

# GSM4924

## 40V N-Channel Enhancement Mode MOSFET

### Product Description

GSM4924, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

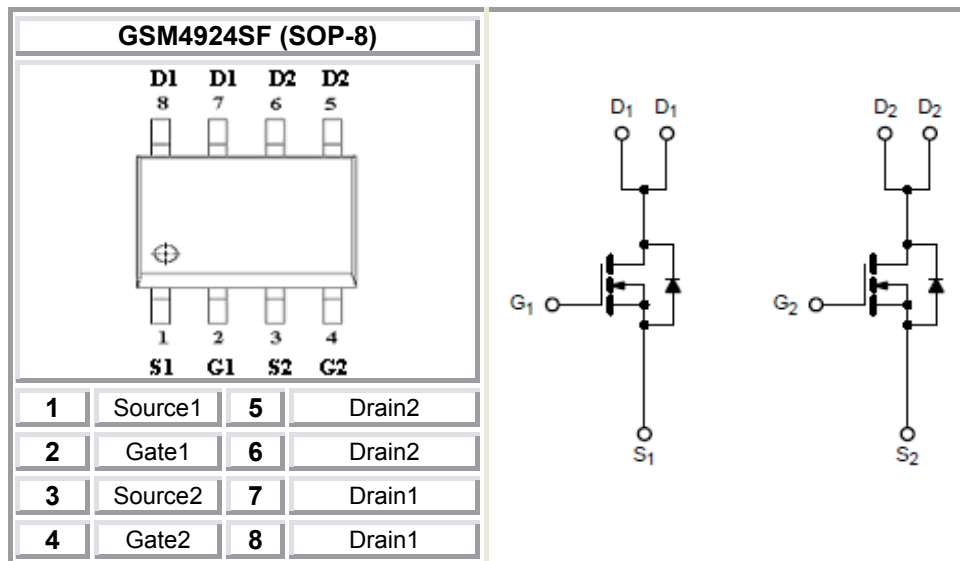
### Features

- 40V/8A,  $R_{DS(ON)} = 24m\Omega @ V_{GS}=10V$
- 40V/6A,  $R_{DS(ON)} = 48m\Omega @ V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOP-8P package design
- RoHS Compliant, 100%Pb & Halogen Free

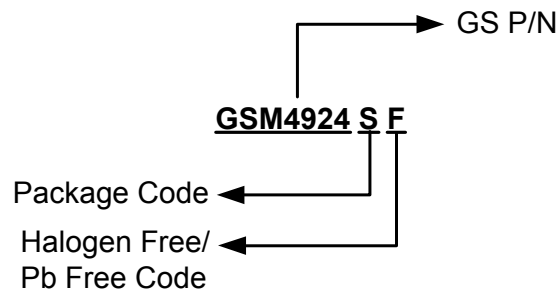
### Applications

- Motor and Load Control
- AD/DC Inverter Systems.
- Power Management in White LED System

### Packages & Pin Assignments

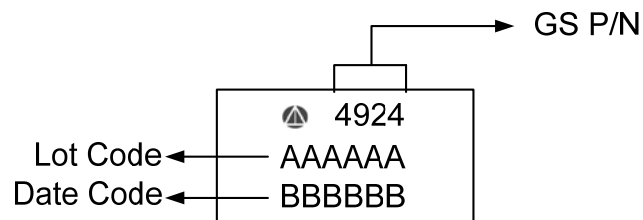


## Ordering Information



Part Number	Package	Quantity Reel
GSM4924SF	SOP-8	3000 PCS

## Marking Information



## Absolute Maximum Ratings

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

Symbol	Parameter	Typical	Unit
$V_{DS}$	Drain-Source Voltage	40	V
$V_{GS}$	Gate -Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$T_A=25^\circ\text{C}$	8
		$T_A=70^\circ\text{C}$	6
$I_{DM}$	Pulsed Drain Current	30	A
$I_S$	Continuous Source Current(Diode Conduction)	1.5	A
$P_D$	Power Dissipation	$T_A=25^\circ\text{C}$	2.8
		$T_A=70^\circ\text{C}$	1.8
$T_J$	Operating Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-55/150	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^\circ\text{C}/\text{W}$

