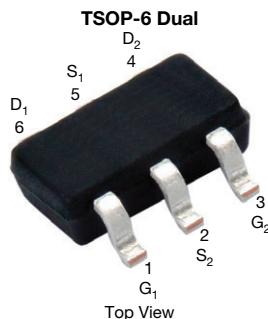


Dual N-Channel 30 V (D-S) MOSFET



Marking code: MH

PRODUCT SUMMARY	
V _{DS} (V)	30
R _{DS(on)} max. (Ω) at V _{GS} = 10 V	0.058
R _{DS(on)} max. (Ω) at V _{GS} = 4.5 V	0.073
Q _g typ. (nC)	1.8
I _D (A) ^a	3.7
Configuration	Dual

FEATURES

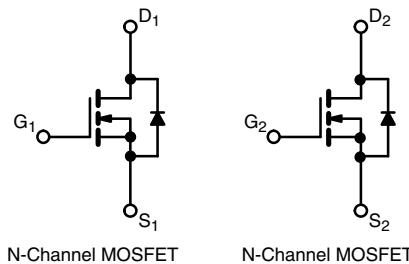
- TrenchFET® power MOSFET
- 100% R_g tested
- Material categorization:
for definitions of compliance please see
www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Load switch for portable applications
- DC/DC converters



ORDERING INFORMATION

Package	TSOP-6
Lead (Pb)-free and halogen-free	SI3932DV-T1-GE3

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-source voltage	V _{DS}	30	V
Gate-source voltage	V _{GS}	± 20	
Continuous drain current (T _J = 150 °C)	T _C = 25 °C	3.7	A
	T _C = 70 °C	3	
	T _A = 25 °C	3.4 b, c	
	T _A = 70 °C	2.7 b, c	
Pulsed drain current	I _{DM}	15	W
Continuous source-drain diode current	T _C = 25 °C	1.17	
	T _A = 25 °C	0.95 b, c	
Maximum power dissipation	T _C = 25 °C	1.4	
	T _C = 70 °C	0.9	
	T _A = 25 °C	1.14 b, c	
	T _A = 70 °C	0.73 b, c	
Operating junction and storage temperature range	T _J , T _{stg}	-55 to +150	°C
Soldering recommendations (peak temperature) ^{d, e}		260	

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum junction-to-ambient b, d	t ≤ 5 s	R _{thJA}	93	°C/W
Maximum junction-to-foot	Steady state	R _{thJF}	75	

