

Product Summary

BV_{DSS}	$R_{DS(on)}$ Max	I_D Max $T_c = +25^\circ\text{C}$
80V	7.0m Ω @ $V_{GS} = 10\text{V}$	95A
	11m Ω @ $V_{GS} = 4.5\text{V}$	75A

Description

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

Applications

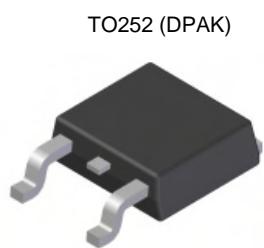
- Power Management Functions
- DC-DC Converters
- Backlighting

Features

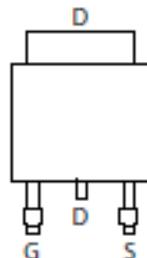
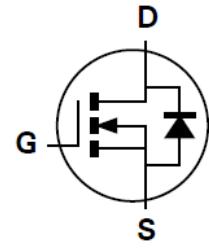
- 100% Unclamped Inductive Switching (UIS) Test in Production – Ensures More Reliable and Robust End Application
- Low $R_{DS(on)}$ – Minimizes Power Losses
- Low Q_g – Minimizes Switching Losses
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative.
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: TO252
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 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

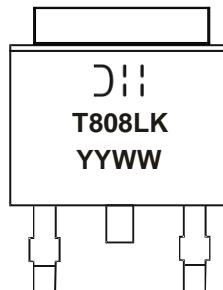
Ordering Information

Part Number	Package	Packing	
		Qty.	Carrier
DMT8008LK3-13	TO252 (DPAK)	2,500	Tape & Reel

Notes:

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

Marking Information



DII = Manufacturer's Marking
 T808LK = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 21 = 2021)
 WW = Week Code (01 to 53)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	80	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current, $V_{GS} = 10\text{V}$	I_D	95	A
		76	
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)	I_{DM}	380	A
Maximum Continuous Body Diode Forward Current (Note 6)	I_S	95	A
Pulsed Body Diode Forward Current (10 μs Pulse, Duty Cycle = 1%)	I_{SM}	380	A
Avalanche Current, $L = 0.1\text{mH}$	I_{AS}	23	A
Avalanche Energy, $L = 0.1\text{mH}$	E_{AS}	26.5	mJ

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	1.7	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	71	$^\circ\text{C/W}$
Total Power Dissipation (Note 6)	P_D	3	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	45	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.1	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	80	—	—	V	$\text{V}_{\text{GS}} = 0\text{V}, \text{I}_{\text{D}} = 1\text{mA}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$\text{V}_{\text{DS}} = 64\text{V}, \text{V}_{\text{GS}} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$\text{V}_{\text{GS}} = \pm 20\text{V}, \text{V}_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$\text{V}_{\text{GS(th)}}$	1.3	—	2.8	V	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}, \text{I}_{\text{D}} = 250\mu\text{A}$
Static Drain-Source On-Resistance	$\text{R}_{\text{DS(on)}}$	—	5.6	7.0	$\text{m}\Omega$	$\text{V}_{\text{GS}} = 10\text{V}, \text{I}_{\text{D}} = 14\text{A}$
		—	7.9	11		$\text{V}_{\text{GS}} = 4.5\text{V}, \text{I}_{\text{D}} = 12\text{A}$
Diode Forward Voltage	V_{SD}	—	0.8	1.2	V	$\text{V}_{\text{GS}} = 0\text{V}, \text{I}_{\text{S}} = 20\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	2345	—	pF	$\text{V}_{\text{DS}} = 40\text{V}, \text{V}_{\text{GS}} = 0\text{V}, \text{f} = 1\text{MHz}$
Output Capacitance	C_{oss}	—	842	—		
Reverse Transfer Capacitance	C_{rss}	—	52	—	nC	$\text{V}_{\text{DD}} = 40\text{V}, \text{I}_{\text{D}} = 2\text{A}$
Gate Resistance	R_{g}	—	1.7	—		
Total Gate Charge ($\text{V}_{\text{GS}} = 4.5\text{V}$)	Q_{g}	—	21.7	—		
Total Gate Charge ($\text{V}_{\text{GS}} = 10\text{V}$)	Q_{g}	—	41.2	—		
Gate-Source Charge	Q_{gs}	—	5.0	—		
Gate-Drain Charge	Q_{gd}	—	10.6	—		
Turn-On Delay Time	$\text{t}_{\text{D(on)}}$	—	5.8	—	ns	$\text{V}_{\text{DD}} = 40\text{V}, \text{V}_{\text{GS}} = 10\text{V}, \text{I}_{\text{D}} = 2\text{A}, \text{R}_{\text{G}} = 1.6\Omega$
Turn-On Rise Time	t_{R}	—	5.4	—		
Turn-Off Delay Time	$\text{t}_{\text{D(off)}}$	—	24.5	—		
Turn-Off Fall Time	t_{F}	—	43.2	—		
Body Diode Reverse Recovery Time	t_{RR}	—	61	—	ns	$\text{I}_{\text{F}} = 2\text{A}, \text{di/dt} = 100\text{A}/\mu\text{s}$
Body Diode Reverse Recovery Charge	Q_{RR}	—	181	—	nC	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to product testing.

