



# SPN4392

## N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN4392 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

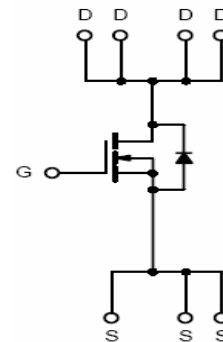
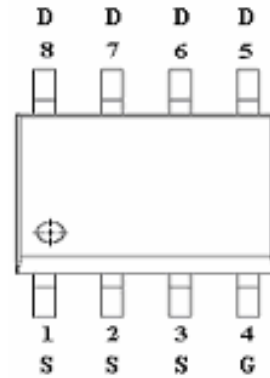
### FEATURES

- ◆ 30V/13A,  $R_{DS(ON)} = 8m\Omega @ V_{GS} = 10V$
- ◆ 30V/10A,  $R_{DS(ON)} = 12m\Omega @ V_{GS} = 4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP – 8P package design

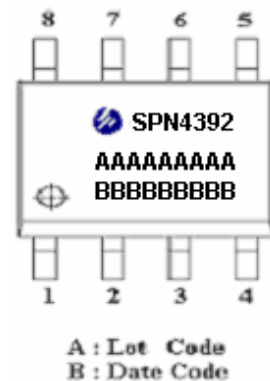
### APPLICATIONS

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

### PIN CONFIGURATION(SOP – 8P)



### PART MARKING





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### PIN DESCRIPTION

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPN4392S8RG	SOP- 8P	SPN4392
SPN4392S8RGB	SOP- 8P	SPN4392
SPN4392S8TG	SOP- 8P	SPN4392

※ SPN4392S8RG : 13" Tape Reel ; Pb – Free

※ SPN4392S8RG : 13" Tape Reel ; Pb – Free; Halogen Free

※ SPN4392S8TG : Tube ; Pb – Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V <sub>DSS</sub>	30	V
Gate –Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	TA=25°C	13
		TA=70°C	10
Pulsed Drain Current	I <sub>DM</sub>	50	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	5.6	A
Power Dissipation	P <sub>D</sub>	TA=25°C	2.5
		TA=70°C	1.6
Operating Junction Temperature	T <sub>J</sub>	-55/150	°C
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	80	°C/W



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### ELECTRICAL CHARACTERISTICS