Notes

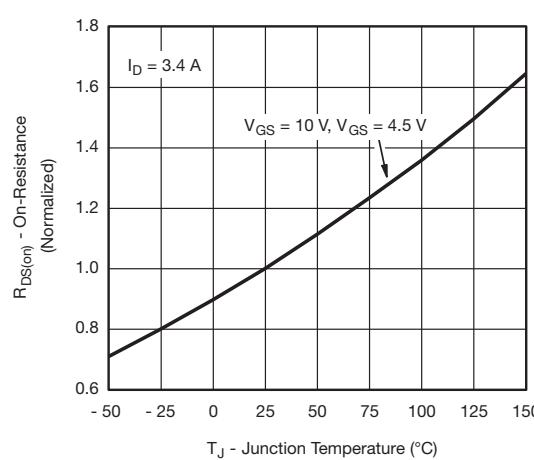
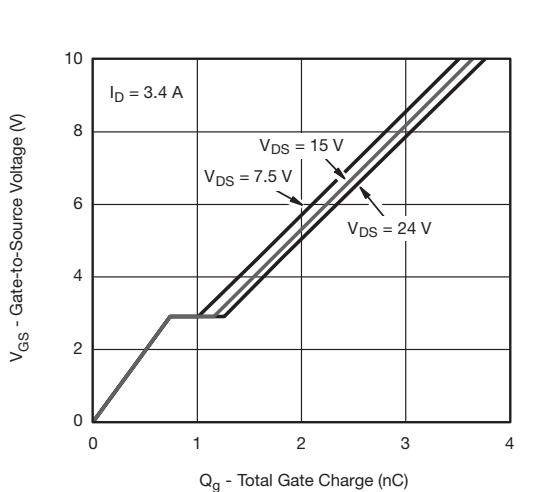
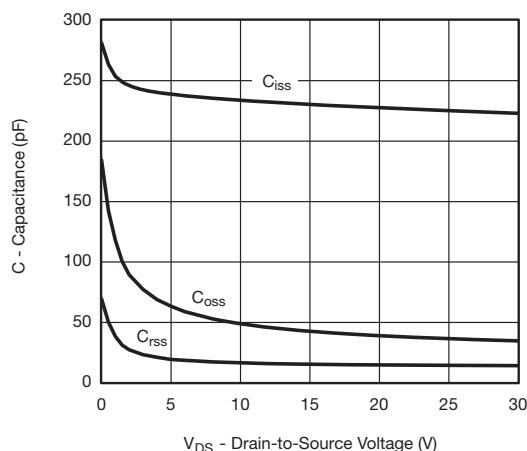
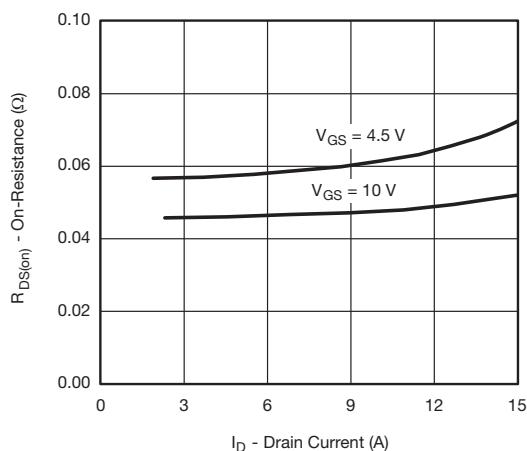
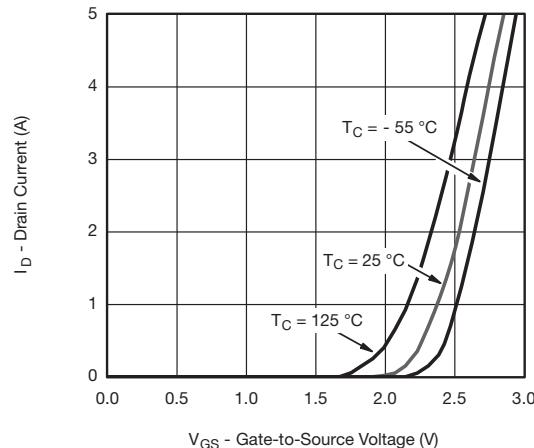
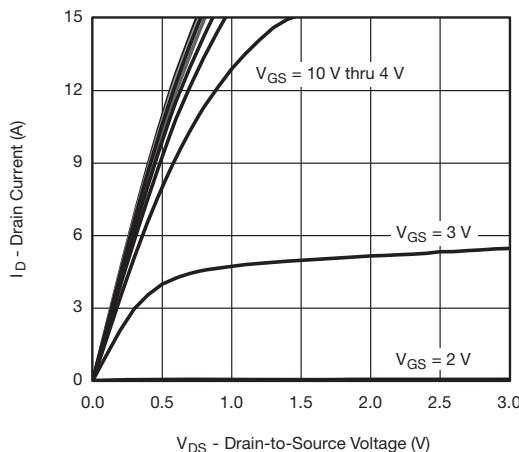
- a. T_C = 25 °C
- b. Surface mounted on 1" x 1" FR4 board
- c. t = 5 s
- d. Maximum under steady state conditions is 150 °C/W

