NOT RECOMMENDED FOR NEW DESIGN
CONTACT US

DMJ65H650SCTI

N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)}$	Package	I_D T_C = +25°C
650V	600mΩ@V_{GS} = 10V	ITO220AB (Type TH)	10A

Description

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

Applications

- Motor controls
- Backlighting
- DC-DC converters
- Power management functions

Features

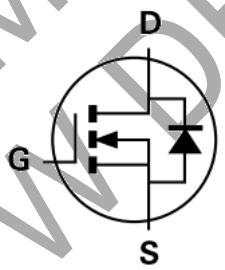
- 100% Unclamped Inductive Switch (UIS) Test in Production
- Low Input Capacitance
- High BV_{DSS} Rating for Power Application
- Low Input/Output Leakage
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, 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

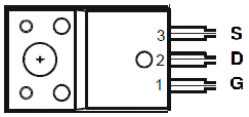
- Package: ITO220AB
- Package Material: Molded Plastic, "Green" Molding Compound, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Terminal Connections: See Diagram Below
- Weight: 1.85 grams (Approximate)

ITO220AB (Type TH)

Top View Bottom View



Equivalent Circuit



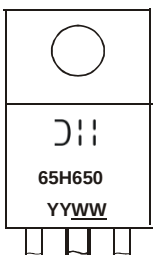
Top View
Pin Out Configuration

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMJ65H650SCTI	ITO220AB (Type TH)	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
65H650 = Product Type Marking Code
YYWW = Date Code Marking
YY or YY = Last Two Digits of Year (ex: 22 = 2022)
WW or WW = Week Code (01 to 53)

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	650	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current (Note 5) V_{GS} = 10V	T_C = +25°C T_C = +100°C	I_D	10 6.4	A
Continuous Source Current (Note 5)	T_C = +25°C T_C = +100°C	I_S	10 6.4	A
Pulsed Drain Current (Note 5)		I_{DM}	18	A
Pulsed Source Current (Note 5)		I_{SM}	18	A
Avalanche Current, L = 60mH		I_{AS}	1.5	A
Avalanche Energy, L = 60mH		E_{AS}	67.5	mJ
Peak Diode Recovery dv/dt (Note 6)		dv/dt	28	V/ns

Thermal Characteristics

Characteristic		Symbol	Max	Unit
Power Dissipation (Note 5)	T_C = +25°C T_C = +100°C	P_D	31 12	W
Thermal Resistance, Junction to Case (Note 5)	T_C = +25°C	$R_{\theta JC}$	4	°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}	650	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	µA	V_{DS} = 650V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	100	nA	V_{GS} = ±30V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	2	3	4	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	0.5	0.6	Ω	V_{GS} = 10V, I_D = 2.4A
Diode Forward Voltage	V_{SD}	—	0.85	1.2	V	V_{GS} = 0V, I_S = 3.5A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	—	639	—	pF	V_{DS} = 100V, f = 1MHz, V_{GS} = 0V
Output Capacitance	C_{oss}	—	249	—		
Reverse Transfer Capacitance	C_{rss}	—	0.8	—		
Gate Resistance	R_G	—	100	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	—	12.9	—	nC	V_{DD} = 480V, I_D = 3.5A, V_{GS} = 10V
Gate-Source Charge	Q_{gs}	—	2.8	—		
Gate-Drain Charge	Q_{gd}	—	4.9	—		
Turn-On Delay Time	$t_{D(ON)}$	—	31	—	ns	V_{DD} = 400V, V_{GS} = 13V, R_G = 6.8Ω, I_D = 3.5A
Turn-On Rise Time	t_R	—	18	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	223	—		
Turn-Off Fall Time	t_F	—	24	—		
Body Diode Reverse Recovery Time	t_{RR}	—	164	—	ns	I_F = 3.5A, dI/dt = 100A/µs
Body Diode Reverse Recovery Charge	Q_{RR}	—	1.2	—	µC	

Notes: 5. Device mounted on infinite heatsink. Drain current limited by maximum junction temperature.
6. Guaranteed by design. Not subject to production testing.
7. Short duration pulse test used to minimize self-heating effect.

