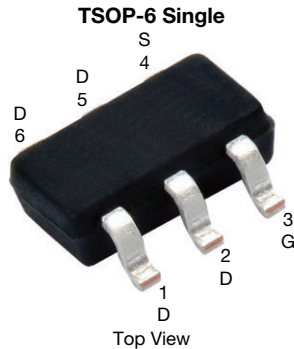


P-Channel 20 V (D-S) MOSFET

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω) MAX.	I _D (A) ^{a, e}	Q _g (TYP.)
-20	0.0210 at V _{GS} = -4.5 V	-8	43.2 nC
	0.0240 at V _{GS} = -2.5 V	-8	
	0.0380 at V _{GS} = -1.8 V	-8	



Marking Code: BM

Ordering Information:

Si3429EDV-T1-GE3 (lead (Pb)-free and halogen-free)

FEATURES

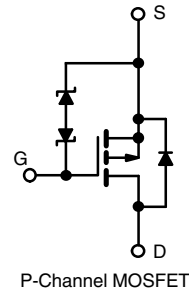
- TrenchFET® power MOSFET
- 100 % R_g tested
- Built-in ESD protection
 - Typical ESD performance 3000 V
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Power management for portable and consumer
 - Load switches
 - DC/DC converters



ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V _{DS}	-20	V
Gate-Source Voltage	V _{GS}	± 8	
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	-8 ^e
		T _C = 70 °C	-8 ^e
		T _A = 25 °C	-8 ^{b, c, e}
		T _A = 70 °C	-6.4 ^{b, c}
Pulsed Drain Current (t = 300 μs)	I _{DM}	-40	A
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	
		T _A = 25 °C	-1.7 ^{b, c}
Maximum Power Dissipation	P _D	T _C = 25 °C	4.2
		T _C = 70 °C	2.7
		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}	45	62.5	°C/W	
Maximum Junction-to-Foot (Drain)	R _{thJF}	25	30		

Notes

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



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}	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	-20	-	-	V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	$I_D = -250\text{ }\mu\text{A}$	-	-12	-	mV/ $^\circ\text{C}$
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$		-	2.4	-	
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-0.4	-	-1	V
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$	-	-	± 10	μA
		$V_{DS} = 0\text{ V}, V_{GS} = \pm 4.5\text{ V}$	-	-	± 1	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20\text{ V}, V_{GS} = 0\text{ V}$	-	-	-1	
		$V_{DS} = -20\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$	-	-	-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -5\text{ V}, V_{GS} = -4.5\text{ V}$	-15	-	-	A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -4\text{ A}$	-	0.0175	0.0210	Ω
		$V_{GS} = -2.5\text{ V}, I_D = -4\text{ A}$	-	0.0200	0.0240	
		$V_{GS} = -1.8\text{ V}, I_D = -2\text{ A}$	-	0.0250	0.0380	
Dynamic ^b						
Input Capacitance	C_{iss}	$V_{DS} = -10\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$	-	4083	-	μF
Output Capacitance	C_{oss}		-	395	-	
Reverse Transfer Capacitance	C_{rss}		-	365	-	
Total Gate Charge	Q_g	$V_{DS} = -10\text{ V}, V_{GS} = -8\text{ V}, I_D = -8\text{ A}$	-	78.2	118	nC
		$V_{DS} = -10\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -8\text{ A}$	-	43.2	65	
Gate-Source Charge	Q_{gs}		-	6.3	-	
Gate-Drain Charge	Q_{gd}		-	4.3	-	
Gate Resistance	R_g	$f = 1\text{ MHz}$	1.8	9.4	18.8	Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10\text{ V}, R_L = 1.56\text{ }\Omega$ $I_D \cong -6.4\text{ A}, V_{GEN} = -4.5\text{ V}, R_g = 1\text{ }\Omega$	-	35	53	ns
Rise Time	t_r		-	30	45	
Turn-Off Delay Time	$t_{d(off)}$		-	174	261	
Fall Time	t_f		-	58	87	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10\text{ V}, R_L = 1.56\text{ }\Omega$ $I_D \cong -6.4\text{ A}, V_{GEN} = -8\text{ V}, R_g = 1\text{ }\Omega$	-	10	20	
Rise Time	t_r		-	17	26	
Turn-Off Delay Time	$t_{d(off)}$		-	210	315	
Fall Time	t_f		-	64	96	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^\circ\text{C}$	-	-	-3.5	A
Pulse Diode Forward Current	I_{SM}		-	-	-40	
Body Diode Voltage	V_{SD}	$I_S = -6.4\text{ A}, V_{GS} = 0\text{ V}$	-	-0.8	-1.2	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -6.4\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$	-	28	42	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	16	24	nC
Reverse Recovery Fall Time	t_a		-	13	-	ns
Reverse Recovery Rise Time	t_b		-	15	-	

