

N-Channel 100 V (D-S) MOSFET

MOSFET PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω) Max.	I _D (A) ^a	Q _g (Typ.)
100	0.126 at V _{GS} = 10 V	3.8	2.9 nC
	0.147 at V _{GS} = 6 V	3.5	
	0.189 at V _{GS} = 4.5 V	3.1	

FEATURES

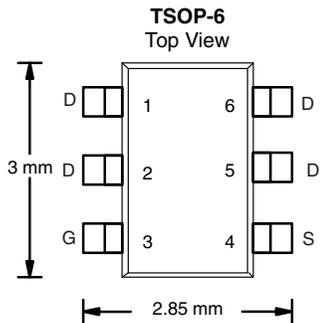
- TrenchFET[®] Power MOSFET
- 100 % R_g and UIS Tested
- Material categorization:
For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- DC/DC Converters / Boost Converters
- Load Switch
- LED Backlighting in LCD TVs
- Power Management for Mobile Computing



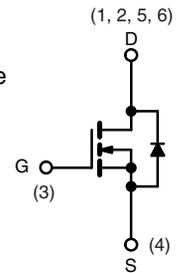
Ordering Information:
Si3474DV-T1-GE3 (Lead (Pb)-free and Halogen-free)

Marking Code



Lot Traceability
and Date Code

Part # Code



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)			
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	3.8
		T _C = 70 °C	3
		T _A = 25 °C	2.8 ^{b, c}
		T _C = 70 °C	2.3 ^{b, c}
Pulsed Drain Current (t = 100 μs)	I _{DM}	14	A
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	
		T _A = 25 °C	1.7 ^{b, c}
Single Pulse Avalanche Current	L = 0.1 mH I _{AS}	2.5	mJ
Single Pulse Avalanche Energy	E _{AS}	0.31	
Maximum Power Dissipation	P _D	T _C = 25 °C	3.6
		T _C = 70 °C	2.33
		T _A = 25 °C	2 ^{b, c}
		T _A = 70 °C	1.3 ^{b, c}
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 ^{b, d}	R _{thJA}	50	62.5	°C/W
Maximum Junction-to-Foot (Drain)	R _{thJF}	28	35	

Notes:

- Based on T_C = 25 °C.
- Surface mounted on 1" x 1" FR4 board.
- t = 5 s.
- Maximum under steady state conditions is 110 °C/W.

MOSFET SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	100			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = 250 μA		59		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			- 4.8		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.2		3	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			- 1	μA
		V _{DS} = 100 V, V _{GS} = 0 V, T _J = 55 °C			- 10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	5			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 2 A		0.102	0.126	Ω
		V _{GS} = 6 V, I _D = 1 A		0.120	0.147	
		V _{GS} = 4.5 V, I _D = 1 A		0.135	0.189	
Forward Transconductance ^a	g _{fs}	V _{DS} = 20 V, I _D = 2 A		5		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = 50 V, V _{GS} = 0 V, f = 1 MHz		196		pF
Output Capacitance	C _{oss}			67		
Reverse Transfer Capacitance	C _{rss}			14		
Total Gate Charge	Q _g	V _{DS} = 50 V, V _{GS} = 10 V, I _D = 2.2 A		5.2	10.4	nC
Gate-Source Charge	Q _{gs}	V _{DS} = 50 V, V _{GS} = 4.5 V, I _D = 2.2 A		2.9	5.8	
Gate-Drain Charge	Q _{gd}			1		
Gate Resistance	R _g	f = 1 MHz	0.9	4.3	8.6	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 50 V, R _L = 27.7 Ω I _D = 1.8 A, V _{GEN} = 4.5 V, R _g = 1 Ω		40	60	ns
Rise Time	t _r			68	102	
Turn-Off Delay Time	t _{d(off)}			14	21	
Fall Time	t _f			20	30	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 50 V, R _L = 27.7 Ω I _D = 1.8 A, V _{GEN} = 10 V, R _g = 1 Ω		8	16	ns
Rise Time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			10	20	
Fall Time	t _f			7	14	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			- 2.1	A
Pulse Diode Forward Current (t = 100 μs)	I _{SM}				- 8	
Body Diode Voltage	V _{SD}	I _S = 1.8 A		- 0.8	- 1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 1.8 A, di/dt = 100 A/μs, T _J = 25 °C		23	35	ns
Body Diode Reverse Recovery Charge	Q _{rr}			21	32	nC
Reverse Recovery Fall Time	t _a			17		ns
Reverse Recovery Rise Time	t _b			6		

