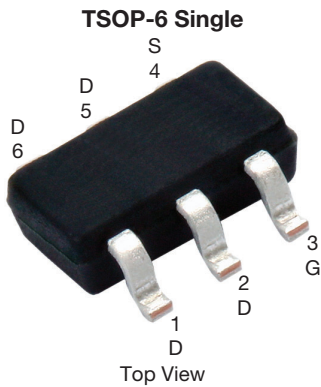


N-Channel 150 V (D-S) MOSFET



FEATURES

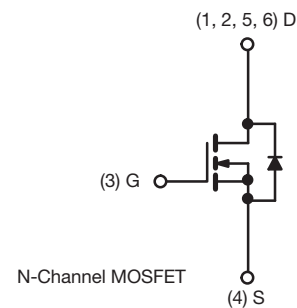
- TrenchFET® power MOSFET
- PWM optimized for fast switching in small footprint
- 100 % R_g tested
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- Primary side switch for low power DC/DC converters

PRODUCT SUMMARY	
V _{DS} (V)	150
R _{DS(on)} max. (Ω) at V _{GS} = 10 V	0.375
R _{DS(on)} max. (Ω) at V _{GS} = 6 V	0.400
Q _g typ. (nC)	5.4
I _D (A)	1.5
Configuration	Single



ORDERING INFORMATION	
Package	TSOP-6
Lead (Pb)-free	Si3440DV-T1-E3
Lead (Pb)-free and halogen-free	Si3440DV-T1-GE3

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V _{DS}	150	V
Gate-source voltage	V _{GS}	± 20	
Continuous drain current (T _J = 175 °C) ^a	T _A = 25 °C	I _D	1.2
	T _A = 85 °C		0.8
Pulsed drain current	I _{DM}	6	A
Single avalanche current	I _{AS}	4	
Single avalanche energy (duty cycle ≤ 1 %)	E _{AS}	0.8	
Continuous source current (diode conduction) ^a	I _S	1	A
Maximum power dissipation ^a	T _A = 25 °C	P _D	1.14
	T _A = 85 °C		0.59
Operating junction and storage temperature range	T _J , T _{stg}	-55 to +150	°C

THERMAL RESISTANCE RATINGS					
PARAMETER	SYMBOL	TYPICAL	MAXIMUM	UNIT	
Maximum junction-to-ambient ^a	R _{thJA}	t ≤ 5 s	45	62.5	°C/W
		Steady state	90	110	
Maximum junction-to-foot (drain)	R _{thJF}	25	30		

Notes

a. Surface mounted on 1" x 1" FR4 board



SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2	-	4	V
Gate-body leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$	-	-	± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 150\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
		$V_{DS} = 150\text{ V}, V_{GS} = 0\text{ V}, T_J = 85\text{ }^\circ\text{C}$	-	-	5	
On-state drain current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	4	-	-	A
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 1.5\text{ A}$	-	0.310	0.375	Ω
		$V_{GS} = 6\text{ V}, I_D = 1.4\text{ A}$	-	0.330	0.400	
Forward transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 1.5\text{ A}$	-	4.1	-	S
Diode forward voltage ^a	V_{SD}	$I_S = 1.7\text{ A}, V_{GS} = 0\text{ V}$	-	0.8	1.2	V
Dynamic ^b						
Total gate charge	Q_g	$V_{DS} = 75\text{ V}, V_{GS} = 10\text{ V}, I_D = 1.5\text{ A}$	-	5.4	8	nC
Gate-source charge	Q_{gs}		-	1.1	-	
Gate-drain charge	Q_{gd}		-	1.9	-	
Gate resistance	R_g	$f = 1\text{ MHz}$	4	9	15	Ω
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 75\text{ V}, R_L = 75\text{ }\Omega$ $I_D \cong 1\text{ A}, V_{GEN} = 10\text{ V}, R_g = 6\text{ }\Omega$	-	8	15	ns
Rise time	t_r		-	10	15	
Turn-off delay time	$t_{d(off)}$		-	20	30	
Fall time	t_f		-	15	25	
Source-drain reverse recovery time	t_{rr}	$I_F = 1.7\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$	-	40	60	

