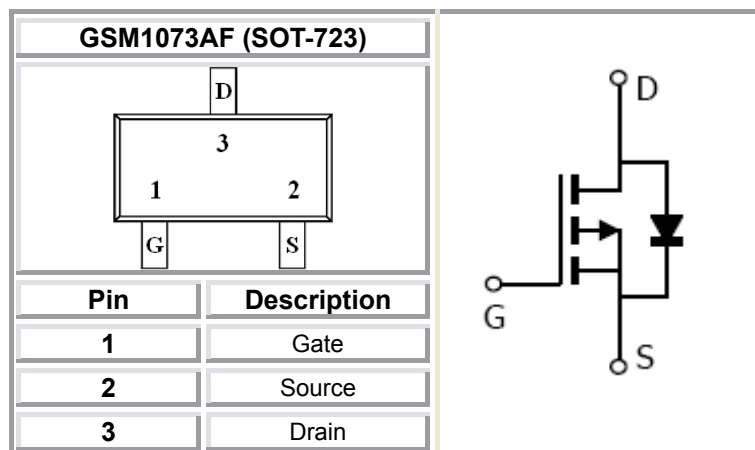
### Features

- -20V/-0.45A,  $R_{DS(ON)}=620m\Omega@V_{GS}=-4.5V$
- -20V/-0.35A,  $R_{DS(ON)}=860m\Omega@V_{GS}=-2.5V$
- -20V/-0.25A,  $R_{DS(ON)}=1450m\Omega@V_{GS}=-1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-723 package design

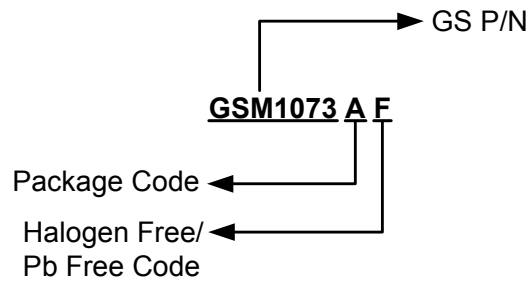
### Applications

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

### Packages & Pin Assignments

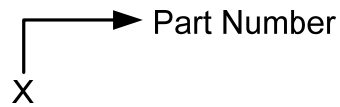


## Ordering Information



Part Number	Package	Quantity Reel
GSM1073AF	SOT-723	8000 PCS

## Marking Information



## Absolute Maximum Ratings

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

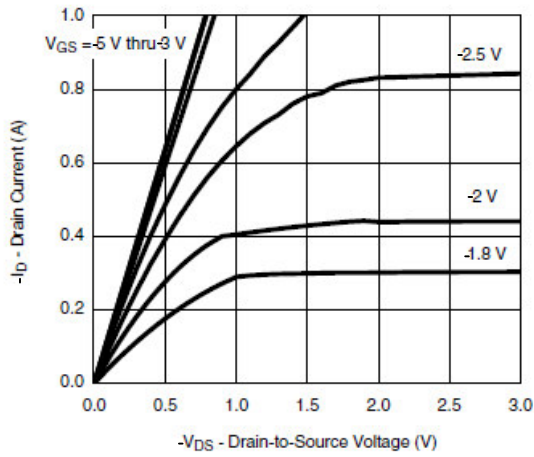
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	-20	V	
V <sub>GSS</sub>	Gate -Source Voltage	±12	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	-0.7	A
		T <sub>A</sub> =70°C	-0.4	
I <sub>DM</sub>	Pulsed Drain Current	-1.0	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	-0.3	A	
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	0.27	W
		T <sub>A</sub> =70°C	0.16	
T <sub>J</sub>	Operating Junction Temperature	-55/150	°C	
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C	

## Electrical Characteristics

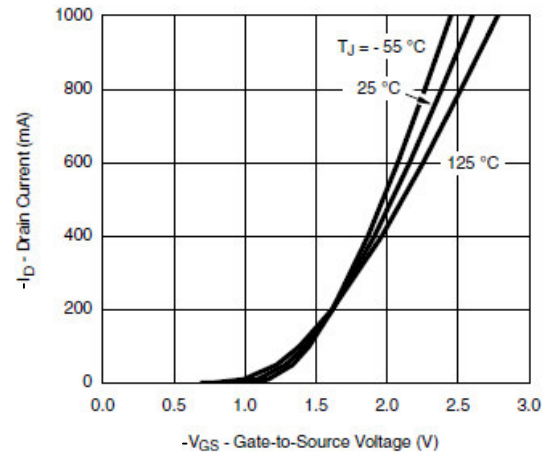
(T<sub>A</sub>=25°C unless otherwise noted)

