

N-Channel 80 V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$R_{DS(on)}$ (Ω) Max.	I_D (A) ^a	Q_g (Typ.)
80	0.093 at $V_{GS} = 10$ V	4.6	2.6
	0.108 at $V_{GS} = 6$ V	4.3	
	0.126 at $V_{GS} = 4.5$ V	4	

FEATURES

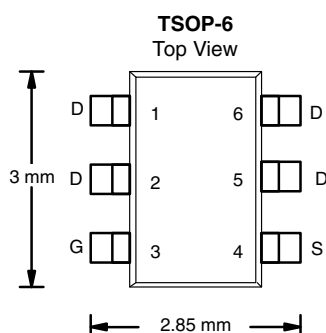
- TrenchFET[®] Power MOSFET
- 100 % R_g Tested
- Material categorization:
For definitions of compliance please see www.vishay.com/doc?99912



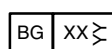
RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Load Switch for Portable Applications
- LED Backlight Switch
- DC/DC Converter
- Boost Converter

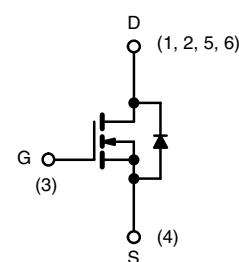


Marking Code



Lot Traceability
and Date Code

Part # Code



N-Channel MOSFET

Ordering Information: Si3476DV-T1-GE3 (Lead (Pb)-free and Halogen-free)

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150$ °C)	I_D	$T_C = 25$ °C	A
		$T_C = 70$ °C	
		$T_A = 25$ °C	
		$T_A = 70$ °C	
Pulsed Drain Current ($t = 100$ μ s)	I_{DM}	18	
Continuous Source-Drain Diode Current	I_S	$T_C = 25$ °C	A
		$T_A = 25$ °C	
Maximum Power Dissipation	P_D	$T_C = 25$ °C	W
		$T_C = 70$ °C	
		$T_A = 25$ °C	
		$T_A = 70$ °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.

SPECIFICATIONS ($T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

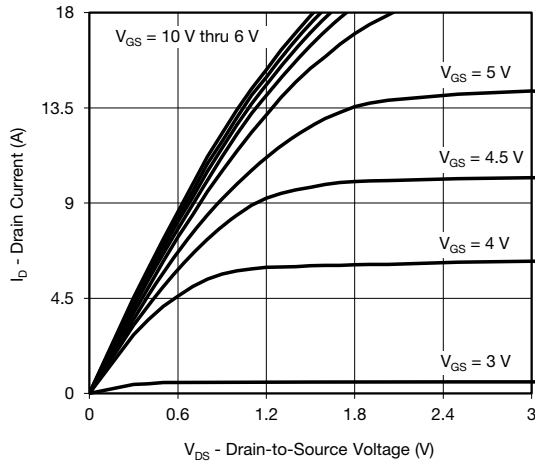
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	80			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = 250 μA		36		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			- 4.8		
Gate-Source Threshold Voltage	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} = 80 V, V _{GS} = 0 V			1	μA
		V _{DS} = 80 V, V _{GS} = 0 V, T _J = 85 °C			10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = ≥ 5 V, V _{GS} = 10 V	10			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 3.5 A		0.077	0.093	Ω
		V _{GS} = 6 V, I _D = 3.2 A		0.090	0.108	
		V _{GS} = 4.5 V, I _D = 3 A		0.105	0.126	
Forward Transconductance	g _{fs}	V _{DS} = 15 V, I _D = 3.5 A		7		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = 40 V, V _{GS} = 0 V, f = 1 MHz		195		pF
Output Capacitance	C _{oss}			116		
Reverse Transfer Capacitance	C _{rss}			16		
Total Gate Charge	Q _g	V _{DS} = 40 V, V _{GS} = 10 V, I _D = 3.5 A		4.9	7.5	nC
		V _{DS} = 40 V, V _{GS} = 4.5 V, I _D = 3.5 A		2.6	5	
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			1.3		
Gate Resistance	R _g	f = 1 MHz	0.82	4.2	8.2	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 40 V, R _L = 14.3 Ω I _D ≅ 2.8 A, V _{GEN} = 10 V, R _g = 1 Ω		8	16	ns
Rise Time	t _r			4	8	
Turn-Off DelayTime	t _{d(off)}			14	21	
Fall Time	t _f			3	6	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 40 V, R _L = 14.3 Ω I _D ≅ 2.8 A, V _{GEN} = 4.5 V, R _g = 1 Ω		26	40	
Rise Time	t _r			50	75	
Turn-Off DelayTime	t _{d(off)}			12	20	
Fall Time	t _f			15	23	
Drain-Source Body Diode Characteristics						
Continous Source-Drain Diode Current	I _S	T _C = 25 °C			3	A
Pulse Diode Forward Current (t = 100 μs)	I _{SM}				18	
Body Diode Voltage	V _{SD}	I _S = 2.8 A		0.85	1.2	V
Body Diode Reverse Recovery Charge	Q _{rr}	I _F = 2.8 A, dI/dt = 100 A/μs		13	20	nC
Body Diode Reverse Recovery Time	t _{rr}			20	30	ns
Reverse Recovery Fall Time	t _a			10.5		
Reverse Recovery Rise Time	t _b			9.5		