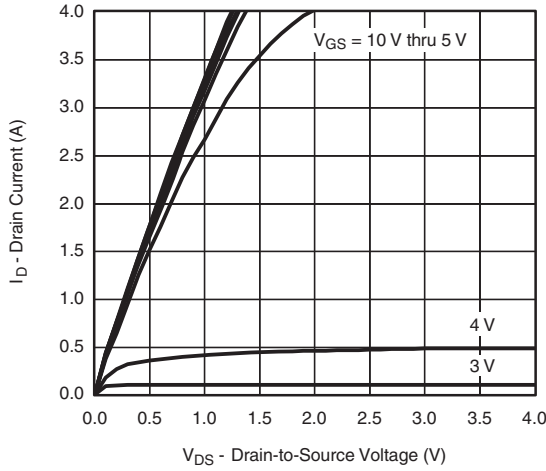
Notes

- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$
b. Guaranteed by design, not subject to production testing

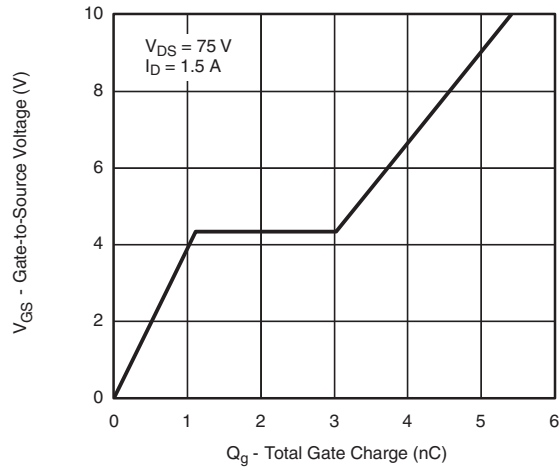
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



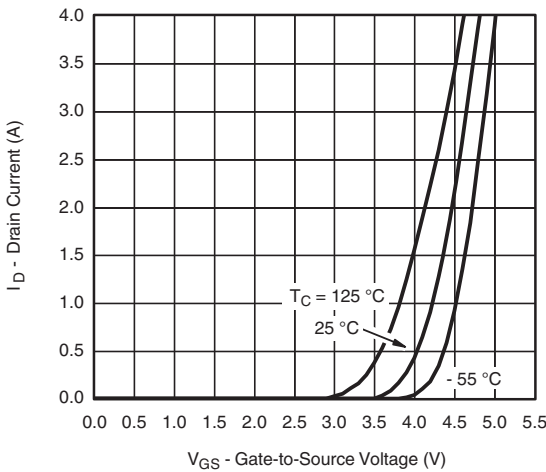
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



