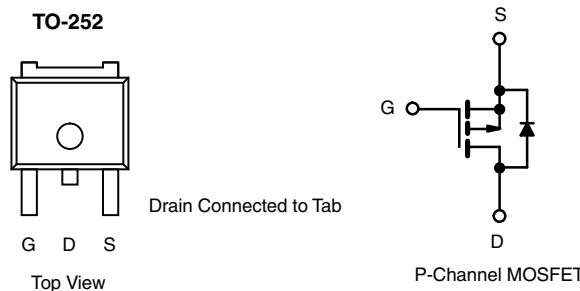


P-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY	
V_{DS} (V)	- 100
$R_{DS(on)}$ (Ω) at $V_{GS} = - 10$ V	0.033
$R_{DS(on)}$ (Ω) at $V_{GS} = - 4.5$ V	0.036
I_D (A)	- 40
Configuration	Single

FEATURES

- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFET
- Package with Low Thermal Resistance
- 100 % R_g and UIS Tested
- Compliant to RoHS Directive 2002/95/EC



ABSOLUTE MAXIMUM RATINGS ($T_C = 25$ °C, unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	- 100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	- 40	A
		- 22	
Continuous Source Current (Diode Conduction) ^a	I_S	- 50	
Pulsed Drain Current ^b	I_{DM}	- 150	
Single Pulse Avalanche Current	I_{AS}	- 44	mJ
Single Pulse Avalanche Energy	E_{AS}	96	
Maximum Power Dissipation ^b	P_D	136	W
		45	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 175	°C

THERMAL RESISTANCE RATINGS			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-Ambient	R_{thJA}	50	°C/W
Junction-to-Case (Drain)	R_{thJC}	1.1	