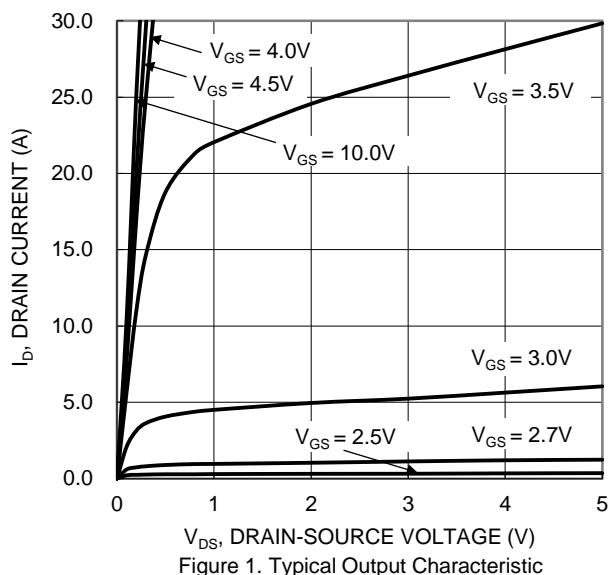


Figure 1. Typical Output Characteristic

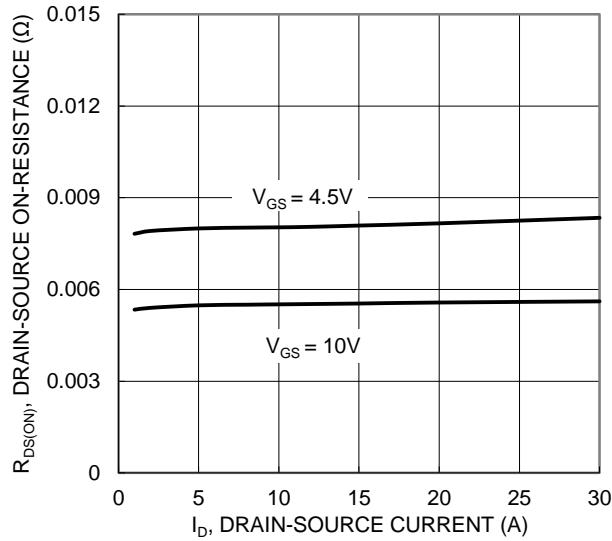


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

