

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	DMTH6016LK3Q-13
Manufacturer:	Diodes Incorporated
Package:	Please confirm with sales
Availability:	Please confirm with sales

Product Page:

<https://antrexco.com/product/details/diodes-incorporated/dmth6016lk3q-13.html>

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Contact Information

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New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _C = +25°C
60V	17mΩ @ V _{GS} = 10V	46.9A
	24mΩ @ V _{GS} = 4.5V	38.3A

Features

- Rated to +175°C – Ideal for High Ambient Temperature Environments
- 100% Unclamped Inductive Switching – Ensures More Reliable and Robust End Application
- Low R_{DS(ON)} – Ensures On-State Losses Are Minimized
- Excellent Q_{gd} x R_{DS(ON)} Product (FOM)
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- The DMTH6016LK3Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

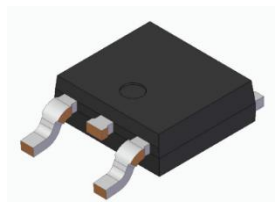
<https://www.diodes.com/quality/product-definitions/>

Description and Applications

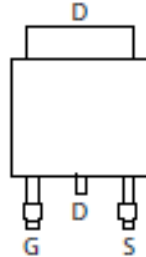
This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Power-management functions
- DC-DC converters
- Backlighting

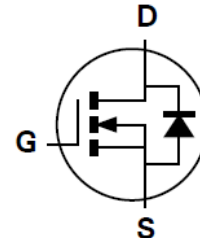
TO252 (DPAK)



Top View



Pinout Top View



Equivalent Circuit

Mechanical Data

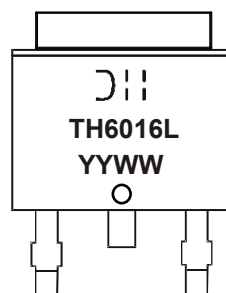
- Package: TO252
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.33 grams (Approximate)

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMTH6016LK3Q-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
 TH6016L = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 26 = 2026)
 WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	60	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Note 5) V _{GS} = 10V	I _D	T _A = +25°C T _A = +100°C	A
Continuous Drain Current (Note 6) V _{GS} = 10V	I _D	T _C = +25°C T _C = +100°C	A
Maximum Continuous Body Diode Forward Current (Note 6)	I _S	50	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	70	A
Avalanche Current, L = 0.1mH	I _{AS}	15.3	A
Avalanche Energy, L = 0.1mH	E _{AS}	11.7	mJ

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	3.2	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	47	°C/W
Total Power Dissipation (Note 6)	P _D	60	W
Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	2.5	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	V _{GS} = 0, I _D = 1mA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	µA	V _{DS} = 48V, V _{GS} = 0
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	1	—	3	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	11	17	mΩ	V _{GS} = 10V, I _D = 10A
		—	16	24	mΩ	V _{GS} = 4.5V, I _D = 6A
Diode Forward Voltage	V _{SD}	—	0.9	1.2	V	V _{GS} = 0, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	864	—	pF	V _{DS} = 30V, V _{GS} = 0, f = 1MHz
Output Capacitance	C _{oss}	—	282	—		
Reverse Transfer Capacitance	C _{rss}	—	27.1	—		
Gate Resistance	R _g	—	1.35	—	Ω	V _{DS} = 0, V _{GS} = 0, f = 1MHz
Total Gate Charge (V _{GS} = 10V)	Q _g	—	17	—	nC	V _{DS} = 30V, I _D = 10A
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	8.4	—		
Gate-Source Charge	Q _{gs}	—	3.1	—		
Gate-Drain Charge	Q _{gd}	—	4.3	—		
Turn-On Delay Time	t _{D(ON)}	—	3.4	—	ns	V _{DD} = 30V, V _{GS} = 10V, R _g = 6Ω, I _D = 10A
Turn-On Rise Time	t _r	—	5.2	—		
Turn-Off Delay Time	t _{D(OFF)}	—	12.9	—		
Turn-Off Fall Time	t _f	—	6.8	—		
Body Diode Reverse-Recovery Time	t _{RR}	—	22	—	ns	I _F = 10A, di/dt = 400A/µs
Body Diode Reverse-Recovery Charge	Q _{RR}	—	11.1	—	nC	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
 - Device mounted on infinite heatsink and measured by thermal couple attached on bottom heatsink of package.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