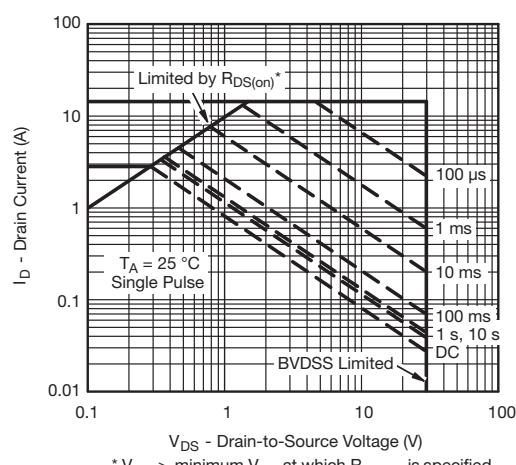
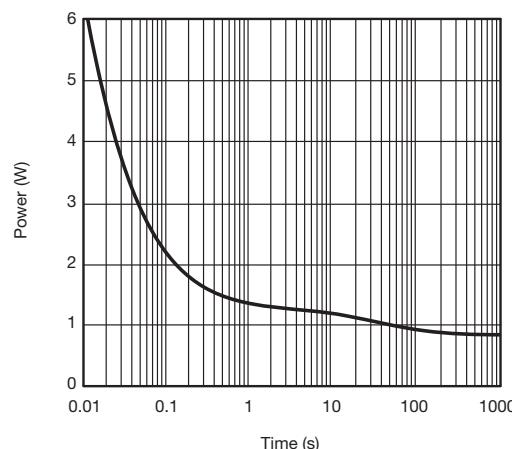
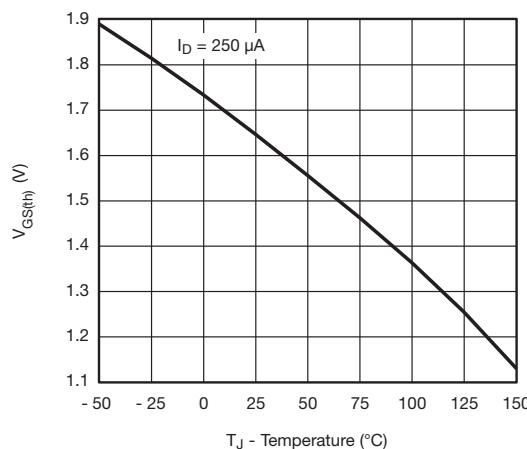
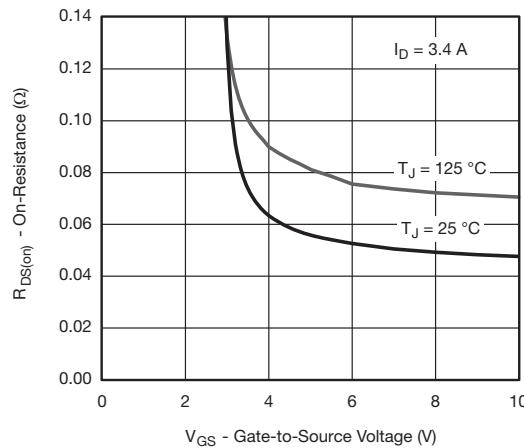
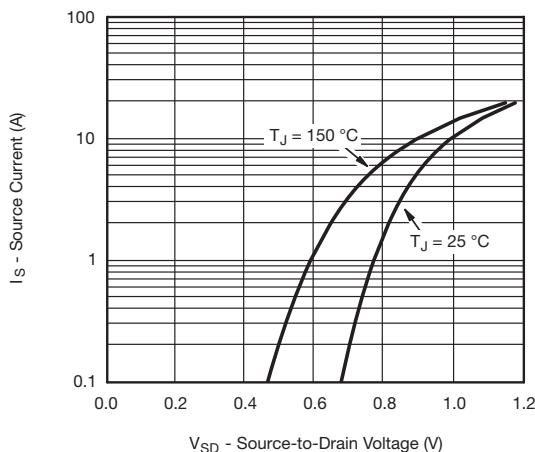
SPECIFICATIONS ($T_J = 25^\circ\text{C}$, unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-source breakdown voltage	V_{DS}	$V_{GS} = 0 \text{ V}, I_D = 250 \mu\text{A}$	30	-	-	V
V_{DS} temperature coefficient	$\Delta V_{DS}/T_J$	$I_D = 250 \mu\text{A}$	-	29	-	mV/ $^\circ\text{C}$
$V_{GS(\text{th})}$ temperature coefficient	$\Delta V_{GS(\text{th})}/T_J$		-	-4	-	
Gate-source threshold voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1.2	-	2.2	V
Gate-source leakage	I_{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$	-	-	± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}$	-	-	1	μA
		$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$	-	-	10	
On-state drain current ^a	$I_{D(\text{on})}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	10	-	-	A
Drain-source on-state resistance ^a	$R_{DS(\text{on})}$	$V_{GS} = 10 \text{ V}, I_D = 3.4 \text{ A}$	-	0.047	0.058	Ω
		$V_{GS} = 4.5 \text{ V}, I_D = 3 \text{ A}$	-	0.058	0.073	
Forward transconductance ^a	g_{fs}	$V_{DS} = 15 \text{ V}, I_D = 3.4 \text{ A}$	-	10	-	S
Dynamic ^b						
Input capacitance	C_{iss}	$V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	-	235	-	pF
Output capacitance	C_{oss}		-	45	-	
Reverse transfer capacitance	C_{rss}		-	16	-	
Total gate charge	Q_g	$V_{DS} = 15 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 3.4 \text{ A}$	-	3.7	6	nC
		$V_{DS} = 15 \text{ V}, V_{GS} = 4.5 \text{ V}, I_D = 3.4 \text{ A}$	-	1.8	3	
Gate-source charge	Q_{gs}		-	0.74	-	
Gate-drain charge	Q_{gd}		-	0.42	-	
Gate resistance	R_g	$f = 1 \text{ MHz}$	1	5	10	Ω
Turn-on delay time	$t_{d(\text{on})}$	$V_{DD} = 15 \text{ V}, R_L = 5.6 \Omega$ $I_D \geq 2.7 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_g = 1 \Omega$	-	10	20	ns
Rise time	t_r		-	15	30	
Turn-off delay time	$t_{d(\text{off})}$		-	10	20	
Fall time	t_f		-	10	20	
Turn-on delay time	$t_{d(\text{on})}$		-	5	10	
Rise time	t_r		-	15	30	
Turn-off delay time	$t_{d(\text{off})}$	$V_{DD} = 15 \text{ V}, R_L = 5.6 \Omega$ $I_D \geq 2.7 \text{ A}, V_{GEN} = 10 \text{ V}, R_g = 1 \Omega$	-	10	20	ns
Fall time	t_f		-	10	20	
Drain-Source Body Diode Characteristics						
Continuous source-drain diode current	I_S	$T_C = 25^\circ\text{C}$	-	-	1.17	A
Pulse diode forward current	I_{SM}		-	-	15	
Body diode voltage	V_{SD}	$I_S = 2.7 \text{ A}, V_{GS} = 0 \text{ V}$	-	0.85	1.2	V
Body diode reverse recovery time	t_{rr}	$I_F = 2.7 \text{ A}, dI/dt = 100 \text{ A}/\mu\text{s},$ $T_J = 25^\circ\text{C}$	-	10	20	ns
Body diode reverse recovery charge	Q_{rr}		-	4	10	
Reverse recovery fall time	t_a		-	6	-	
Reverse recovery rise time	t_b		-	4	-	