Notes

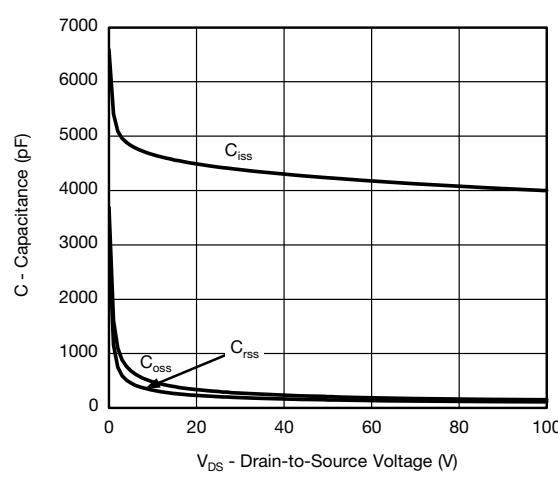
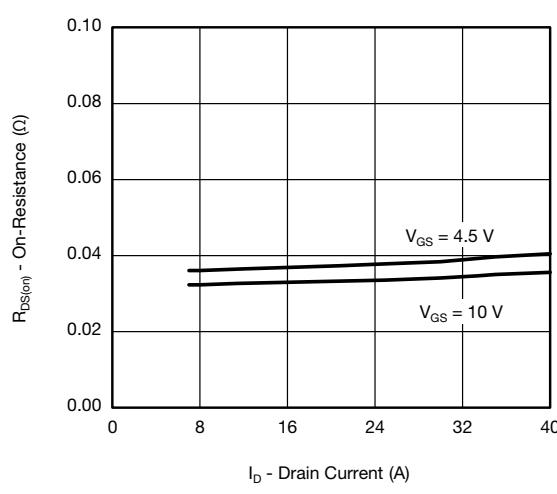
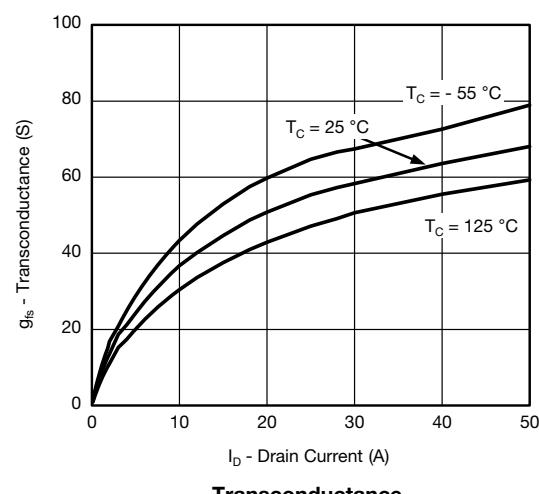
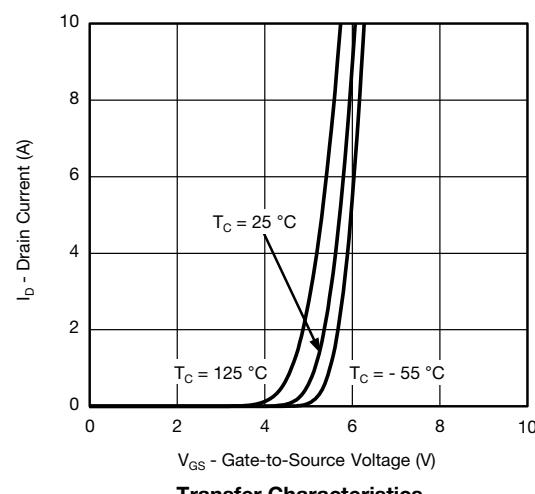
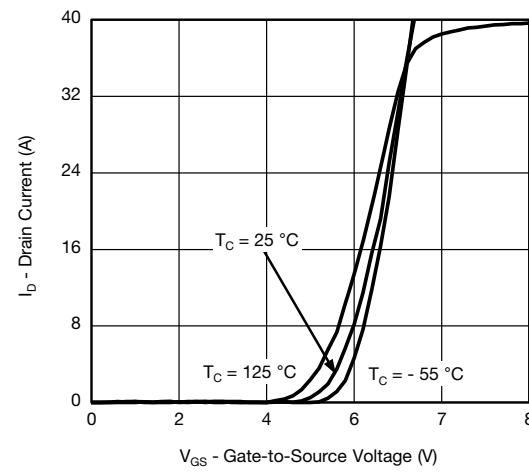
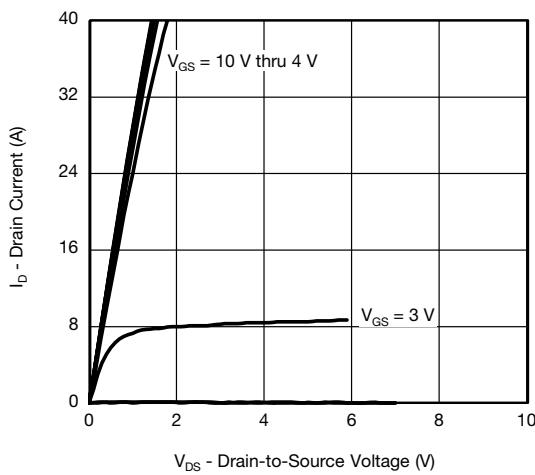
- Package limited.
- Pulse test; pulse width ≤ 300 μ s, duty cycle ≤ 2 %.
- When mounted on 1" square PCB (FR-4 material).
- Parametric verification ongoing.