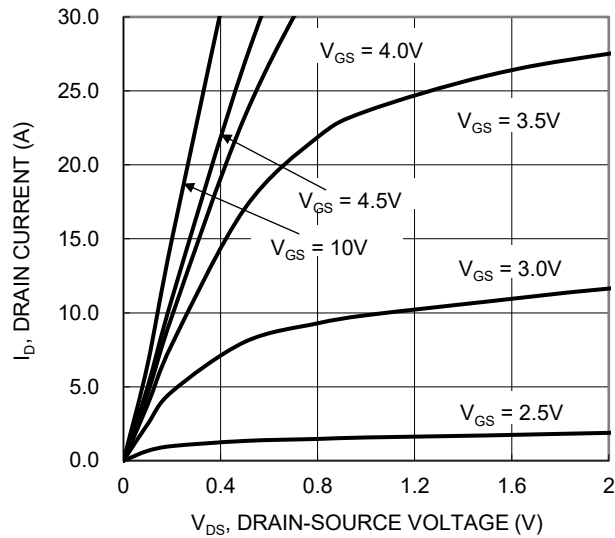


Figure 1. Typical Output Characteristic

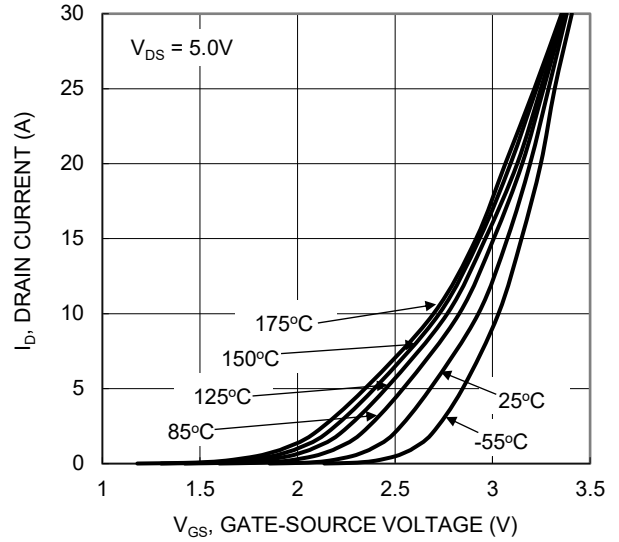


Figure 2. Typical Transfer Characteristic