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> =-250uA	-20			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4		-1.0	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	uA
		V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V T <sub>J</sub> =85°C			-5	
I <sub>D(on)</sub>	On-State Drain Current	V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-4.5V	-0.7			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.45A		500	620	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.35A		700	860	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-0.25A		1000	1450	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.4A		1		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-0.15A, V <sub>GS</sub> =0V		-0.65	-1.2	V
<b>Dynamic</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz		70	100	pF
C <sub>oss</sub>	Output Capacitance			20		
C <sub>rss</sub>	Reverse Transfer Capacitance			10		
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.25A		1.0	1.3	nC
Q <sub>gs</sub>	Gate-Source Charge			0.1		
Q <sub>gd</sub>	Gate-Drain Charge			0.3		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =-10V, R <sub>L</sub> =30Ω, I <sub>D</sub> =-0.2A, V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =10Ω		10	15	ns
t <sub>r</sub>				10	15	
t <sub>d(off)</sub>	Turn-Off Time			40	60	
t <sub>f</sub>				30	50	

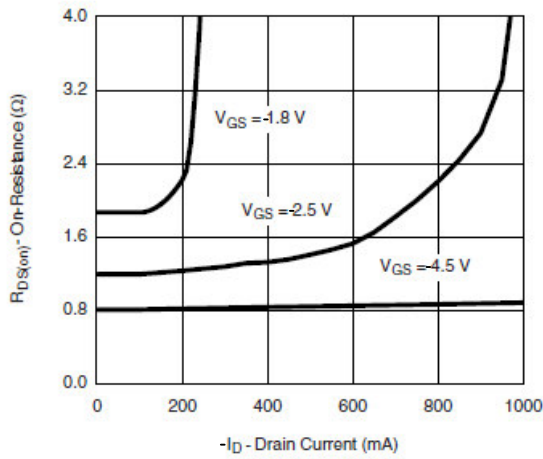
## Typical Performance Characteristics



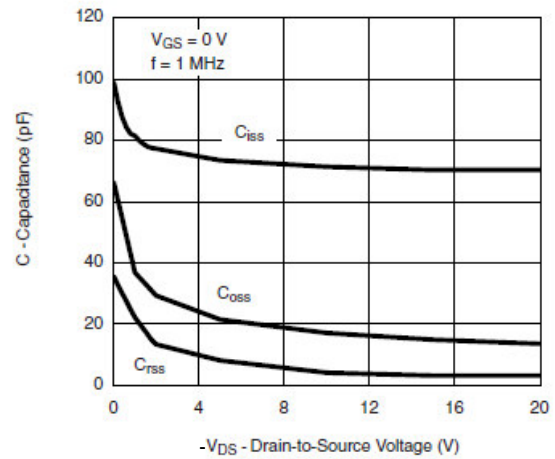
Output Characteristics



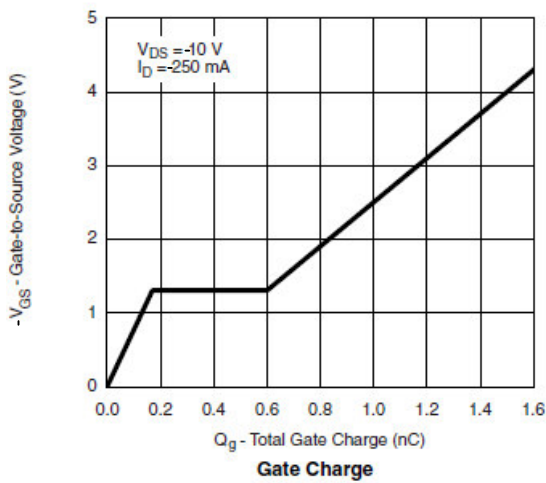
Transfer Characteristics



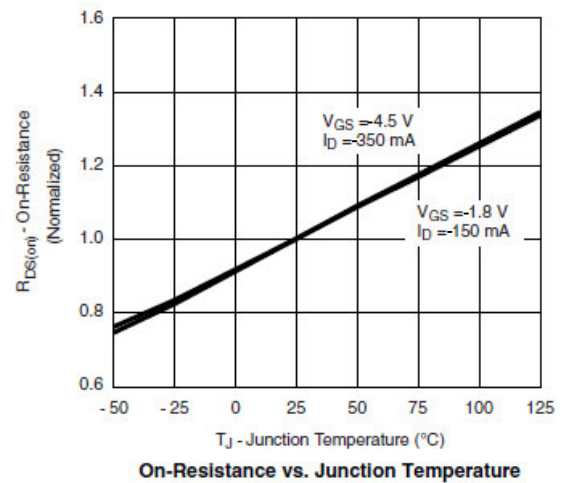
On-Resistance vs. Drain Current



Capacitance

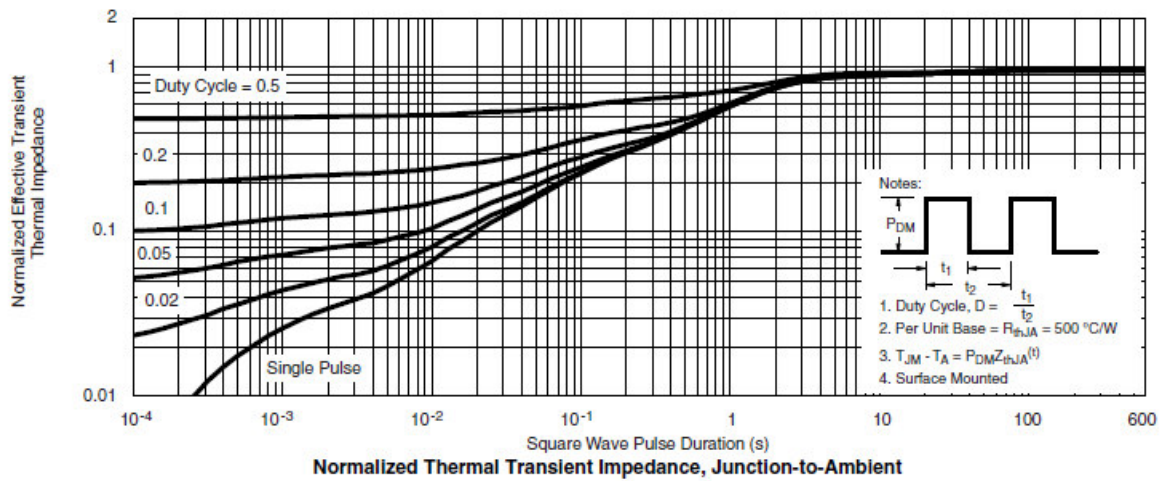
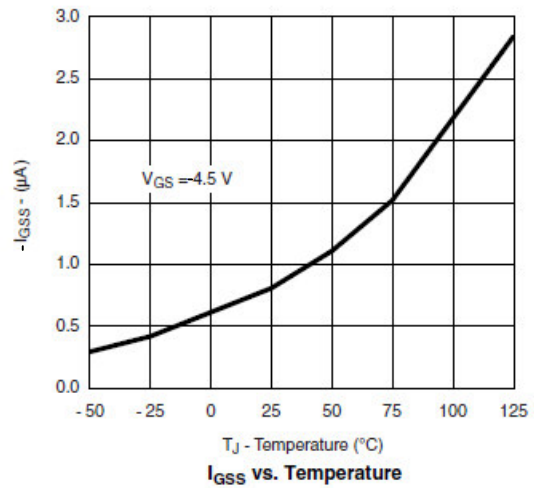
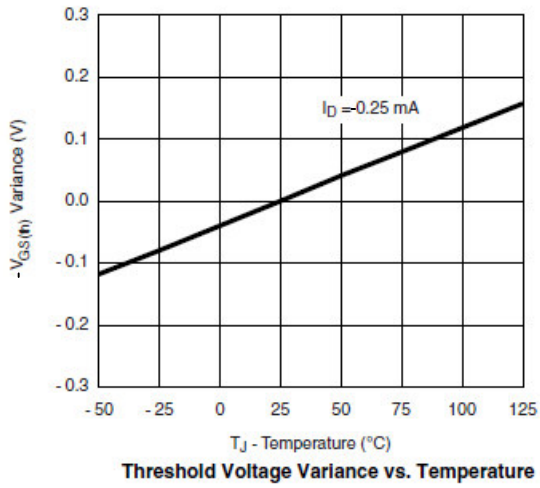
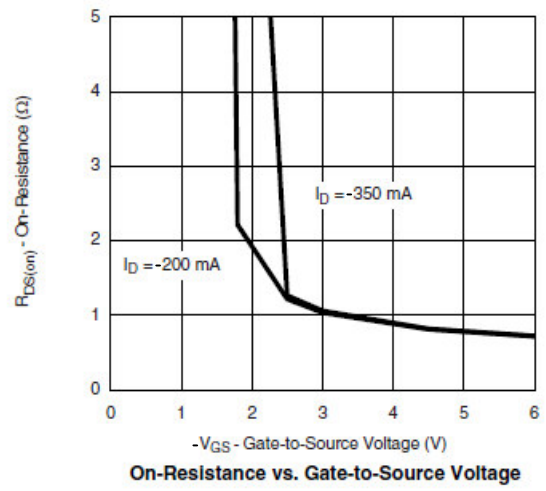
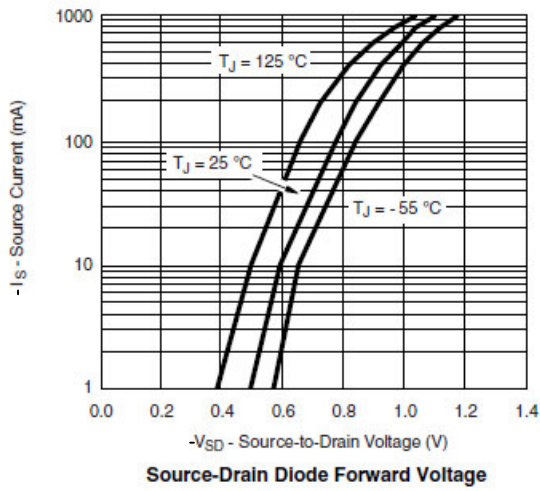


