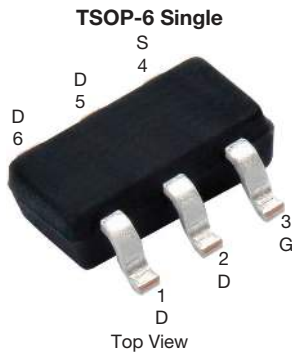


## P-Channel 2.5 V (G-S) MOSFET



### FEATURES

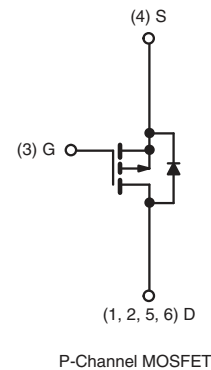
- TrenchFET® power MOSFET
- 100 % R<sub>g</sub> tested
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
Available

Marking Code: 3B

PRODUCT SUMMARY	
V <sub>DS</sub> (V)	-20
R <sub>DS(on)</sub> max. (Ω) at V <sub>GS</sub> = -4.5 V	0.060
R <sub>DS(on)</sub> max. (Ω) at V <sub>GS</sub> = -2.7 V	0.090
R <sub>DS(on)</sub> max. (Ω) at V <sub>GS</sub> = -2.5 V	0.100
Q <sub>g</sub> typ. (nC)	6
I <sub>D</sub> (A) <sup>a</sup>	-4.7
Configuration	Single



ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free	Si3443BDV-T1-E3
Lead (Pb)-free and halogen-free	Si3443BDV-T1-GE3

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25 °C, unless otherwise noted)				
PARAMETER		SYMBOL	LIMIT	UNIT
Drain-source voltage		V <sub>DS</sub>	-20	V
Gate-source voltage		V <sub>GS</sub>	± 12	
Continuous drain current (T <sub>J</sub> = 150 °C) <sup>a</sup>	T <sub>A</sub> = 25 °C	I <sub>D</sub>	-3.6	A
	T <sub>A</sub> = 70 °C		-2.8	
Pulsed drain current		I <sub>DM</sub>	-20	
Continuous source current (diode conduction) <sup>a</sup>		I <sub>S</sub>	-0.9	
Maximum power dissipation <sup>a</sup>	T <sub>A</sub> = 25 °C	P <sub>D</sub>	1.1	W
	T <sub>A</sub> = 70 °C		0.7	
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

THERMAL RESISTANCE RATINGS					
PARAMETER		SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient <sup>a</sup>	t ≤ 5 s	R <sub>thJA</sub>	50	62.5	°C/W
	Steady state		90	110	
Maximum junction-to-foot (drain)	Steady state	R <sub>thJF</sub>	30	36	

### Note

a. Surface mounted on FR4 board, t ≤ 5 s



SPECIFICATIONS (T <sub>J</sub> = 25 °C, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
<b>Static</b>						
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-0.6	-	-1.4	V
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 12 V	-	-	± 100	nA
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0 V	-	-	-1	μA
		V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 70 °C	-	-	-5	
On-state drain current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -4.5 V	-15	-	-	A
Drain-source on-state resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.7 A	-	0.048	0.060	Ω
		V <sub>GS</sub> = -2.7 V, I <sub>D</sub> = -3.8 A	-	0.070	0.090	
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -1 A	-	0.080	0.100	
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -4.7 A	-	11	-	S
Diode forward voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = -1.7 A, V <sub>GS</sub> = 0 V	-	-0.8	-1.2	V
<b>Dynamic <sup>b</sup></b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.7 A	-	6	9	nC
Gate-source charge	Q <sub>gs</sub>		-	1.4	-	
Gate-drain charge	Q <sub>gd</sub>		-	1.9	-	
Gate resistance	R <sub>g</sub>	f = 1 MHz	5	9.5	16.2	Ω
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ -1.0 A, V <sub>GEN</sub> = -4.5 V, R <sub>g</sub> = 6 Ω	-	22	35	ns
Rise time	t <sub>r</sub>		-	35	55	
Turn-off delay time	t <sub>d(off)</sub>		-	45	70	
Fall time	t <sub>f</sub>		-	25	40	
Source-drain reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> = -1.7 A, dI/dt = 100 A/μs	-	25	50	

