

Product Summary

BV_{DSS}	$R_{DS(ON)}$ max	I_D max $T_C = +25^\circ\text{C}$
100V	$28\text{m}\Omega$ @ $V_{GS} = 10\text{V}$	60A

Description

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

Applications

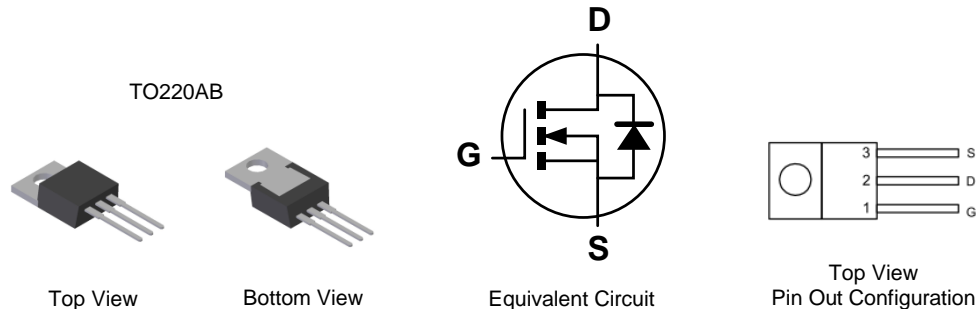
- Motor Control
- Backlighting
- DC-DC Converters
- Power Management Functions

Features

- Rated to $+175^\circ\text{C}$ – Ideal for High Ambient Temperature Environments
- 100% Unclamped Inductive Switching – ensures more reliable and robust end application
- Low Input Capacitance
- Low Input/Output Leakage
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: TO220AB
- Case Material: Molded Plastic, “Green” Molding Compound, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 [Ⓔ]
- Terminal Connections: See Diagram Below
- Weight: TO220AB – 1.85 grams (Approximate)

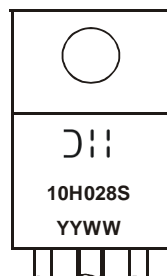


Ordering Information (Note 4)

Part Number	Case	Packaging
DMNH10H028SCT	TO220AB	50 pieces/tube

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html 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 <http://www.diodes.com/products/packages.html>.

Marking Information



DII = Manufacturer's Marking
 10H028S = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 16 = 2016)
 WW = Week (01 to 53)

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	100	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current, V _{GS} = 10V	I _D	T _C = +25°C 60	A
		T _C = +100°C 42	
Pulsed Drain Current (380µs Pulse, Duty Cycle = 1%)	I _{DM}	90	A
Maximum Continuous Body Diode Forward Current (Note 5)	I _S	2.8	A
Avalanche Current, L = 0.1mH	I _{AS}	27	A
Avalanche Energy, L = 0.1mH	E _{AS}	37	mJ

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	2.8	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	54	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	1	°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 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	100	—	—	V	V _{GS} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current, T _J = +25°C	I _{DSS}	—	—	1	µA	V _{DS} = 100V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(TH)}	2.0	2.8	4.0	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	19	28	mΩ	V _{GS} = 10V, I _D = 20A
Diode Forward Voltage	V _{SD}	—	0.7	1.2	V	V _{GS} = 0V, I _S = 1.0A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	1942	—	pF	V _{DS} = 50V, V _{GS} = 0V, f = 1MHz
Output Capacitance	C _{oss}	—	166	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	47	—	pF	
Gate Resistance	R _g	—	1.8	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (V _{GS} = 8V)	Q _g	—	25.4	—	nC	V _{DS} = 50V, I _D = 20A
Total Gate Charge (V _{GS} = 10V)	Q _g	—	31.9	—	nC	
Gate-Source Charge	Q _{gs}	—	8.1	—	nC	
Gate-Drain Charge	Q _{gd}	—	6.5	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	7.1	—	ns	V _{GS} = 10V, V _{DS} = 50V, R _G = 3Ω, I _D = 20A
Turn-On Rise Time	t _R	—	6.6	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	14.0	—	ns	
Turn-Off Fall Time	t _F	—	3.2	—	ns	I _F = 20A, di/dt = 100A/µs
Body Diode Reverse Recovery Time	t _{RR}	—	35.3	—	ns	
Body Diode Reverse Recovery Charge	Q _{RR}	—	46.8	—	nC	I _F = 20A, di/dt = 100A/µs

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to product testing.

