DMT15H035SCT Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DMT15H035SCT-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DMT15H035SCT
Description	MOSFET BVDSS: 101V~250V TO220AB
Detailed Description	N-Channel 150 V 46A (Tc) 2.2W (Ta) Through Hole TO-220-3

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DMT15H035SCT	Diodes Incorporated
Series:	Product Status:
-	Active
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
150 V	46A (Tc)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
10V	35mOhm @ 20A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
4V @ 250µA	25 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	1600 pF @ 75 V
FET Feature:	Power Dissipation (Max):
-	2.2W (Ta)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Through Hole
Supplier Device Package:	Package / Case:
TO-220-3	TO-220-3
Base Product Number:	
DMT15	

Environmental & Export classification

RoHS Status:	REACH Status:
ROHS3 Compliant	REACH Unaffected
ECCN:	HTSUS:
EAR99	8541.29.0095

DMT15H035SCT

150V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_C = +25°C
150V	35mΩ @ V_{GS} = 10V	46A

Features and Benefits

- 100% Unclamped Inductive Switching – 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/

Description and Applications

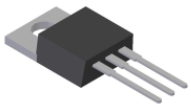
This new generation MOSFET features low on-resistance and fast switching, making it ideal for high efficiency power management applications.

- Power Management Functions
- DC-DC Converters
- Backlighting

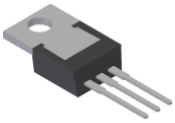
Mechanical Data

- Package: TO220AB
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe Solderable per MIL-STD-202, Method 208 e3
- Weight: 2.24 grams (Approximate)

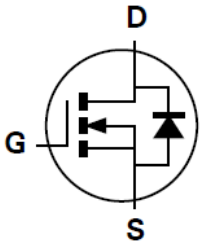
TO220AB



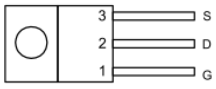
Top View



Bottom View



Equivalent Circuit



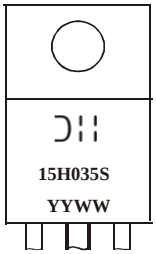
Top View
Pin Out Configuration

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMT15H035SCT	TO220AB	50pcs	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
15H035S = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 21 = 2021)
WW = Week Code (01 to 53)

DMT15H035SCT

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	150	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current, V_{GS} = 10V (Note 5)	T_C = +25°C	I_D	46	A
	T_C = +70°C		37	
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I_{DM}	184	A
Maximum Continuous Body Diode Forward Current (Note 5)		I_S	46	A
Pulsed Body Diode Continuous Current (10µs Pulse, Duty Cycle = 1%)		I_{SM}	184	A
Avalanche Current, L = 1mH (Note 8)		I_{AS}	17	A
Avalanche Energy, L = 1mH (Note 8)		E_{AS}	144.5	mJ

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)		P_D	2.2	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	55	°C/W
Total Power Dissipation (Note 5)		P_D	166	W
Thermal Resistance, Junction to Case (Note 5)		$R_{\theta JC}$	0.75	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°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}	150	—	—	V	V_{GS} = 0V, I_D = 10mA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	µA	V_{DS} = 120V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	2	2.8	4	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	22	35	mΩ	V_{GS} = 10V, I_D = 20A
Diode Forward Voltage	V_{SD}	—	0.9	1	V	V_{GS} = 0V, I_S = 20A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	1600	—	pF	V_{DS} = 75V, V_{GS} = 0V f = 1MHz
Output Capacitance	C_{oss}	—	160	—		
Reverse Transfer Capacitance	C_{rss}	—	4.2	—		
Gate Resistance	R_g	—	0.3	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	—	25	—	nC	V_{DS} = 75V, I_D = 4.1A, V_{GS} = 10V
Gate-Source Charge	Q_{gs}	—	9	—		
Gate-Drain Charge	Q_{gd}	—	6	—		
Turn-On Delay Time	$t_{D(ON)}$	—	16.6	—	ns	V_{DS} = 75V, V_{GS} = 10V, I_D = 4.1A, R_g = 6Ω
Turn-On Rise Time	t_R	—	15.3	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	26.5	—		
Turn-Off Fall Time	t_F	—	13.7	—		
Reverse Recovery Time	t_{RR}	—	53	—	ns	I_F = 4.1A, di/dt = 100A/µs
Reverse Recovery Charge	Q_{RR}	—	47	—	nC	