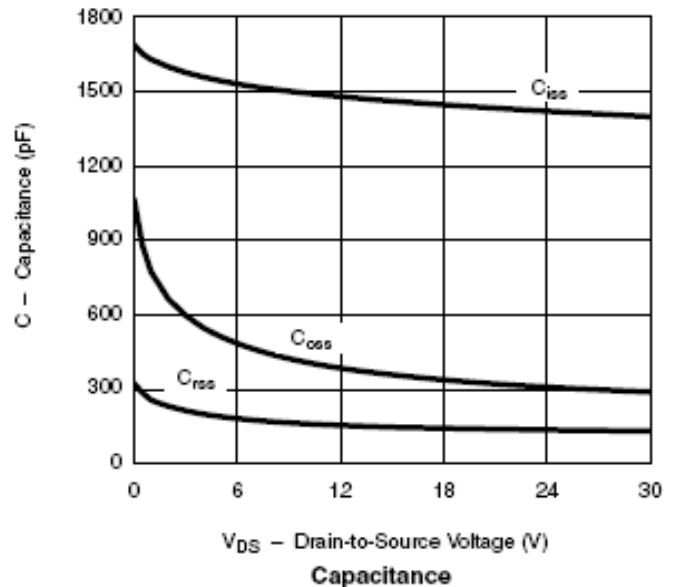
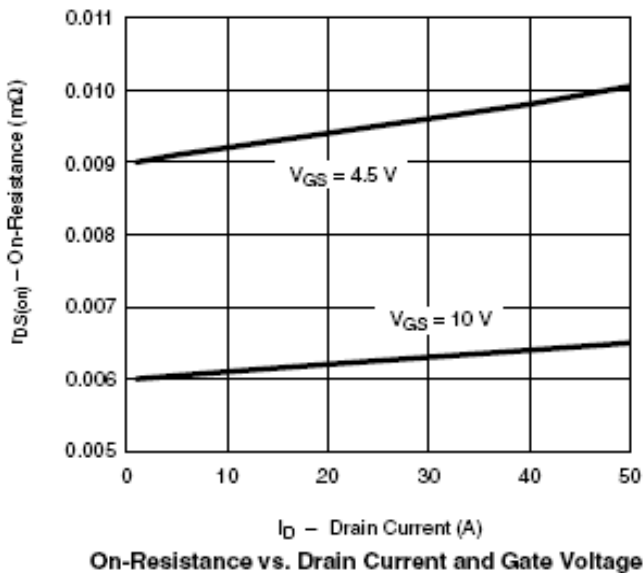
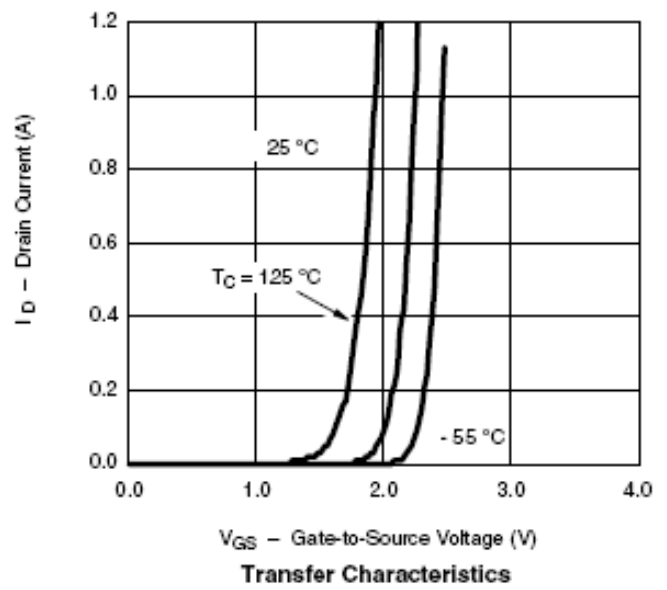
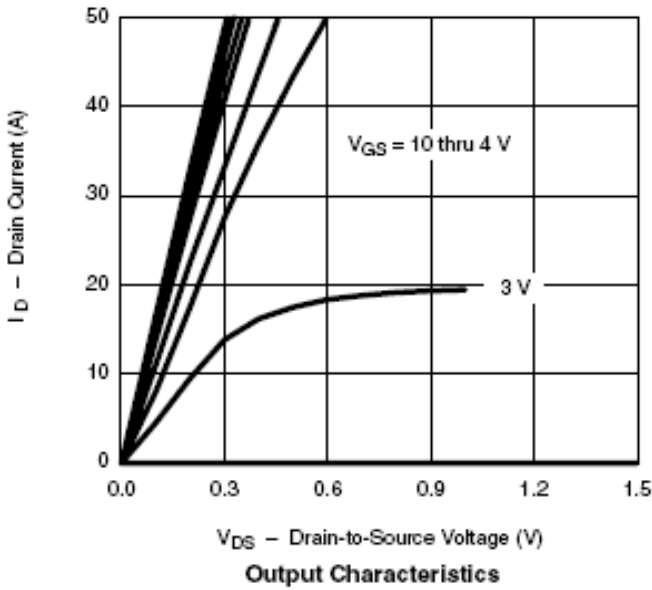
( $T_A=25^{\circ}\text{C}$  Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{DS} = 250\mu A$	1.0		2.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	uA
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 125^{\circ}\text{C}$			100	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 13A$		0.006	0.008	$\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		0.009	0.012	
Forward Transconductance	$g_{fs}$	$V_{DS} = 15V, I_D = 20A$	10			S
Diode Forward Voltage	$V_{SD}$	$I_F = 13A, V_{GS} = 0V$		1.0	1.5	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15V, V_{GS} = 5V, I_D = 13A$		12	20	nC
Gate-Source Charge	$Q_{gs}$			4		
Gate-Drain Charge	$Q_{gd}$			5		
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 25V, F = 1\text{MHz}$		1500		pF
Output Capacitance	$C_{oss}$			320		
Reverse Transfer Capacitance	$C_{rss}$			200		
Turn-On Time	$t_{d(on)}$	$(V_{DD} = 15V, I_D = 13A, V_{GS} = 10V, R_G = 2.5\Omega)$		8	12	ns
	$t_r$			10	15	
Turn-Off Time	$t_{d(off)}$			18	30	
	$t_f$			6	9	