Gate Charge



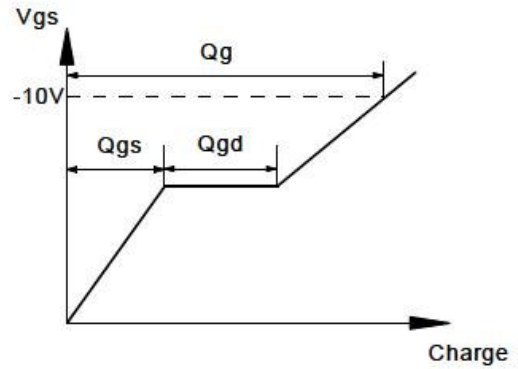
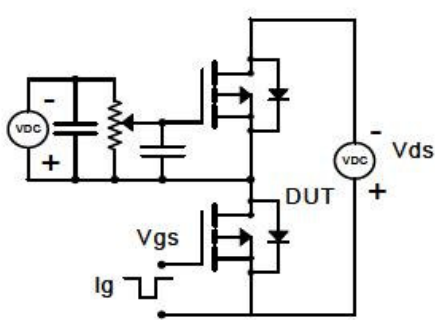
On-Resistance vs. Junction Temperature

## Typical Performance Characteristics (continue)

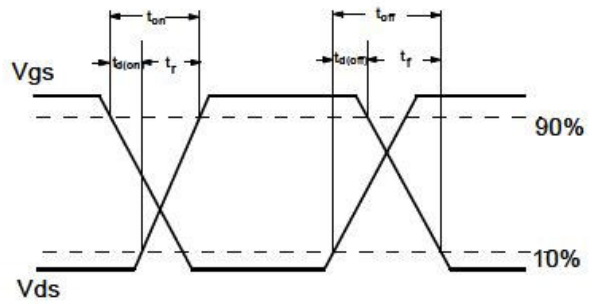
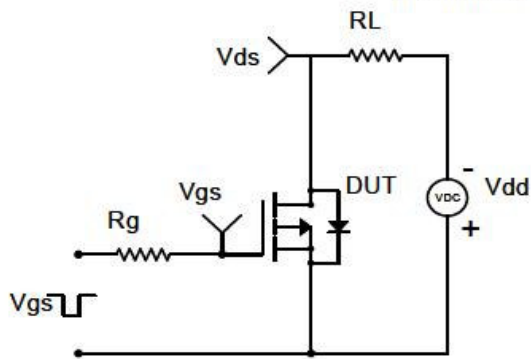


