

# GSM1072

## 20V N-Channel Enhancement Mode MOSFET

### Product Description

GSM1072, 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.

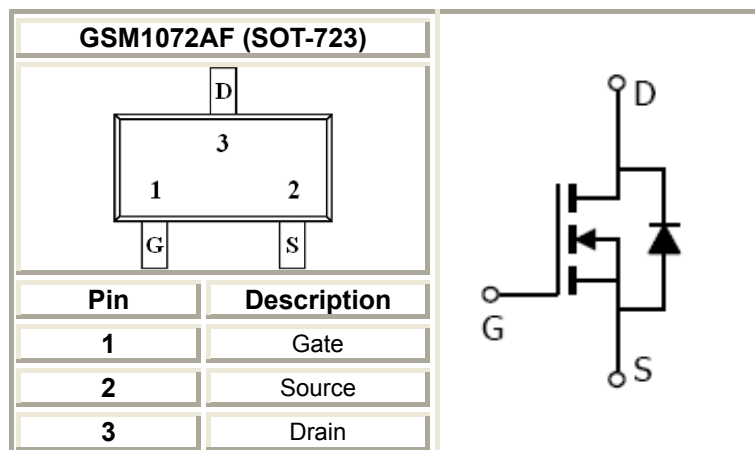
### Features

- 20V/0.8A,  $R_{DS(ON)}=360m\Omega@V_{GS}=4.5V$
- 20V/0.7A,  $R_{DS(ON)}=420m\Omega@V_{GS}=2.5V$
- 20V/0.6A,  $R_{DS(ON)}=560m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-723 package design

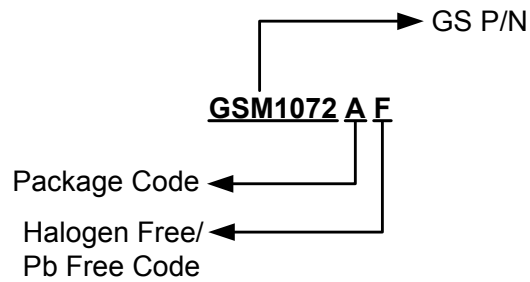
### Applications

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

### Packages & Pin Assignments

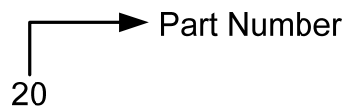


## Ordering Information



Part Number	Package	Quantity Reel
GSM1072AF	SOT-723	8000 PCS

## Marking Information



## Absolute Maximum Ratings

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

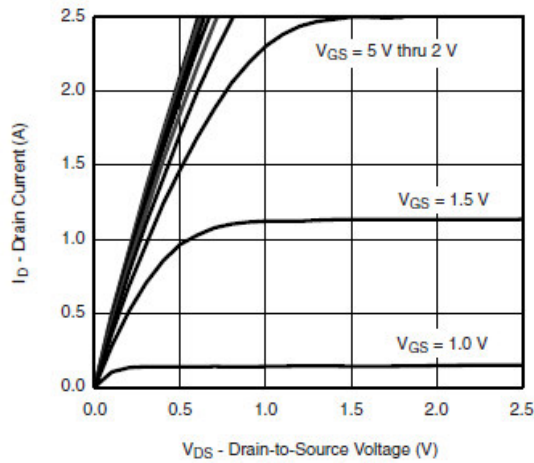
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	20	V	
V <sub>GSS</sub>	Gate –Source Voltage	±12	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	0.7	A
		T <sub>A</sub> =70°C	0.4	
I <sub>DM</sub>	Pulsed Drain Current	1.0	A	
I <sub>S</sub>	Continuous 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