Notes: 5. Thermal resistance from junction to soldering point (on the exposed drain pad).
6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

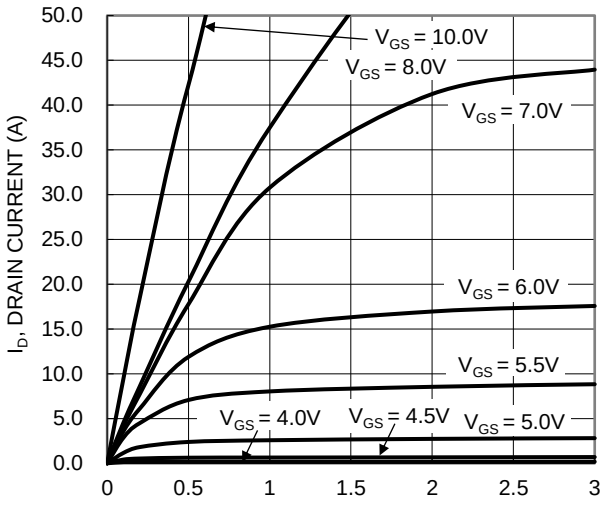


Figure 1. Typical Output Characteristic

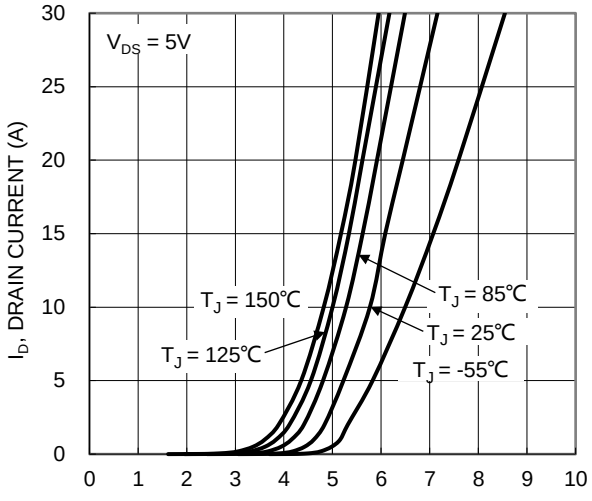


Figure 2. Typical Transfer Characteristic