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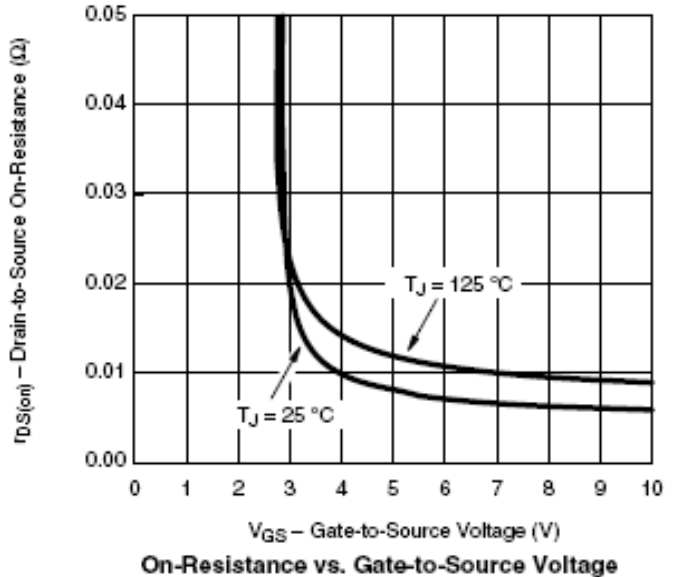
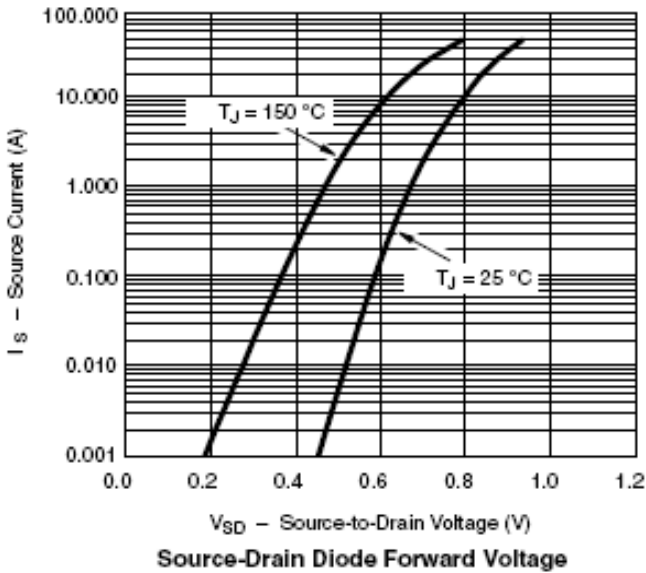
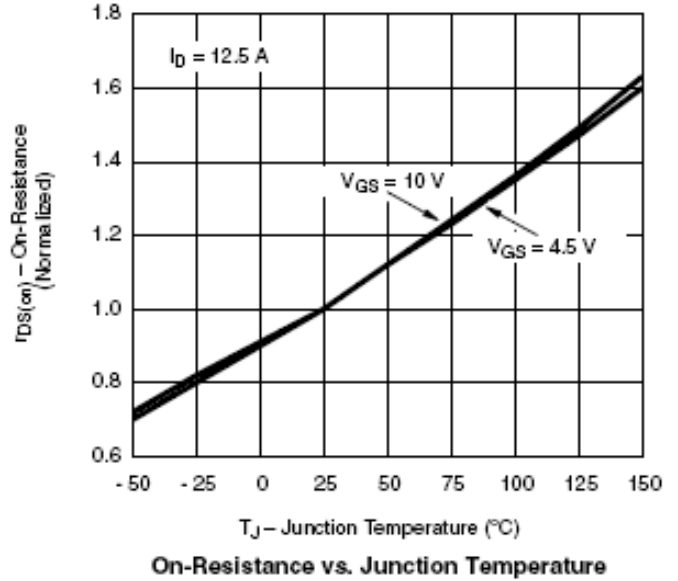
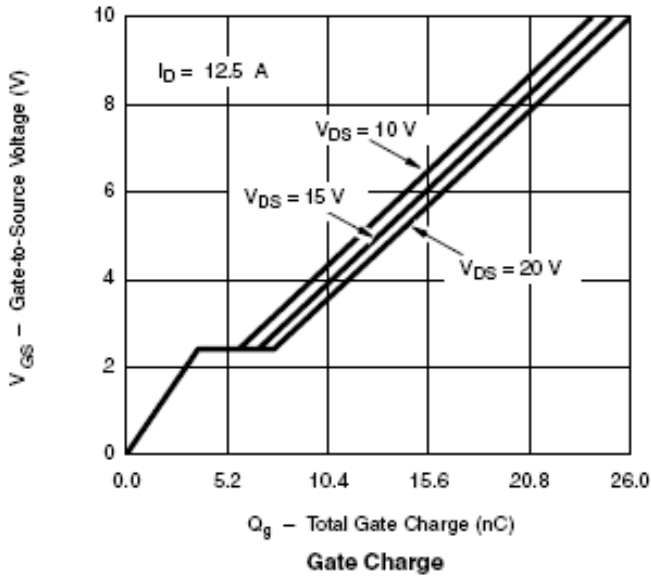
## TYPICAL CHARACTERISTICS





