

# GSM1072K

## 20V N-Channel Enhancement Mode MOSFET

### Product Description

GSM1072K, 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.

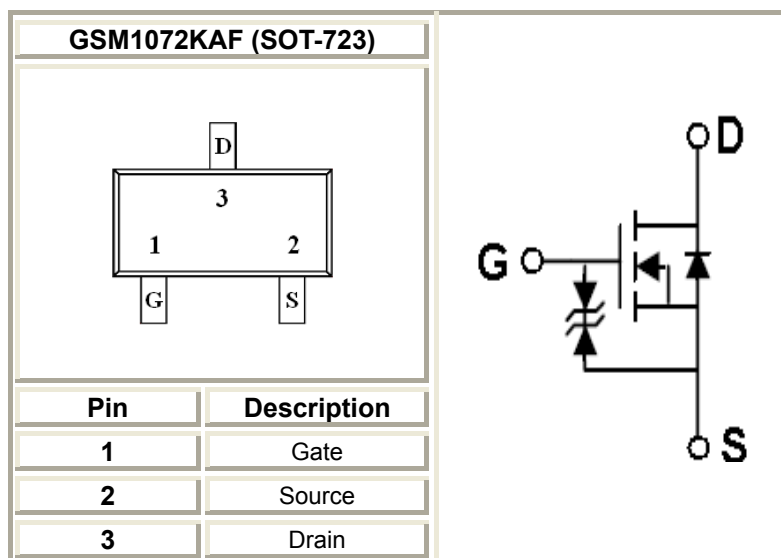
### Features

- 20V/0.95A,  $R_{DS(ON)}=380m\Omega@V_{GS}=4.5V$
- 20V/0.75A,  $R_{DS(ON)}=450m\Omega@V_{GS}=2.5V$
- 20V/0.65A,  $R_{DS(ON)}=800m\Omega@V_{GS}=1.8V$
- 20V/0.65A,  $R_{DS(ON)}=1000m\Omega@V_{GS}=1.5V$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- ESD Protected
- SOT-723 package design

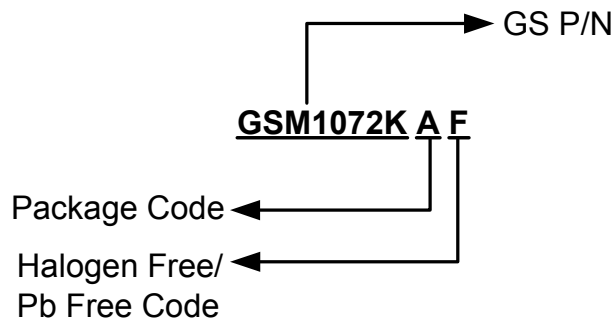
### Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