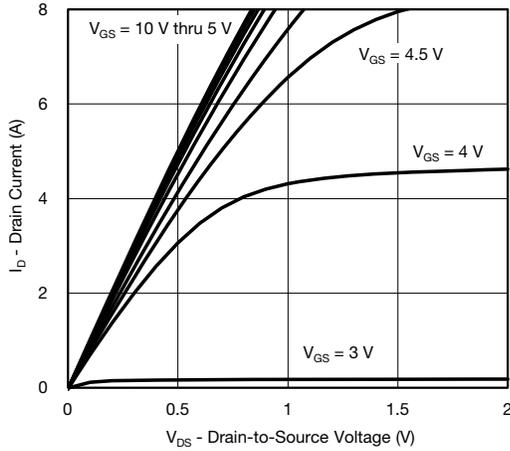
Notes:

a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.

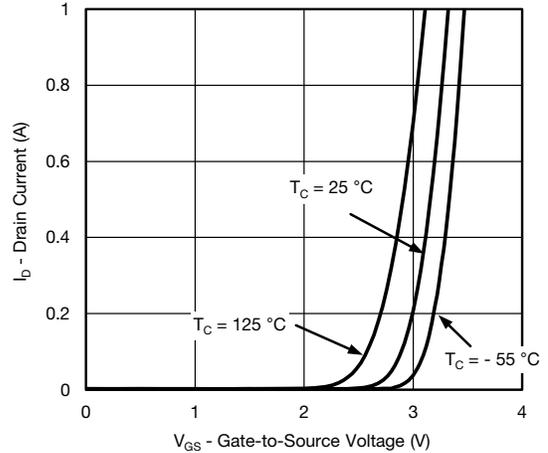
b. Guaranteed by design, not subject to production testing.

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.

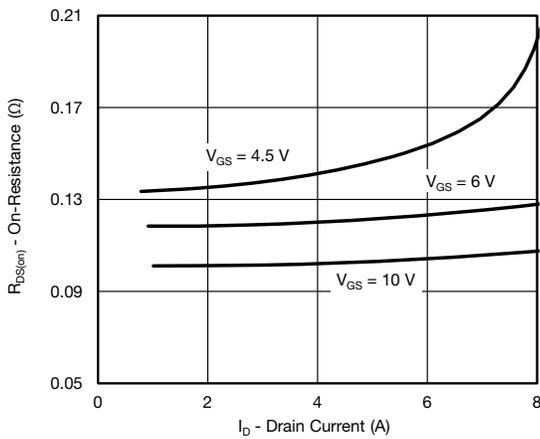
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