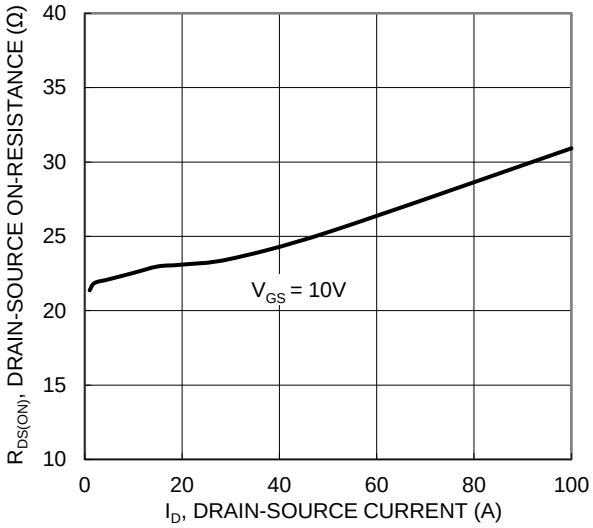


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

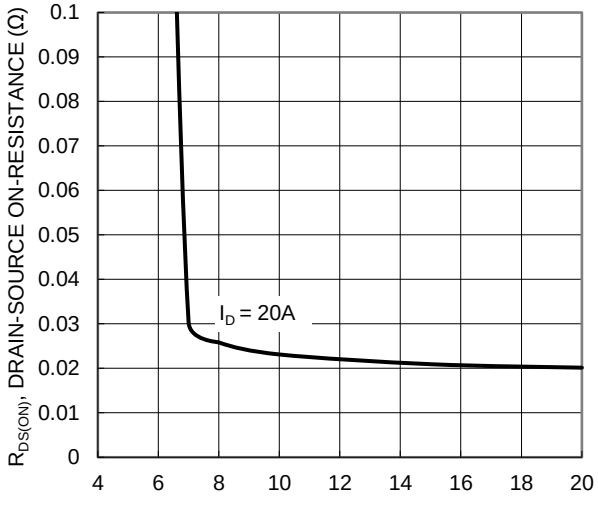


Figure 4. Typical Transfer Characteristic

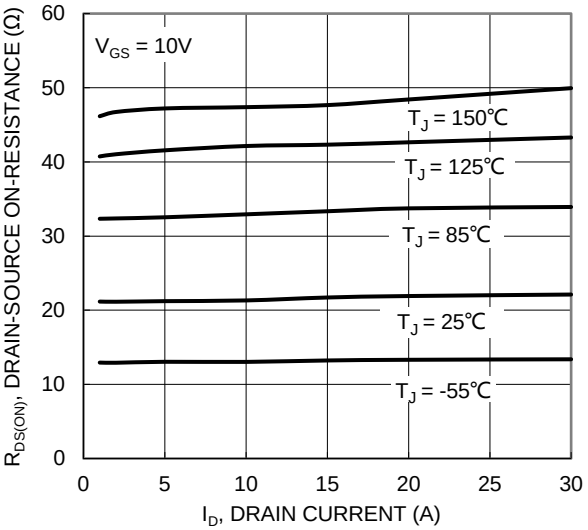


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

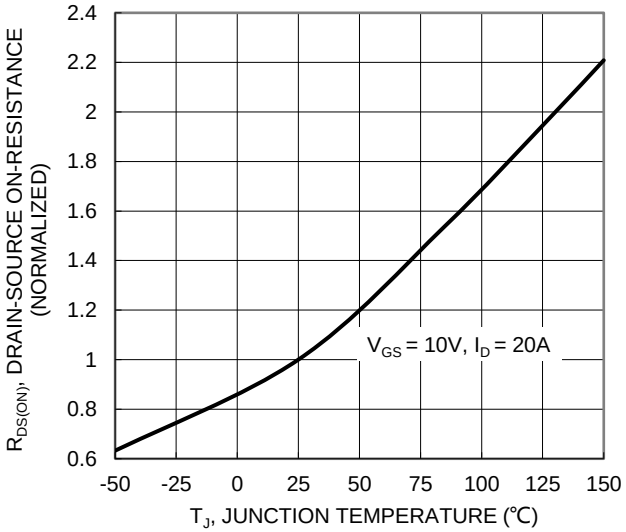