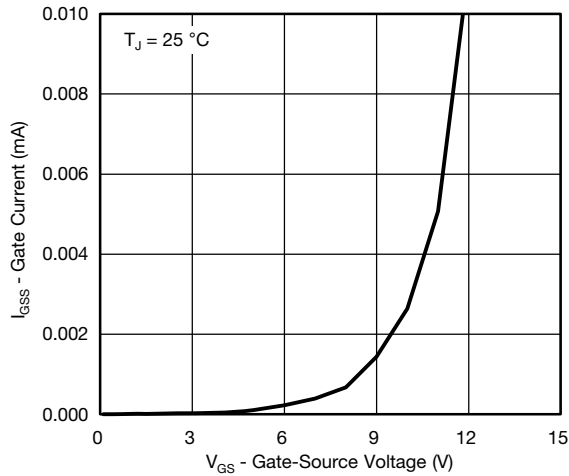
Notes

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

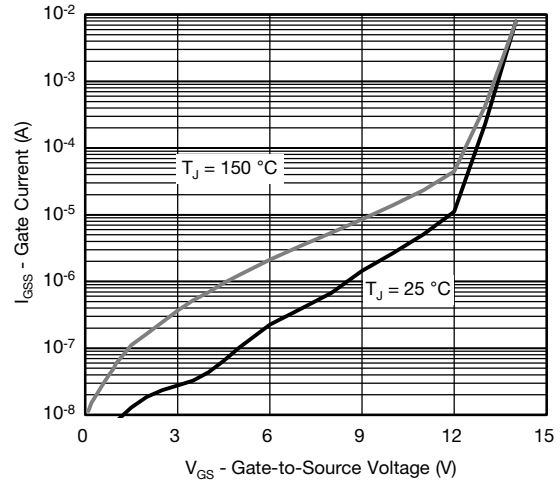
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



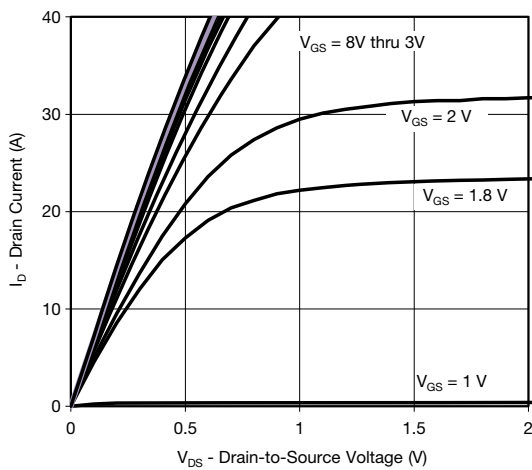
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