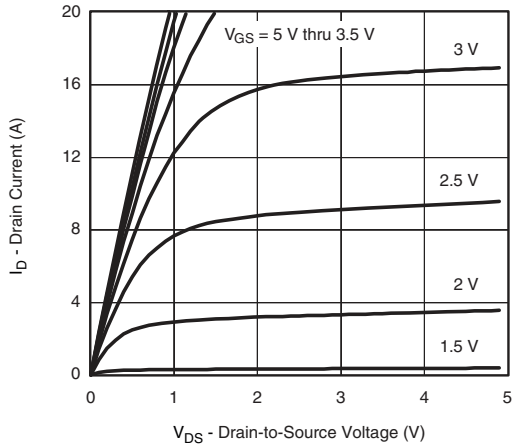
**Notes**

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %  
b. Guaranteed by design, not subject to production testing

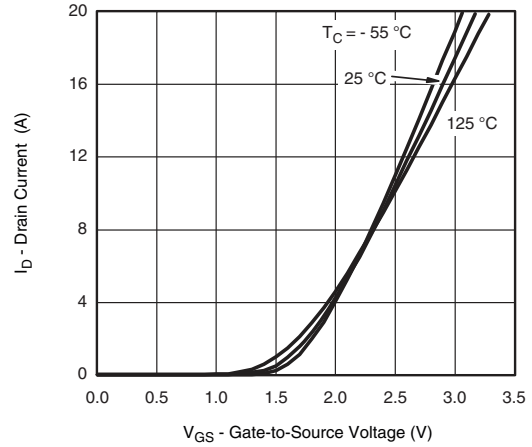
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



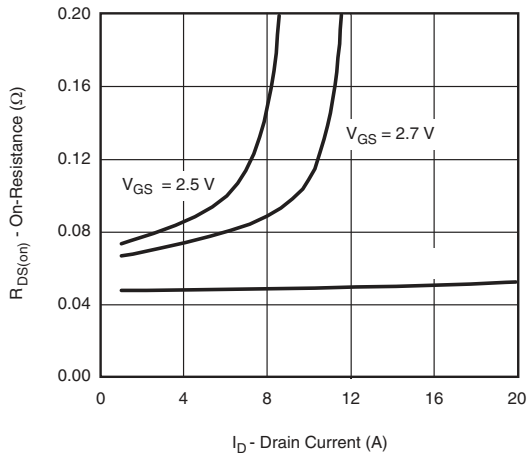
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