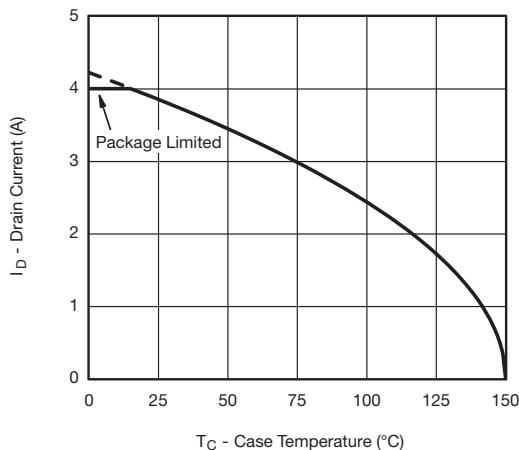
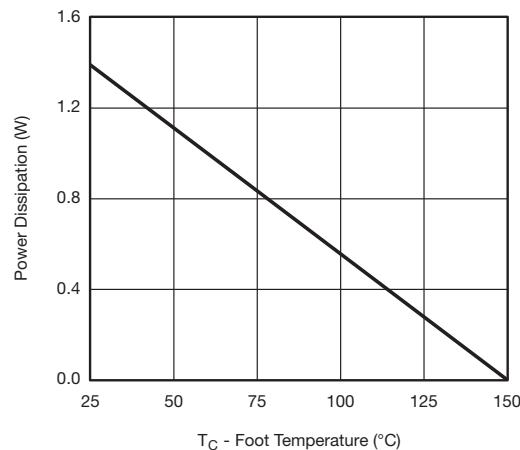
Notes

