

# GSM1032

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM1032, 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.

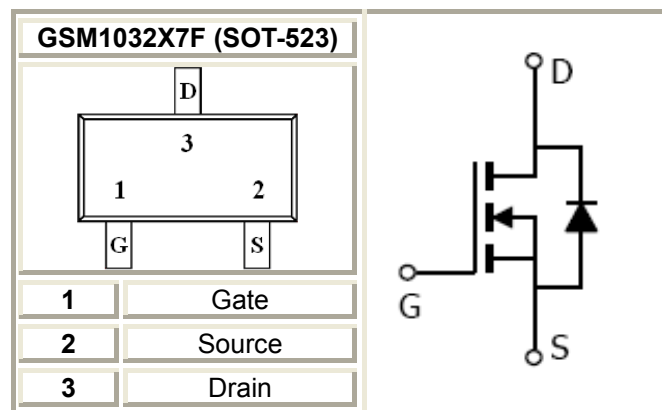
### Features

- 30V/0.6A,  $R_{DS(ON)}=440m\Omega@V_{GS}=4.5V$
- 30V/0.5A,  $R_{DS(ON)}=500m\Omega@V_{GS}=2.5V$
- 30V/0.4A,  $R_{DS(ON)}=750m\Omega@V_{GS}=1.8V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-523 package design

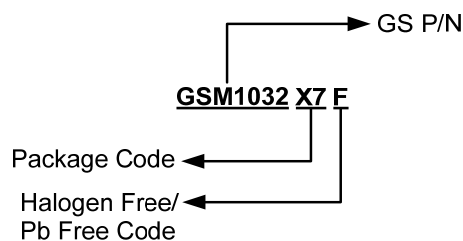
### Applications

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

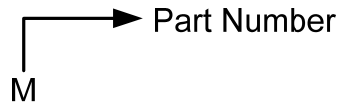
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM1032X7F	SOT-523	M