Notes:

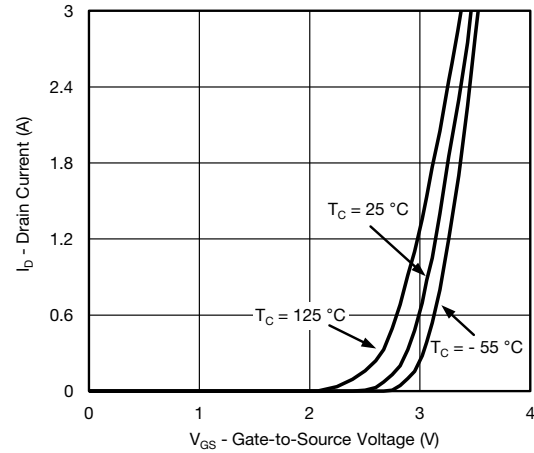
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
b. Guaranteed by design, not subject to production testing.

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.

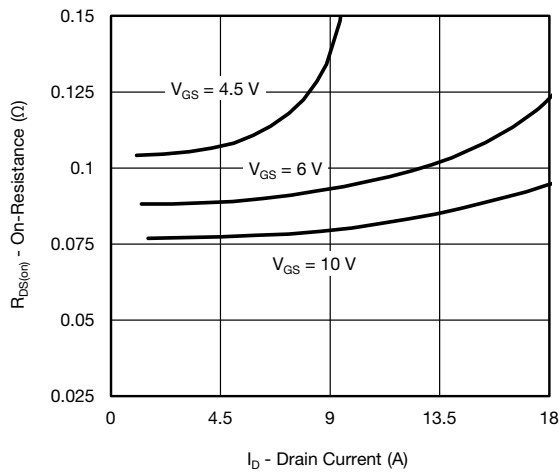
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise noted)



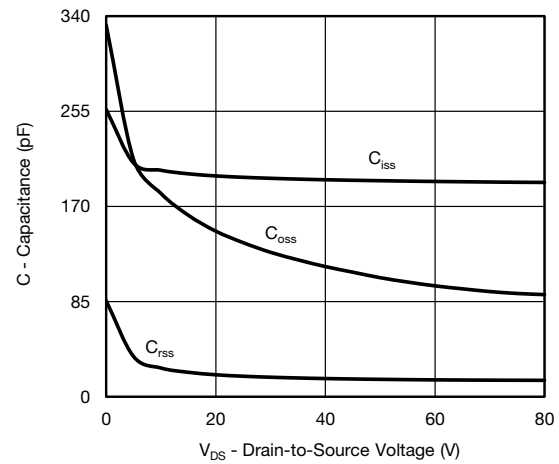
Output Characteristics



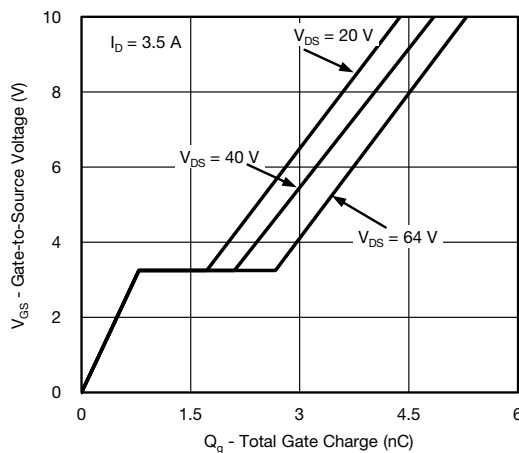
Transfer Characteristics Curves vs. Temp.