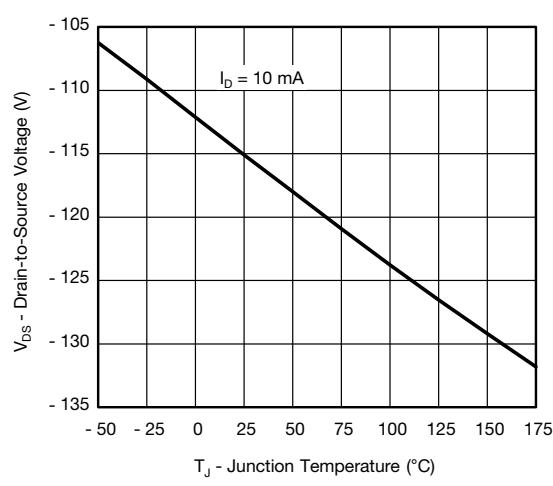
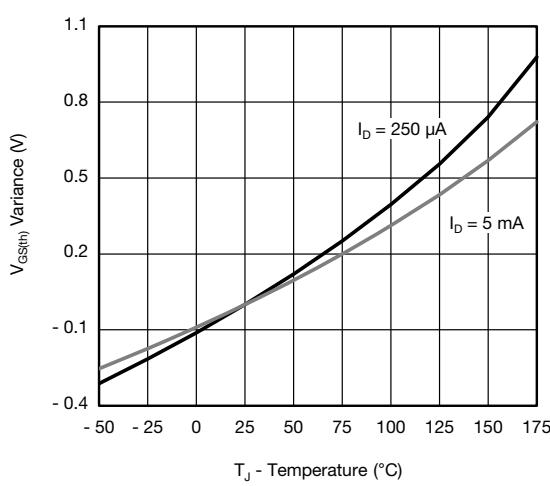
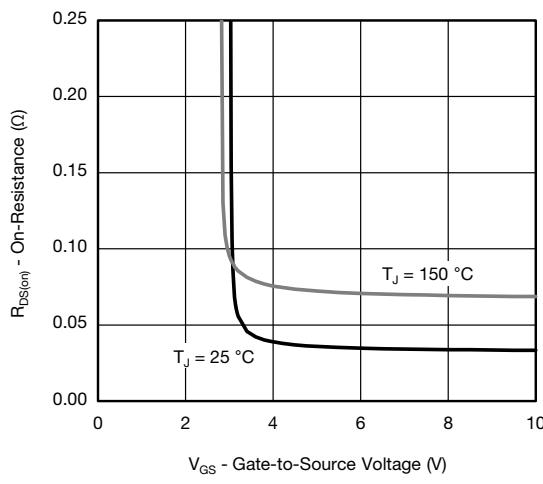
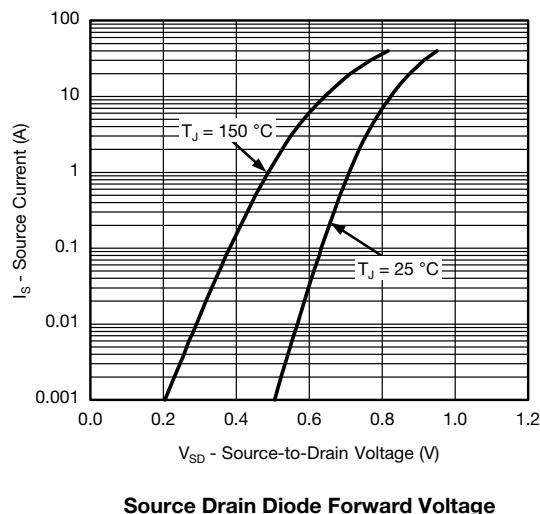
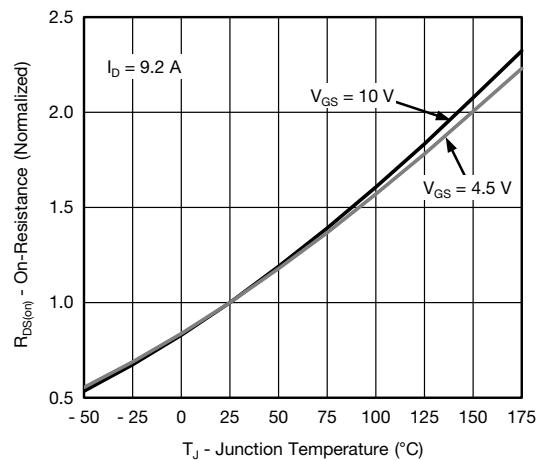
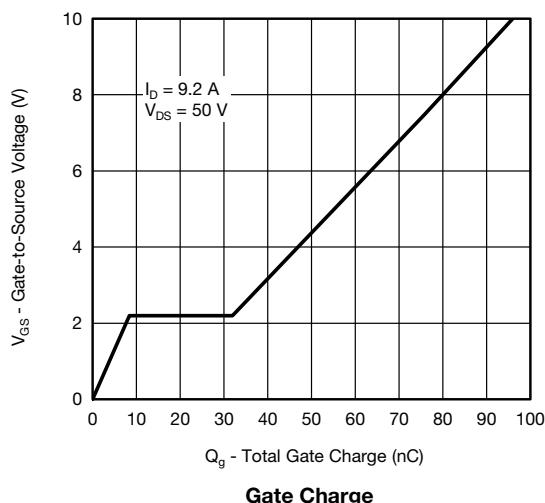
SPECIFICATIONS ($T_C = 25^\circ\text{C}$, unless otherwise noted)									
PARAMETER	SYMBOL	TEST CONDITIONS			MIN.	TYP.	MAX.		
Static									
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}$, $I_D = -250\text{ }\mu\text{A}$	-100	-	-	V			
Gate-Source Threshold Voltage	$V_{GS(\text{th})}$	$V_{DS} = V_{GS}$, $I_D = -250\text{ }\mu\text{A}$	-1.0	-	-2.5				
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}$, $V_{GS} = \pm 20\text{ V}$	-	-	± 100				
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}$, $V_{DS} = -100\text{ V}$	-	-	-1	μA			
		$V_{GS} = 0\text{ V}$, $V_{DS} = -100\text{ V}$, $T_J = 125^\circ\text{C}$	-	-	-50				
		$V_{GS} = 0\text{ V}$, $V_{DS} = -100\text{ V}$, $T_J = 175^\circ\text{C}$	-	-	-250				
On-State Drain Current ^a	$I_{D(\text{on})}$	$V_{GS} = -10\text{ V}$, $V_{DS} \leq -5\text{ V}$	-30	-	-	A			
Drain-Source On-State Resistance ^a	$R_{DS(\text{on})}$	$V_{GS} = -10\text{ V}$, $I_D = -9.2\text{ A}$	-	0.033	-				
		$V_{GS} = -10\text{ V}$, $I_D = -9.2\text{ A}$, $T_J = 125^\circ\text{C}$	-	0.065	-				