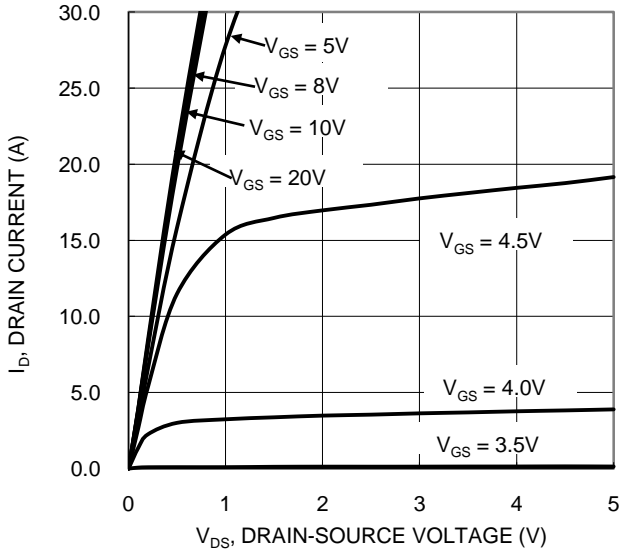


Figure 1. Typical Output Characteristic

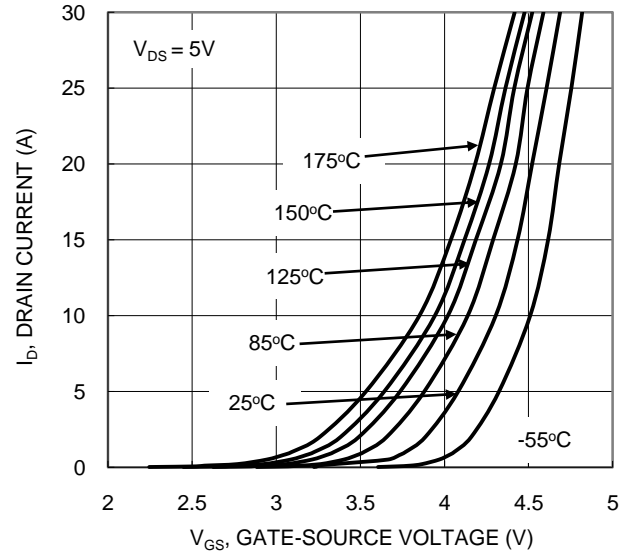


Figure 2. Typical Transfer Characteristic