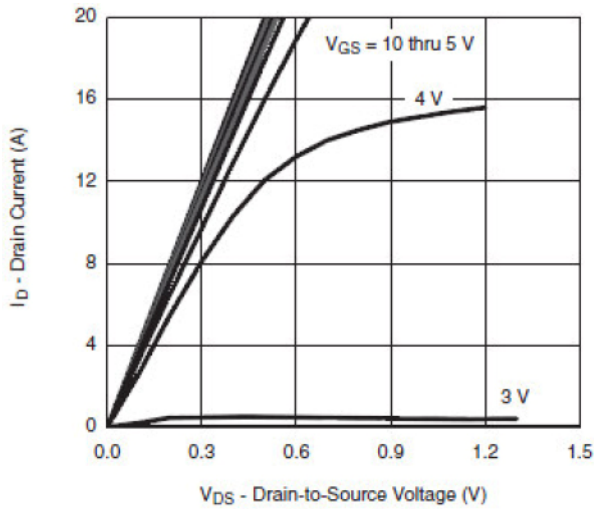
## Electrical Characteristics

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

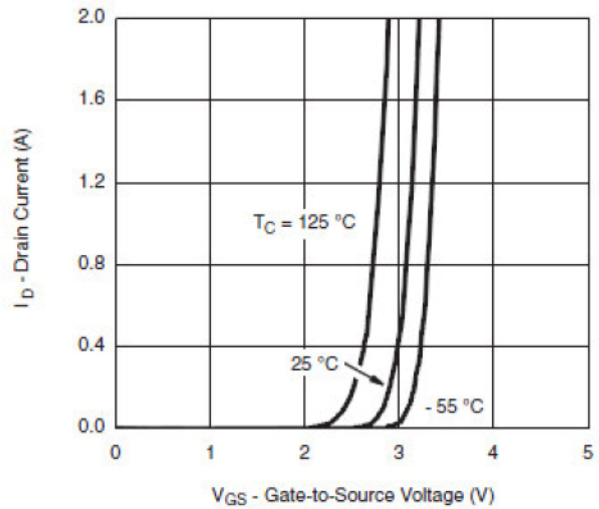
Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5		3.0	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	$\mu A$
		$V_{DS}=40V, V_{GS}=0V, T_J=85^\circ\text{C}$			10	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\geq 5V, V_{GS}=10V$	20			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=8A$		18	24	m $\Omega$
		$V_{GS}=4.5V, I_D=6A$		38	48	
$g_{fs}$	Forward Transconductance	$V_{DS}=15V, I_D=5.0A$		25		S
$V_{SD}$	Diode Forward Voltage	$I_S=2A, V_{GS}=0V$		0.85	1.2	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1\text{MHz}$		850		pF
$C_{oss}$	Output Capacitance			110		
$C_{rss}$	Reverse Transfer Capacitance			75		
$Q_g$	Total Gate Charge	$V_{DS}=20V, V_{GS}=4.5V, I_D=5A$		10	14	nC
$Q_{gs}$	Gate-Source Charge			2.8		
$Q_{gd}$	Gate-Drain Charge			3.2		
$t_{d(on)}$	Turn-On Time	$V_{DD}=20V, R_L=4\Omega, I_D=5.0A, V_{GEN}=10V, R_G=1\Omega$		6	12	ns
$t_r$				10	20	
$t_{d(off)}$	Turn-Off Time			20	36	
$t_f$				6	12	