### Packages & Pin Assignments

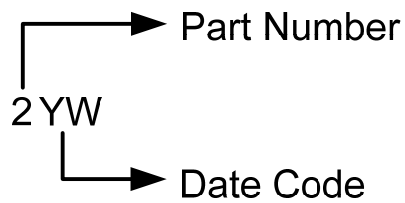


## Ordering Information



Part Number	Package	Quantity Reel
GSM1072KAF	SOT-723	8000 PCS

## Marking Information



## Absolute Maximum Ratings

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

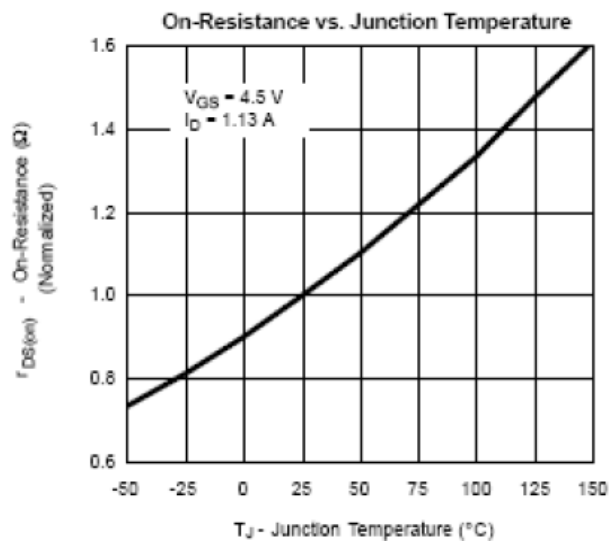
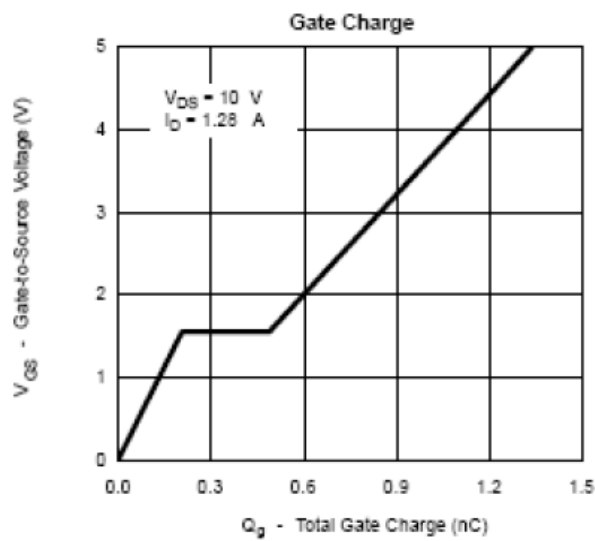
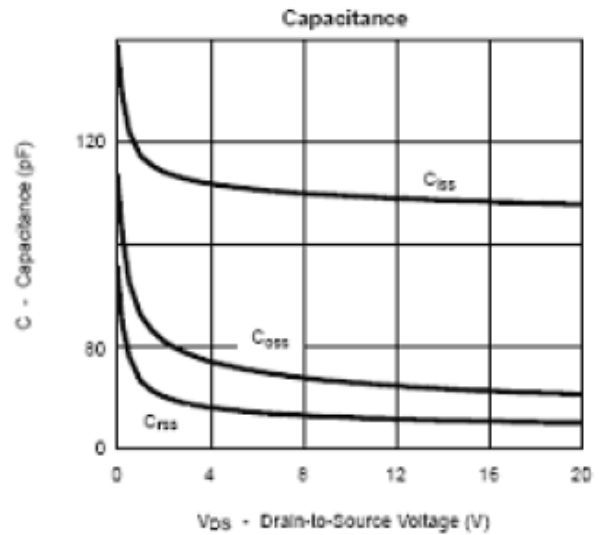
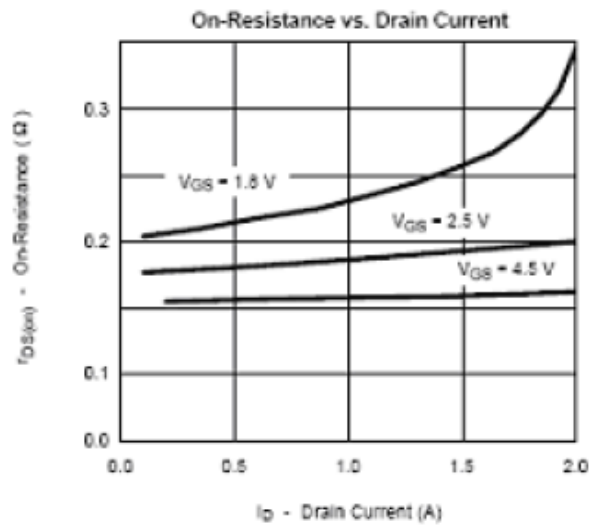
