

Product Summary

BV _{DSS}	R _{DS(ON)} MAX	I _D MAX T _C = +25°C
60V	8.0mΩ @ V _{GS} = 10V	130A

Description

This new generation MOSFET is designed to minimize the on-state resistance (R_{DS(ON)}), yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

Applications

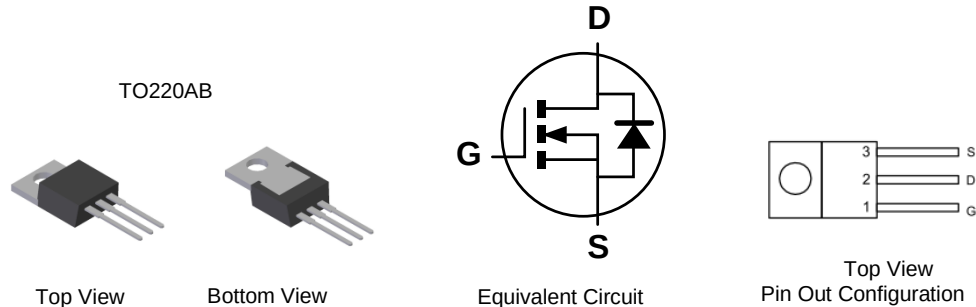
- Motor Control
- Backlighting
- DC-DC Converters
- Power Management Functions

Features

- Rated to +175°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**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([DMNH6008SCTQ](#))**

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 (E3)
- Terminal Connections: See Diagram Below
- Weight: 1.85 grams (Approximate)

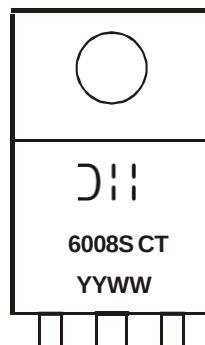


Ordering Information (Note 4)

Part Number	Case	Packaging
DMNH6008SCT	TO220AB	50 Pieces/Tube

- 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 <https://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



⌐⌐⌐ = Manufacturer's Marking
 6008SCT = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 18 = 2018)
 WW = Week (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	Steady State	T _C = +25°C	I _D	130	A
		T _C = +100°C		90	
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			I _{DM}	200	A
Maximum Continuous Body Diode Forward Current (Note 5)			I _S	80	A
Avalanche Current (Note 6) L=0.1mH			I _{AS}	62	A
Avalanche Energy (Note 6) L=0.1mH			E _{AS}	190	mJ

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) T _C = +25°C T _C = +100°C	P _D	210	W
		100	
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	0.7	°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} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 48V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±16V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	2	—	4	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	6.0	8.0	mΩ	V _{GS} = 10V, I _D = 20A
Diode Forward Voltage	V _{SD}	—	0.7	1.2	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{ISS}	—	2,596	—	pF	V _{DS} = 30V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{OSS}	—	437	—		
Reverse Transfer Capacitance	C _{RSS}	—	118	—		
Gate Resistance	R _g	—	2.0	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = 10V)	Q _g	—	40	—	nC	V _{DD} = 30V, I _D = 20A
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	21	—		
Gate-Source Charge	Q _{gs}	—	8.3	—		
Gate-Drain Charge	Q _{gd}	—	11.8	—		
Turn-On Delay Time	t _{D(ON)}	—	5.7	—	ns	V _{DD} = 30V, V _{GS} = 10V, R _g = 1Ω, I _D = 20A
Turn-On Rise Time	t _R	—	5.0	—		
Turn-Off Delay Time	t _{D(OFF)}	—	15.6	—		
Turn-Off Fall Time	t _F	—	3.4	—		
Reverse Recovery Time	t _{RR}	—	33	—	ns	I _F = 20A, di/dt = 100A/μs
Reverse Recovery Charge	Q _{RR}	—	33	—	nC	

- Notes:
5. Device mounted on an infinite heatsink.
 6. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.
 7. Short duration pulse used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to product testing.