Figure 6. On-Resistance Variation with Junction Temperature

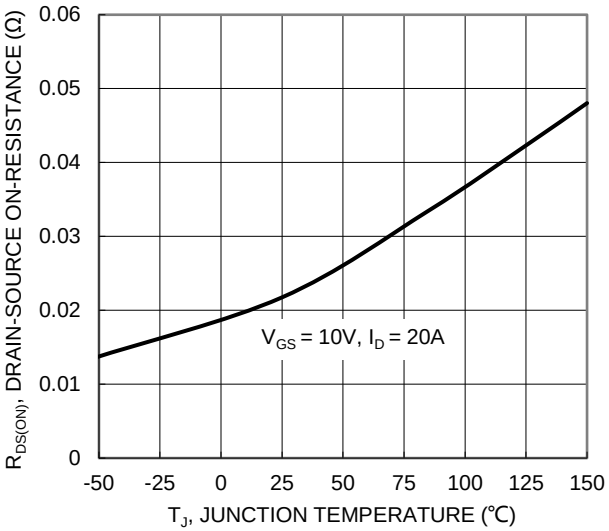


Figure 7. On-Resistance Variation with Junction Temperature

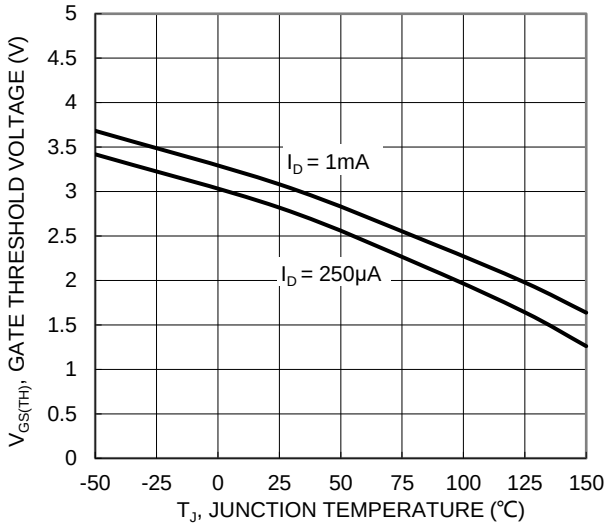


Figure 8. Gate Threshold Variation vs. Junction Temperature

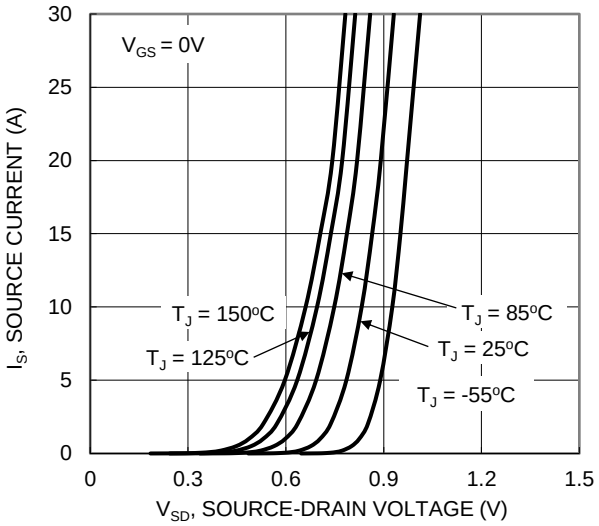


Figure 9. Diode Forward Voltage vs. Current