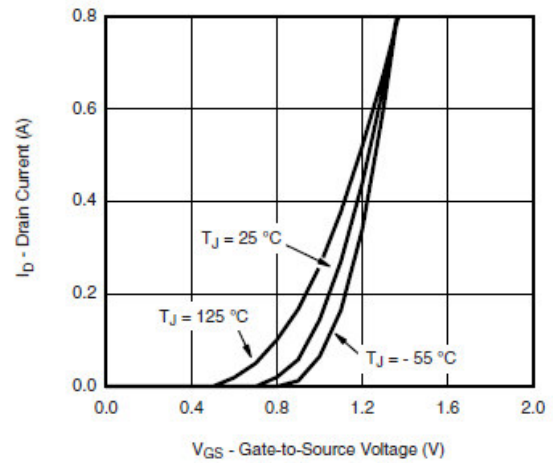
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		1.0	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=20V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			5	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq 5V, V_{GS}=4.5V$	0.7			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=0.8A$		300	360	m $\Omega$
		$V_{GS}=2.5V, I_D=0.7A$		240	420	
		$V_{GS}=1.8V, I_D=0.6A$		420	560	
$g_{FS}$	Forward Transconductance	$V_{DS}=10V, I_D=0.4A$		1		S
$V_{SD}$	Diode Forward Voltage	$I_S=0.15A, V_{GS}=0V$		0.65	1.2	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=10V, V_{GS}=0V,$ $f=1\text{MHz}$		70		pF
$C_{oss}$	Output Capacitance			20		
$C_{rss}$	Reverse Transfer Capacitance			8		
$Q_g$	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V,$ $I_D=0.6A$		1.06	1.38	nC
$Q_{gs}$	Gate-Source Charge			0.18		
$Q_{gd}$	Gate-Drain Charge			0.32		
$t_{d(on)}$	Turn-On Time	$V_{DD}=10V, R_L=20\Omega,$ $I_D=0.5A, V_{GEN}=4.5V,$ $R_G=1\Omega$		18	26	ns
$t_r$				20	28	
$t_{d(off)}$	Turn-Off Time			70	110	
$t_f$				25	40	