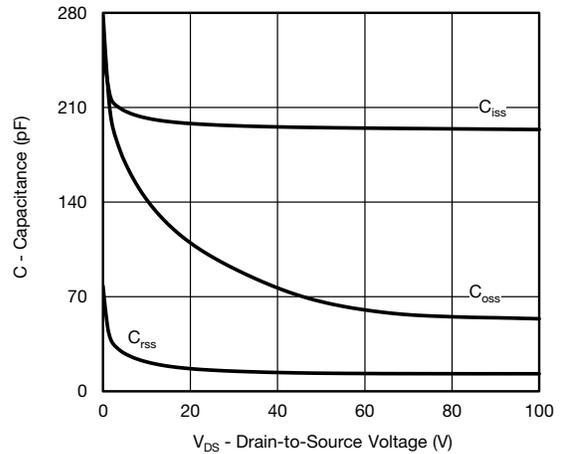
Output Characteristics



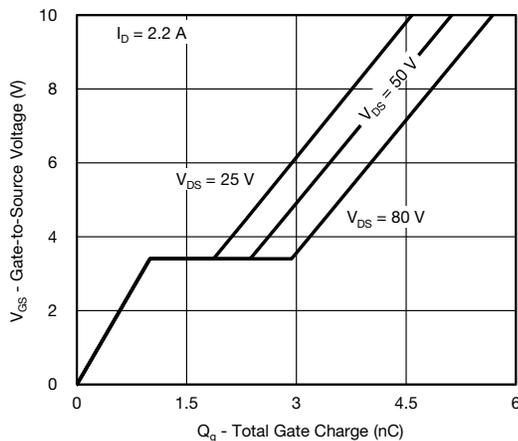
Transfer Characteristics



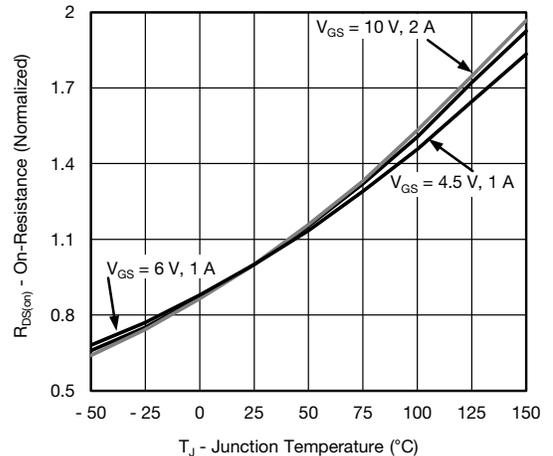
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

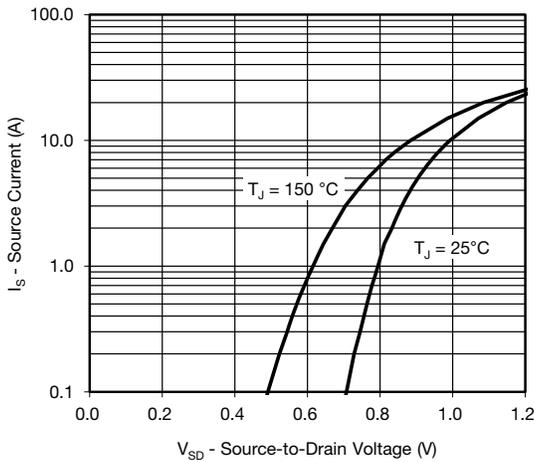


Gate Charge

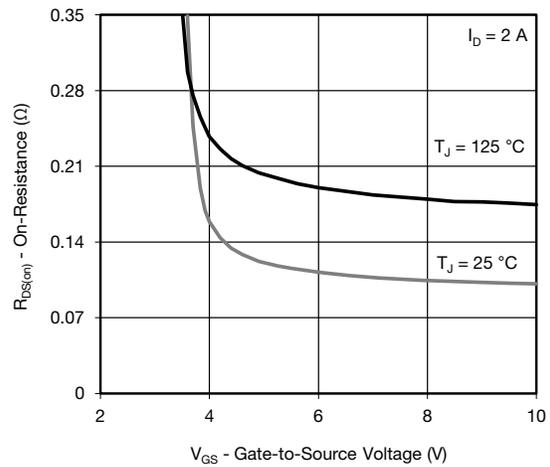


On-Resistance vs. Junction Temperature

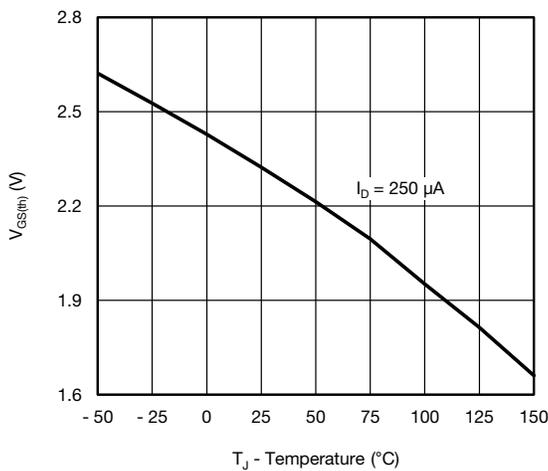
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