## Absolute Maximum Ratings

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

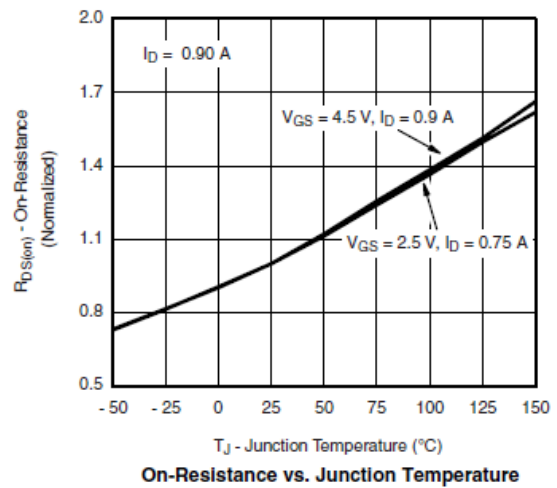
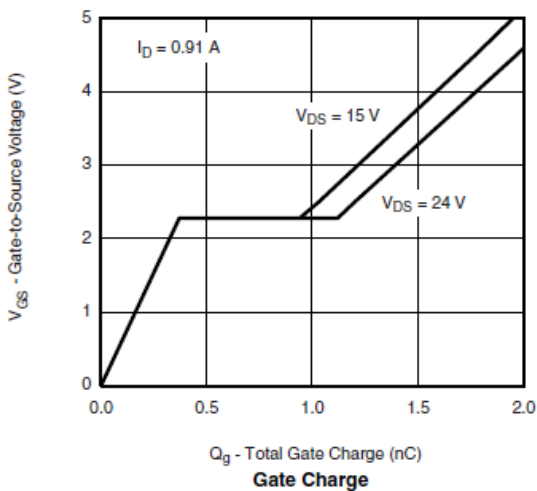
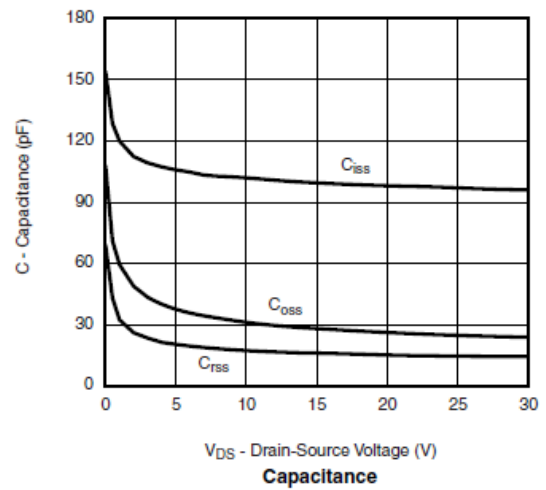
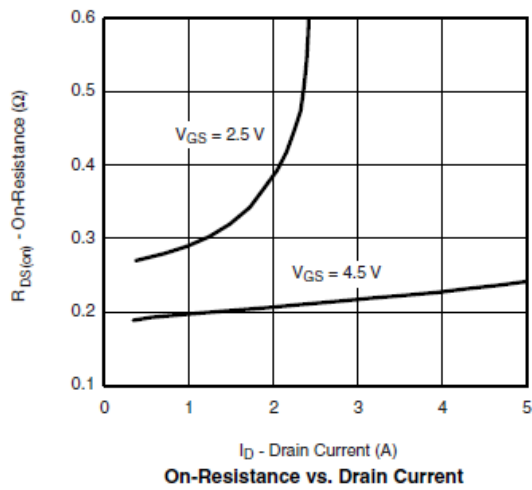
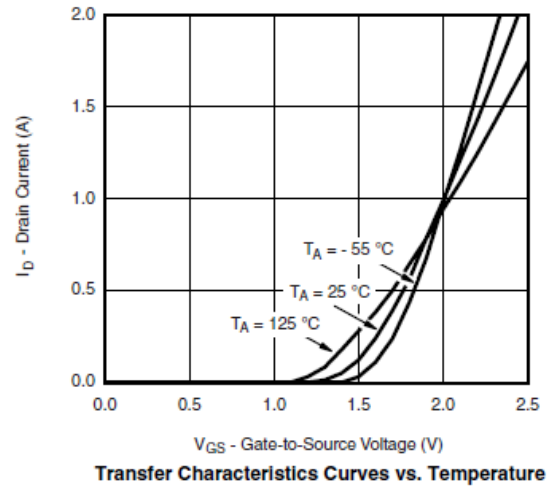
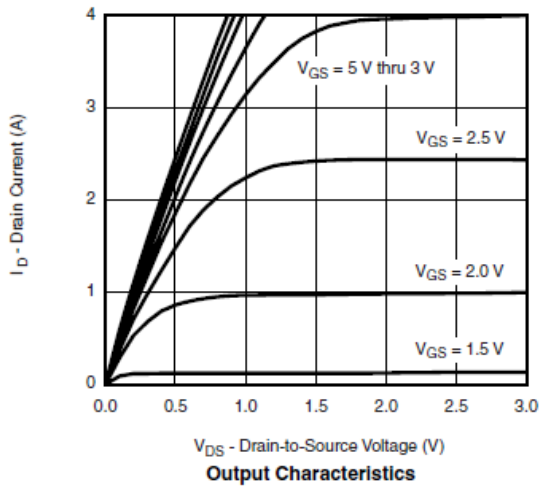
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	30	V	
V <sub>GSS</sub>	Gate –Source Voltage	±12	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	TA=25°C	0.7	A
		TA=70°C	0.4	
I <sub>DM</sub>	Pulsed Drain Current	1.0	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	0.3	A	
P <sub>D</sub>	Power Dissipation	TA=25°C	0.27	W
		TA=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