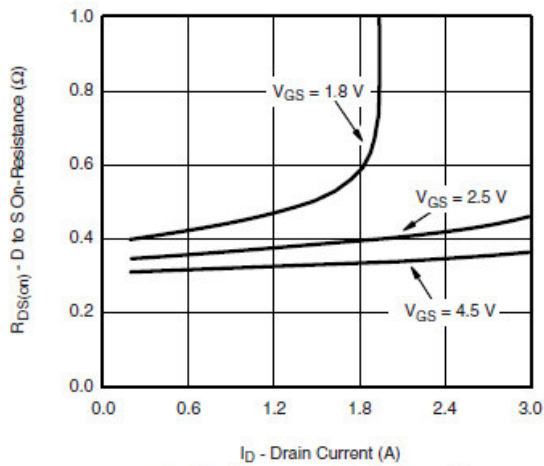
## Typical Performance Characteristics



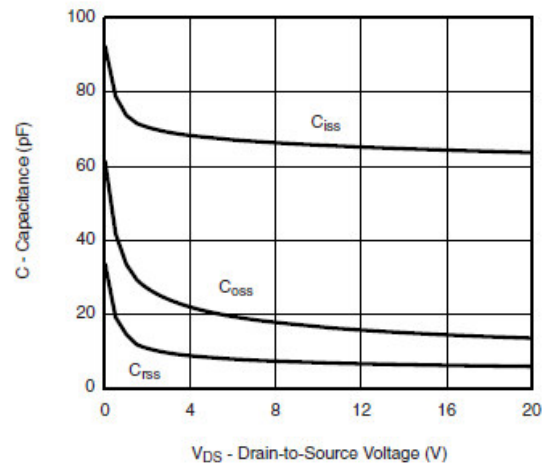
Output Characteristics



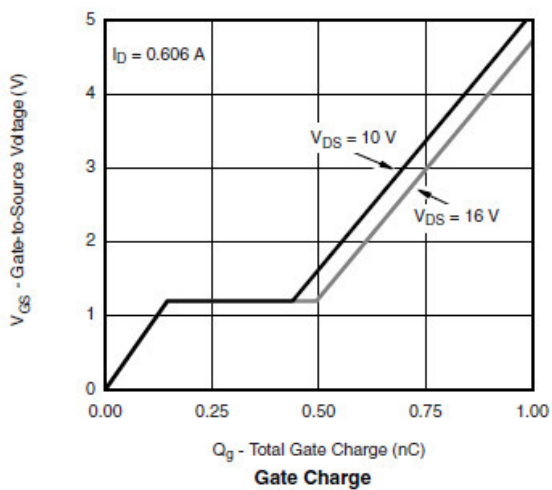
Transfer Characteristics



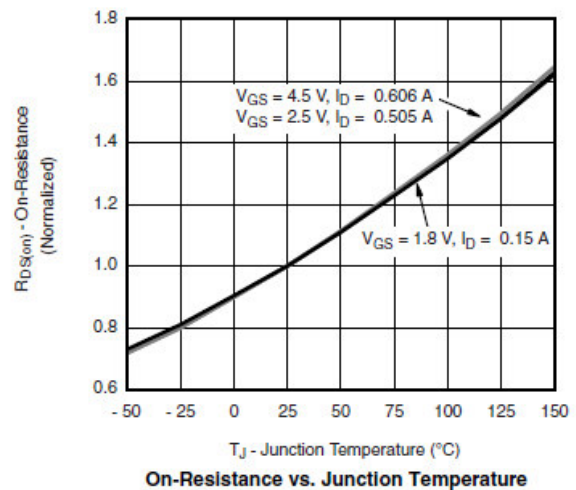