		$V_{GS} = -10\text{ V}$, $I_D = -9.2\text{ A}$, $T_J = 175^\circ\text{C}$	-	0.081	-				
		$V_{GS} = -4.5\text{ V}$, $I_D = -7.7\text{ A}$	-	0.037	-				
Forward Transconductance ^b	g_{fs}	$V_{DS} = -15\text{ V}$, $I_D = -9.2\text{ A}$	-	35	-	S			
Dynamic ^b									
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}$	$V_{DS} = -25\text{ V}$, $f = 1\text{ MHz}$	-	4433	-	pF		
Output Capacitance	C_{oss}			-	301	-			
Reverse Transfer Capacitance	C_{rss}			-	208	-			
Total Gate Charge ^c	Q_g	$V_{GS} = -10\text{ V}$	$V_{DS} = -50\text{ V}$, $I_D = -9.2\text{ A}$	-	96	144	nC		
Gate-Source Charge ^c	Q_{gs}			-	8.4	-			
Gate-Drain Charge ^c	Q_{gd}			-	23.5	-			
Gate Resistance	R_g	$f = 1\text{ MHz}$			1.5	3.13	4.7	Ω	
Turn-On Delay Time ^c	$t_{d(\text{on})}$	$V_{DD} = -50\text{ V}$, $R_L = 6.49\text{ }\Omega$ $I_D \geq -7.7\text{ A}$, $V_{GEN} = -10\text{ V}$, $R_g = 1.0\text{ }\Omega$		-	11	17	ns		
Rise Time ^c	t_r			-	11	17			
Turn-Off Delay Time ^c	$t_{d(\text{off})}$			-	78	117			
Fall Time ^c	t_f			-	15	23			
Source-Drain Diode Ratings and Characteristics ^b									
Pulsed Current ^a	I_{SM}				-	-	-150	A	
Forward Voltage	V_{SD}	$I_F = -7.7\text{ A}$, $V_{GS} = 0\text{ V}$			-	-0.8	-1.5	V	