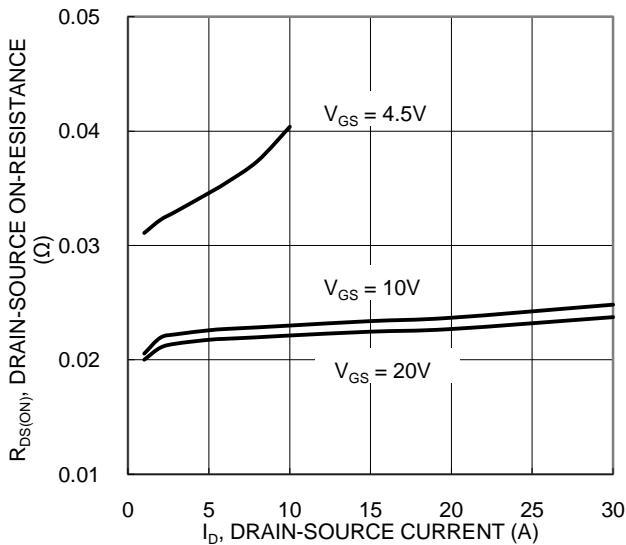


Figure 3. Typical On-Resistance vs Drain Current and Gate Voltage

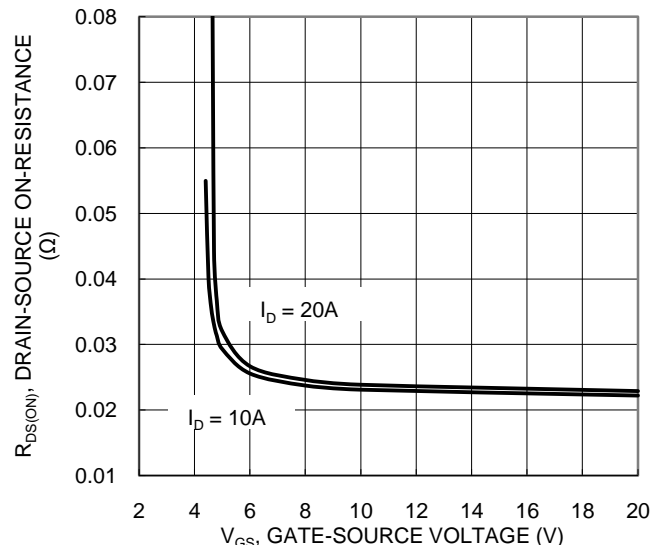


Figure 4. Typical Transfer Characteristic