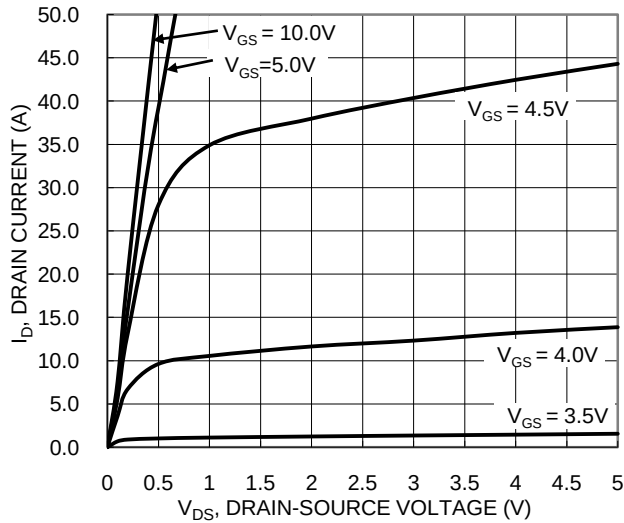


Figure 1. Typical Output Characteristic

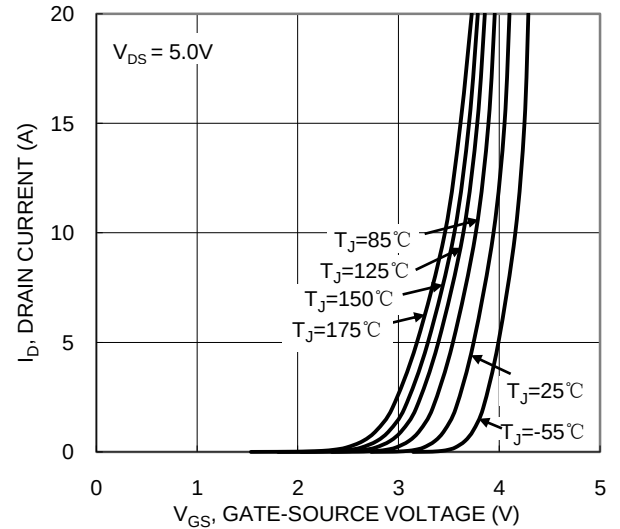


Figure 2. Typical Transfer Characteristic

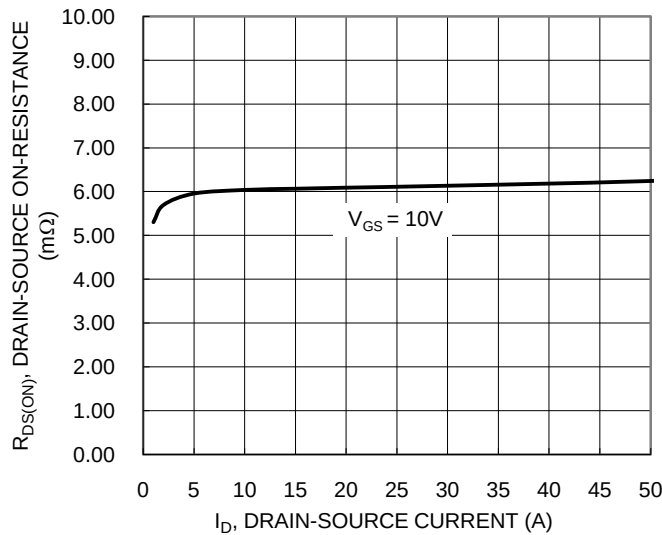


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

