

**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**Product Summary**

BV <sub>DSS</sub>	R <sub>DS(ON)</sub> Max	I <sub>D</sub> Max T <sub>C</sub> = +25°C
100V	8.8mΩ @ V <sub>GS</sub> = 10V	68.8A
	11.3mΩ @ V <sub>GS</sub> = 6.0V	60.7A
	15mΩ @ V <sub>GS</sub> = 4.5V	52.7A

**Description**

This new generation MOSFET features low on-resistance and fast switching, making it ideal for high-efficiency power management applications.

**Applications**

- Power Management Functions
- DC-DC Converters
- Backlighting

**Features**

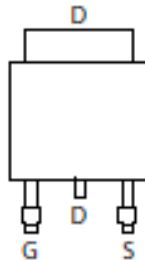
- 100% Unclamped Inductive Switching – Ensures More Reliable and Robust End Application
- Low R<sub>DS(ON)</sub> – Minimizes Power Losses
- Low Q<sub>g</sub> – Minimizes Switching Losses
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

**Mechanical Data**

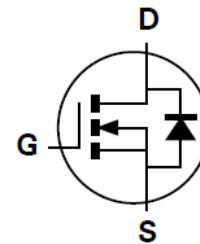
- Case: TO252 (DPAK)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.33 grams (Approximate)



Top View



Pin Out Top View



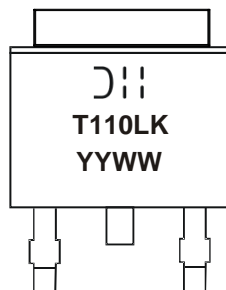
Equivalent Circuit

**Ordering Information** (Note 4)

Part Number	Case	Packaging
DMT10H010LK3-13	TO252 (DPAK)	2,500/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free/](http://www.diodes.com/quality/lead_free/) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

**Marking Information**



D = Manufacturer's Marking  
 T110LK = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 18 = 2018)  
 WW = Week Code (01 to 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DSS</sub>	100	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current, V <sub>GS</sub> = 10V	I <sub>D</sub>	T <sub>C</sub> = +25°C	68.8
		T <sub>C</sub> = +70°C	55
Continuous Drain Current, V <sub>GS</sub> = 6V	I <sub>D</sub>	T <sub>C</sub> = +25°C	60.7
		T <sub>C</sub> = +70°C	48.5
Pulsed Drain Current (10µs Pulse, T <sub>C</sub> =+25°C, Package Limited)	I <sub>DM</sub>	275	A
Maximum Continuous Body Diode Forward Current (Note 6)	I <sub>S</sub>	52	A
Pulsed Body Diode Forward Current (10µs Pulse, T <sub>C</sub> =+25°C, Package Limited)	I <sub>SM</sub>	275	A
Avalanche Current, L=3mH	I <sub>AS</sub>	10	A
Avalanche Energy, L=3mH	E <sub>AS</sub>	150	mJ