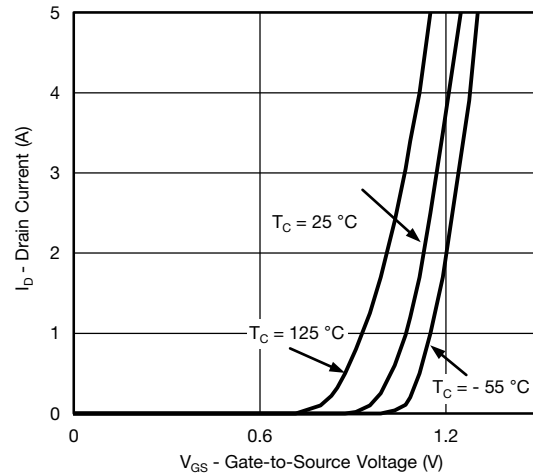
Gate Current vs. Gate-Source Voltage



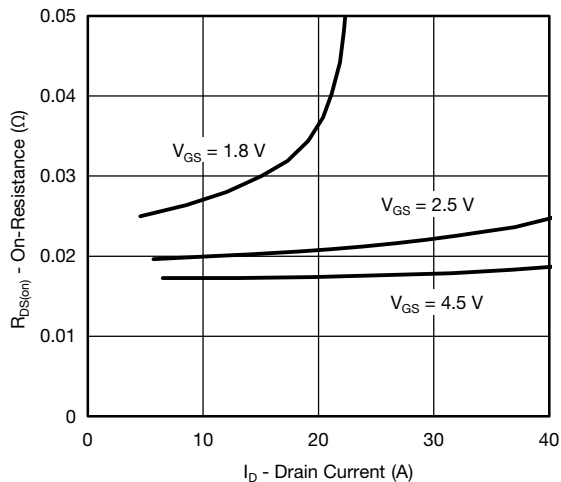
Gate Current vs. Gate-Source Voltage



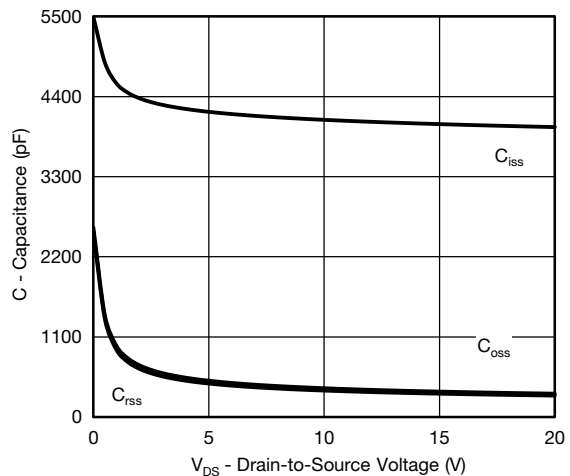
Output Characteristics



Transfer Characteristics



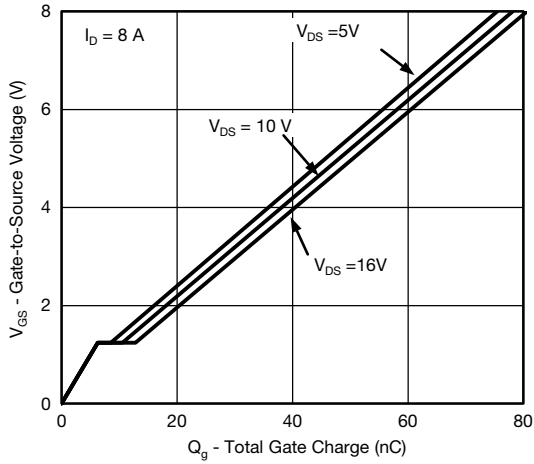
On-Resistance vs. Drain Current



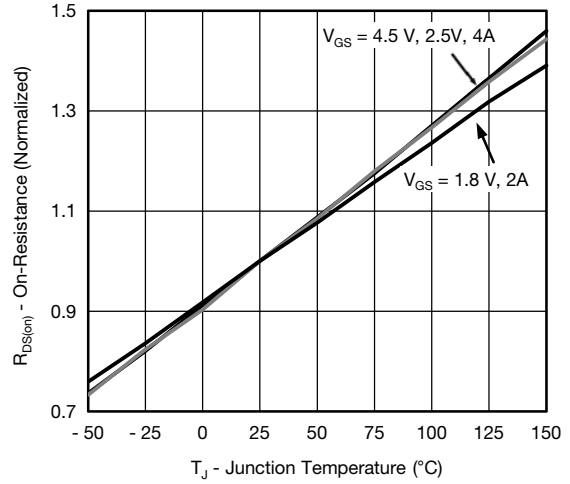
Capacitance



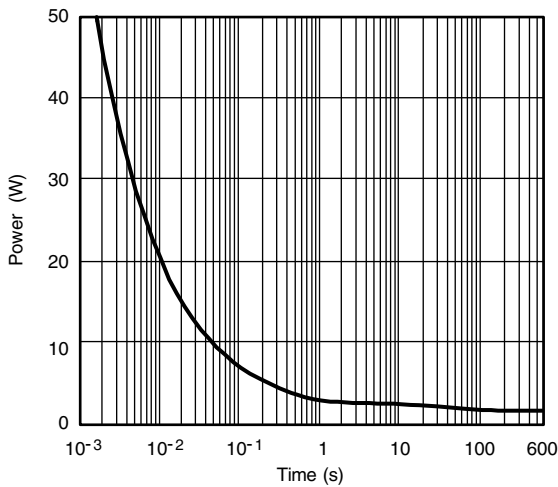
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