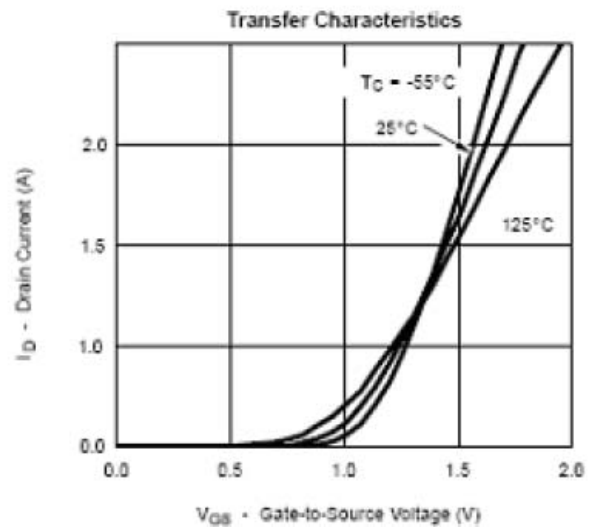
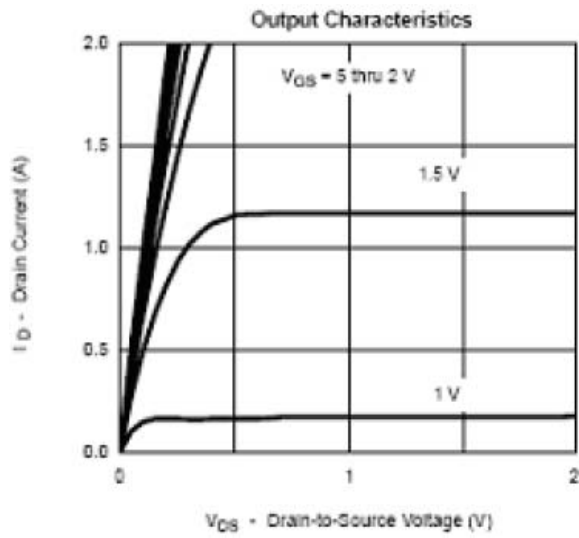
Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	20	V
V <sub>GSS</sub>	Gate-Source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	0.95	A
I <sub>DM</sub>	Pulsed Drain Current	4.0	A
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	0.3	A
P <sub>D</sub>	Power Dissipation	0.15	W
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range	-55 to +150	°C