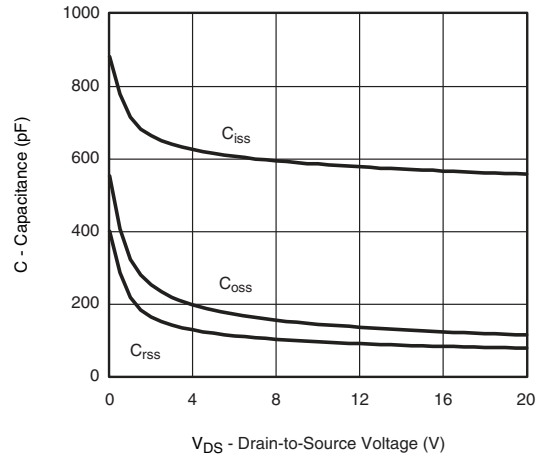
Output Characteristics



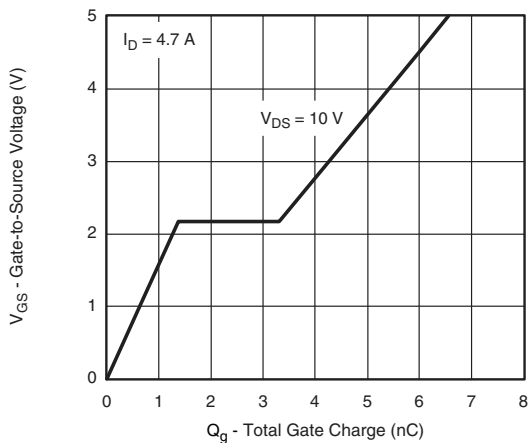
Transfer Characteristics



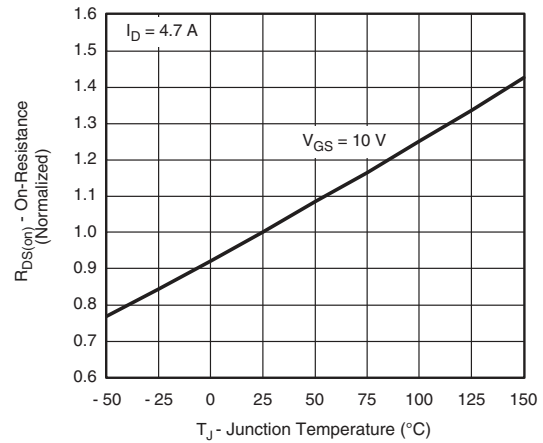
On-Resistance vs. Drain Current



Capacitance



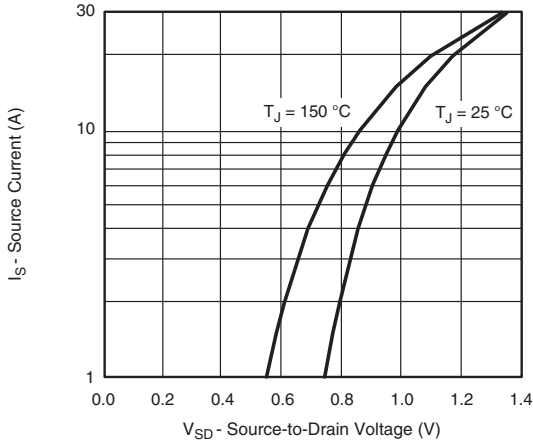
Gate Charge



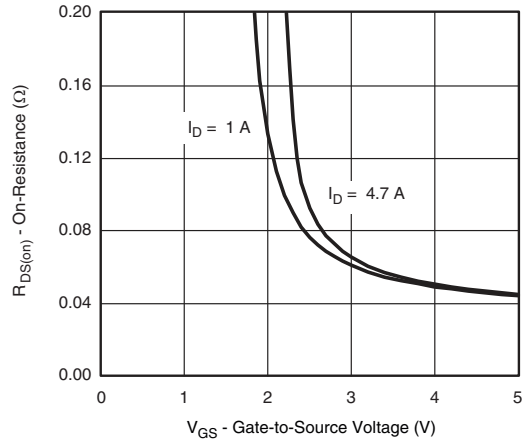
On-Resistance vs. Junction Temperature



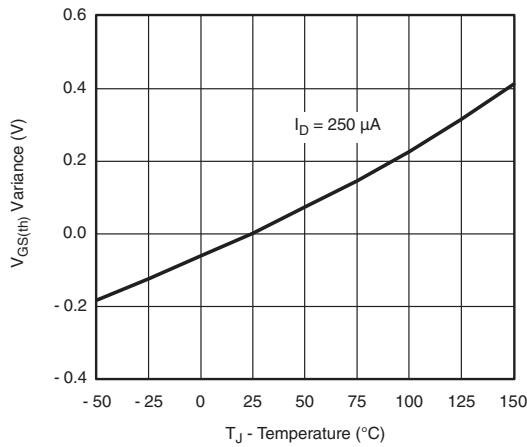
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