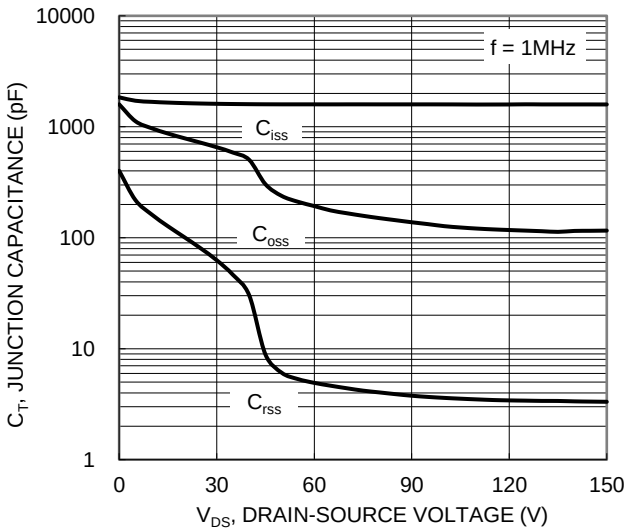


Figure 10. Typical Junction Capacitance

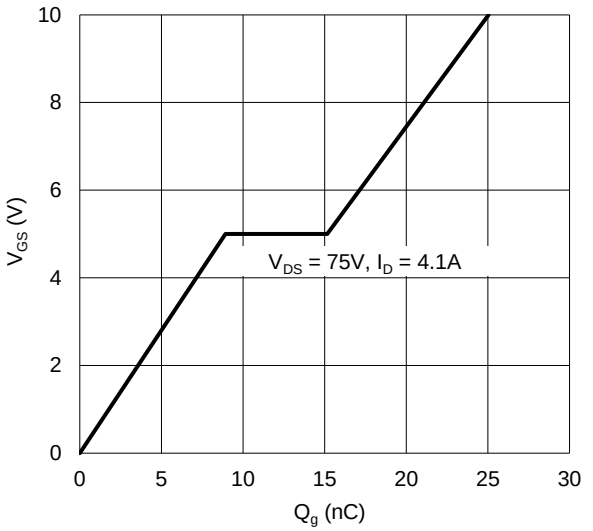


Figure 11. Gate Charge

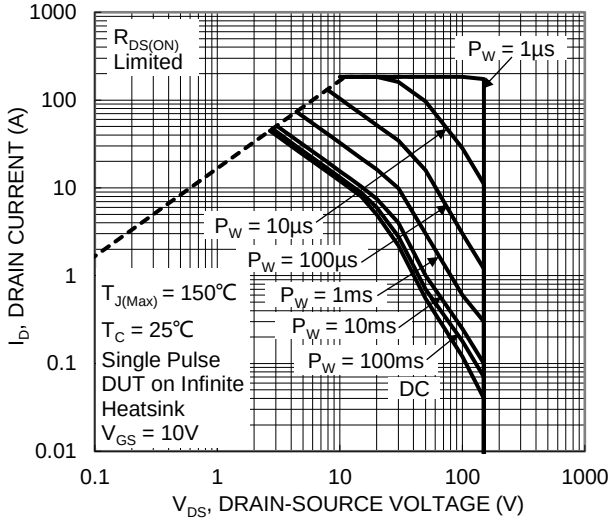


Figure 12. SOA, Safe Operation Area

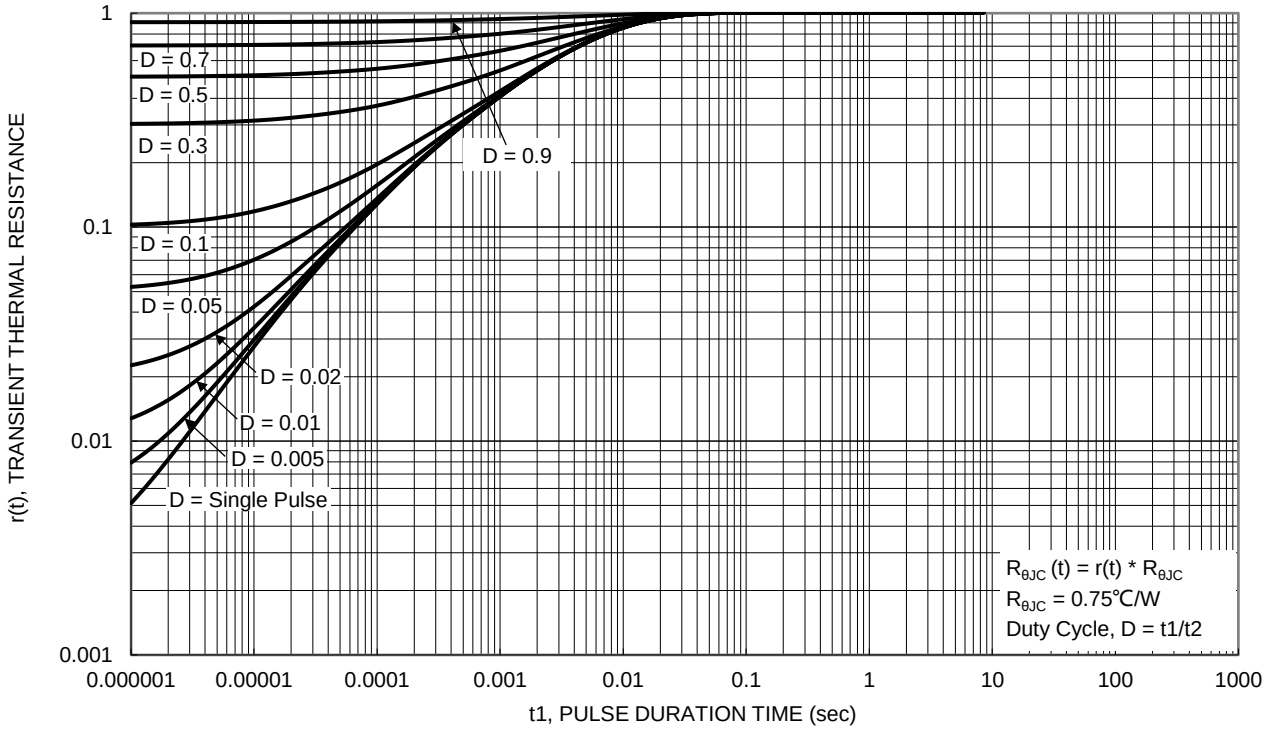
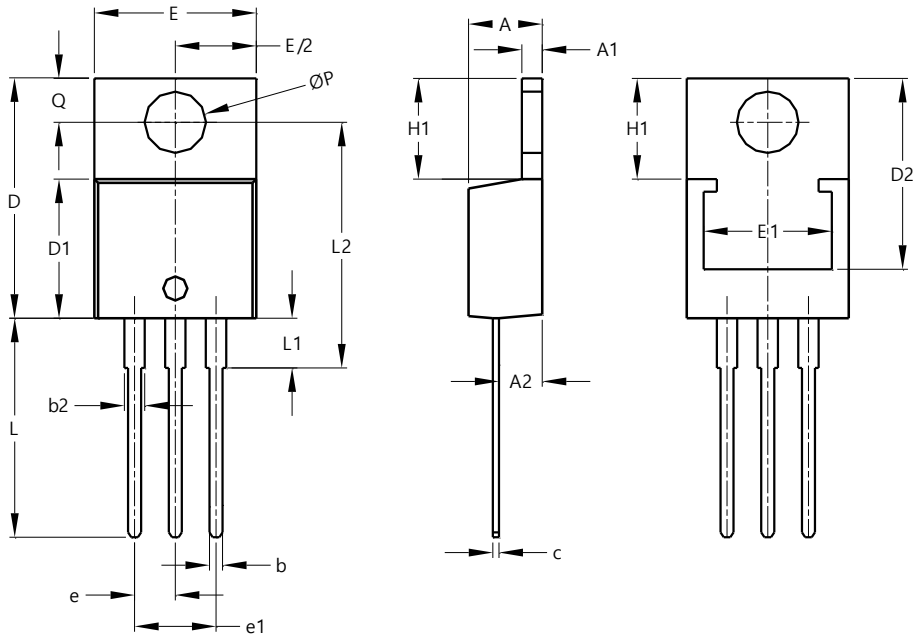