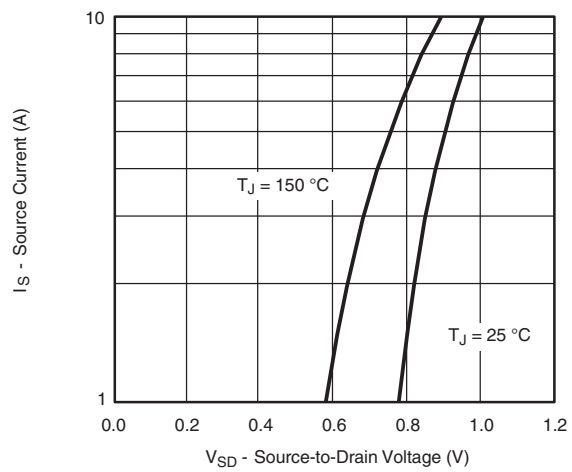
Output Characteristics



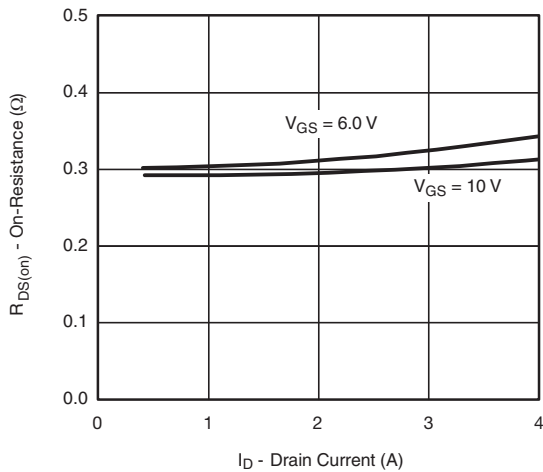
Gate Charge



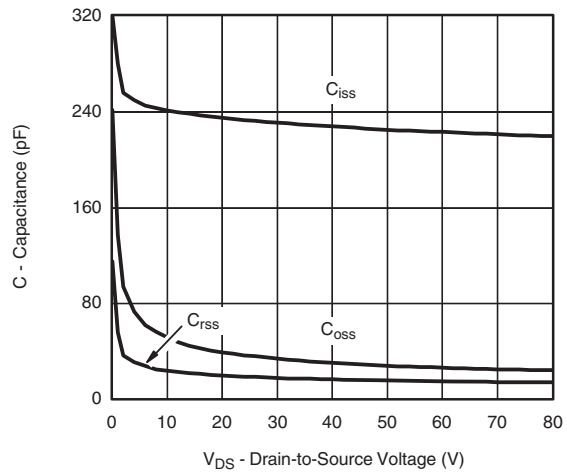
Transfer Characteristics



Source-Drain Diode Forward Voltage



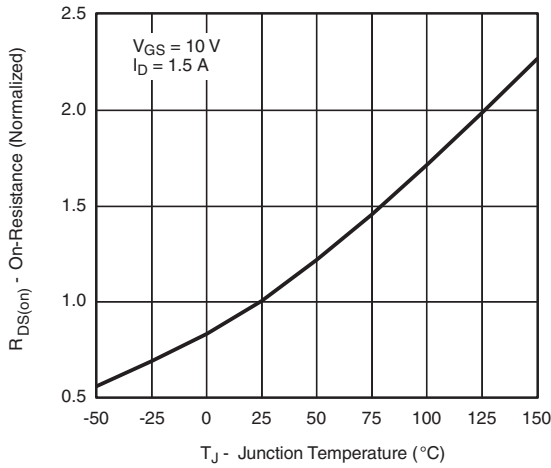
On-Resistance vs. Drain Current



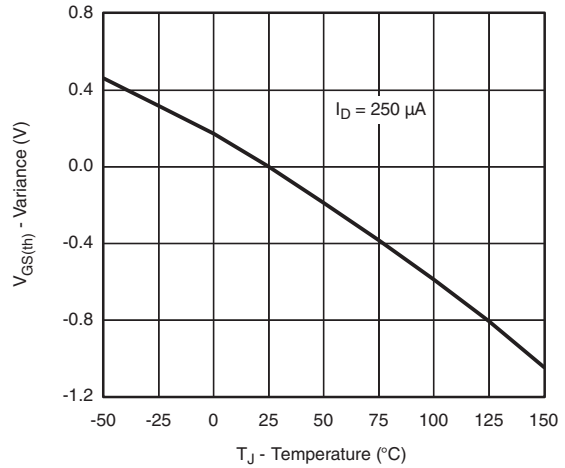
Capacitance



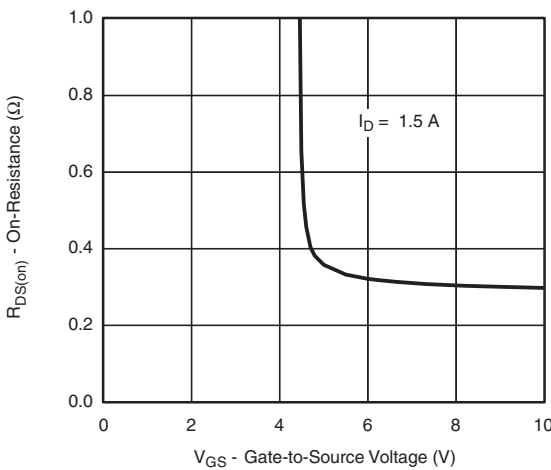
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