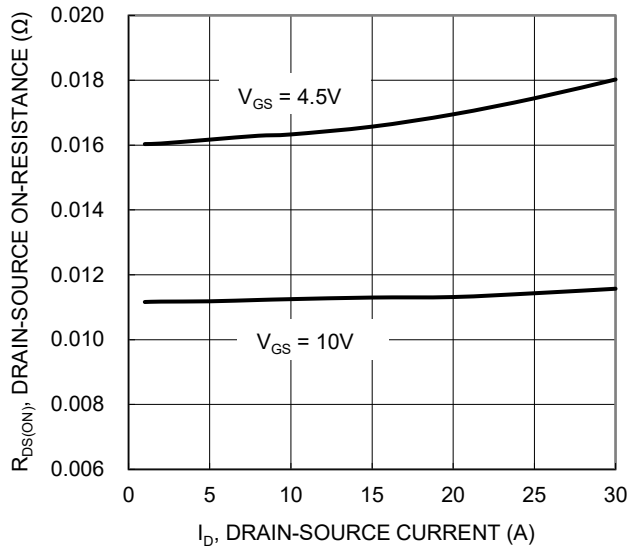


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

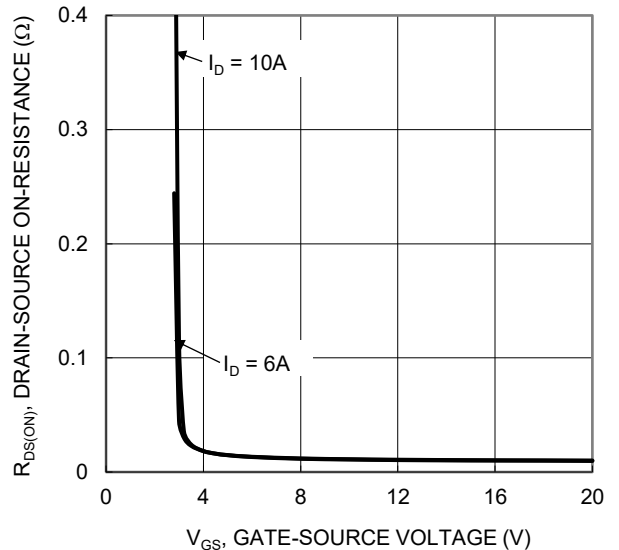


Figure 4. Typical Transfer Characteristic