## Typical Performance Characteristics

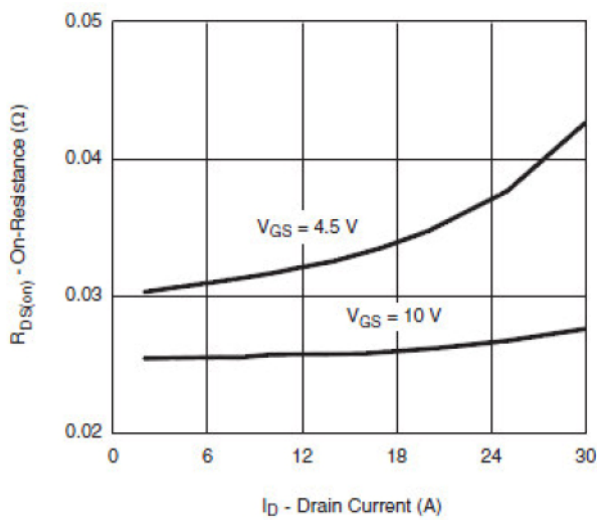
### Output Characteristics



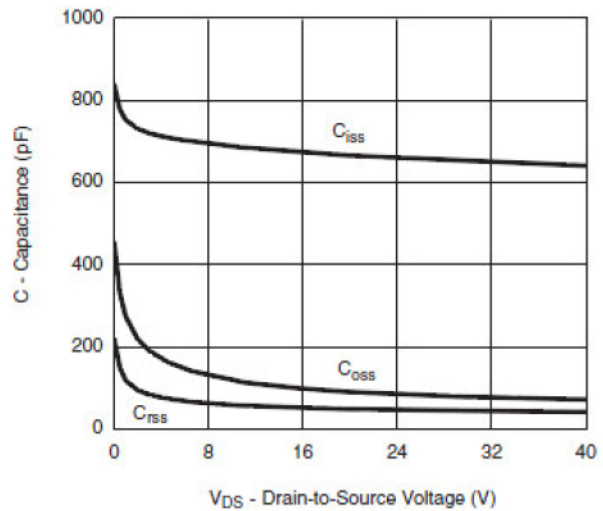
### Transfer Characteristics



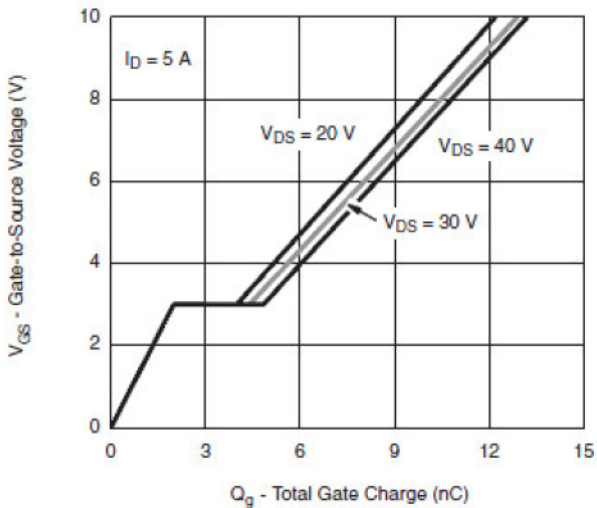
### On-Resistance vs. Drain Current and Gate Voltage