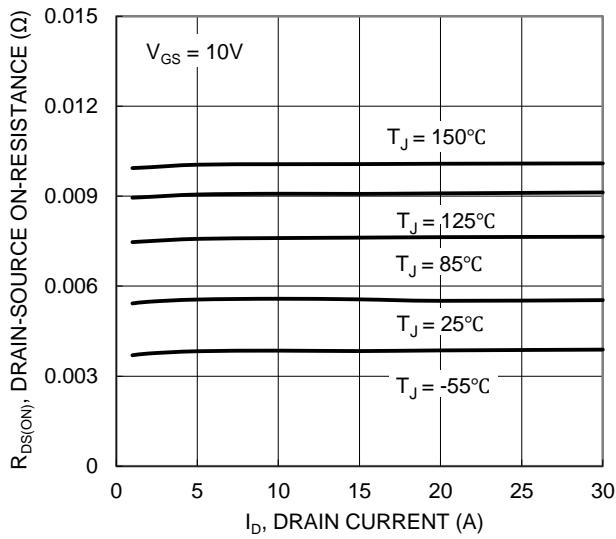


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

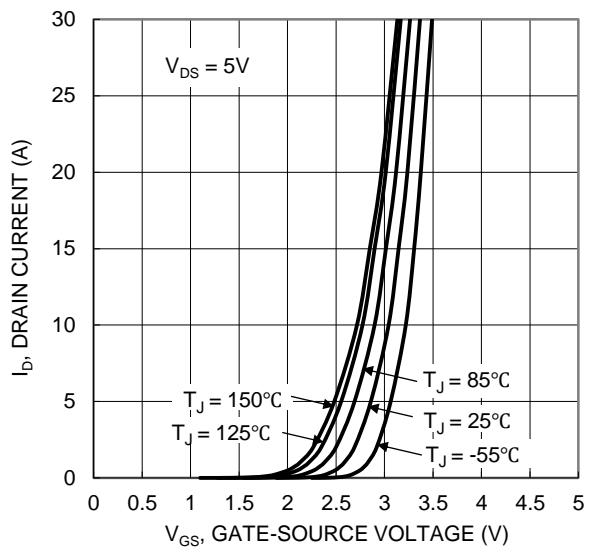


Figure 2. Typical Transfer Characteristic