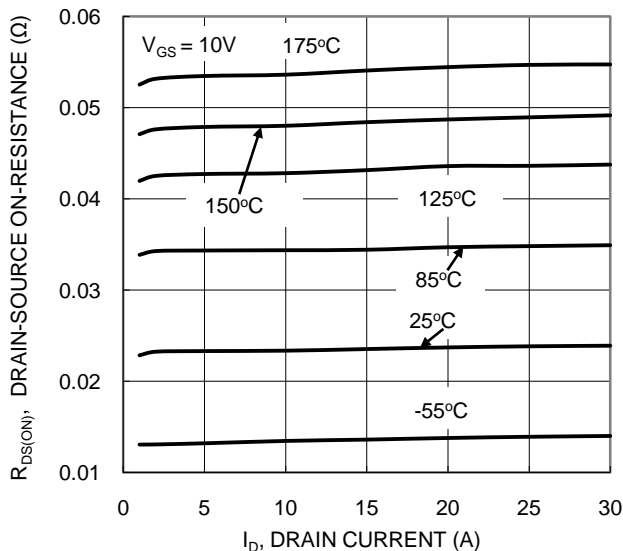


Figure 5. Typical On-Resistance vs Drain Current and Temperature

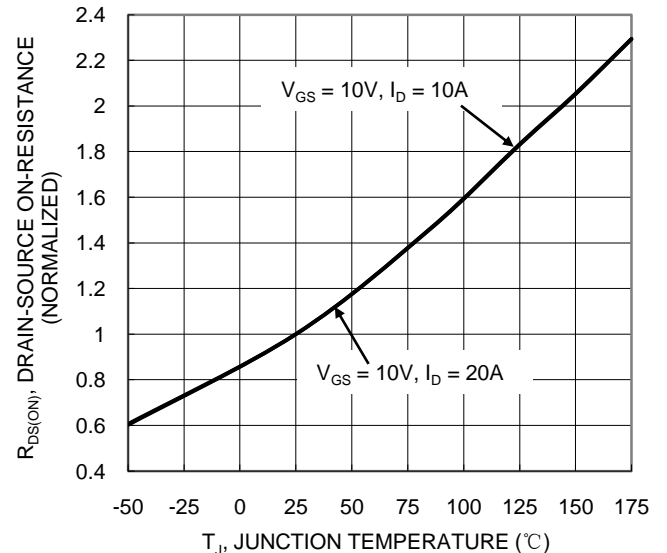
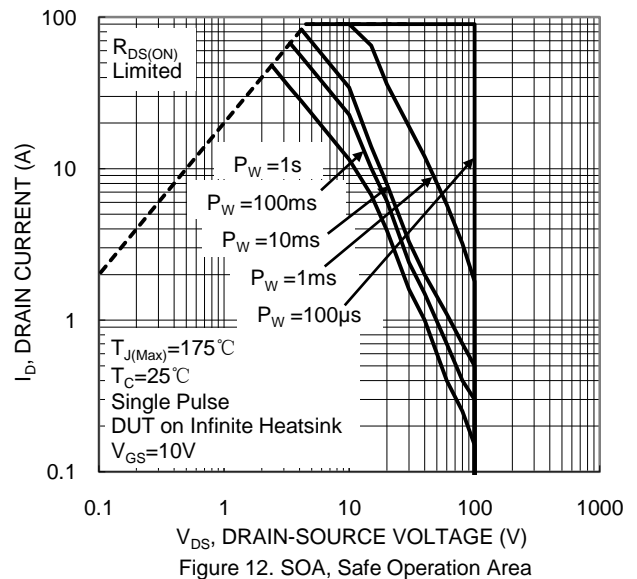