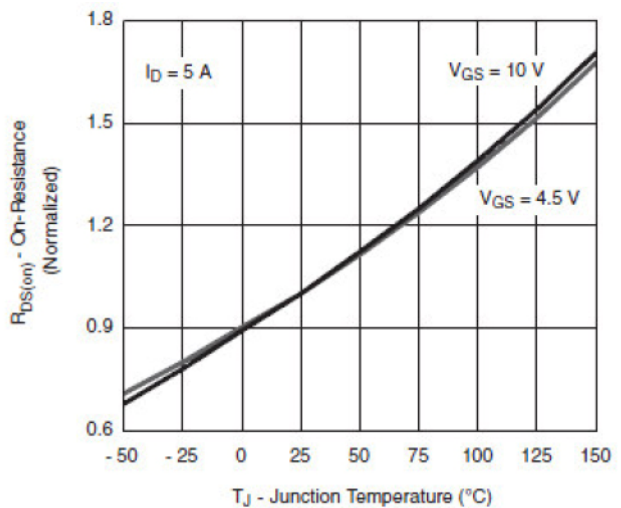
### Capacitance



### Gate Charge

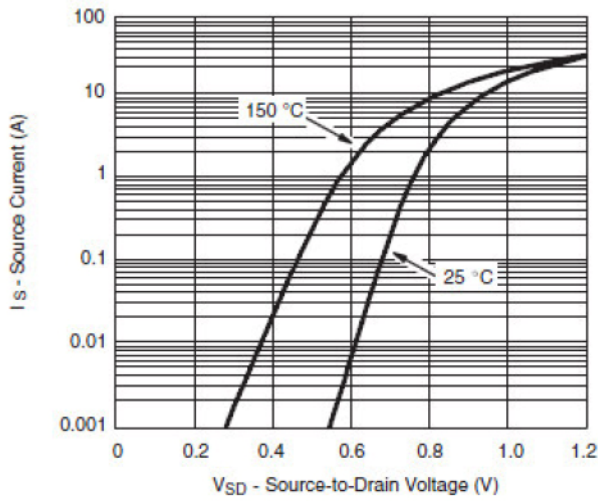


### On-Resistance vs. Junction Temperature

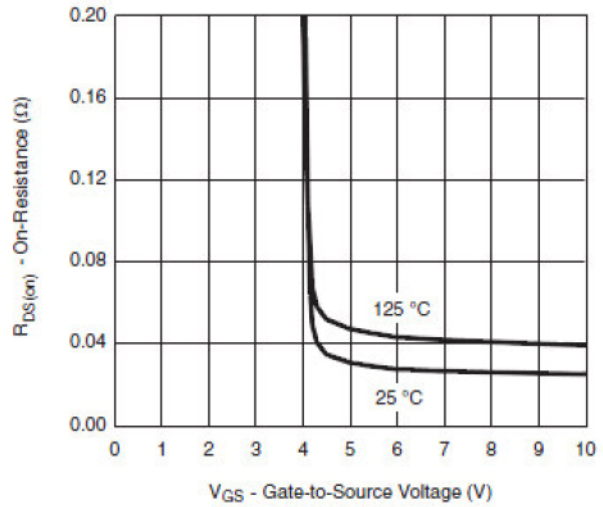


## Typical Performance Characteristics (continue)

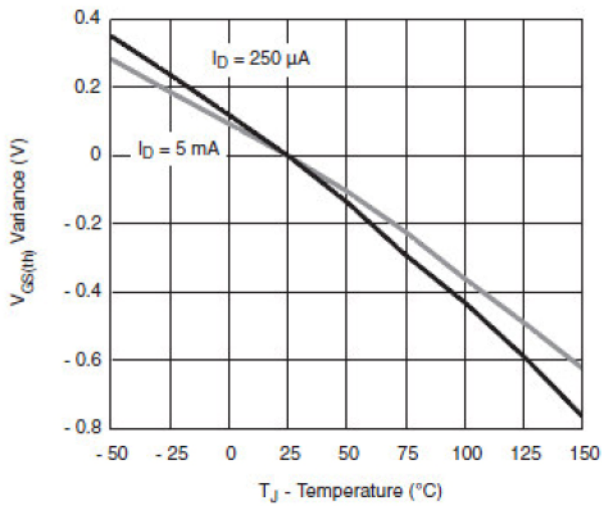
### Source-Drain Diode Forward Voltage



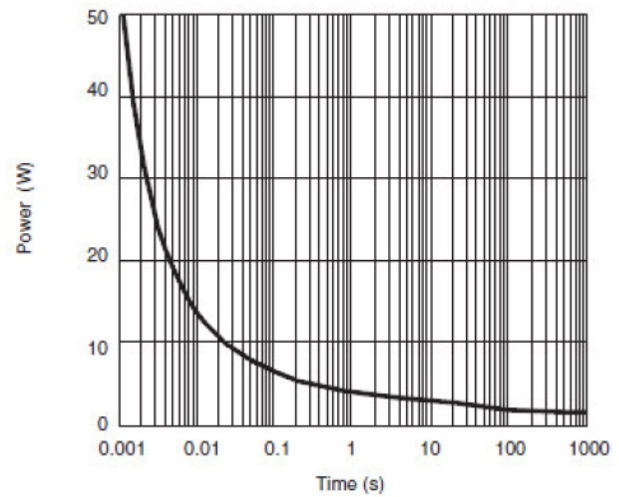
### On-Resistance vs. Gate-to-Source Voltage