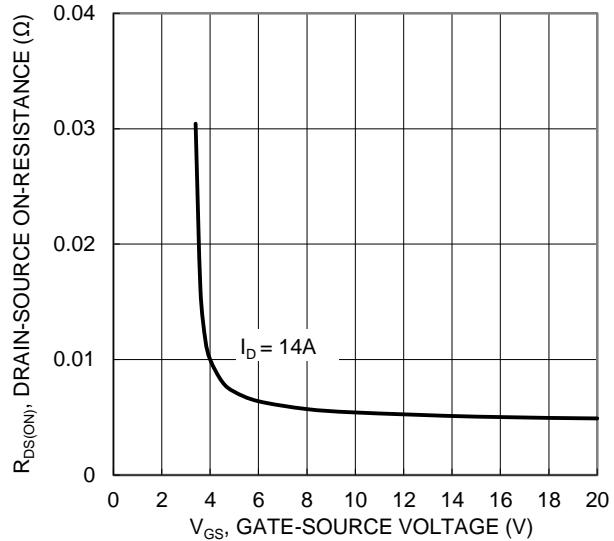


Figure 4. Typical Transfer Characteristic

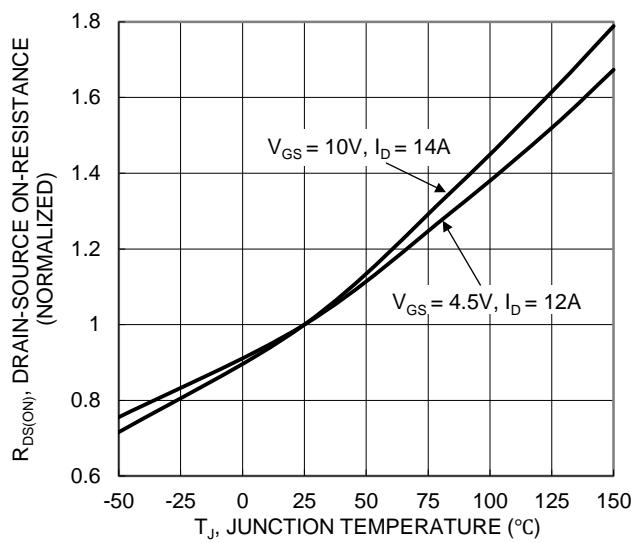
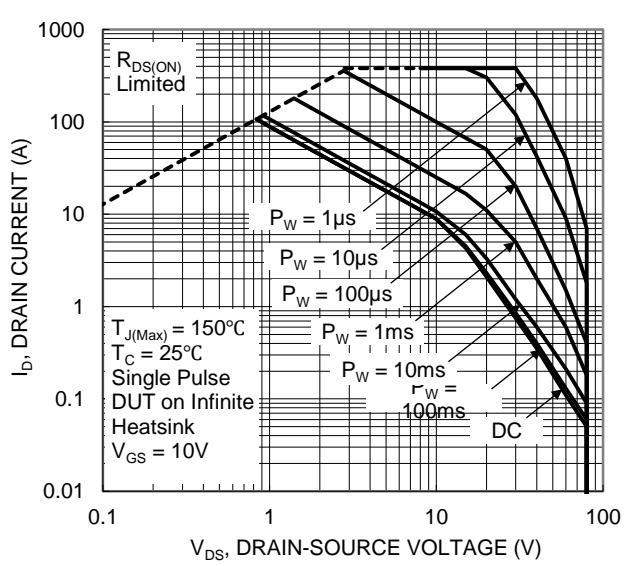
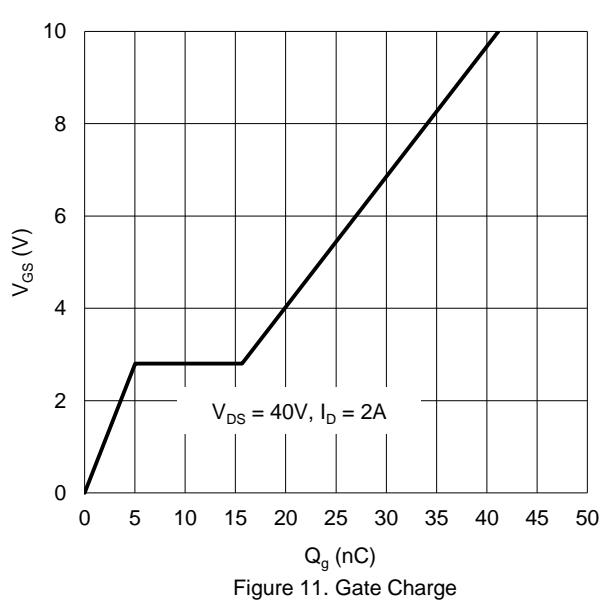