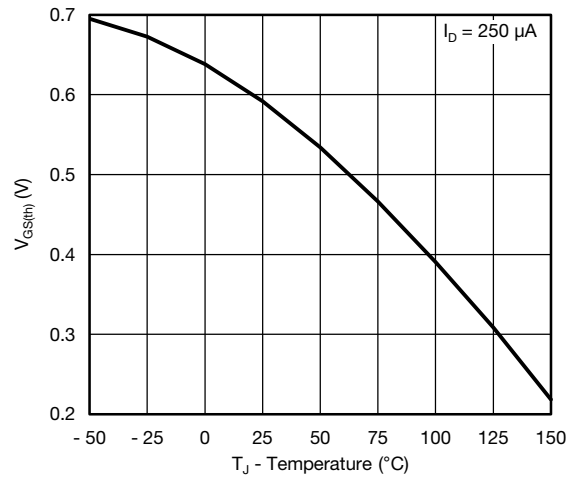
Gate Charge



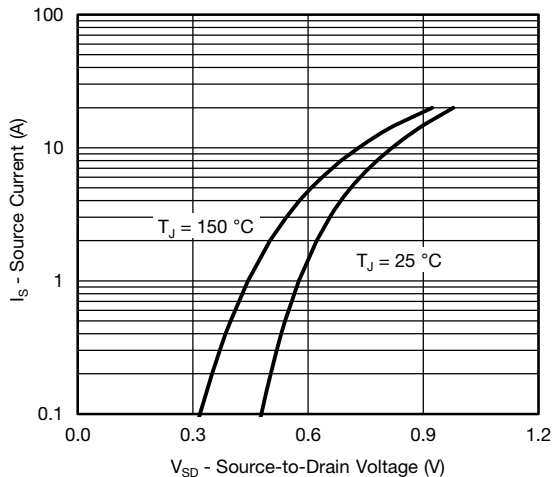
On-Resistance vs. Junction Temperature



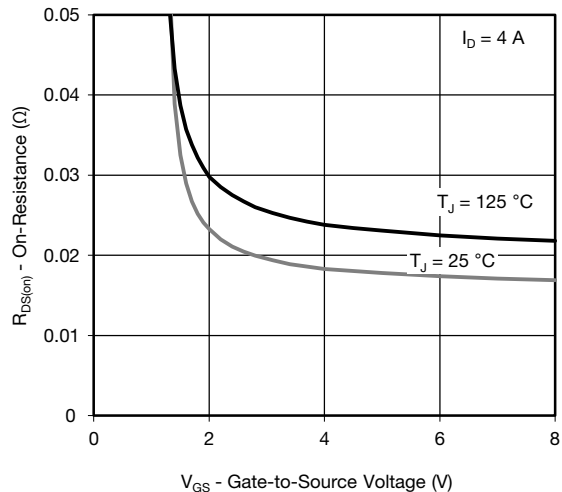
Single Pulse Power, Junction-to-Ambient



Threshold Voltage



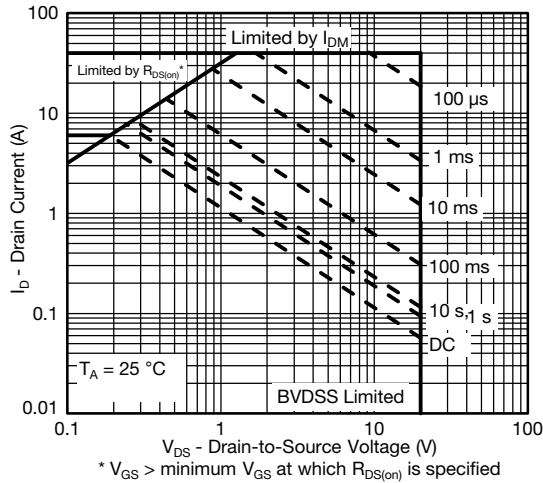