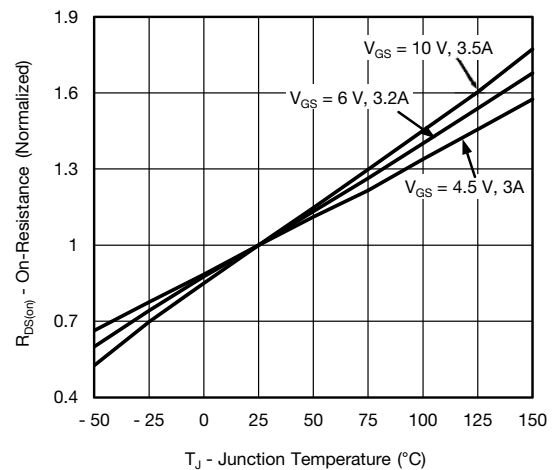
On-Resistance vs. Drain Current



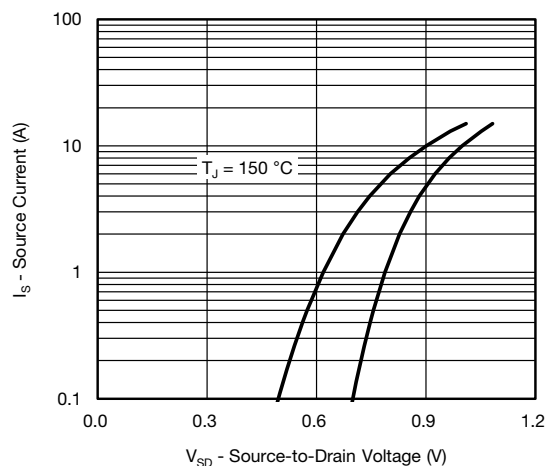
Capacitance



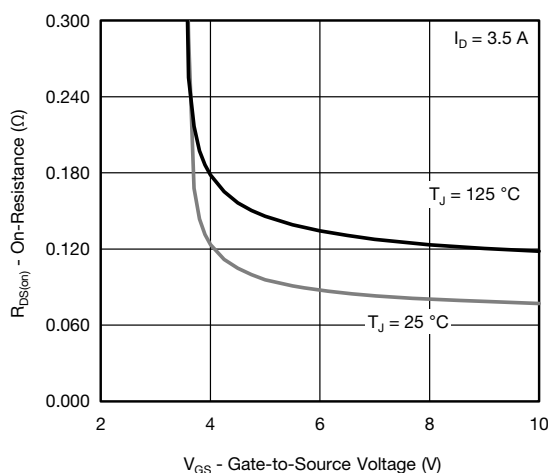
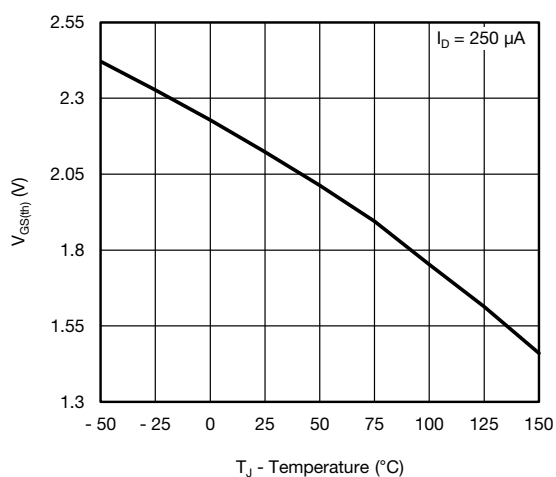
Gate Charge