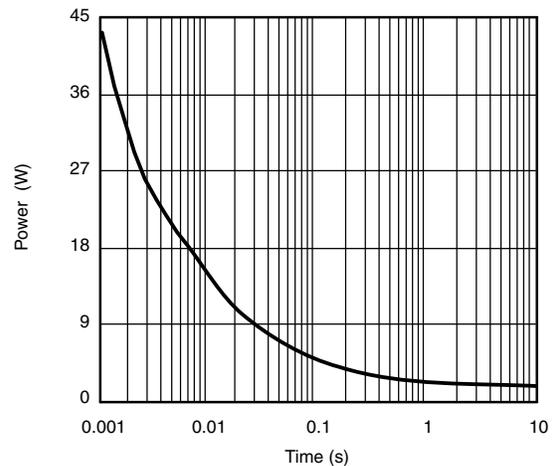
Source-Drain Diode Forward Voltage



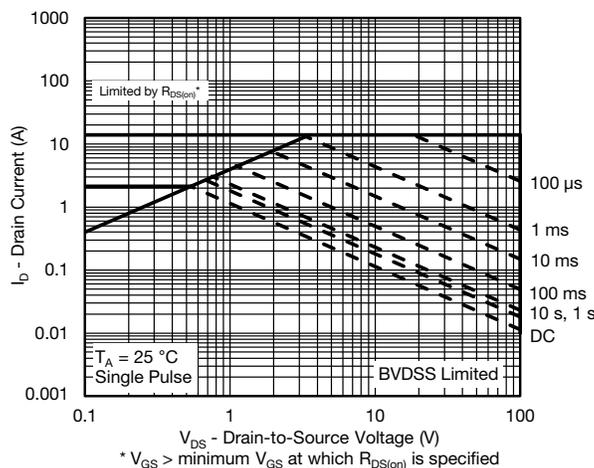
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

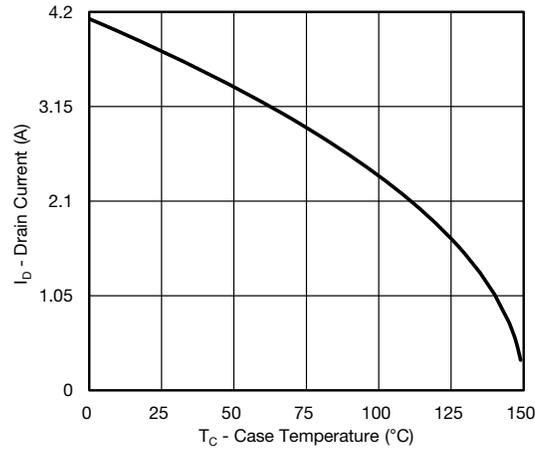


Single Pulse Power

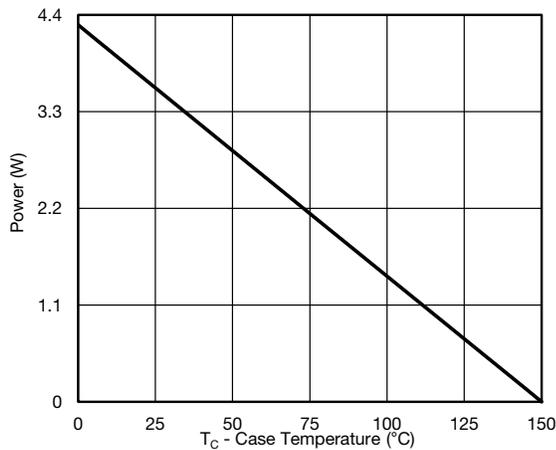


Safe Operating Area

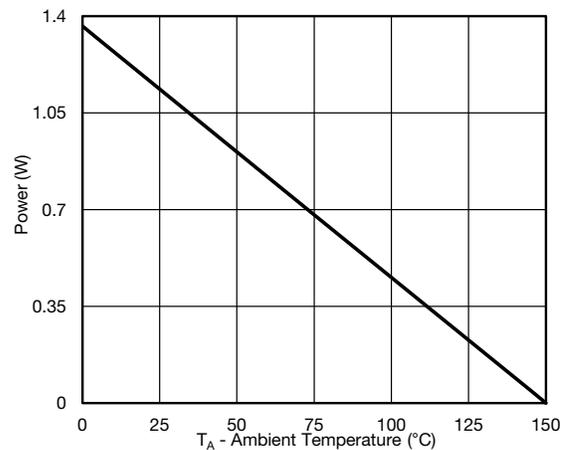
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating*