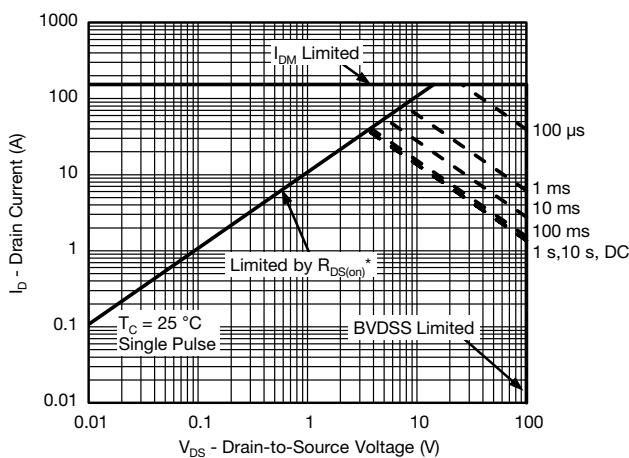
Notes

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

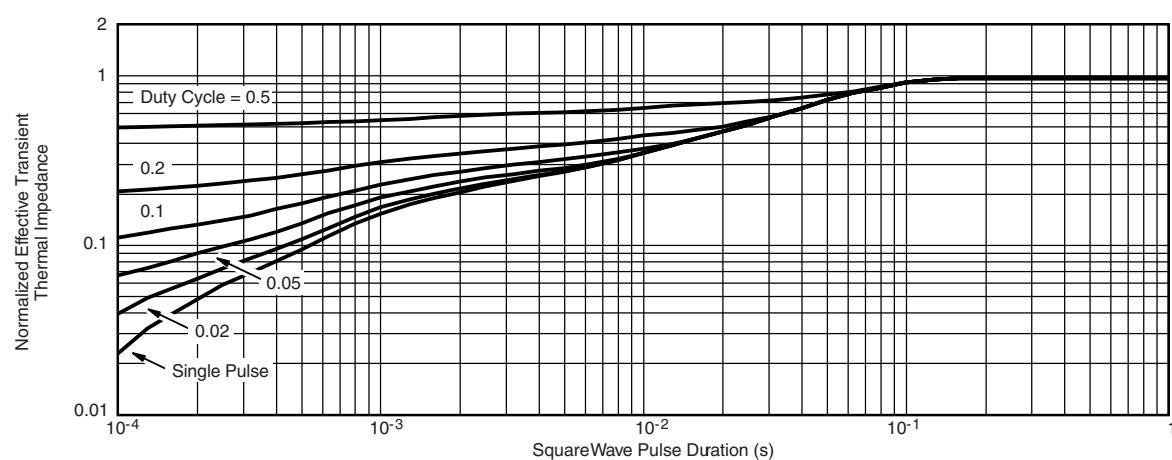
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

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


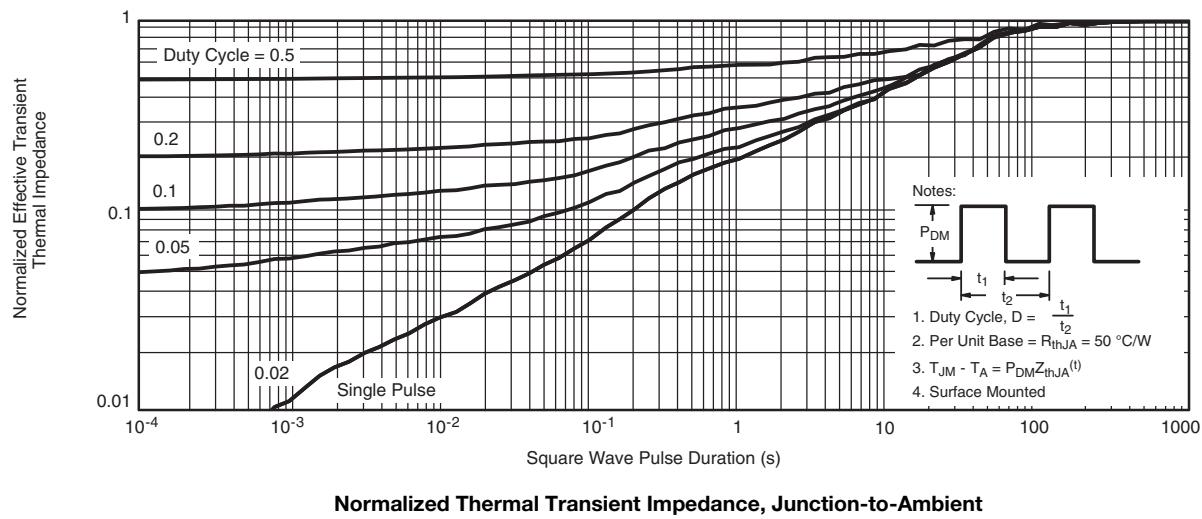
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise noted)