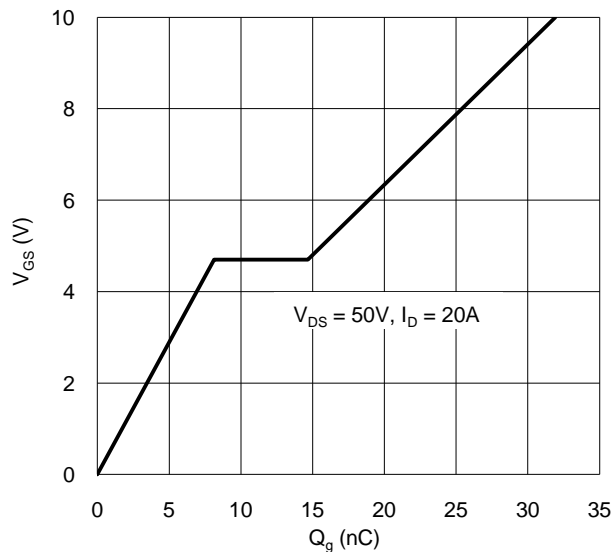
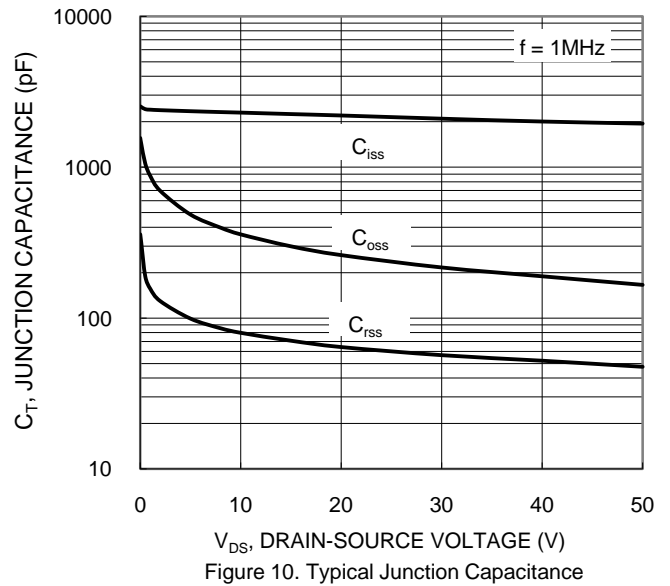
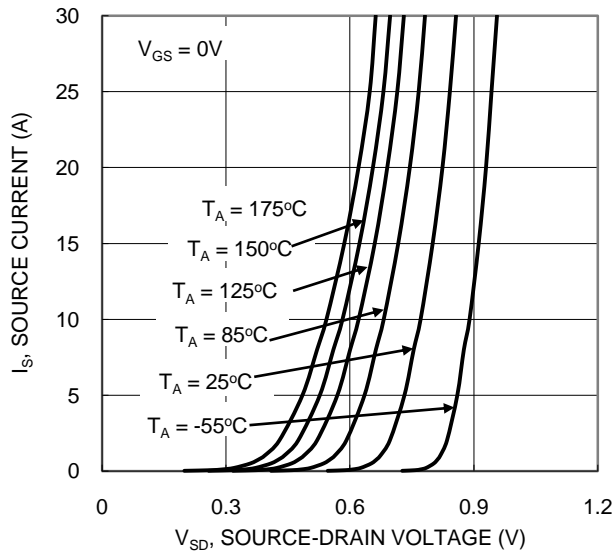
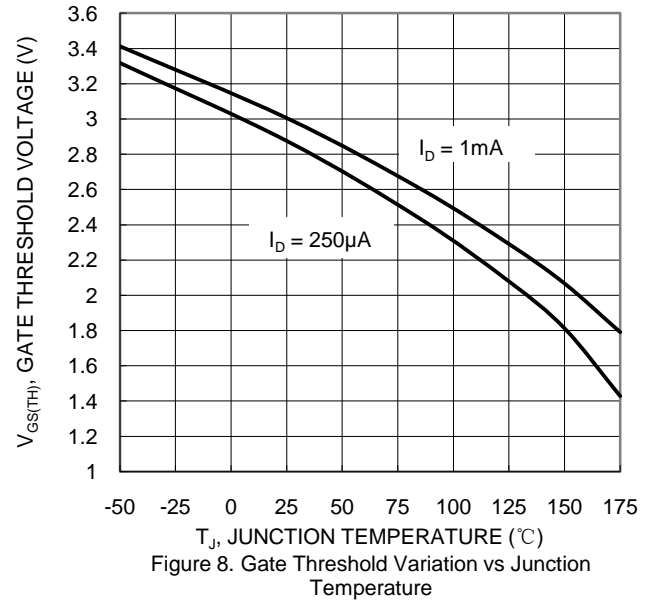
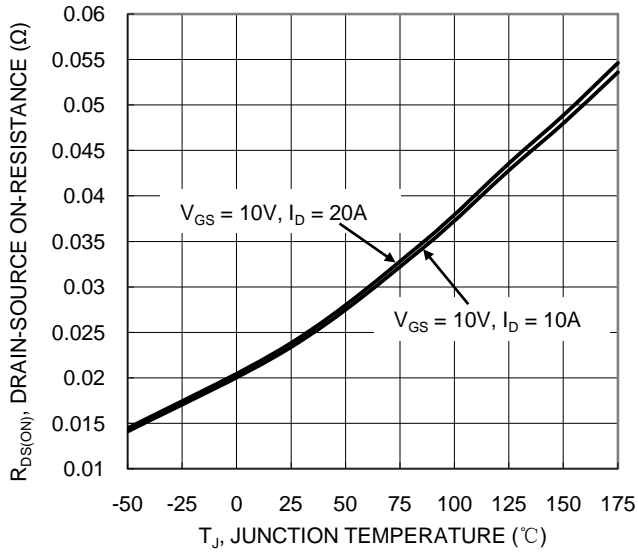