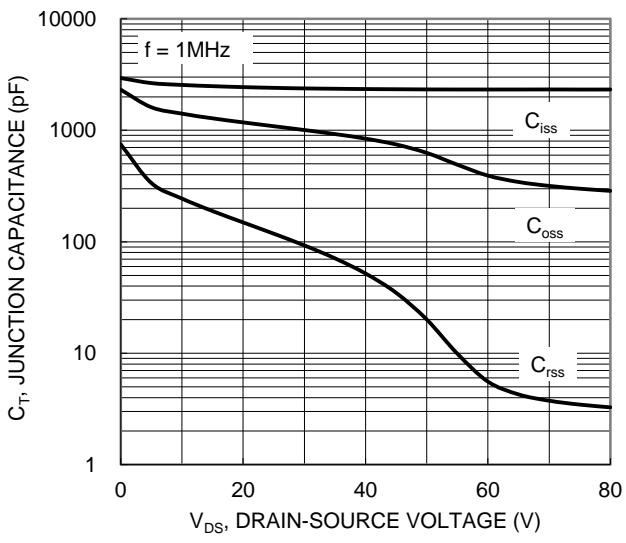
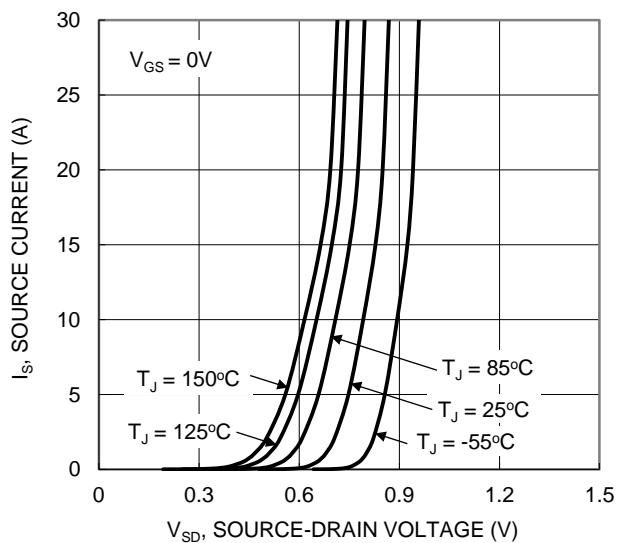
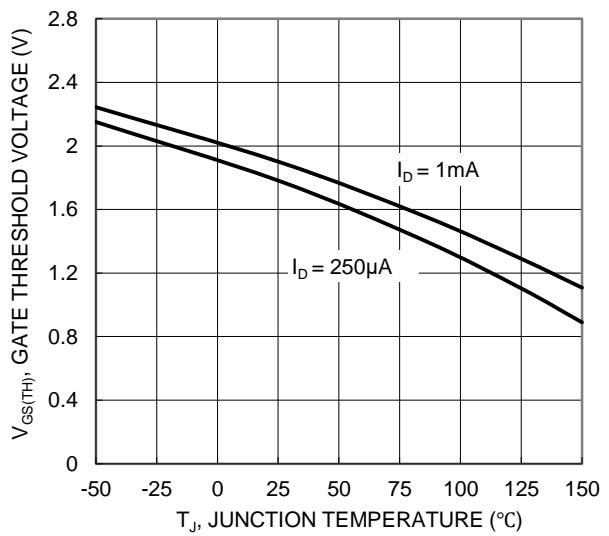
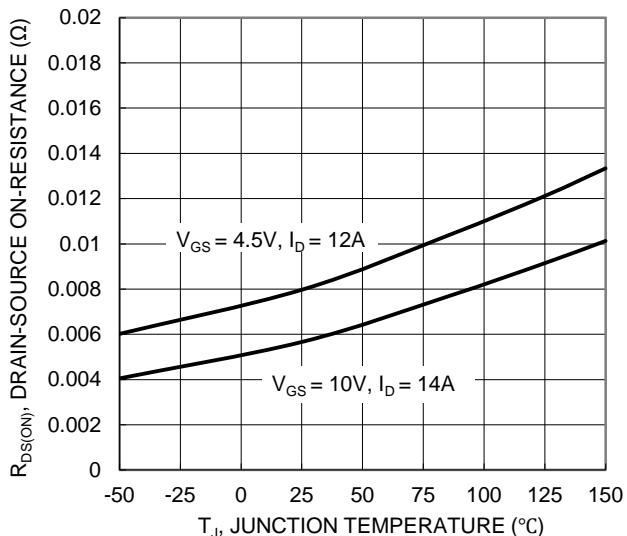