## Electrical Characteristics

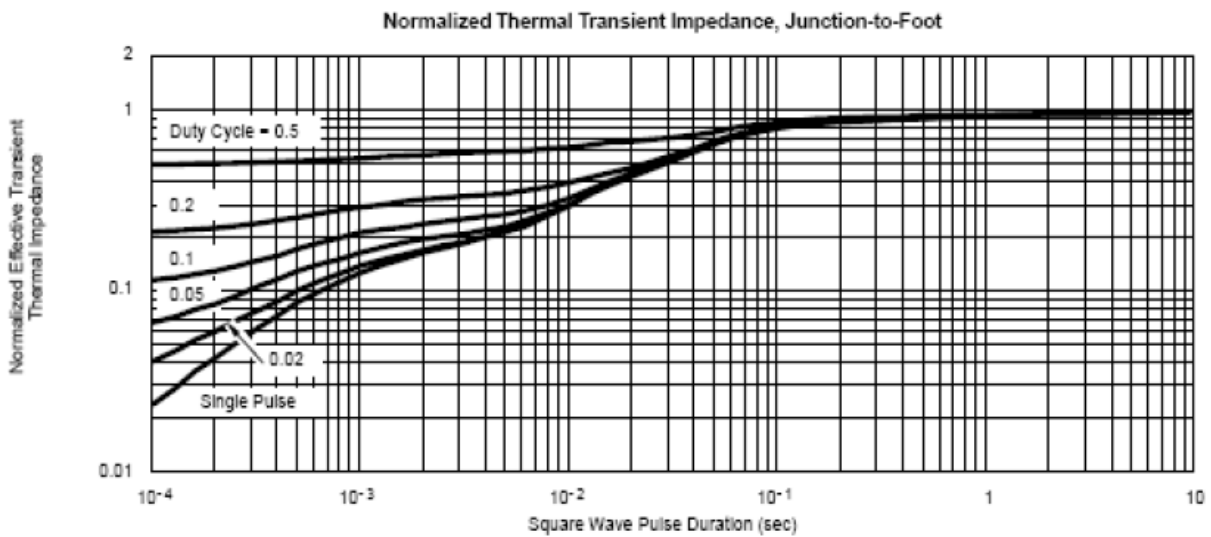
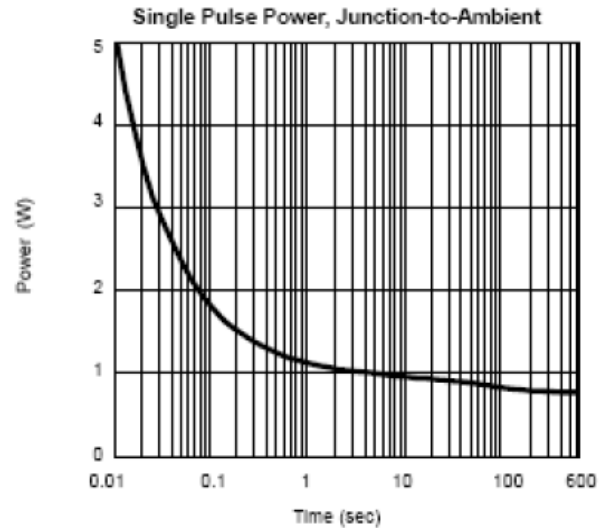
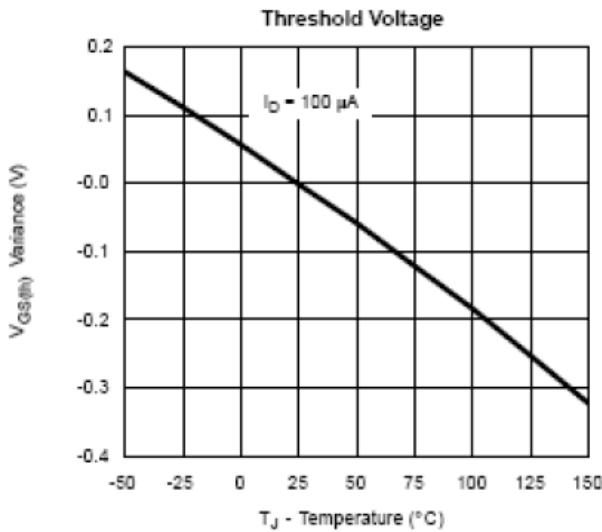
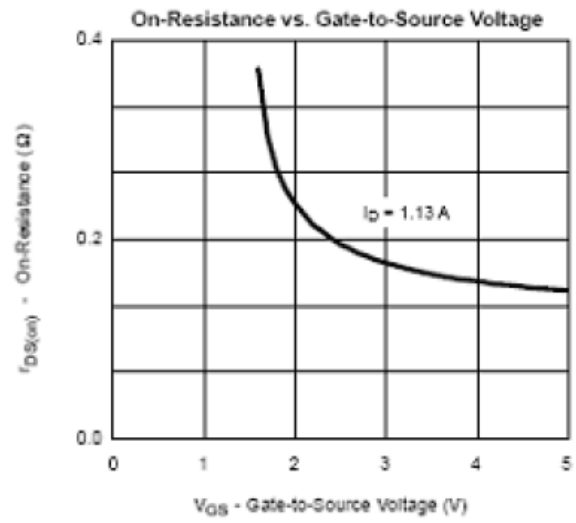
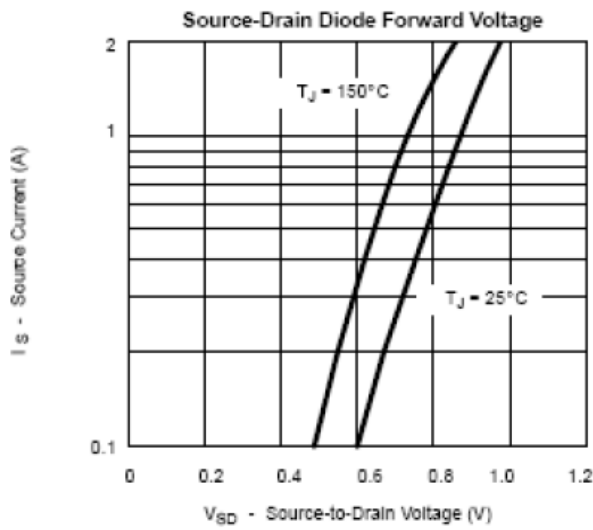
( $T_A=25^\circ\text{C}$  unless otherwise noted)