Figure 6. On-Resistance Variation with Temperature



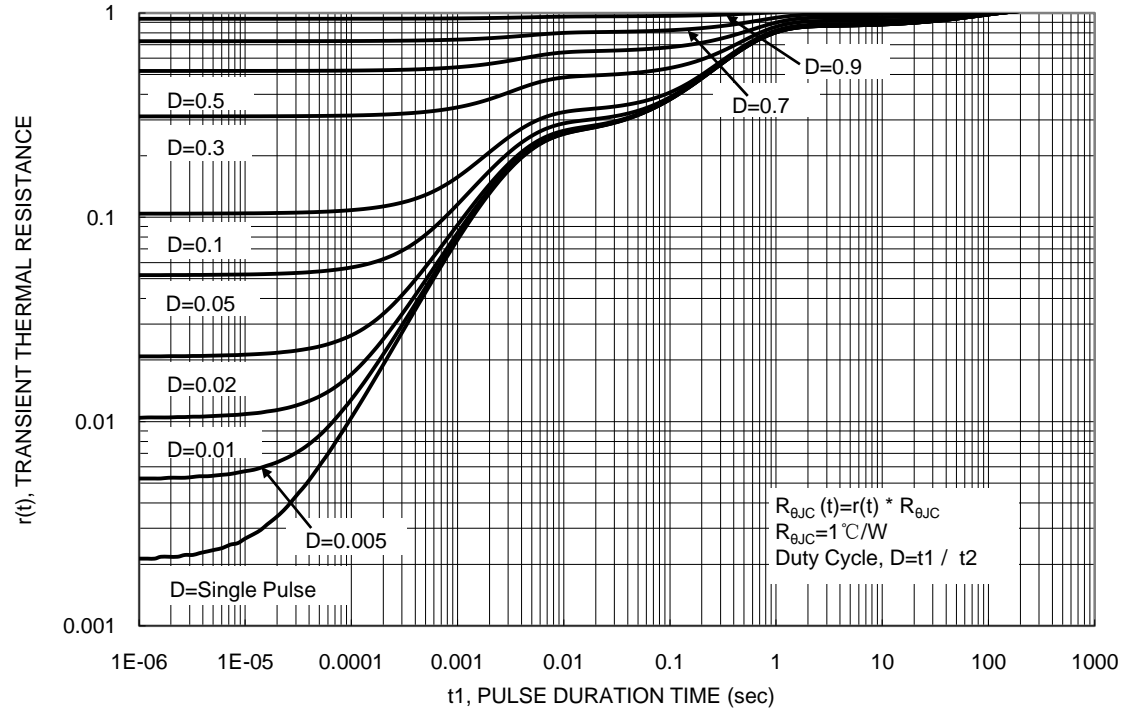
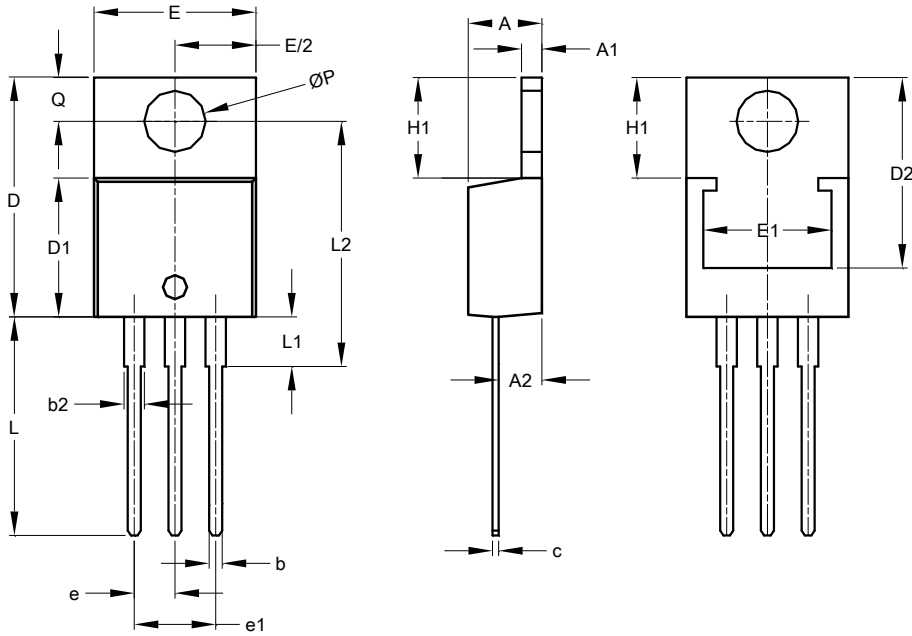


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TO220AB



TO220AB			
Dim	Min	Max	Typ
A	3.56	4.82	-
A1	0.51	1.39	-
A2	2.04	2.92	-
b	0.39	1.01	0.81
b2	1.15	1.77	1.24
c	0.356	0.61	-
D	14.22	16.51	-
D1	8.39	9.01	-
D2	11.45	12.87	-
e	-	-	2.54
e1	-	-	5.08
E	9.66	10.66	-
E1	6.86	8.89	-
H1	5.85	6.85	-
L	12.70	14.73	-
L1	-	6.35	-
L2	15.80	16.20	16.00
P	3.54	4.08	-
Q	2.54	3.42	-
All Dimensions in mm			

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