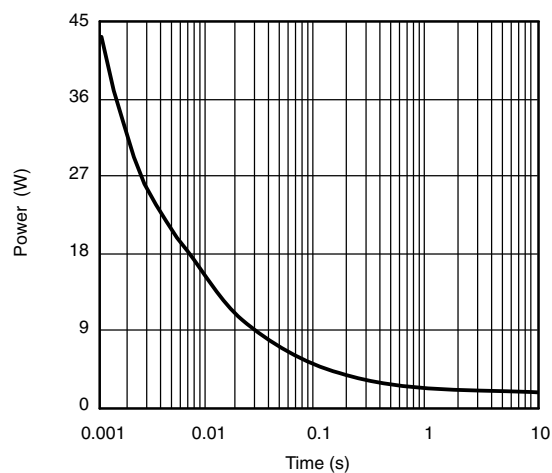
On-Resistance vs. Junction Temperature

TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)


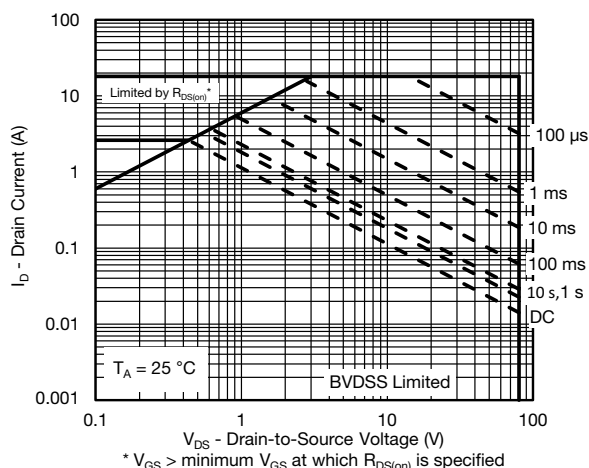
Source-Drain Diode Forward Voltage

 $R_{DS(on)}$ vs. V_{GS} vs. Temperature

Threshold Voltage

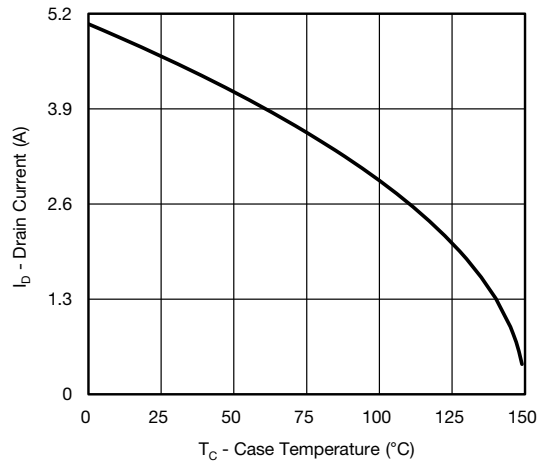


Single Pulse Power (Junction-to-Ambient)

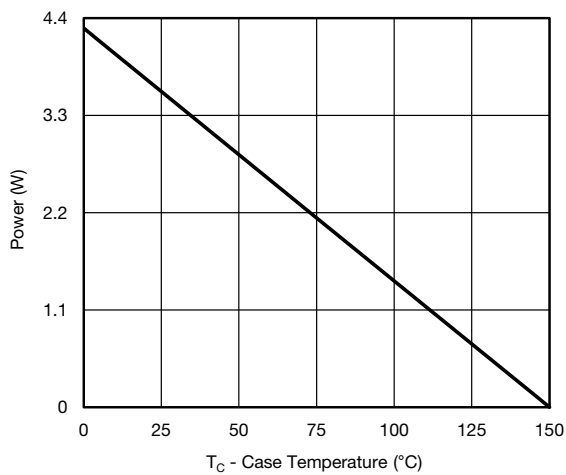


Safe Operating Area, Junction-to-Ambient

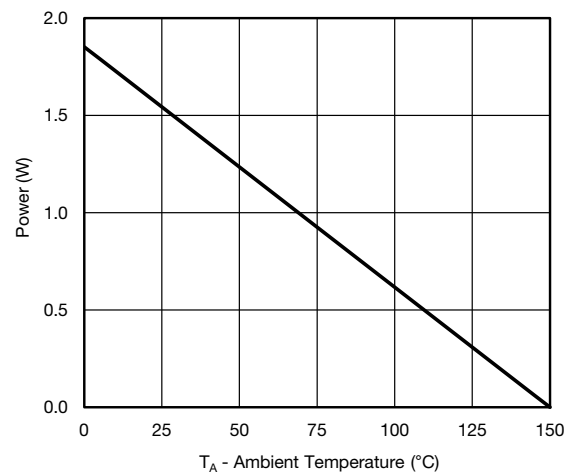
TYPICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)