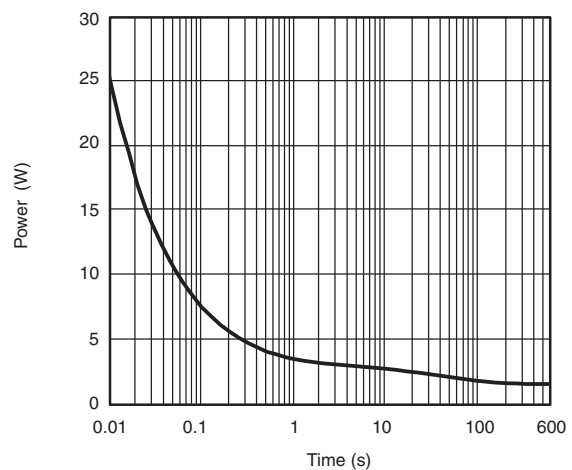
On-Resistance vs. Junction Temperature



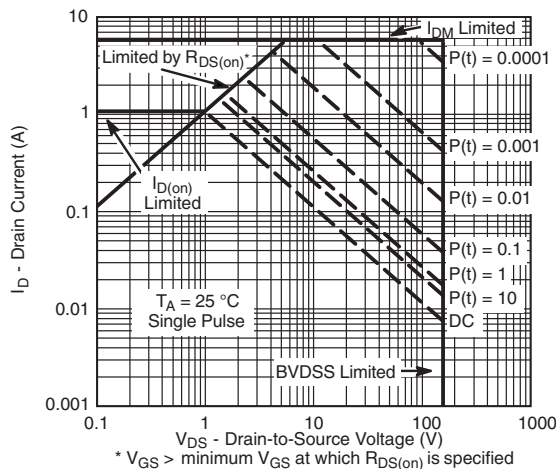
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage