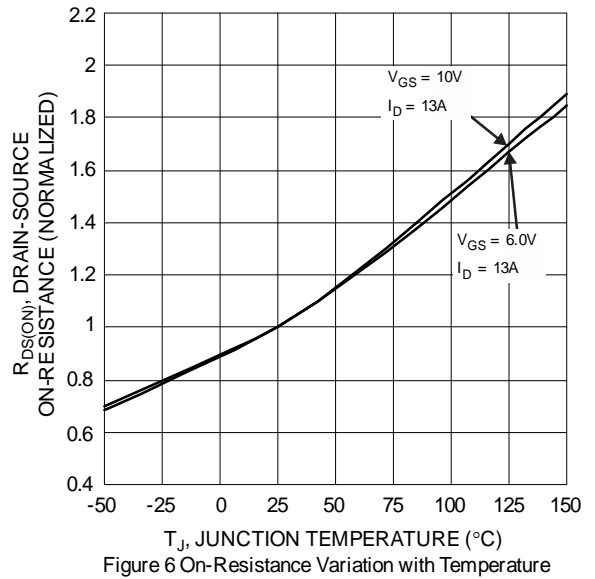
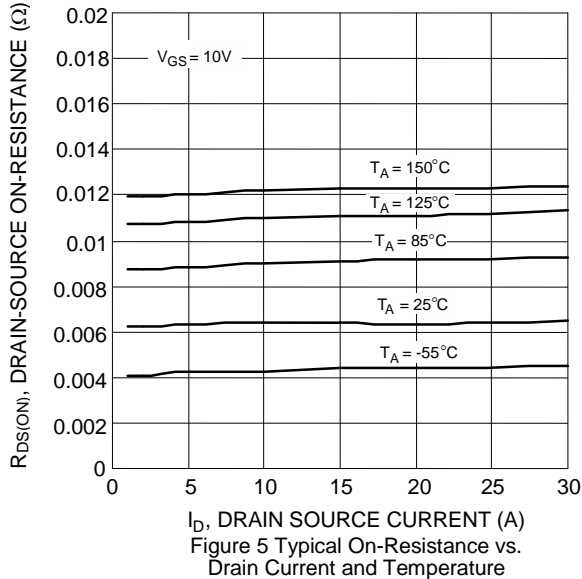
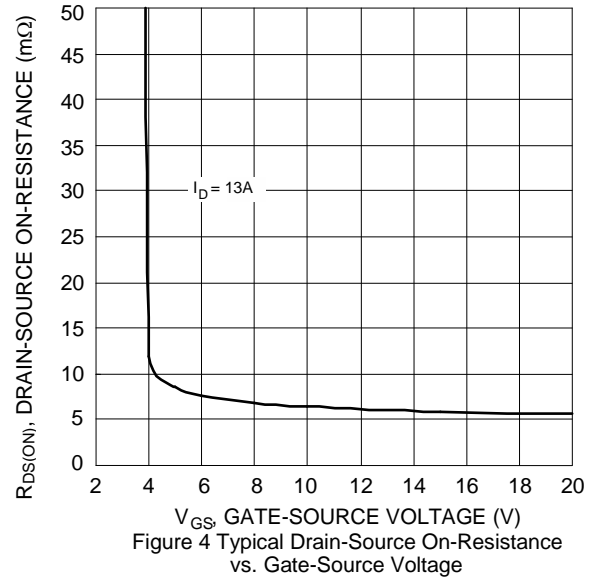
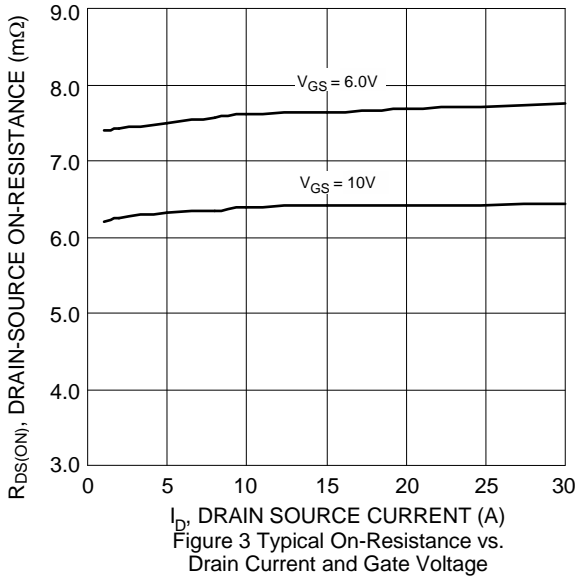
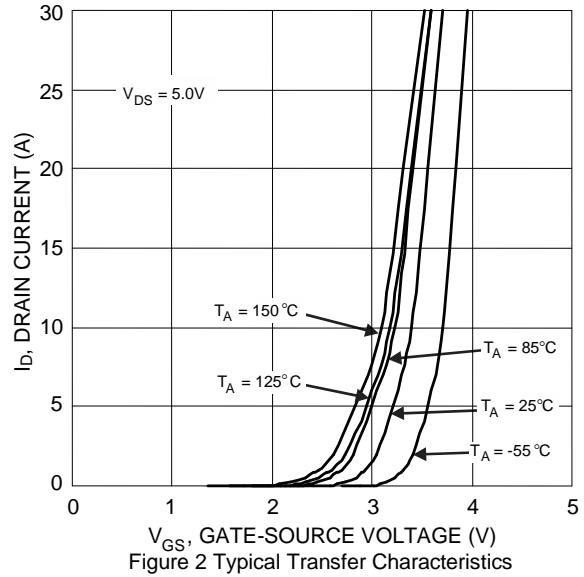
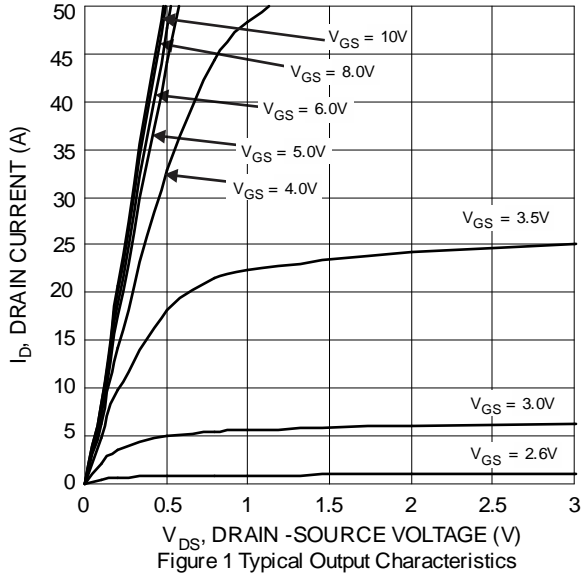
**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