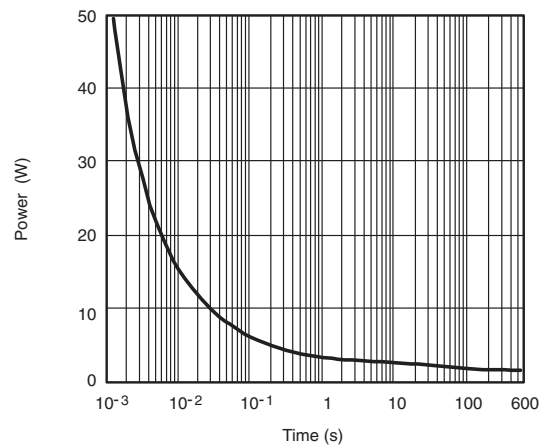
Source-Drain Diode Forward Voltage



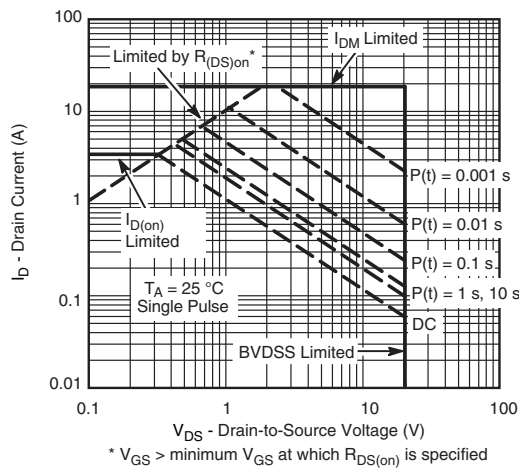
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