## Typical Performance Characteristics (continue)

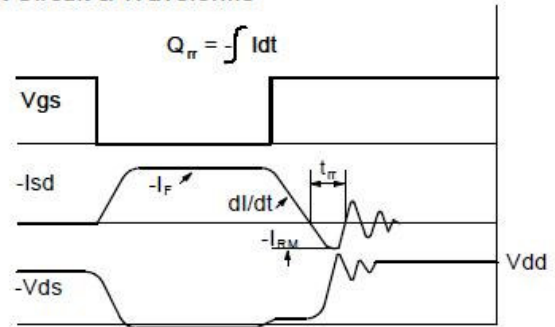
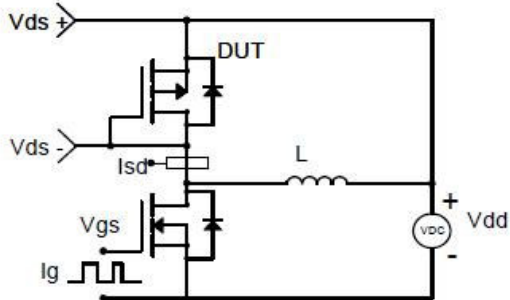
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

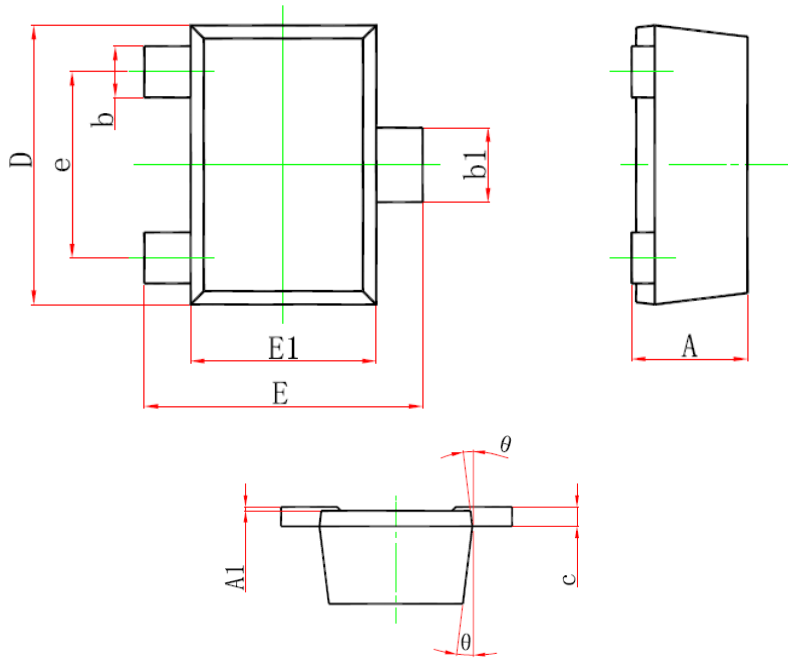


### Diode Recovery Test Circuit & Waveforms



## Package Dimension

### SOT-723




Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	-	0.500	-	0.02
<b>A1</b>	0.000	0.050	0.000	0.002
<b>b</b>	0.170	0.270	0.007	0.011
<b>b1</b>	0.270	0.370	0.011	0.015
<b>c</b>	-	0.150	-	0.006
<b>D</b>	1.150	1.250	0.045	0.049
<b>E</b>	1.150	1.250	0.045	0.049
<b>E1</b>	0.750	0.850	0.030	0.033
<b>e</b>	0.800 TYP		0.031 TYP	
<b>θ</b>	7° REF		7° REF	



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