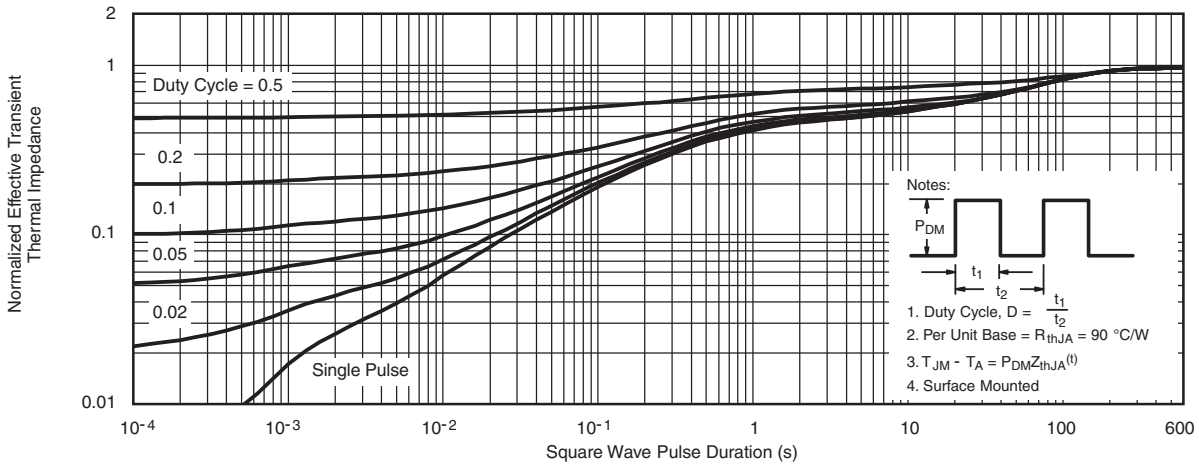
Single Pulse Power



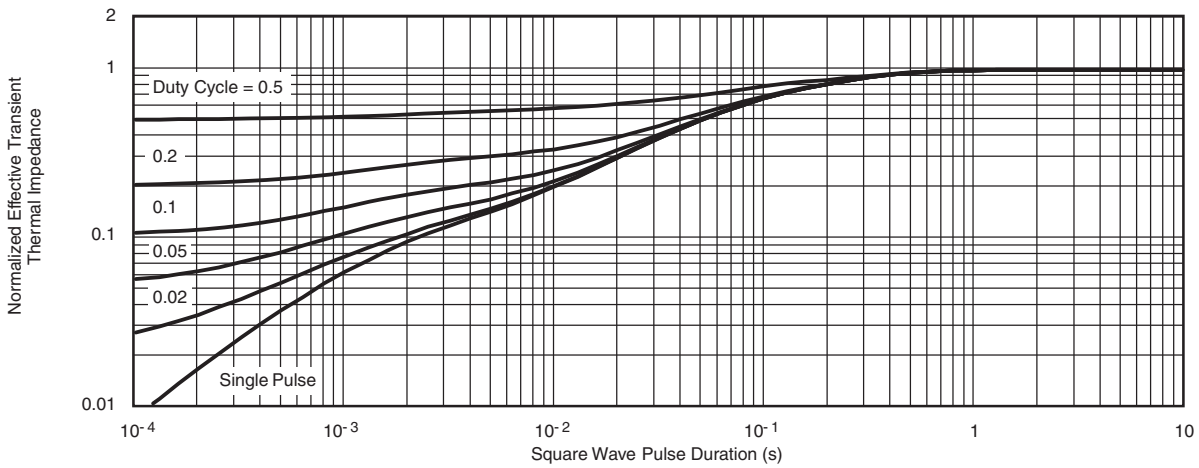
Safe Operating Area



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient

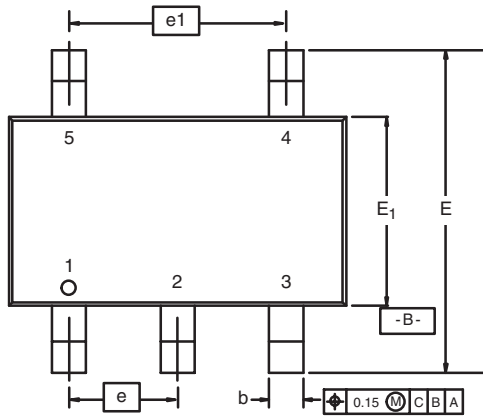


Normalized Thermal Transient Impedance, Junction-to-Foot

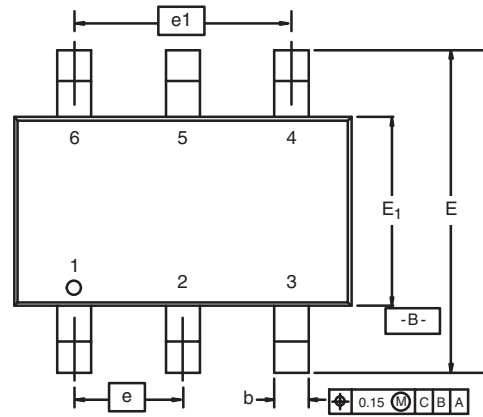
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TSOP: 5/6-LEAD

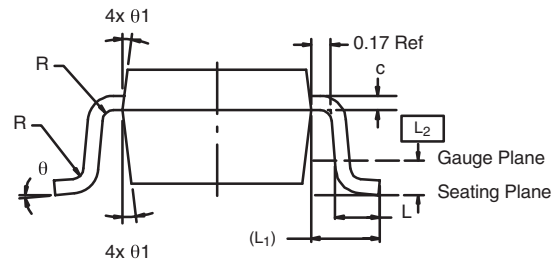
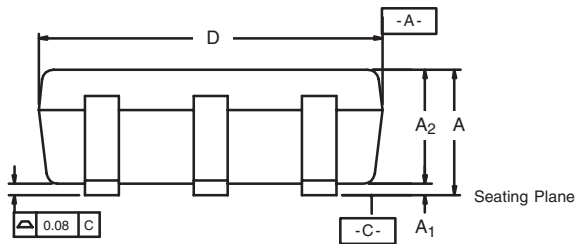
JEDEC Part Number: MO-193C