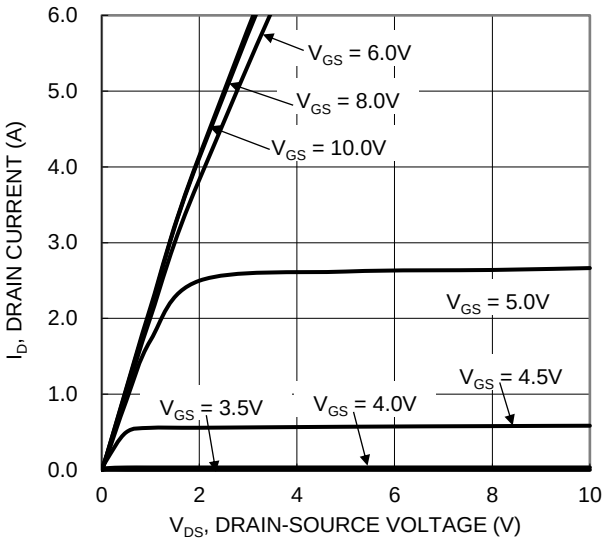


Figure 1. Typical Output Characteristic

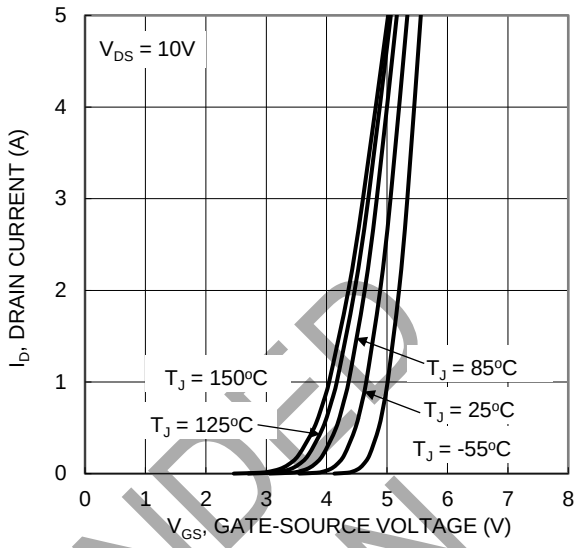


Figure 2. Typical Transfer Characteristic

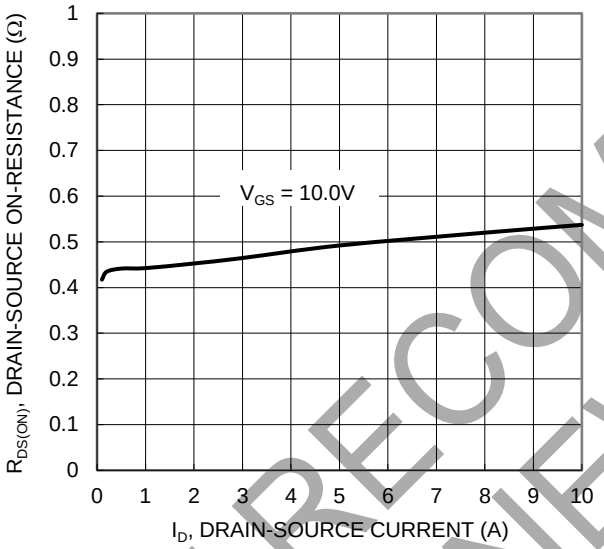


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

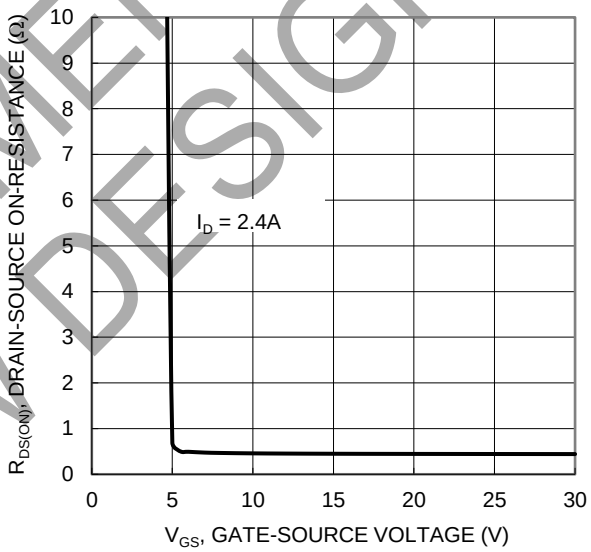


Figure 4. Typical Transfer Characteristic