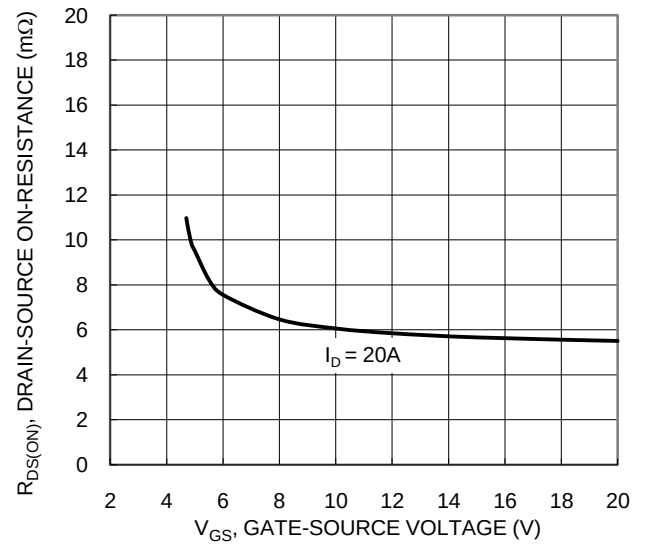


Figure 4. Typical Transfer Characteristic

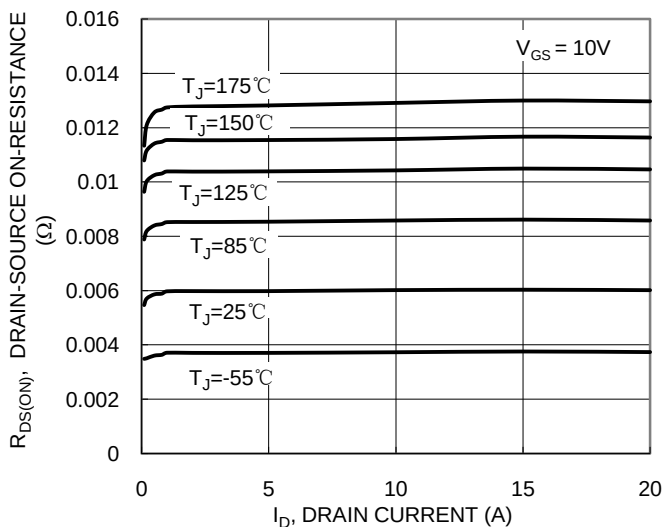


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

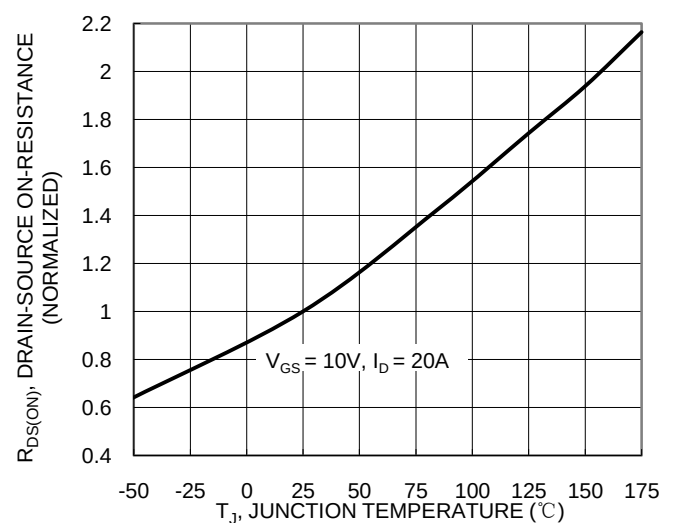