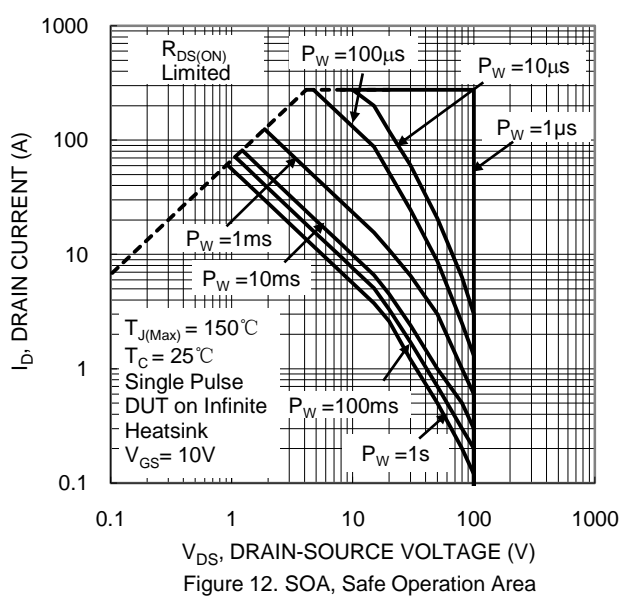
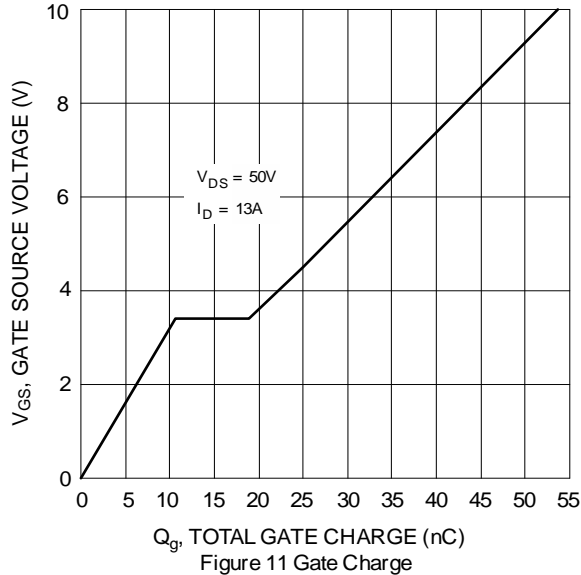
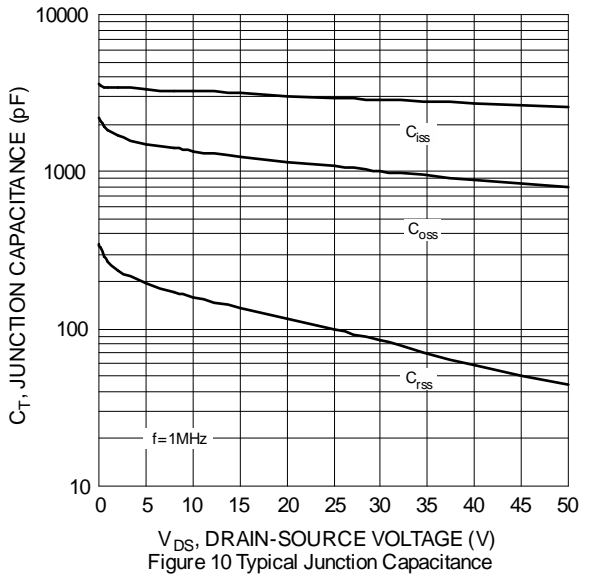
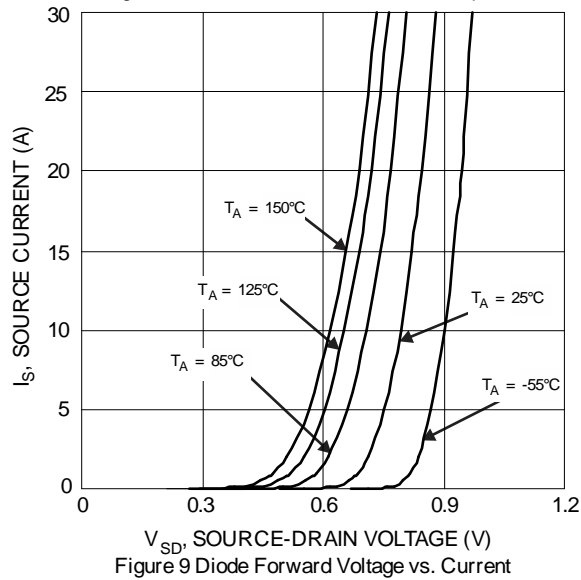
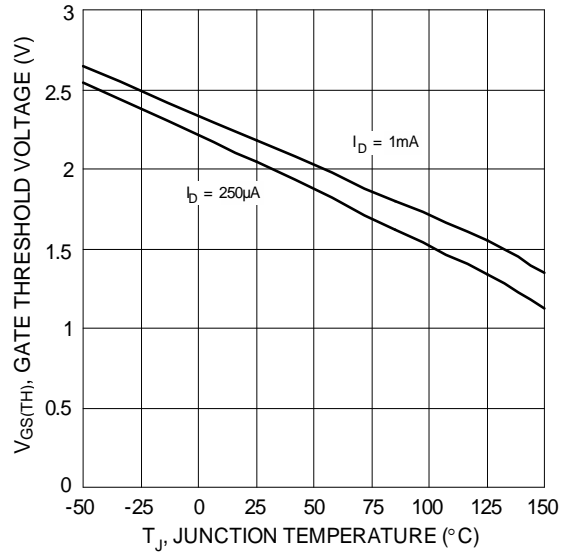
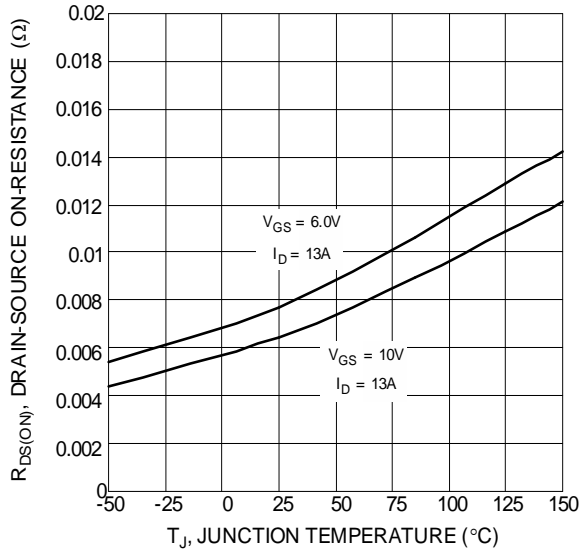
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P <sub>D</sub>	3	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	42	°C/W
Total Power Dissipation (Note 6)	P <sub>D</sub>	62.5	W
Thermal Resistance, Junction to Case (Note 6)	R <sub>θJC</sub>	2	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	µA	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1.2	—	2.8	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	6.5	8.8	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 13A
		—	7.8	11.3		V <sub>GS</sub> = 6V, I <sub>D</sub> = 13A
		—	12.5	15		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 13A
		—	—	—		V <sub>GS</sub> = 0V, I <sub>S</sub> = 13A
Diode Forward Voltage	V <sub>SD</sub>	—	—	1.3	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 13A
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	C <sub>ISS</sub>	—	2,592	—	pF	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V f = 1MHz
Output Capacitance	C <sub>OSS</sub>	—	792	—		
Reverse Transfer Capacitance	C <sub>RSS</sub>	—	45	—		
Gate Resistance	R <sub>g</sub>	—	2	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge	Q <sub>g</sub>	—	53.7	—	nC	V <sub>DD</sub> = 50V, I <sub>D</sub> = 13A, V <sub>GS</sub> = 10V
Gate-Source Charge	Q <sub>gs</sub>	—	10.6	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	8.2	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	11.6	—	ns	V <sub>DD</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 13A, R <sub>g</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	14.1	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	42.9	—		
Turn-Off Fall Time	t <sub>f</sub>	—	22	—		
Reverse Recovery Time	t <sub>RR</sub>	—	49.8	—	ns	I <sub>F</sub> = 13A, di/dt = 100A/µs
Reverse Recovery Charge	Q <sub>RR</sub>	—	85.1	—	nC	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
  - Device mounted on infinite heat sink.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.