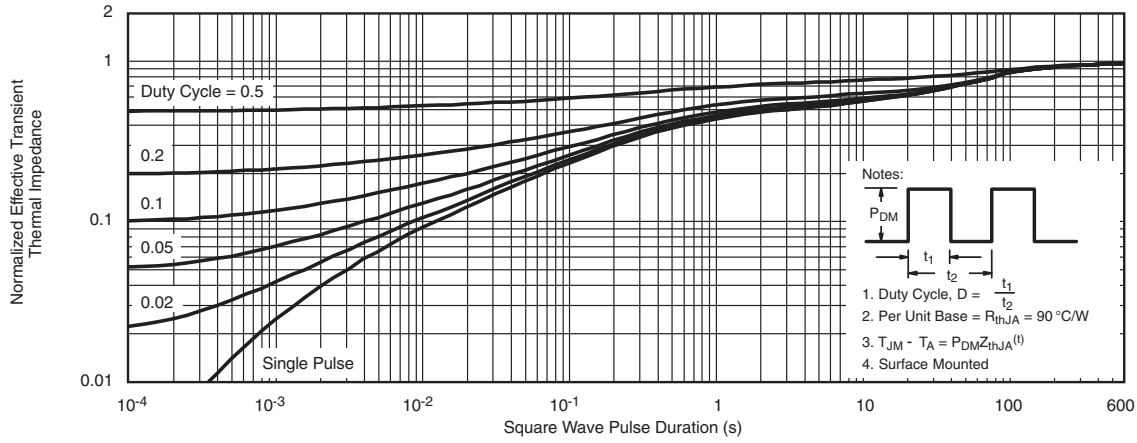
Single Pulse Power



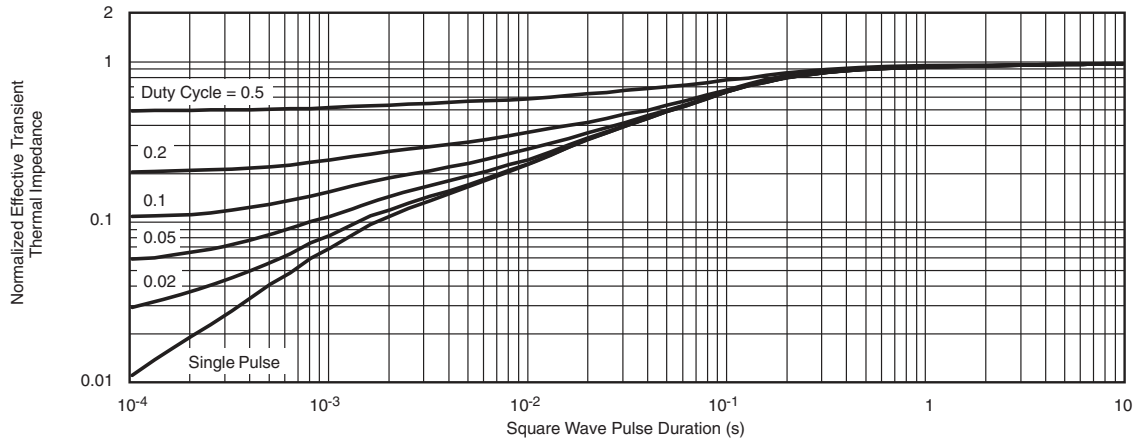
Safe Operating Area



**TYPICAL CHARACTERISTICS** (25 °C, unless otherwise noted)



**Normalized Thermal Transient Impedance, Junction-to-Ambient**

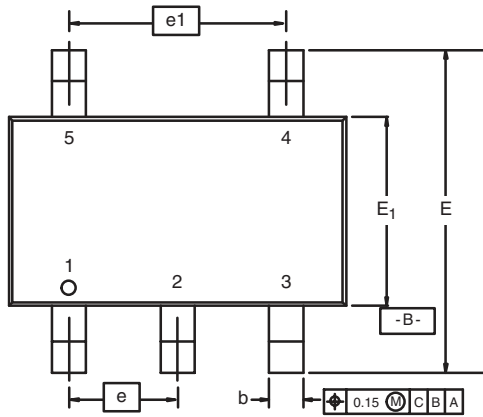


**Normalized Thermal Transient Impedance, Junction-to-Foot**

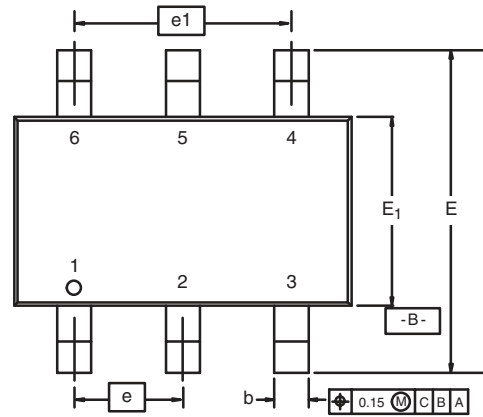
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## TSOP: 5/6-LEAD

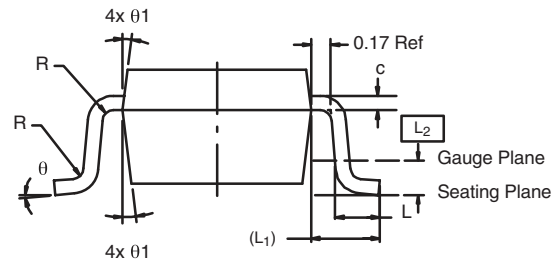
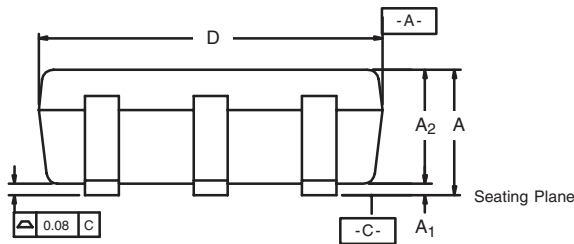
JEDEC Part Number: MO-193C