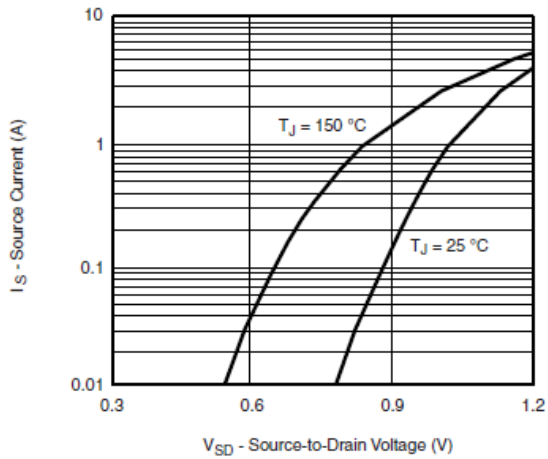
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		1.0	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=24V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			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	$V_{GS}=4.5V, I_D=0.6A$		350	440	m $\Omega$
		$V_{GS}=2.5V, I_D=0.5A$		430	500	
		$V_{GS}=1.8V, I_D=0.4A$		680	750	
$g_{fs}$	Forward Transconductance	$V_{DS}=10V, I_D=0.4A$		1		S
$V_{SD}$	Diode Forward Voltage	$I_S=0.15A, V_{GS}=0V$		0.6	1.2	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$		85		pF
$C_{oss}$	Output Capacitance			25		
$C_{rss}$	Reverse Transfer Capacitance			15		
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=4.5V$ $I_D=0.6A$		1.4	1.8	nC
$Q_{gs}$	Gate-Source Charge			0.3		
$Q_{gd}$	Gate-Drain Charge			0.6		
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=20\Omega$ $I_D=0.5A, V_{GEN}=4.5V$ $R_G=1\Omega$		15	25	ns
$t_r$				25	45	
$t_{d(off)}$	Turn-Off Time			15	25	
$t_f$				10	20	

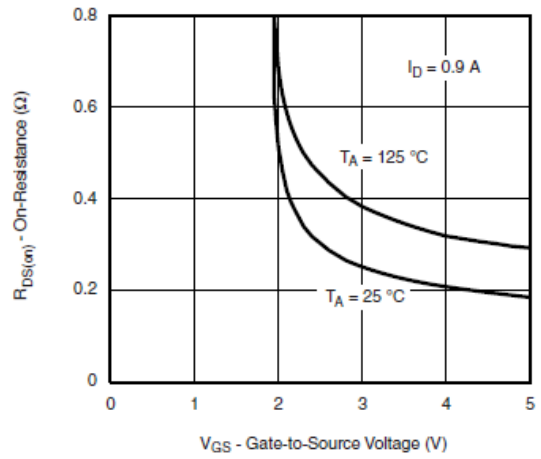
## Typical Performance Characteristics



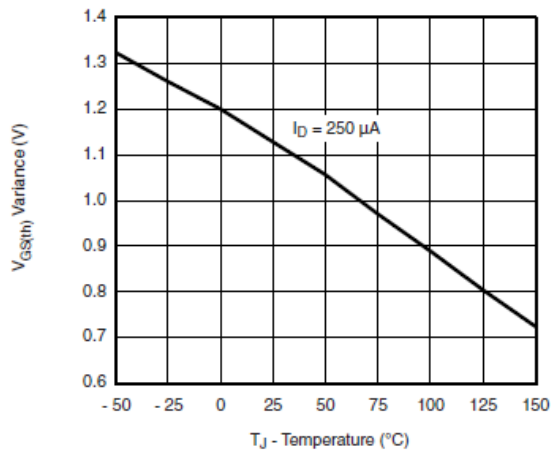
## Typical Performance Characteristics (continue)