On-Resistance vs. Drain Current



Capacitance

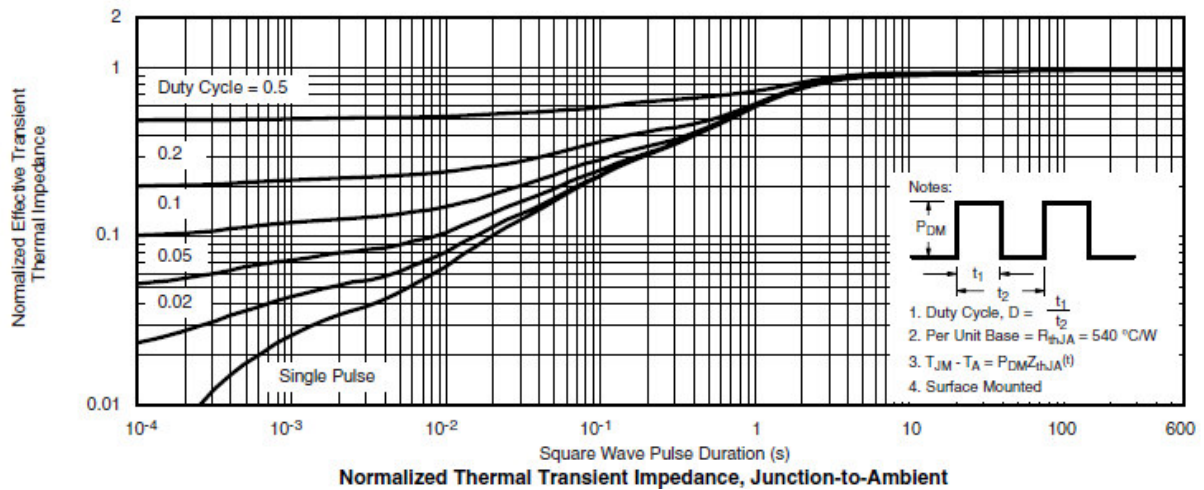
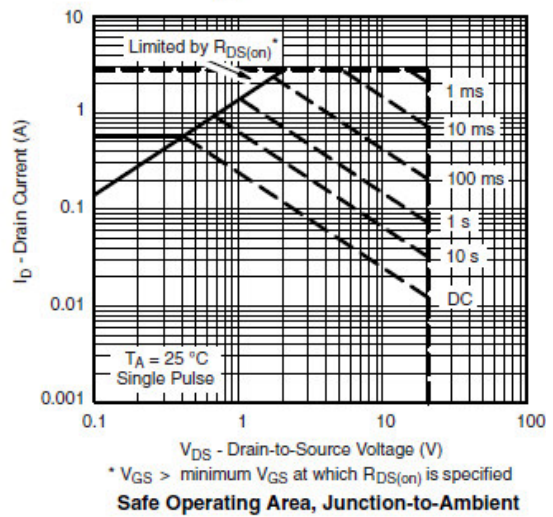
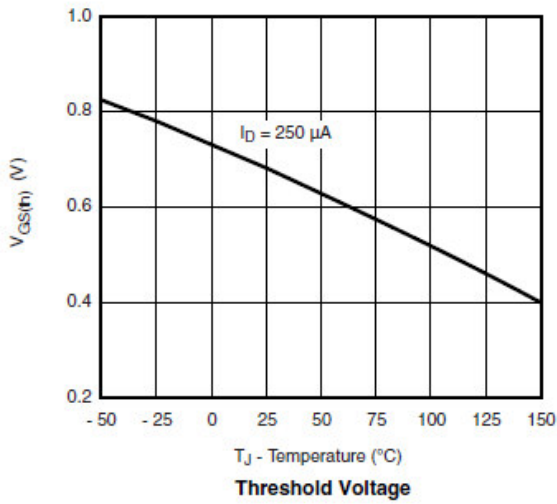
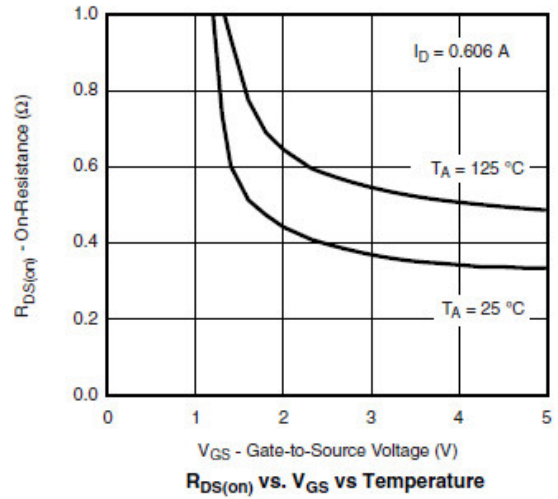
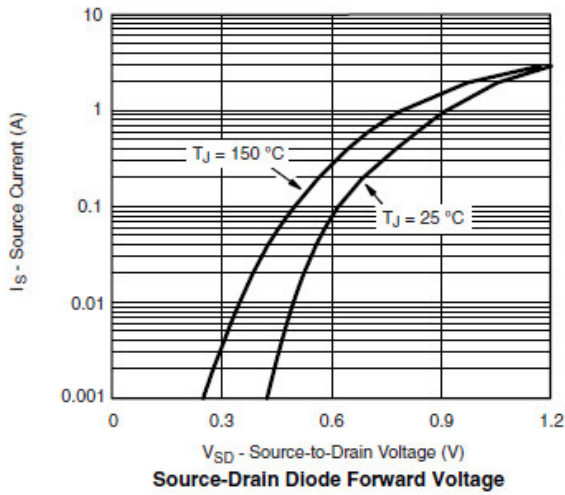