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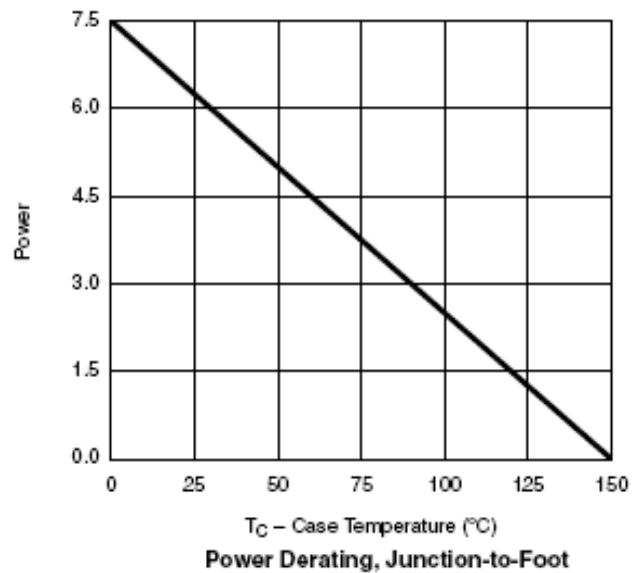
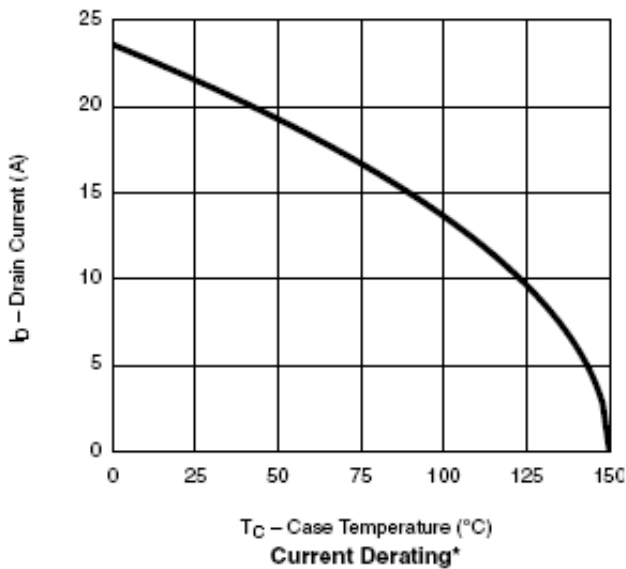
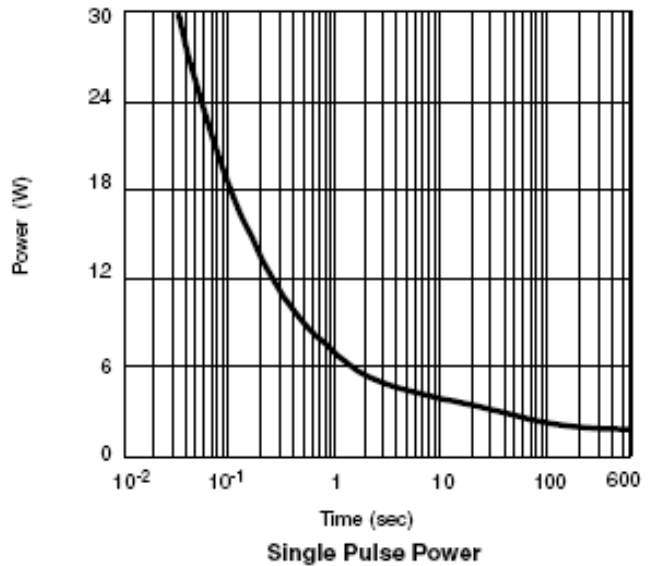
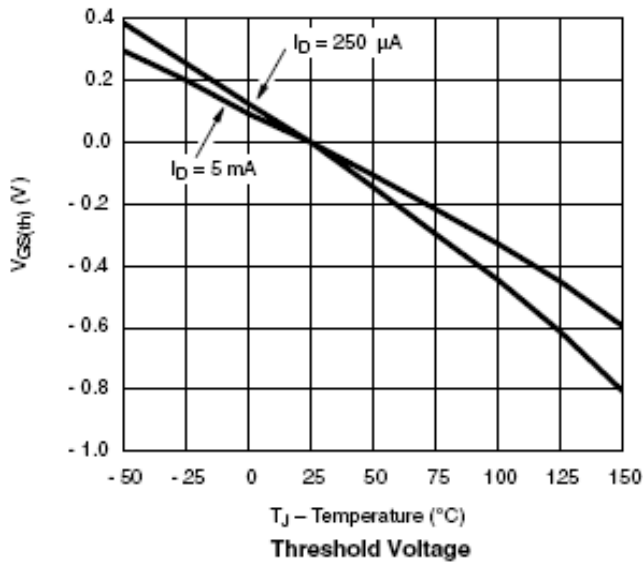