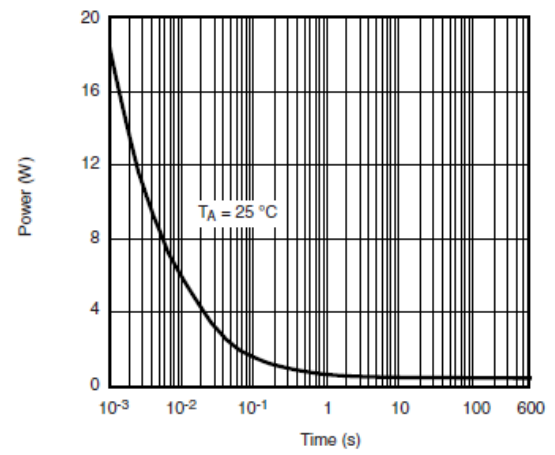
Forward Diode Voltage vs. Temperature



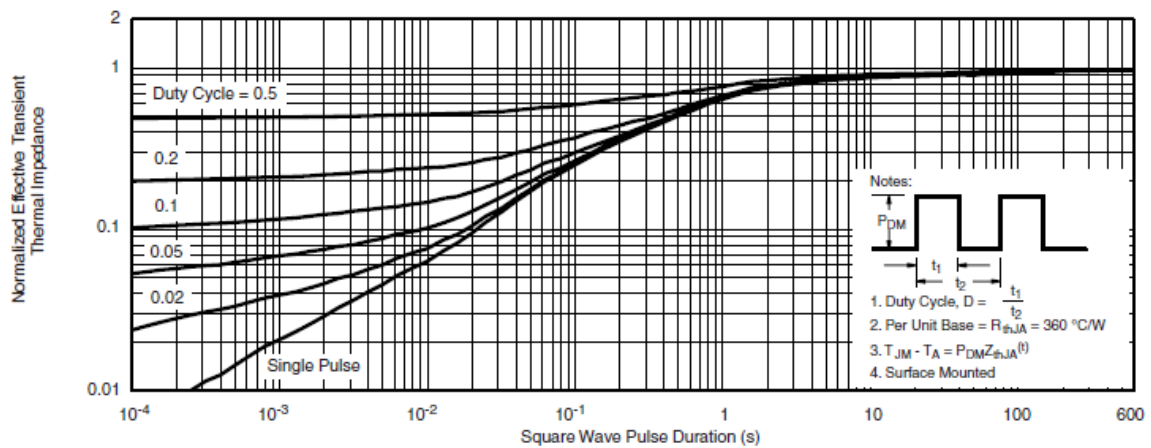
$R_{DS(on)}$  vs.  $V_{GS}$  vs. Temperature