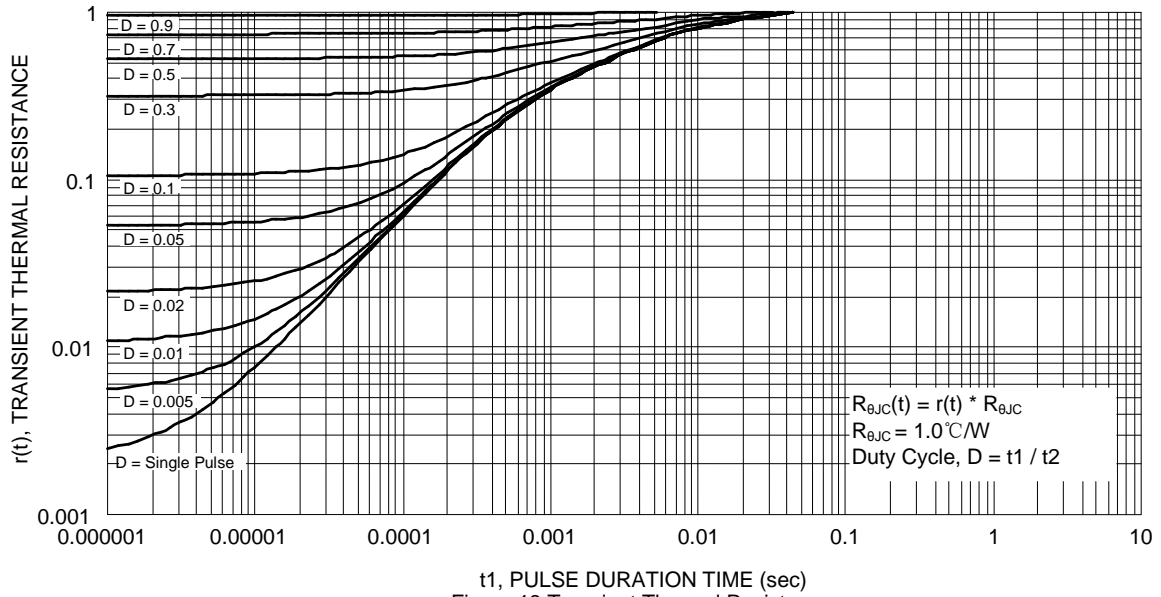
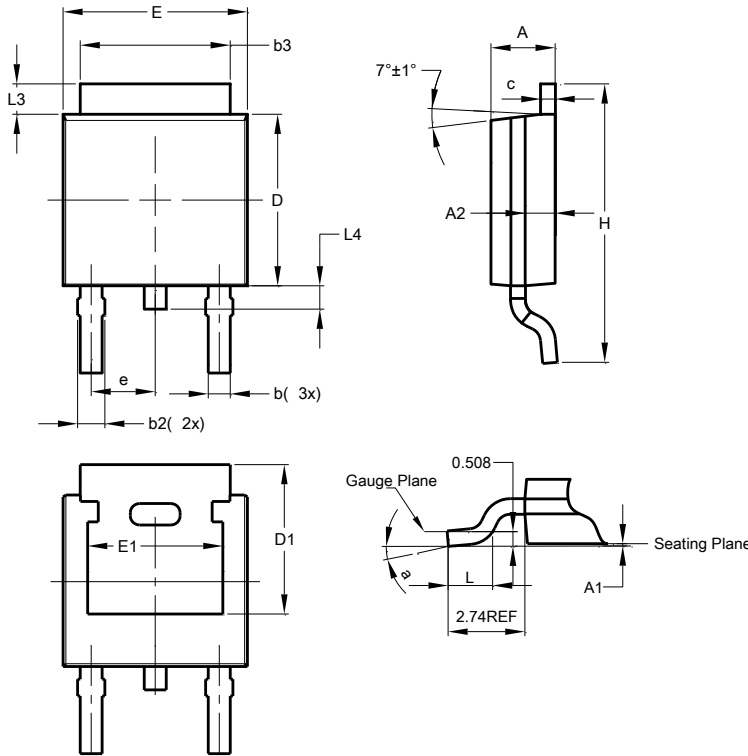


Figure 13 Transient Thermal Resistance

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**TO252 (DPAK)**

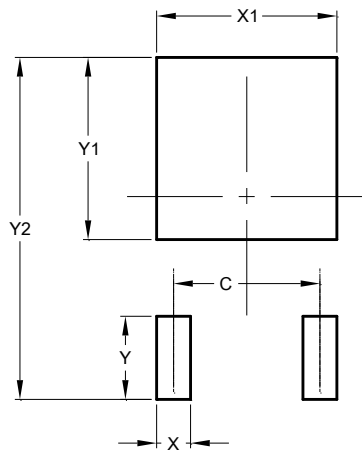


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
E	6.45	6.70	6.58
E1	4.32	-	-
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	-
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**TO252 (DPAK)**



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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