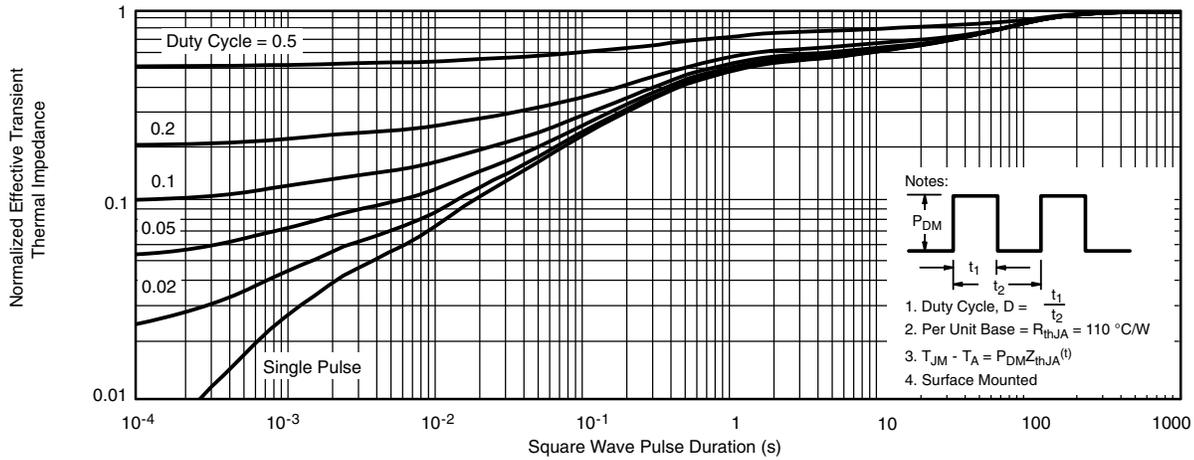
Power, Junction-to-Foot



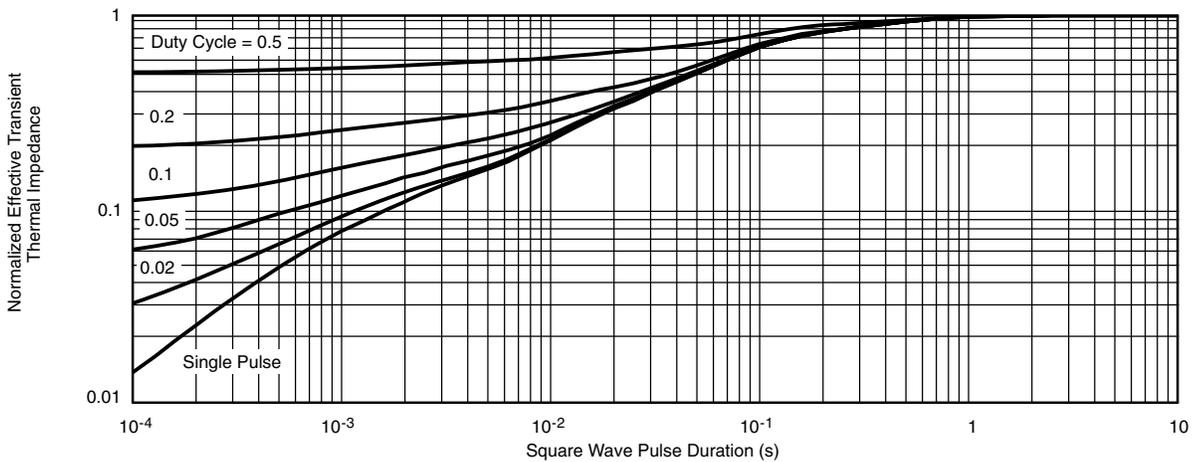
Power, Junction-to-Ambient

* 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)



Normalized Thermal Transient Impedance, Junction-to-Ambient

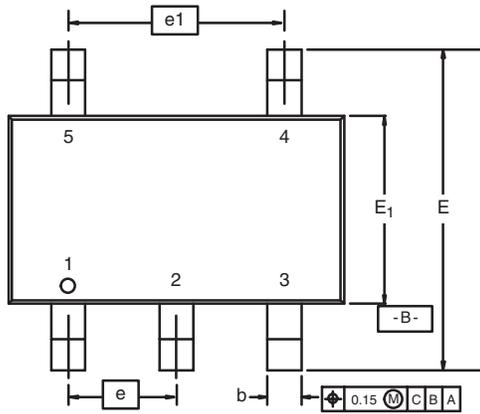


Normalized Thermal Transient Impedance, Junction-to-Foot

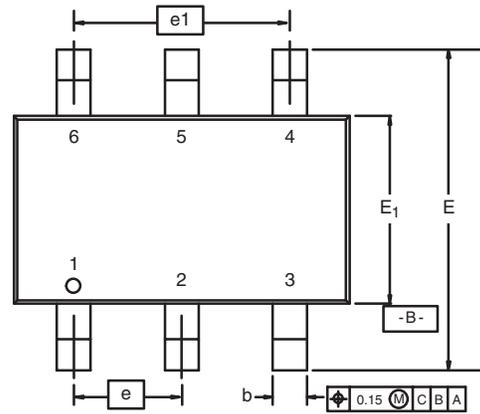
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TSOP: 5/6-LEAD