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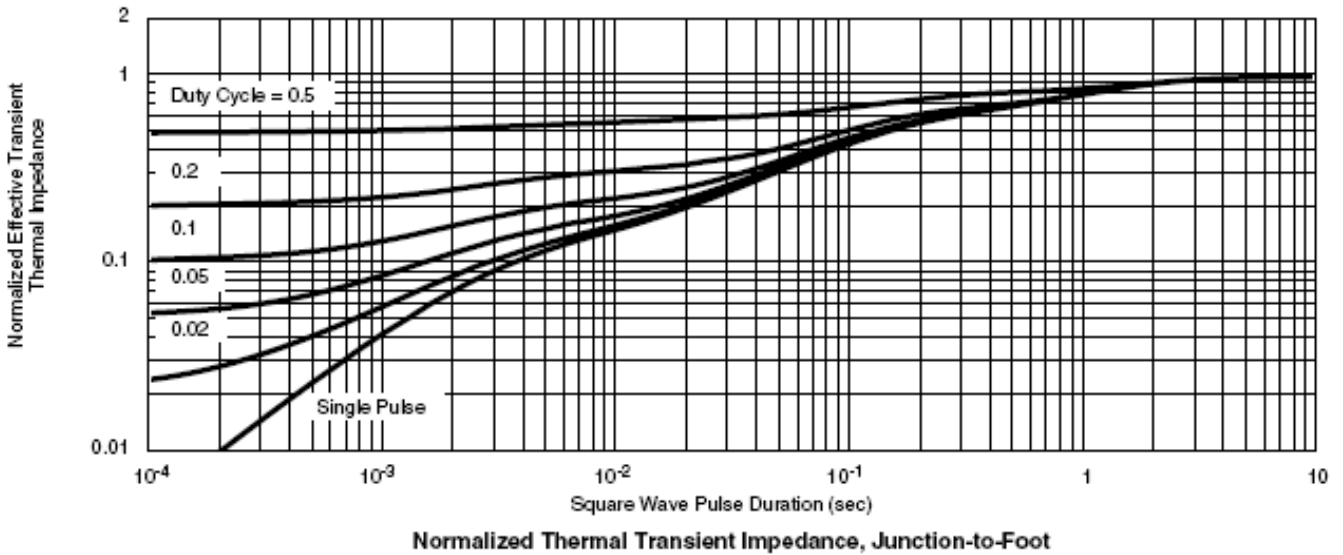
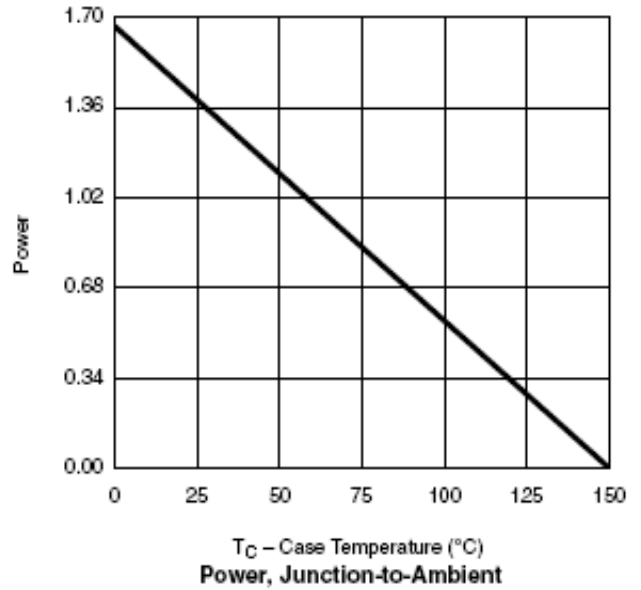
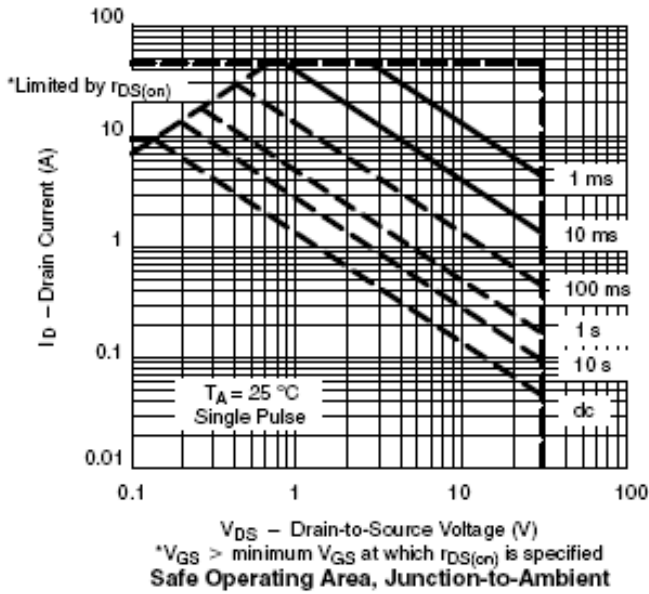