Threshold Voltage



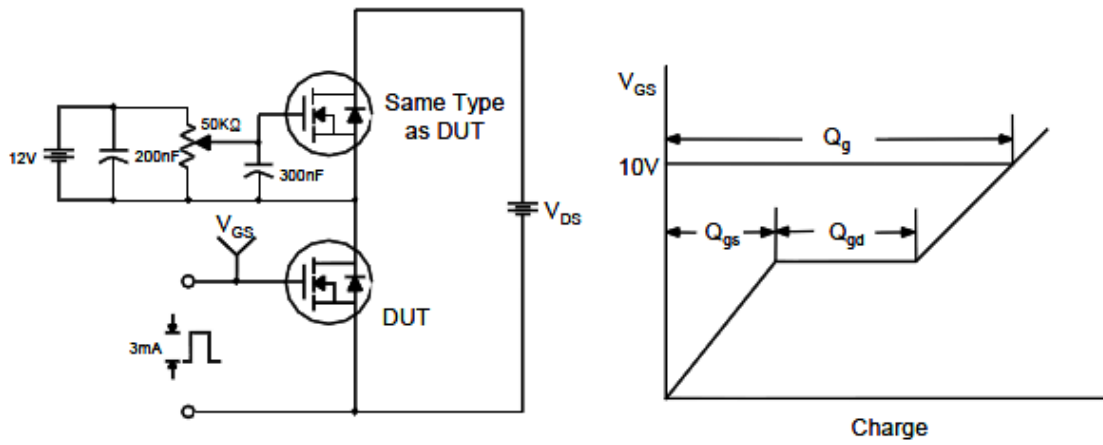
Single Pulse Power, Junction-to-Ambient



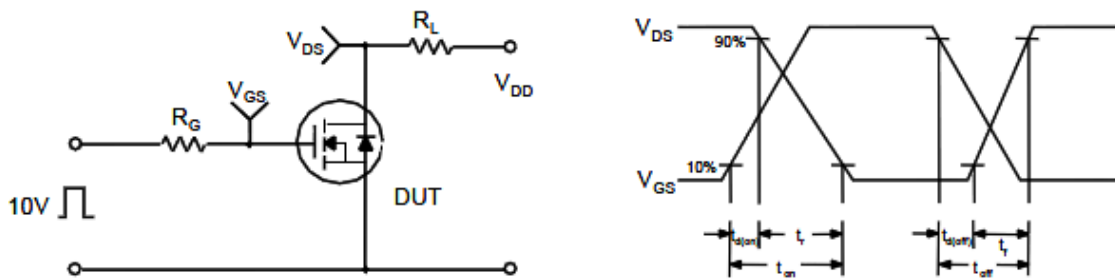
Normalized Thermal Transient Impedance, Junction-to-Ambient

## Typical Characteristics

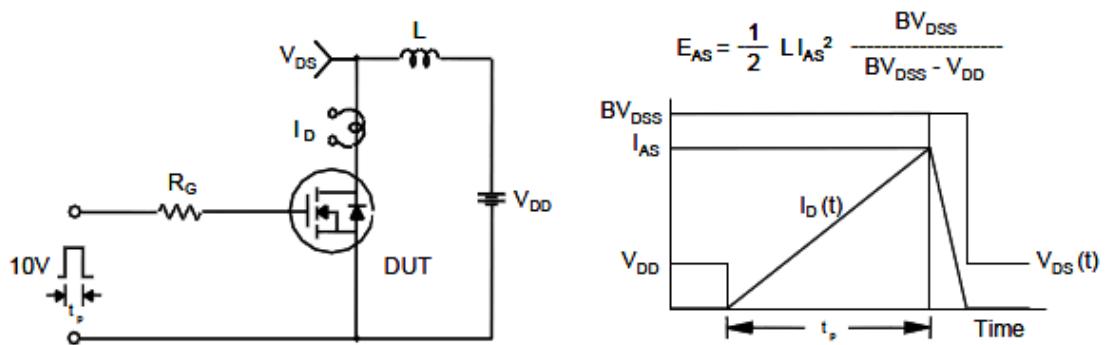
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

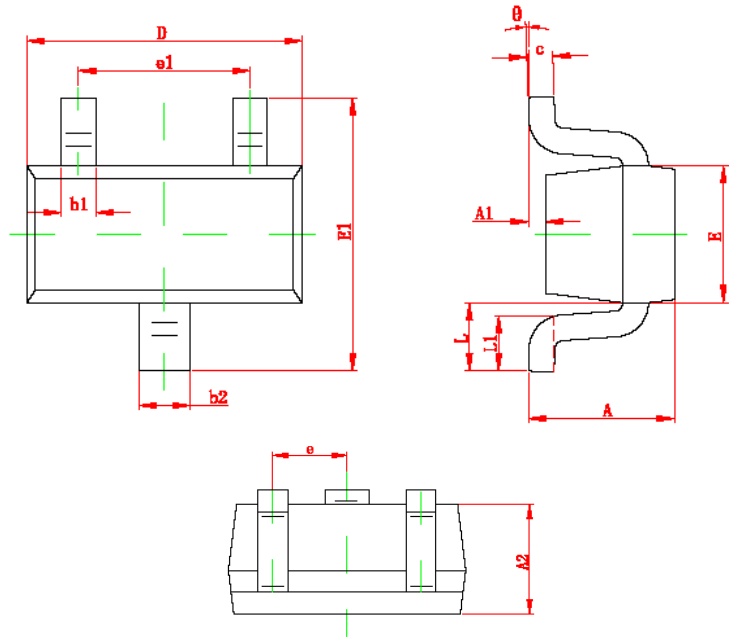


Unclamped Inductive Switching Test Circuit & Waveforms



## 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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