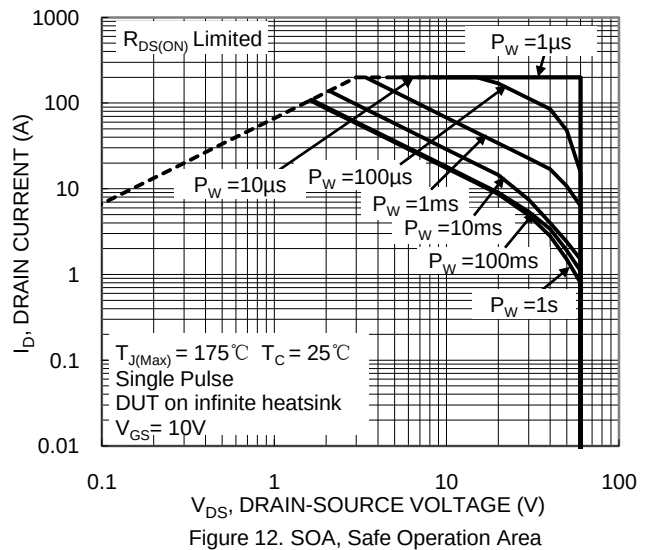
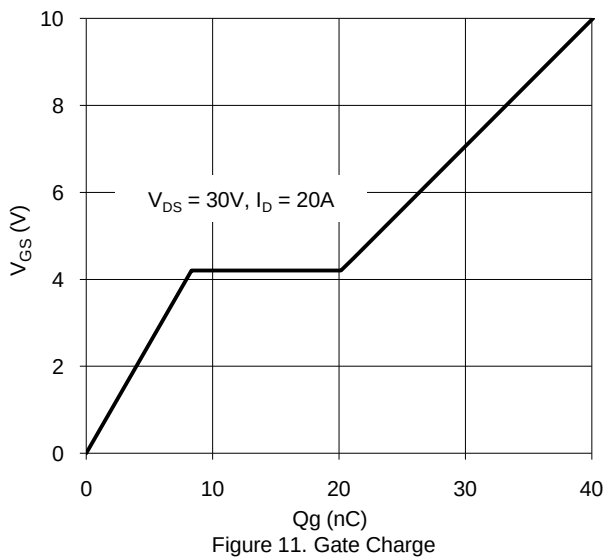
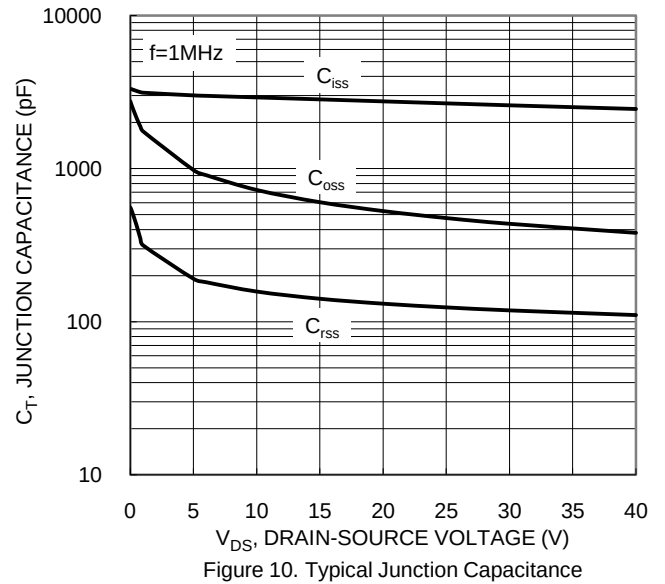
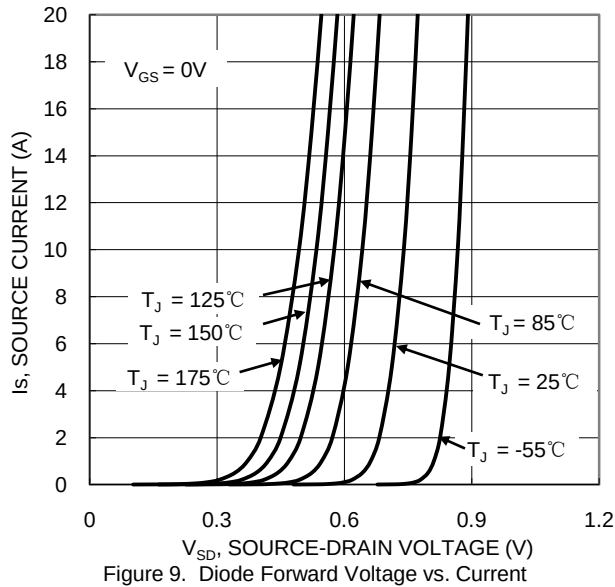
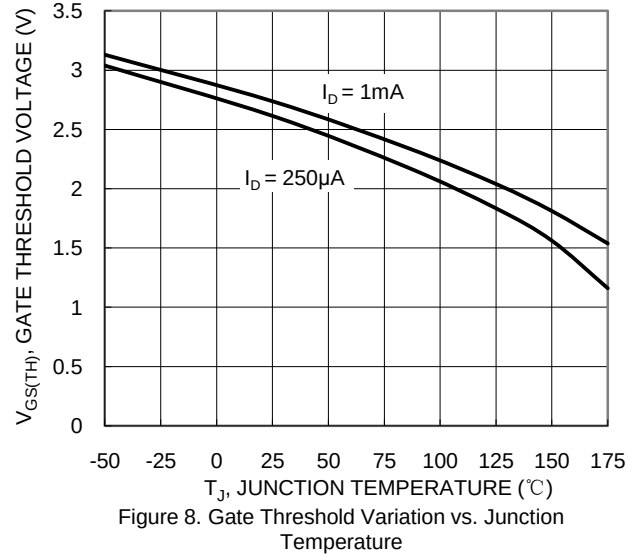
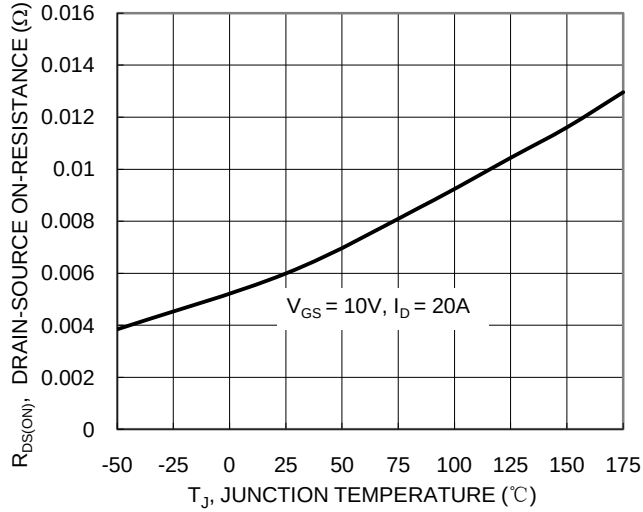