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


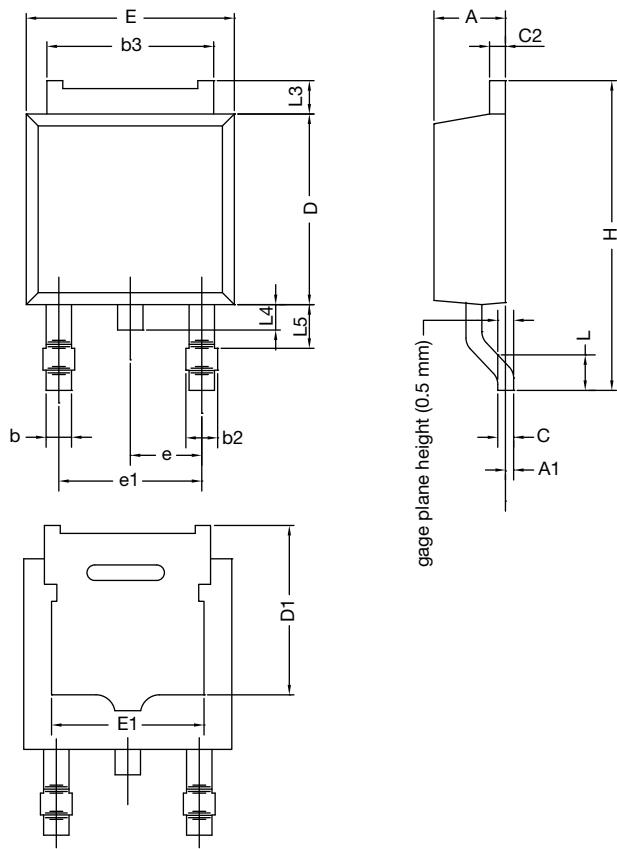
Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Case

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


TO-252AA Case Outline

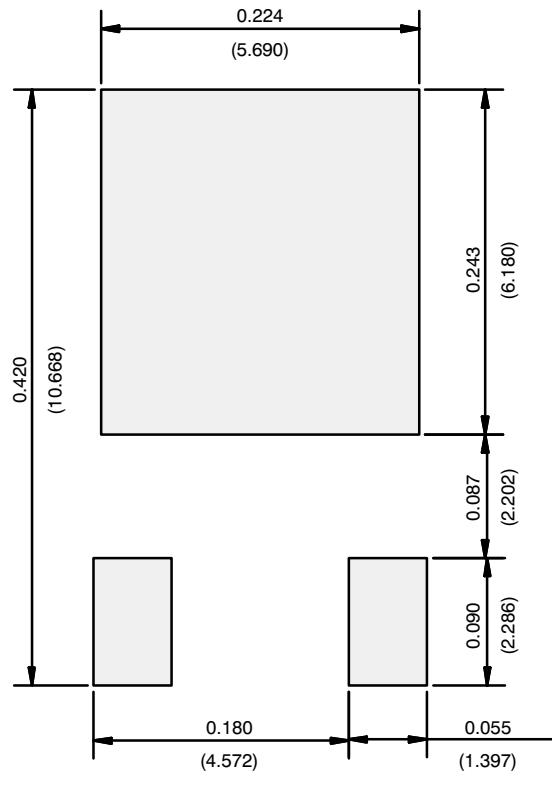


DIM.	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	2.18	2.38	0.086	0.094
A1	-	0.127	-	0.005
b	0.64	0.88	0.025	0.035
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
C	0.46	0.61	0.018	0.024
C2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	4.10	-	0.161	-
E	6.35	6.73	0.250	0.265
E1	4.32	-	0.170	-
H	9.40	10.41	0.370	0.410
e	2.28 BSC		0.090 BSC	
e1	4.56 BSC		0.180 BSC	
L	1.40	1.78	0.055	0.070
L3	0.89	1.27	0.035	0.050
L4	-	1.02	-	0.040
L5	1.01	1.52	0.040	0.060

ECN: T13-0592-Rev. A, 02-Sep-13
 DWG: 6019

Note

- Dimension L3 is for reference only.

RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)

Recommended Minimum Pads
Dimensions in Inches/(mm)

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