Source-Drain Diode Forward Voltage



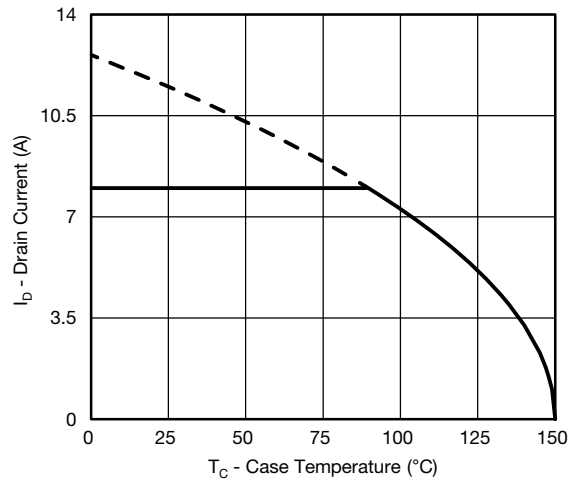
On-Resistance vs. Gate-to-Source Voltage



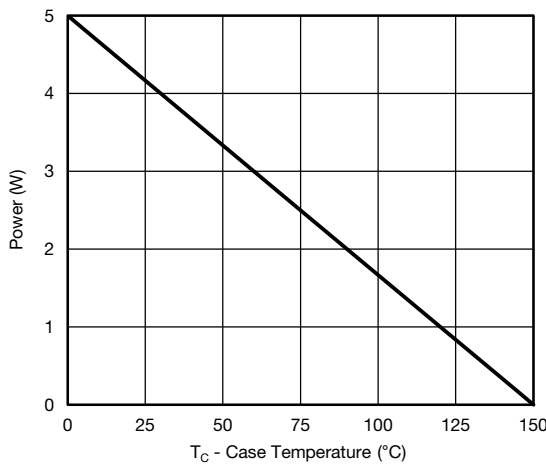
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



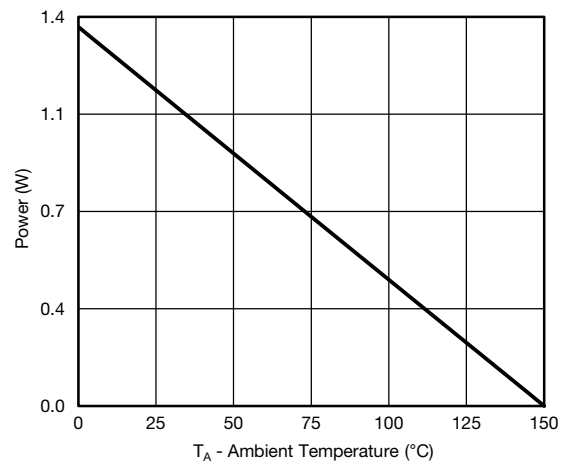
Safe Operating Area, Junction-to-Ambient