Figure 13. Transient Thermal Resistance

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			

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance.

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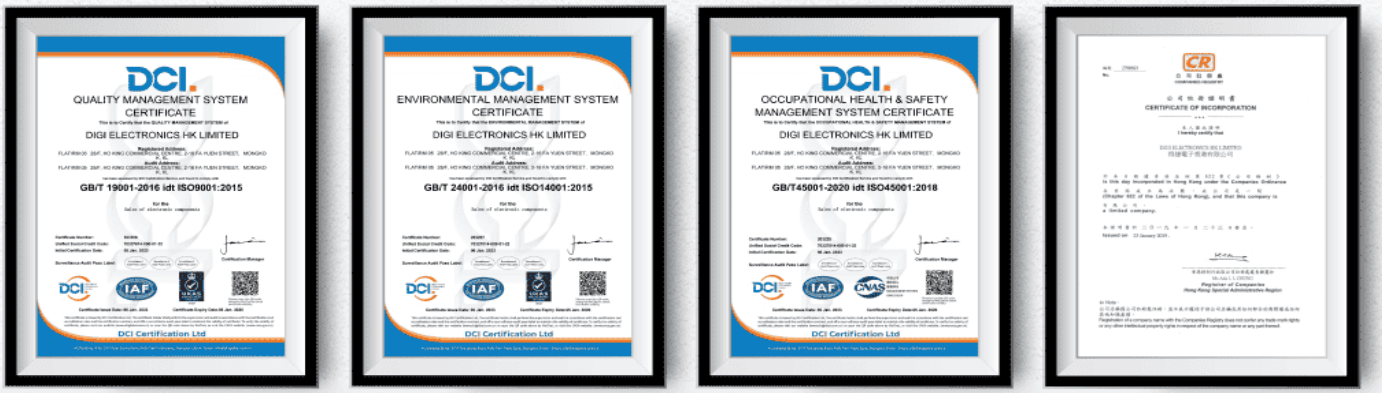

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