5-LEAD TSOP



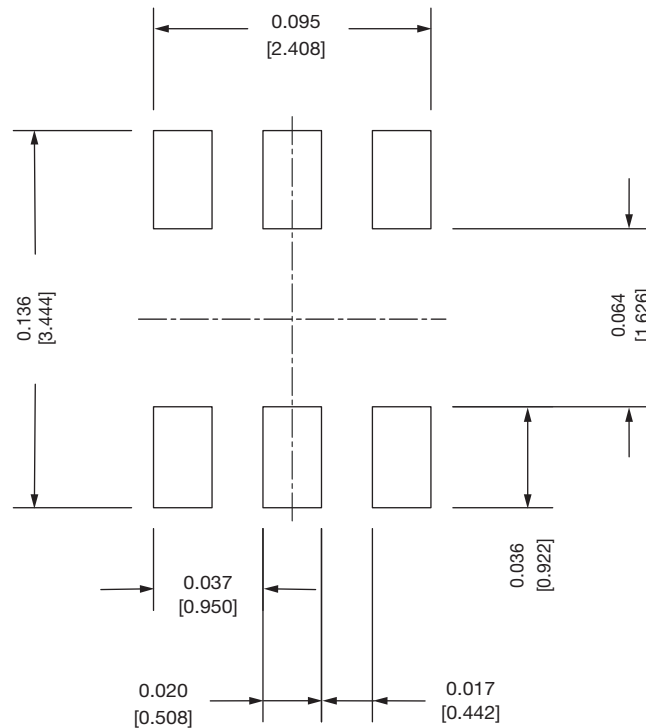
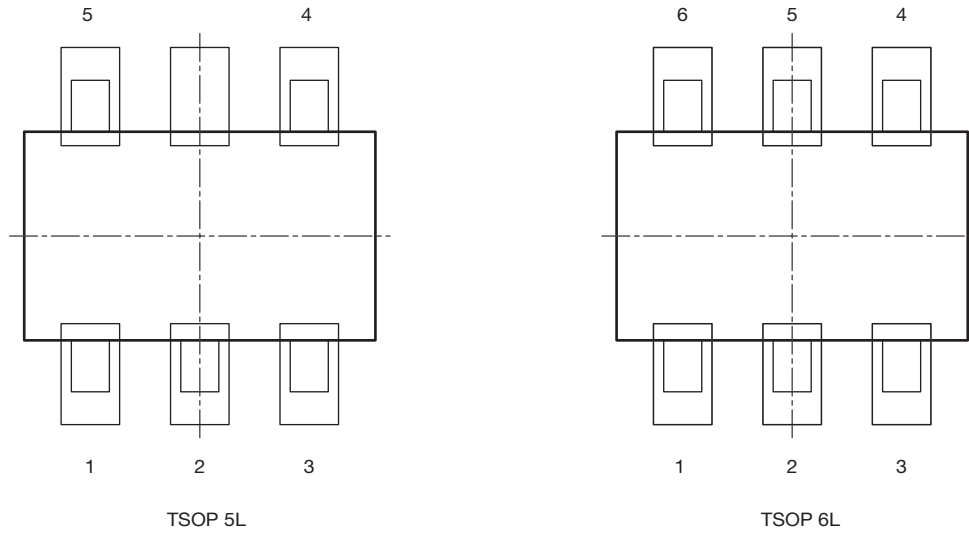
6-LEAD TSOP



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A₁	0.01	-	0.10	0.0004	-	0.004
A₂	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E₁	1.55	1.65	1.70	0.061	0.065	0.067
e	0.95 BSC			0.0374 BSC		
e₁	1.80	1.90	2.00	0.071	0.075	0.079
L	0.32	-	0.50	0.012	-	0.020
L₁	0.60 Ref			0.024 Ref		
L₂	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ₁	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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