**5-LEAD TSOP**

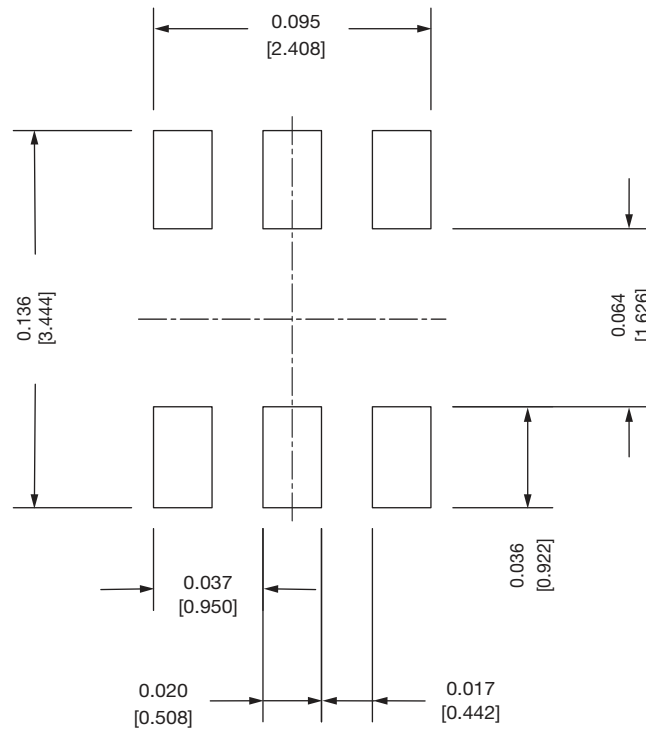
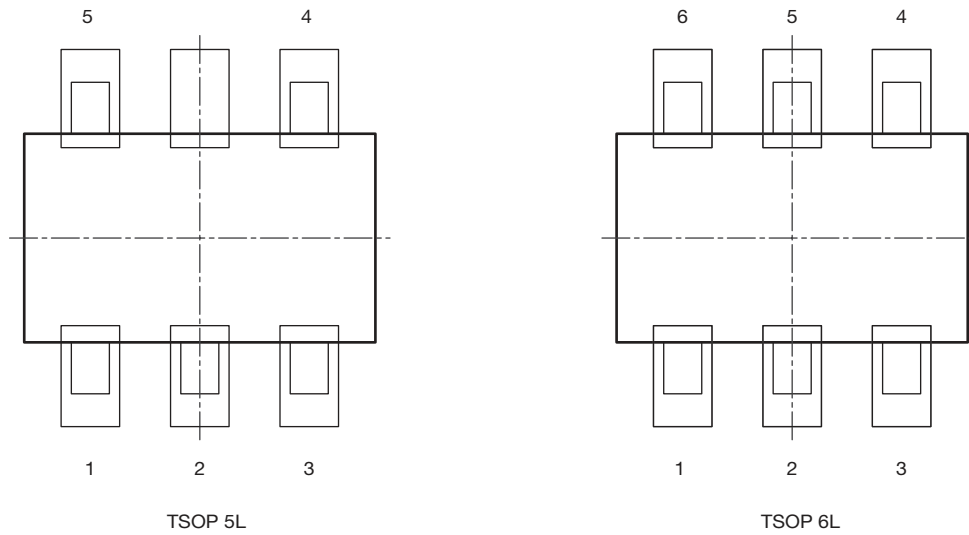


**6-LEAD TSOP**



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
<b>A</b>	0.91	-	1.10	0.036	-	0.043
<b>A<sub>1</sub></b>	0.01	-	0.10	0.0004	-	0.004
<b>A<sub>2</sub></b>	0.90	-	1.00	0.035	0.038	0.039
<b>b</b>	0.30	0.32	0.45	0.012	0.013	0.018
<b>c</b>	0.10	0.15	0.20	0.004	0.006	0.008
<b>D</b>	2.95	3.05	3.10	0.116	0.120	0.122
<b>E</b>	2.70	2.85	2.98	0.106	0.112	0.117
<b>E<sub>1</sub></b>	1.55	1.65	1.70	0.061	0.065	0.067
<b>e</b>	0.95 BSC			0.0374 BSC		
<b>e<sub>1</sub></b>	1.80	1.90	2.00	0.071	0.075	0.079
<b>L</b>	0.32	-	0.50	0.012	-	0.020
<b>L<sub>1</sub></b>	0.60 Ref			0.024 Ref		
<b>L<sub>2</sub></b>	0.25 BSC			0.010 BSC		
<b>R</b>	0.10	-	-	0.004	-	-
<b>θ</b>	0°	4°	8°	0°	4°	8°
<b>θ<sub>1</sub></b>	7° Nom			7° Nom		
ECN: C-06593-Rev. I, 18-Dec-06						
DWG: 5540						

## Recommended Land Pattern For TSOP-5L / TSOP-6L



**Note**

- All dimensions are in inches (millimeter)

ECN: C22-0860-Rev. B, 24-Oct-2022  
 DWG: 3010



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