Current Derating*

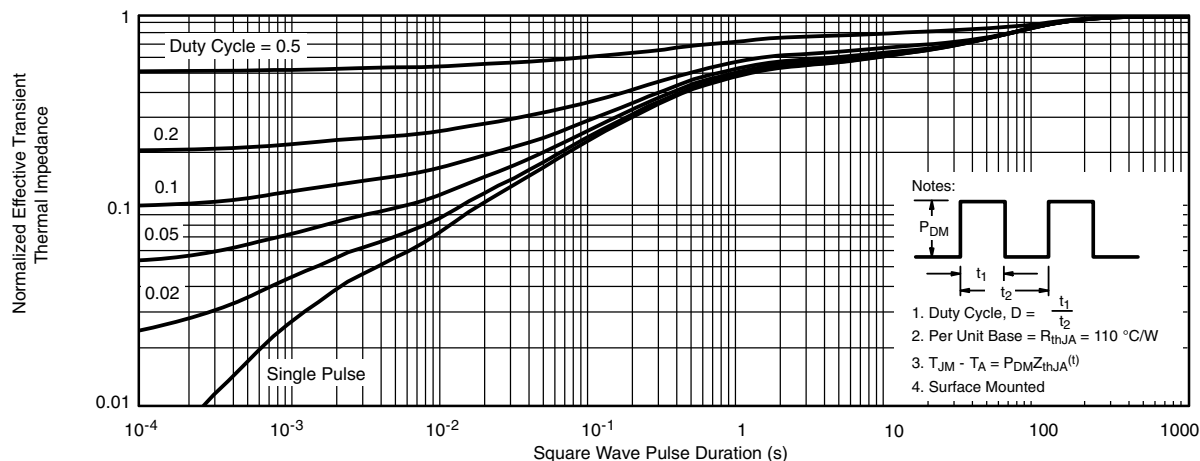
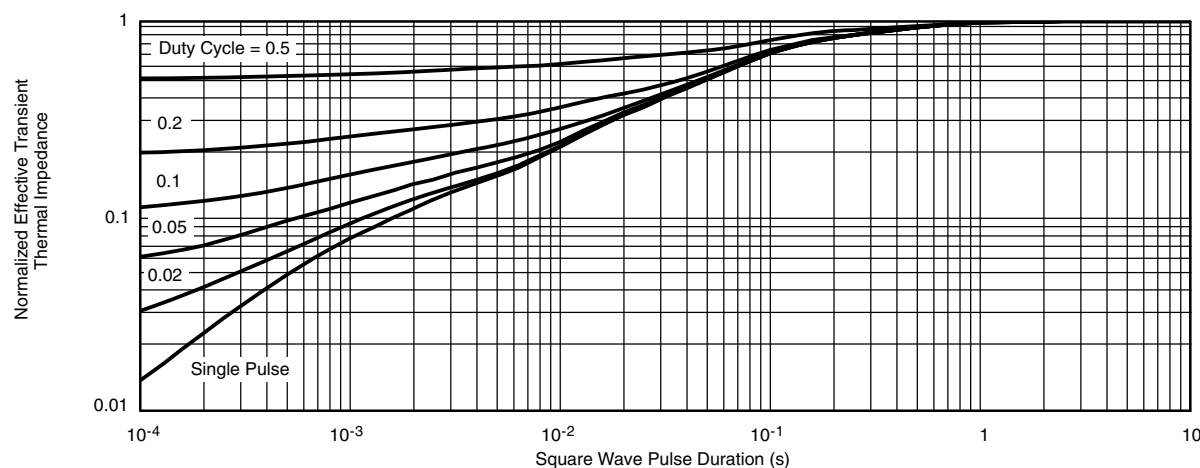


Power Derating, Junction-to-Foot



Power Derating, Junction-to-Ambient

* The power dissipation P_D is based on $T_{J(\max.)} = 150\text{ }^{\circ}\text{C}$, 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 ($T_A = 25\text{ }^{\circ}\text{C}$, 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
A ₁	0.01	-	0.10	0.0004	-	0.004
A ₂	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
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	0.95 BSC			0.0374 BSC		
e ₁	1.80	1.90	2.00	0.071	0.075	0.079
L	0.32	-	0.50	0.012	-	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ ₁	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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