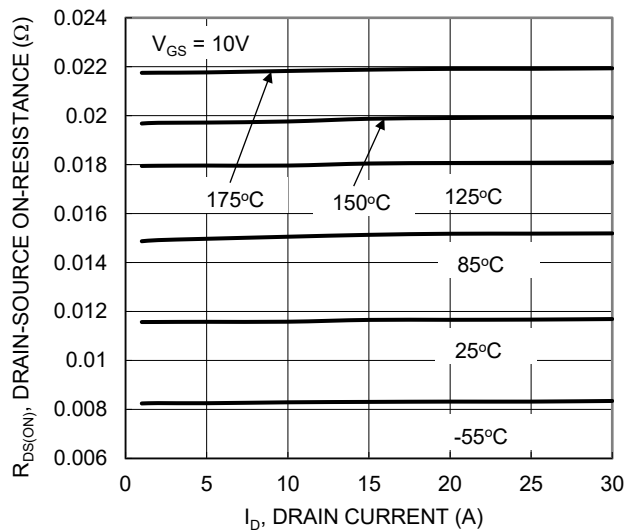


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

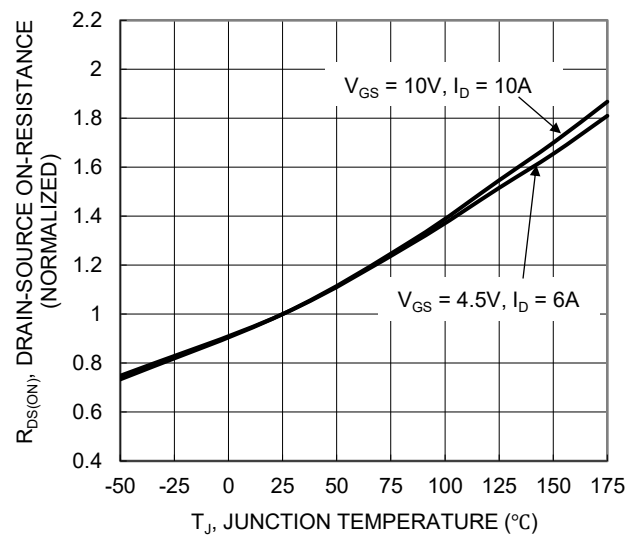
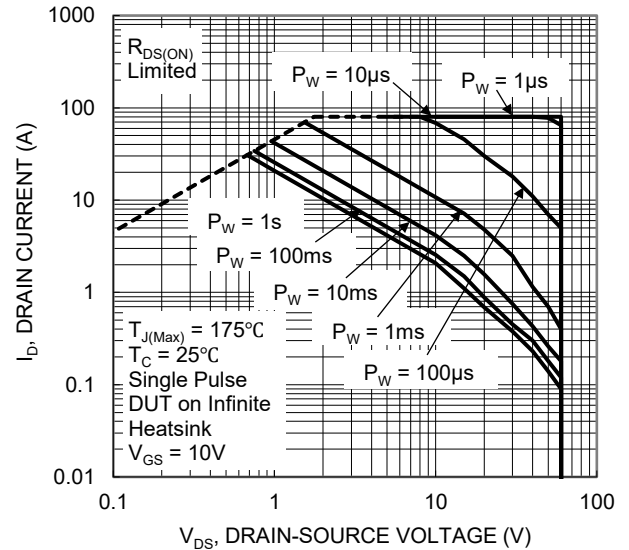
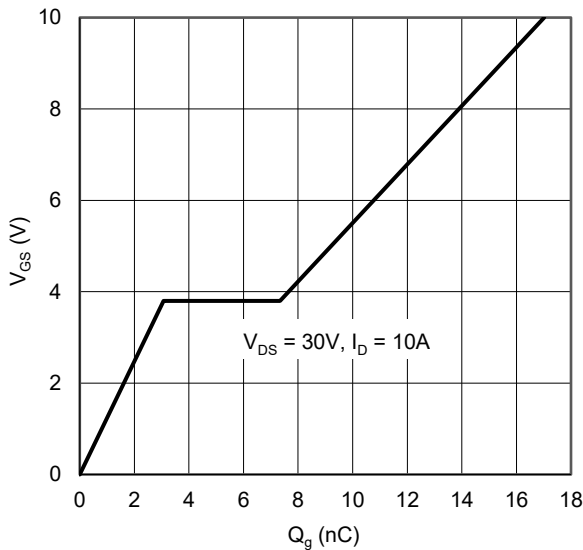