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	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35		1.0	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			30	$\mu A$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=20V, V_{GS}=0V$ $T_J=55^\circ\text{C}$			5	
$I_{D(on)}$	On-State Drain Current	$V_{DS} \geq 4.5V, V_{GS}=5V$	0.7			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=0.95A$		260	380	m $\Omega$
		$V_{GS}=2.5V, I_D=0.75A$		320	450	
		$V_{GS}=1.8V, I_D=0.65A$		420	800	
		$V_{GS}=1.5V, I_D=0.65A$		500	1000	
$g_{FS}$	Forward Transconductance	$V_{DS}=10V, I_D=0.4A$		1.0		S
$V_{SD}$	Diode Forward Voltage	$I_S=0.15A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
$Q_g$	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V,$ $I_D=0.6A$		1.2	1.5	nC
$Q_{gs}$	Gate-Source Charge			0.2		
$Q_{gd}$	Gate-Drain Charge			0.3		
$t_{d(on)}$	Turn-On Time	$V_{DD}=10V, R_L=10\Omega,$ $I_D=0.5A, V_{GEN}=4.5V,$ $R_G=6\Omega$		5	10	ns
$t_r$				8	15	
$t_{d(off)}$	Turn-Off Time			10	18	
$t_f$				1.2	2.8	