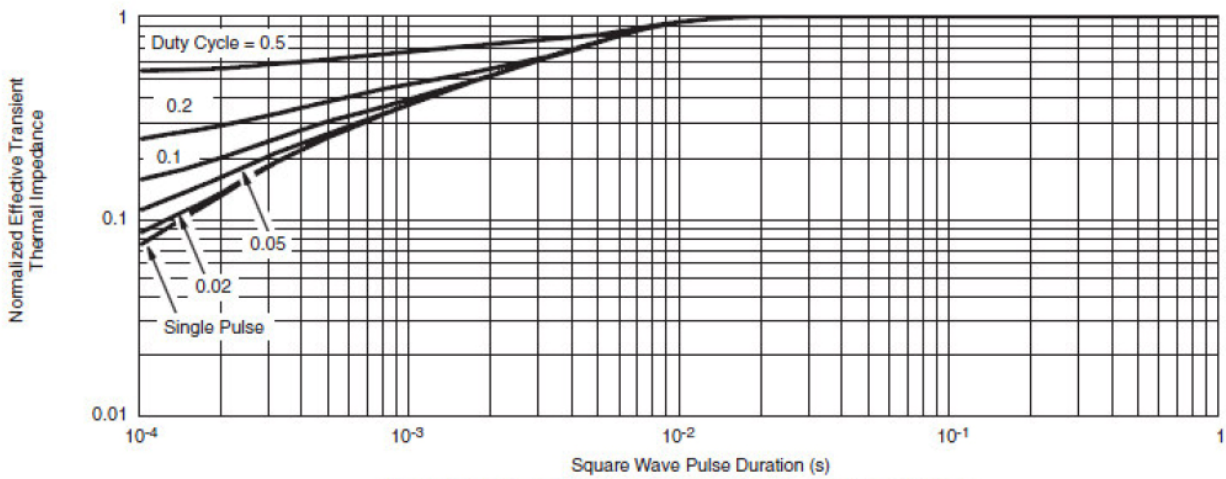
### Threshold Voltage



### Single Pulse Power, Junction-to-Ambient

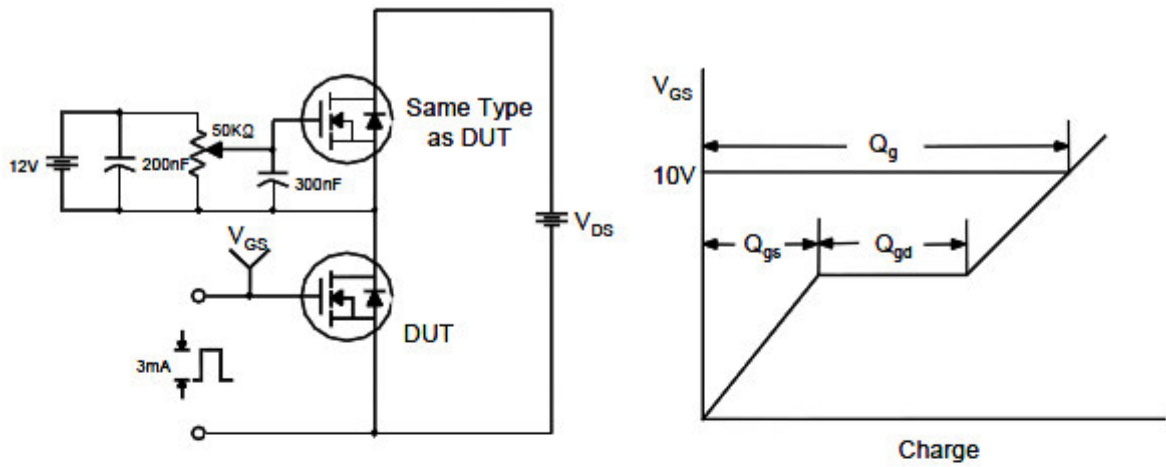


### Normalized Thermal Transient Impedance, Junction-to-Case

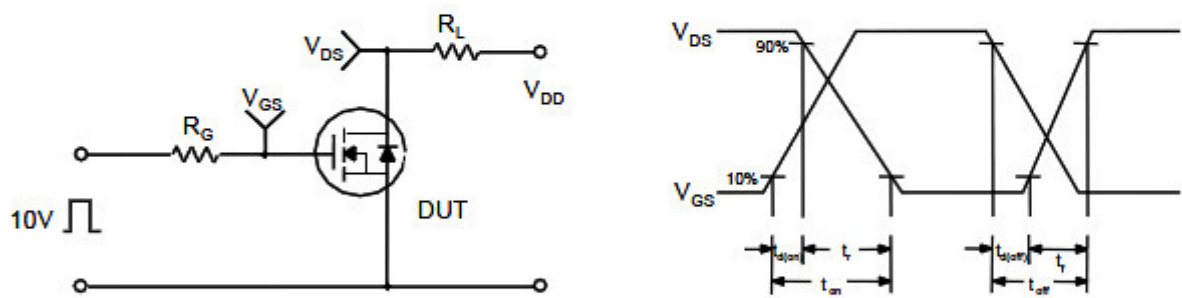


## Typical Characteristics

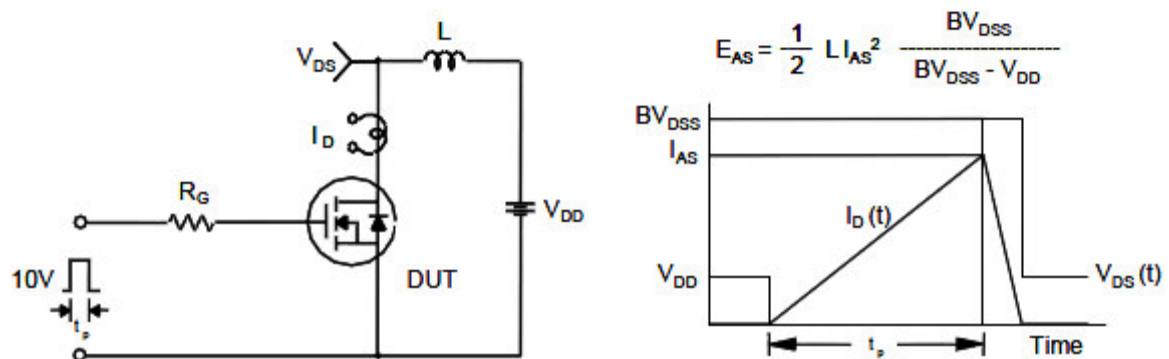
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

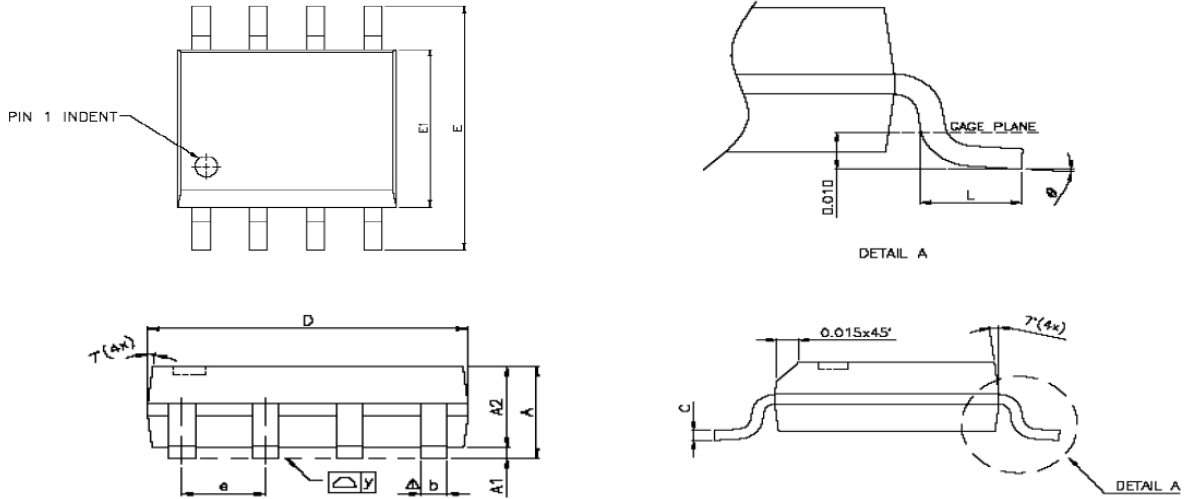


Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOP-8



### Dimensions





Symbol	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
<b>A</b>	1.47	1.60	1.73	0.058	0.063	0.068
<b>A1</b>	0.10	-	0.25	0.004	-	0.010
<b>A2</b>	-	1.45	-	-	0.057	-
<b>b</b>	0.33	0.41	0.51	0.013	0.016	0.020
<b>C</b>	0.19	0.20	0.25	0.0075	0.008	0.0098
<b>D</b>	4.80	4.85	4.95	0.189	0.191	0.195
<b>E</b>	5.80	6.00	6.20	0.228	0.236	0.244
<b>E1</b>	3.80	3.90	4.00	0.150	0.154	0.157
<b>e</b>	-	1.27	-	-	0.050	-
<b>L</b>	0.38	0.71	1.27	0.015	0.028	0.050
$\Delta y$	-	-	0.076	-	-	0.003
$\theta$	0°	-	8°	0°	-	8°





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