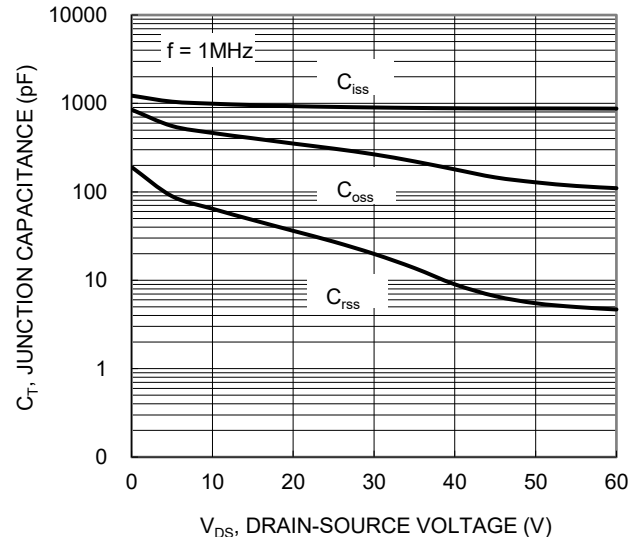
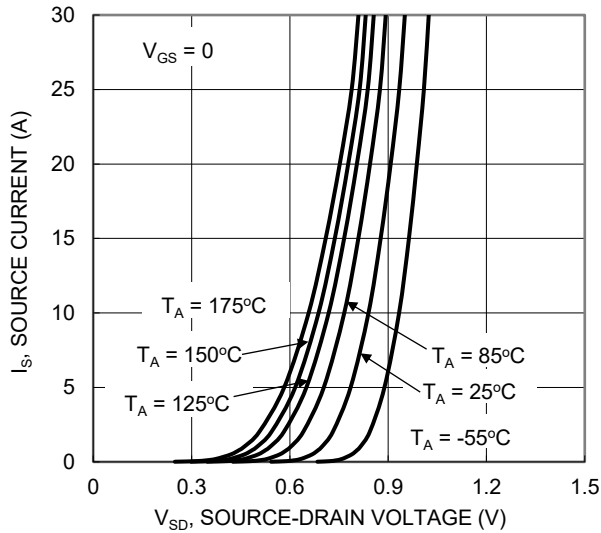
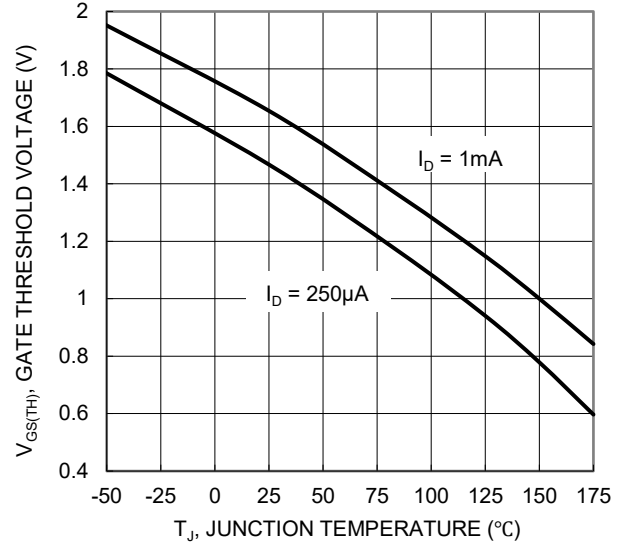
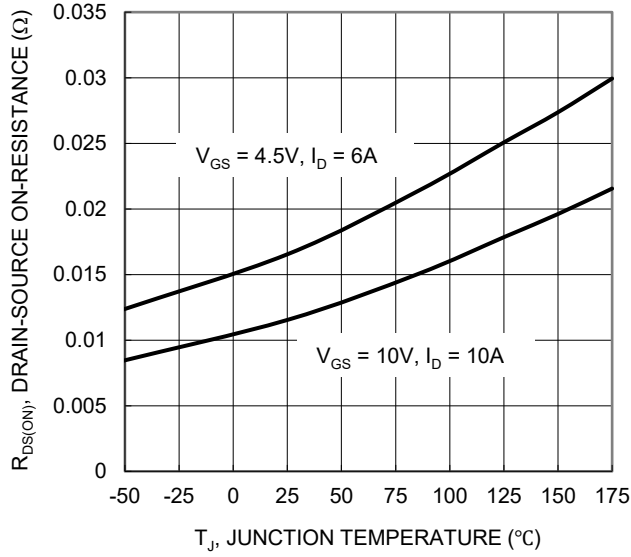