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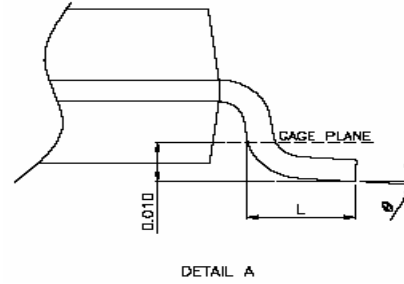
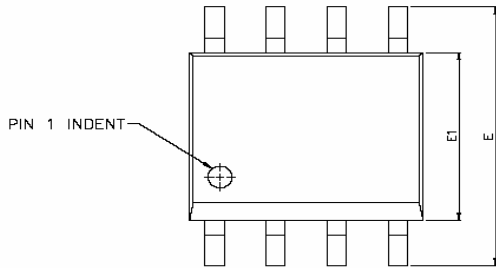
### TYPICAL CHARACTERISTICS





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## SOP-8 PACKAGE OUTLINE

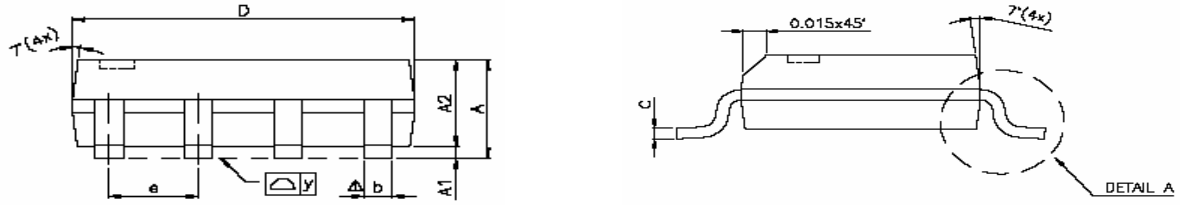






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SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
$\Delta$ y	—	—	0.076	—	—	0.003
$\varnothing$	0°	—	8°	0°	—	8°