## Typical Performance Characteristics

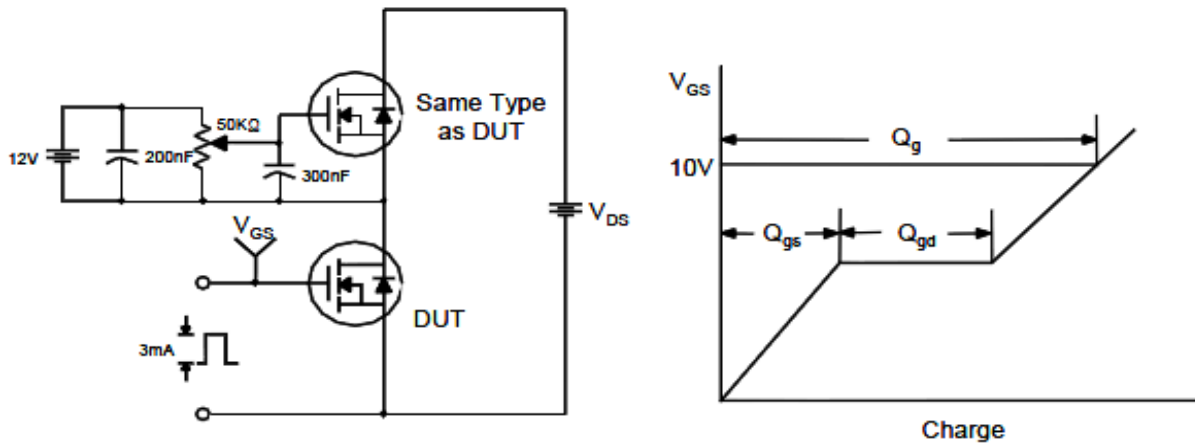


## Typical Performance Characteristics (continue)

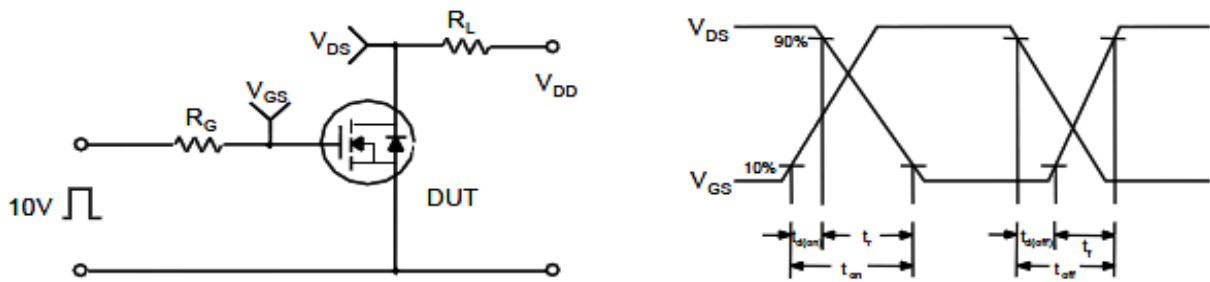


## Typical Performance Characteristics (continue)

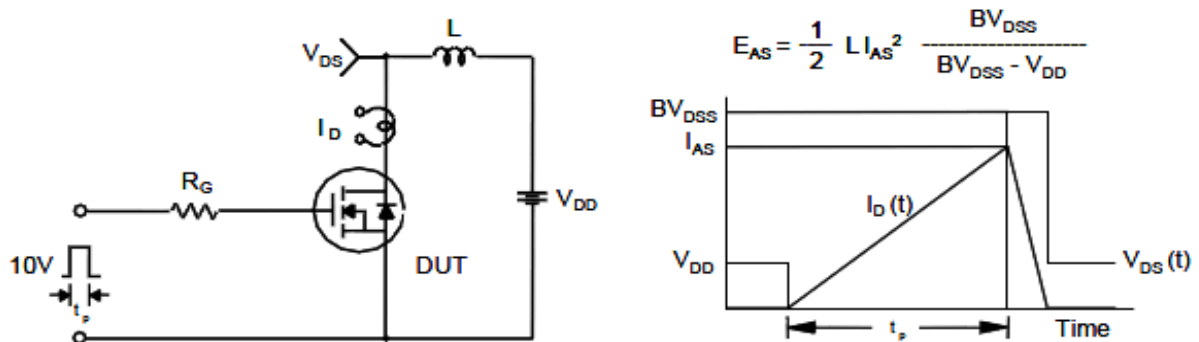
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

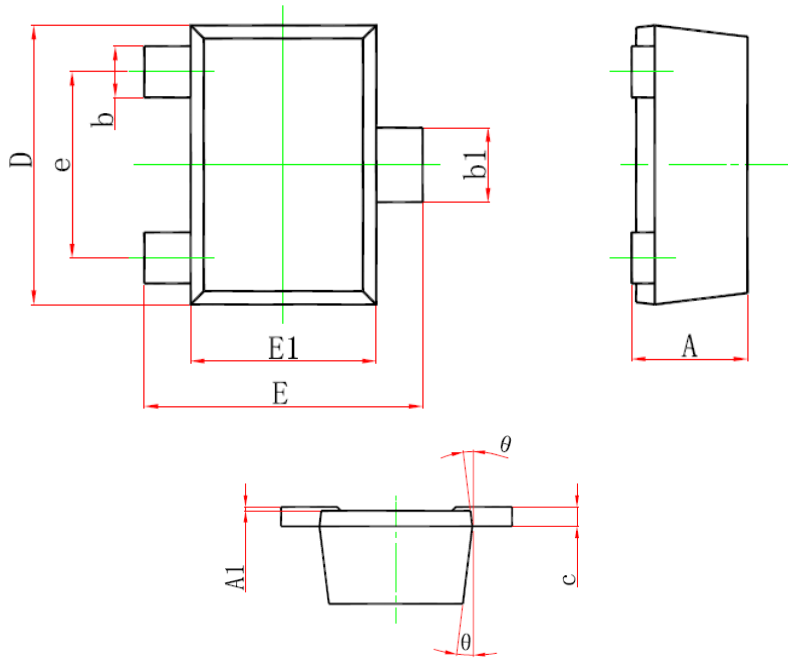


Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOT-723







Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	-	0.500	-	0.020
<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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