Gate Charge



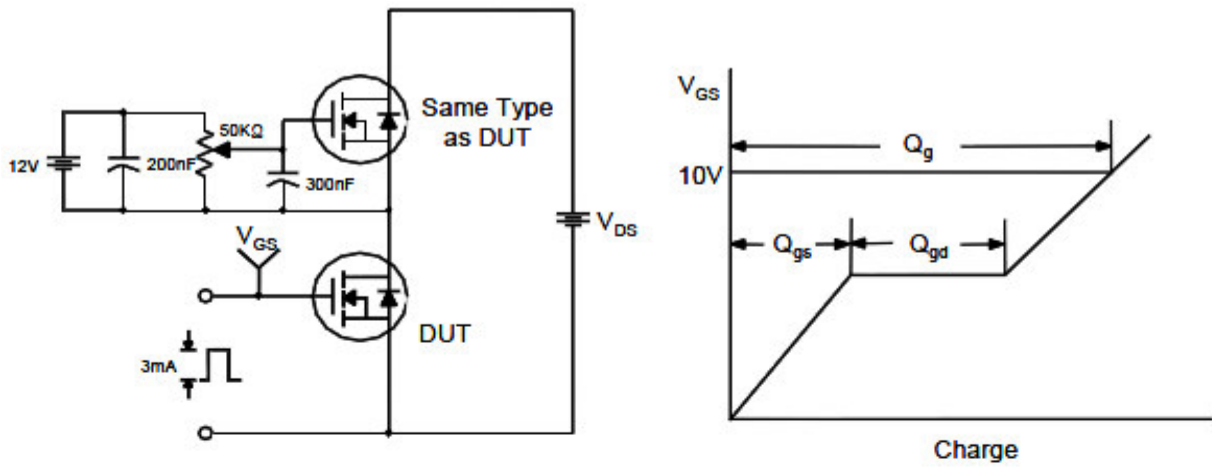
On-Resistance vs. Junction Temperature

## Typical Performance Characteristics (continue)

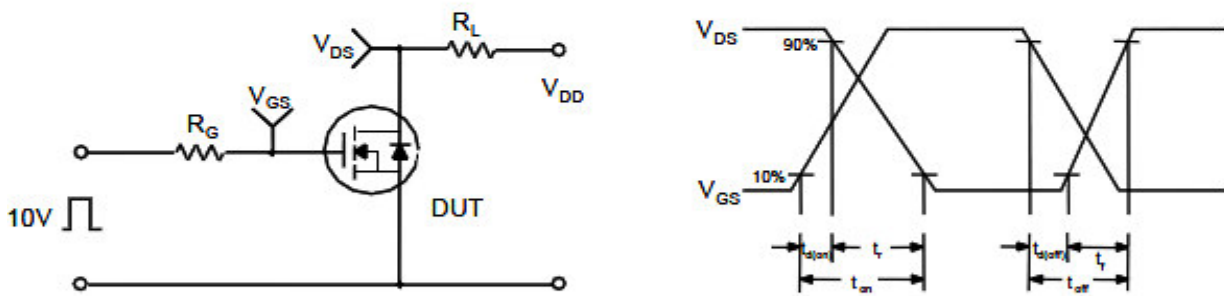


## Typical Performance Characteristics (continue)

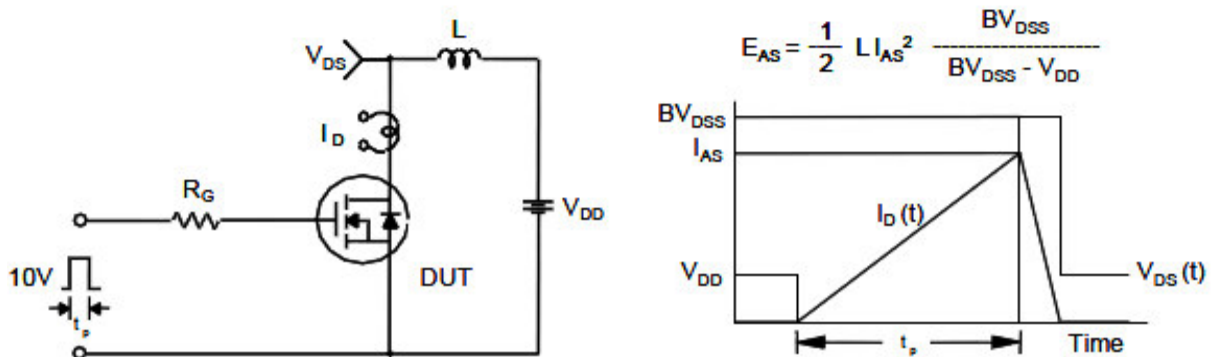
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

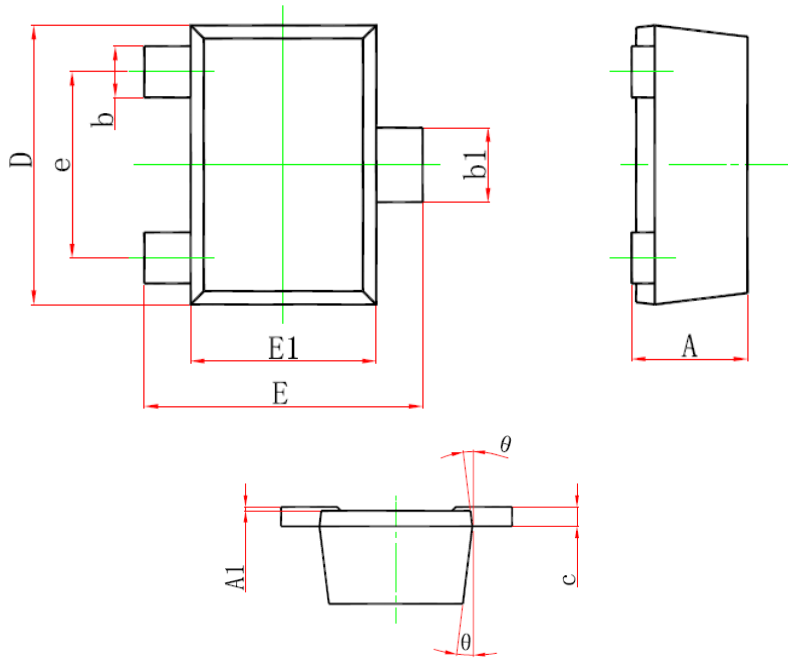


### Unclamped Inductive Switching Test Circuit & Waveforms



## 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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