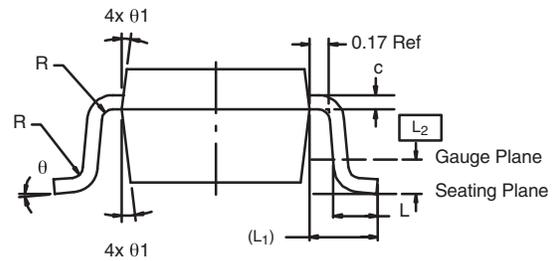
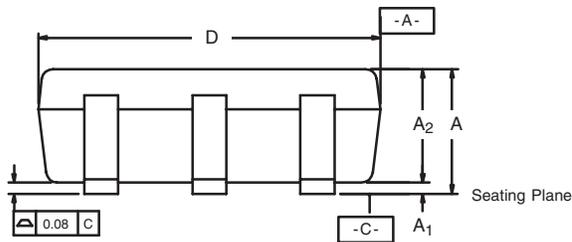
JEDEC Part Number: MO-193C



5-LEAD TSOP

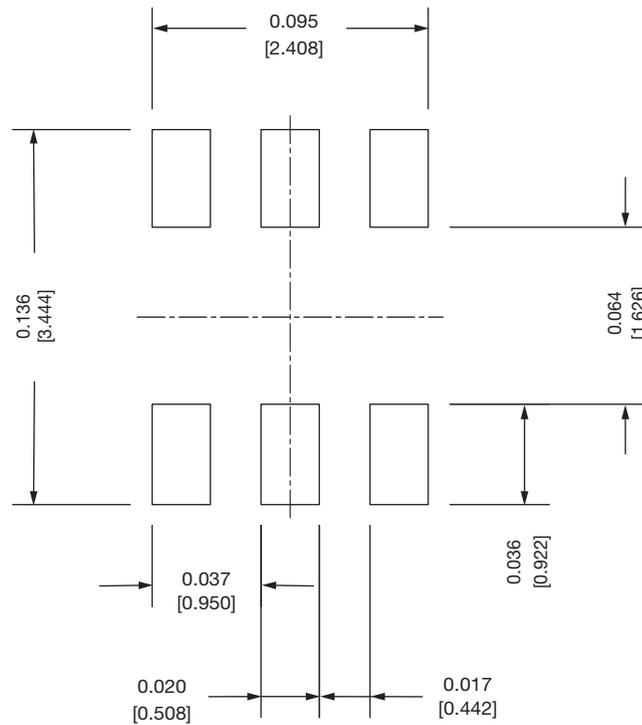
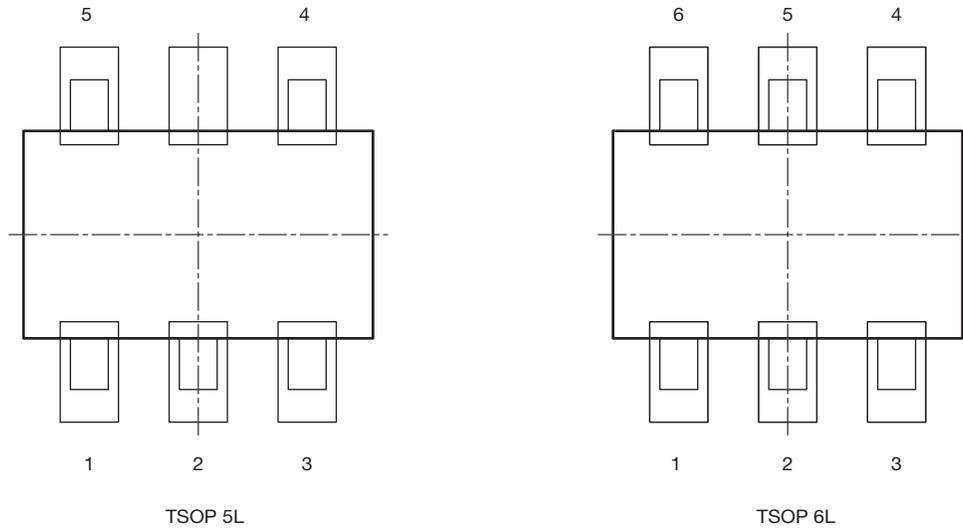


6-LEAD TSOP



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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