Current Derating*



Power Junction-to-Foot

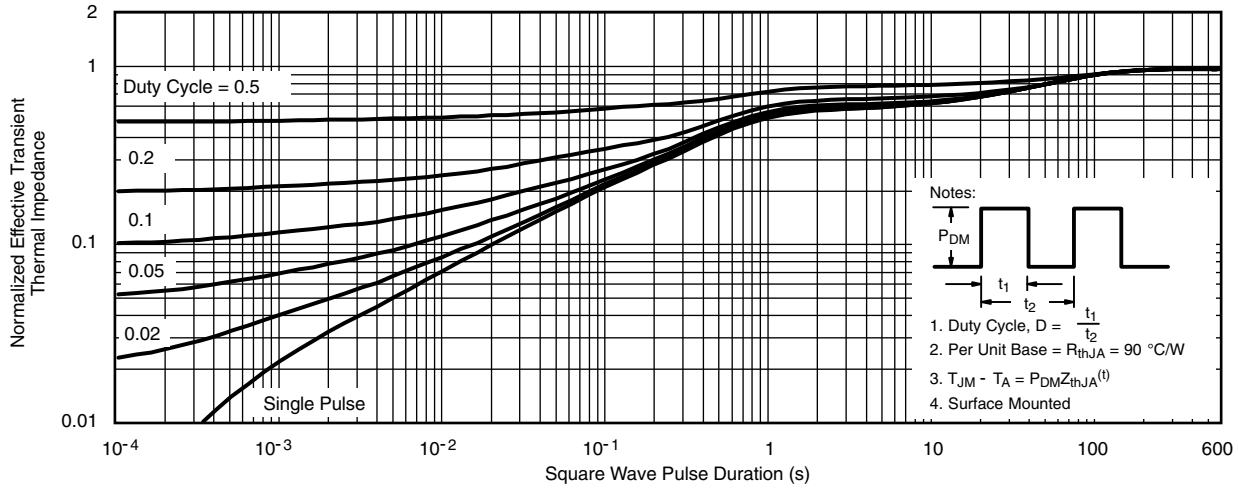


Power Junction-to-Ambient

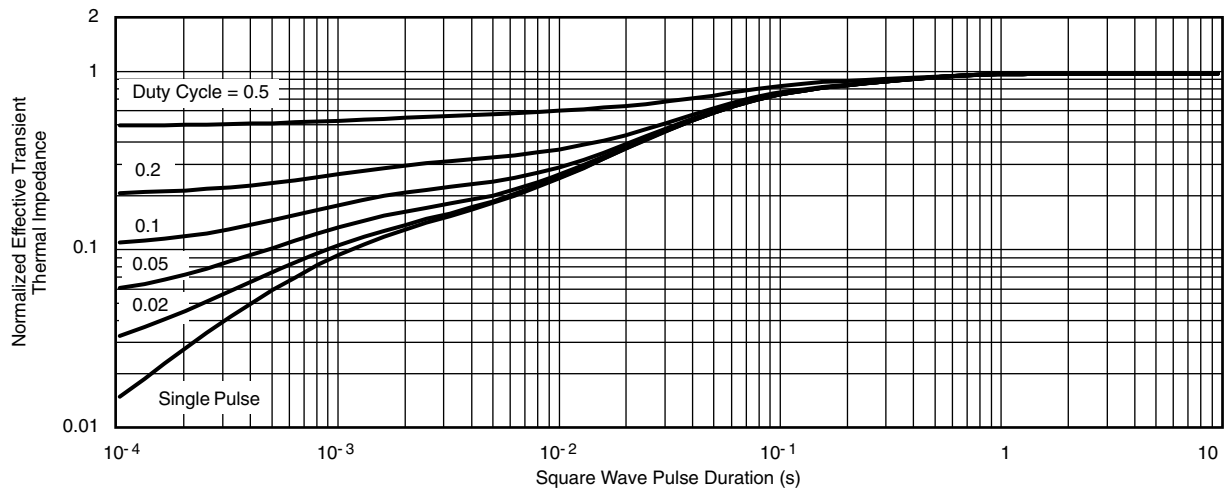
* The power dissipation P_D is based on $T_{J(max.)} = 150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.



TYPICAL CHARACTERISTICS (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



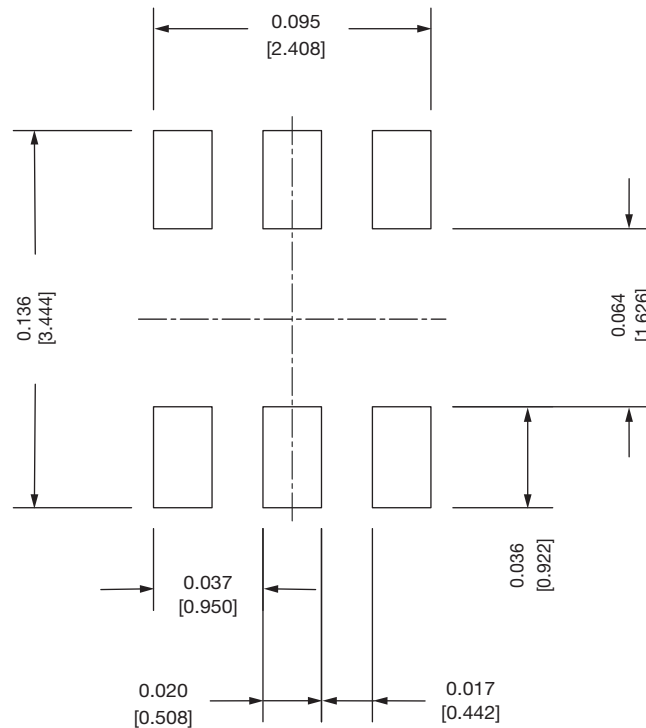
6-LEAD TSOP



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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