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

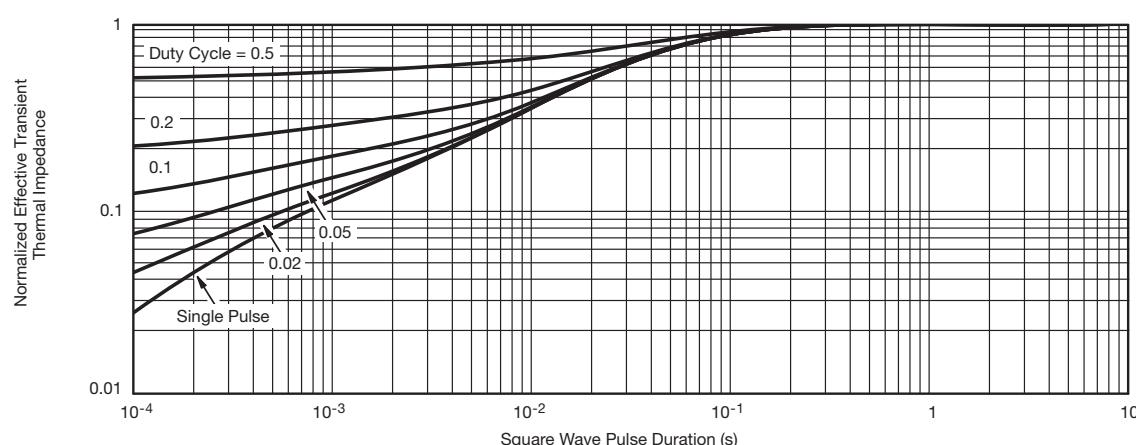
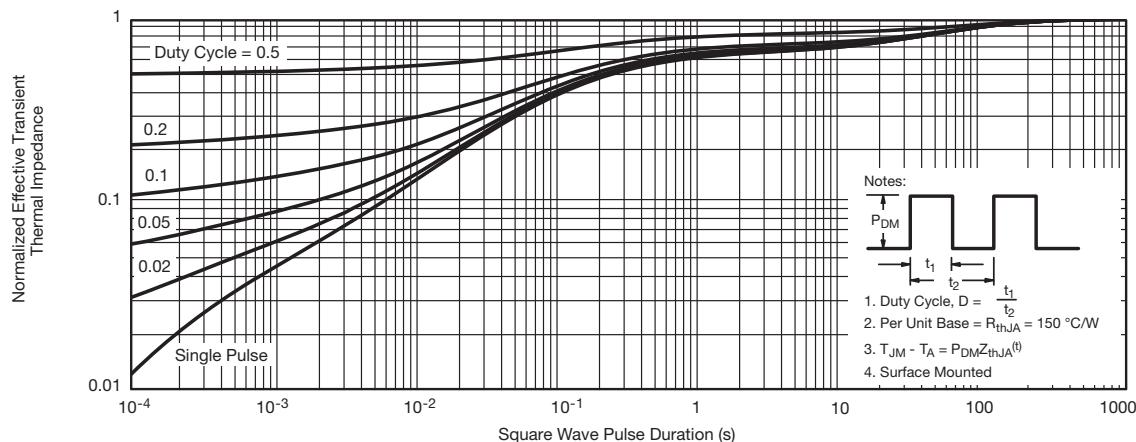
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)


TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)


TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

Current Derating ^a

Power Derating
Note

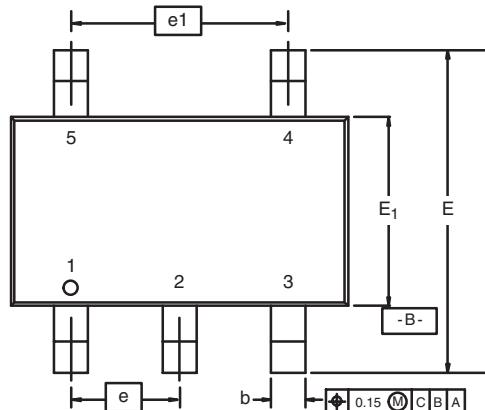
- The power dissipation P_D is based on T_J max. = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)


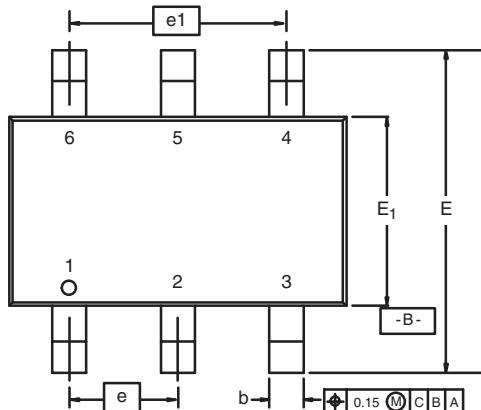
Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for silicon technology and package reliability represent a composite of all qualified locations. For related documents such as package / tape drawings, part marking, and reliability data, see www.vishay.com/ppg?65736.