Figure 6. On-Resistance Variation with Temperature



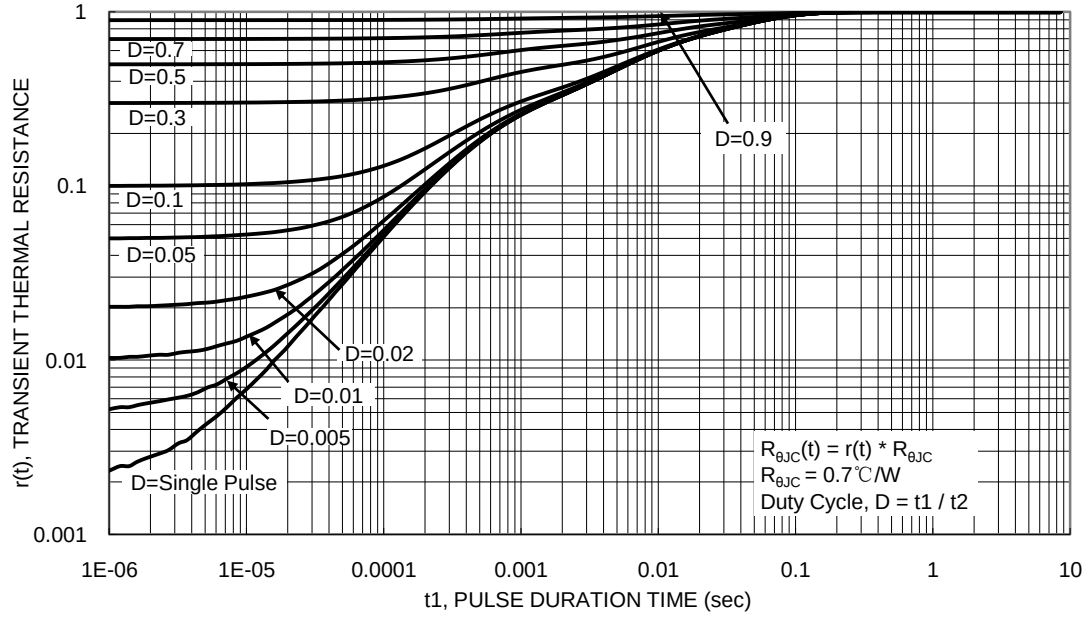
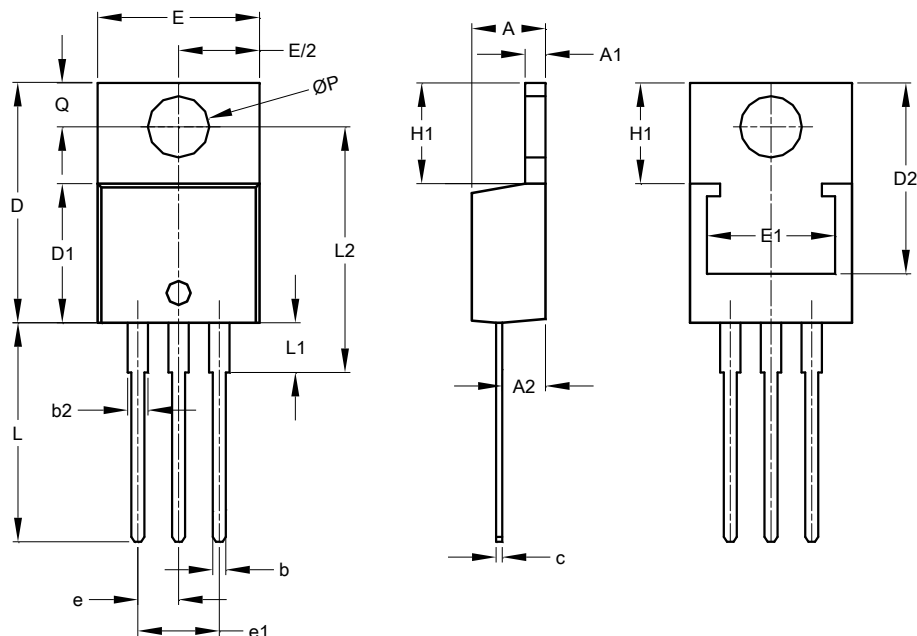


Figure 13. Transient Thermal Resistance

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	—	4.42	—
L2	15.80	17.51	16.00
P	3.54	4.08	—
Q	2.54	3.42	—
All Dimensions in mm			

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