Figure 6. On-Resistance Variation with Junction Temperature



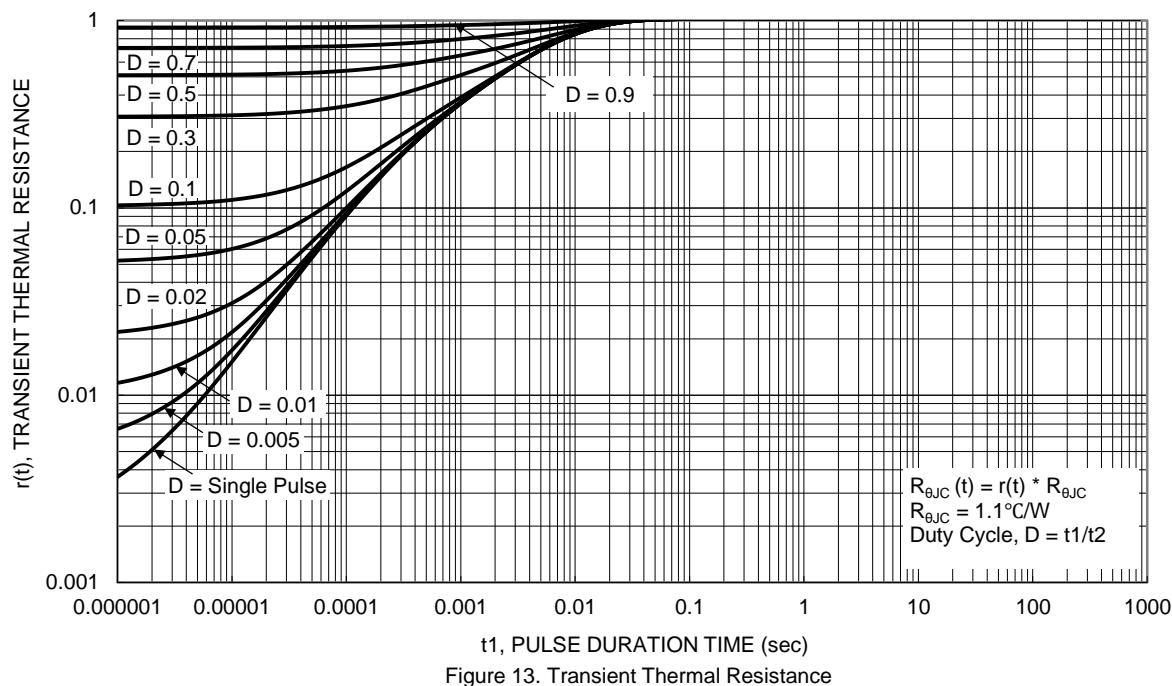
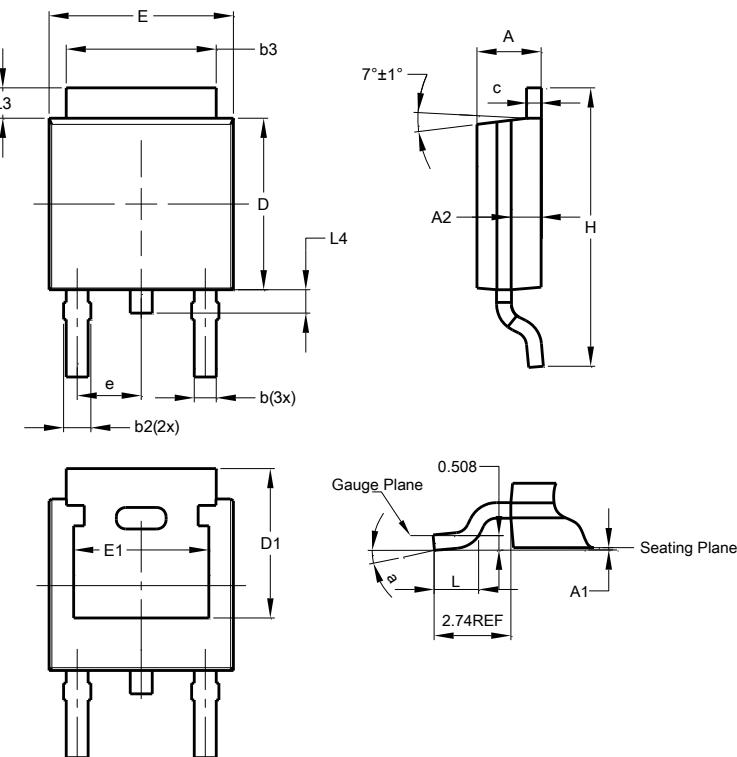


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TO252 (DPAK)

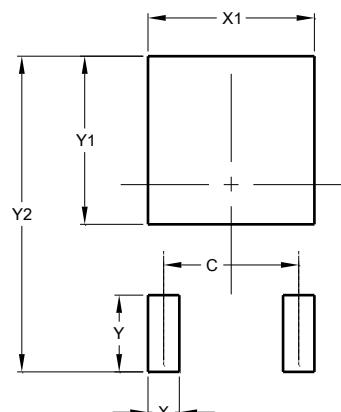


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	—	—
e	—	—	2.286
E	6.45	6.70	6.58
E1	4.32	—	—
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°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

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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