TSOP: 5/6-LEAD

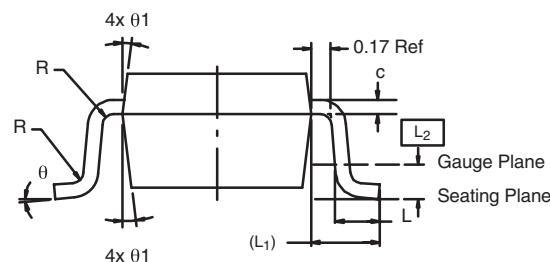
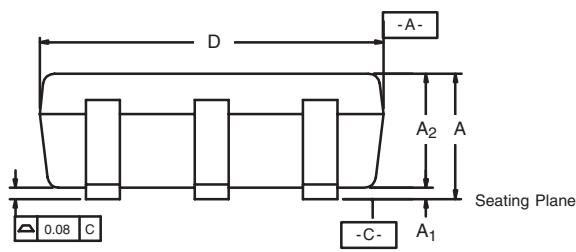
JEDEC Part Number: MO-193C



5-LEAD TSOP



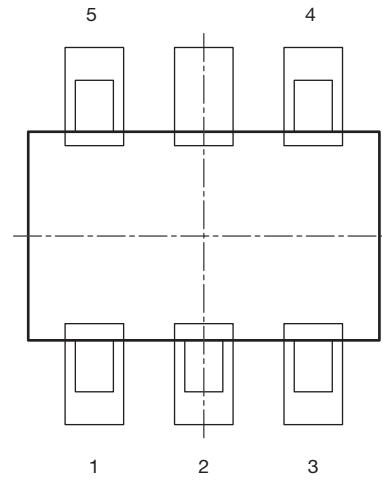
6-LEAD TSOP



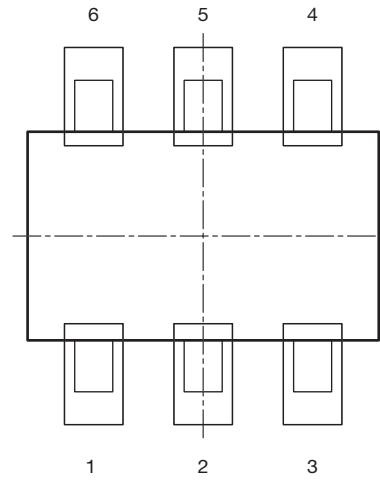
Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A₁	0.01	-	0.10	0.0004	-	0.004
A₂	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E₁	1.55	1.65	1.70	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

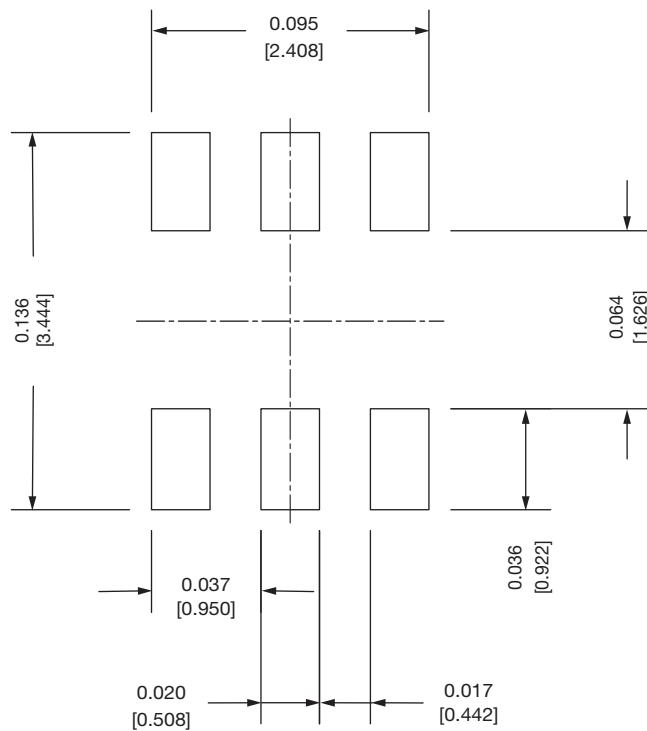
Recommended Land Pattern For TSOP-5L / TSOP-6L



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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