Figure 6. On-Resistance Variation with Temperature



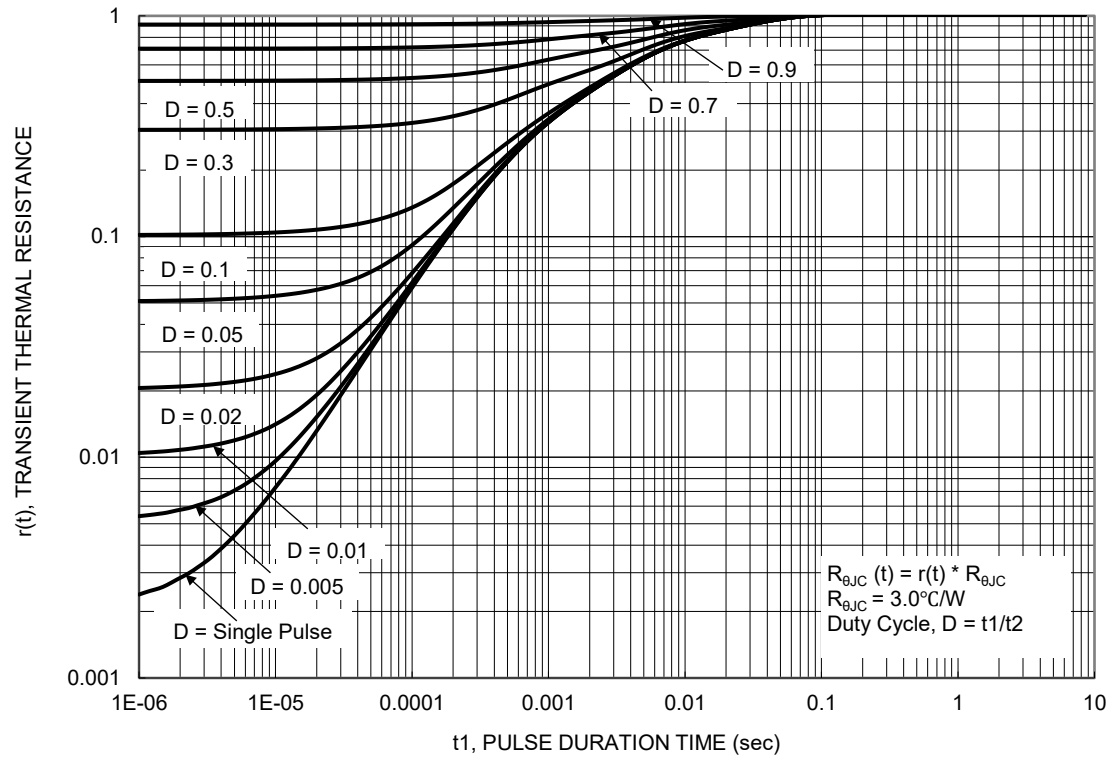
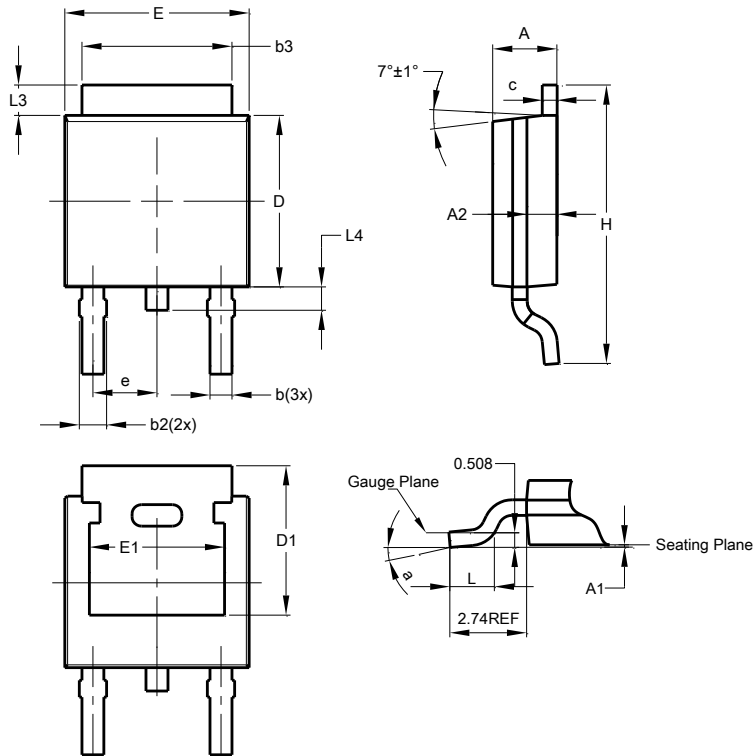


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TO252 (DPAK)

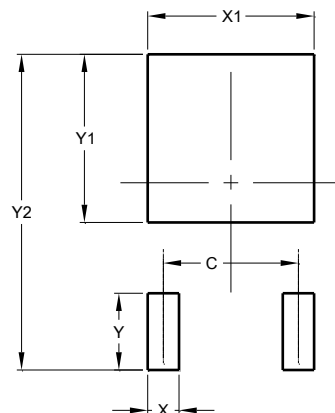


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.50	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	--	--
e	2.286 BSC		
E	6.45	6.70	6.58
E1	4.32	--	--
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
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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