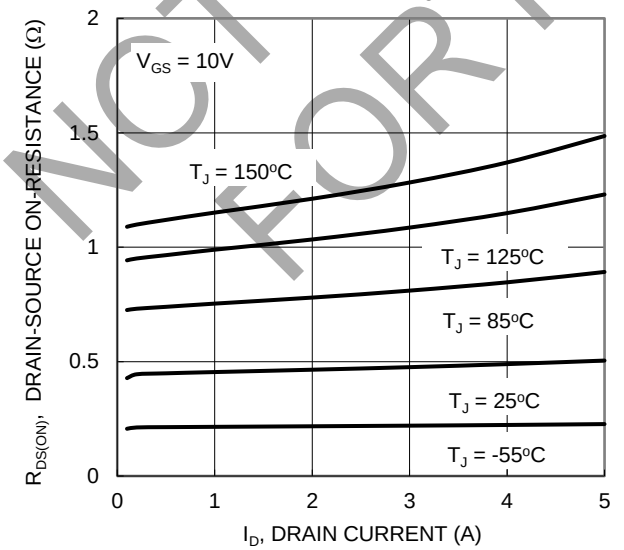


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

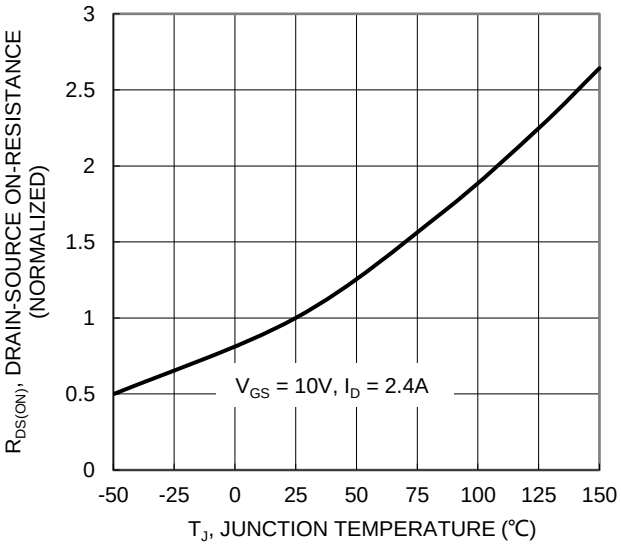


Figure 6. On-Resistance Variation with Temperature

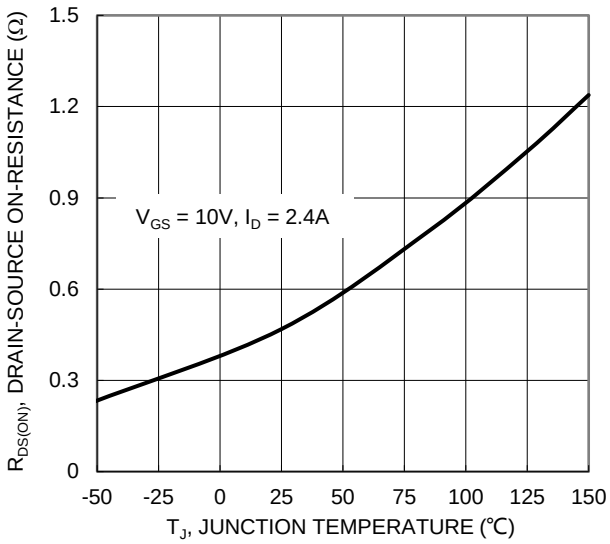


Figure 7. On-Resistance Variation with Temperature

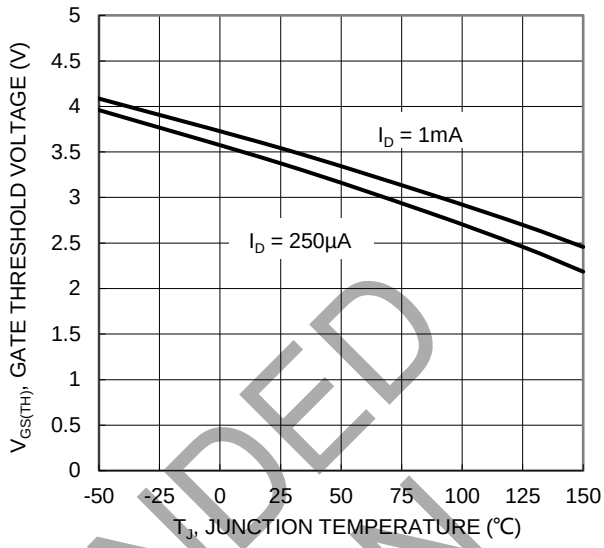


Figure 8. Gate Threshold Variation vs. Junction Temperature

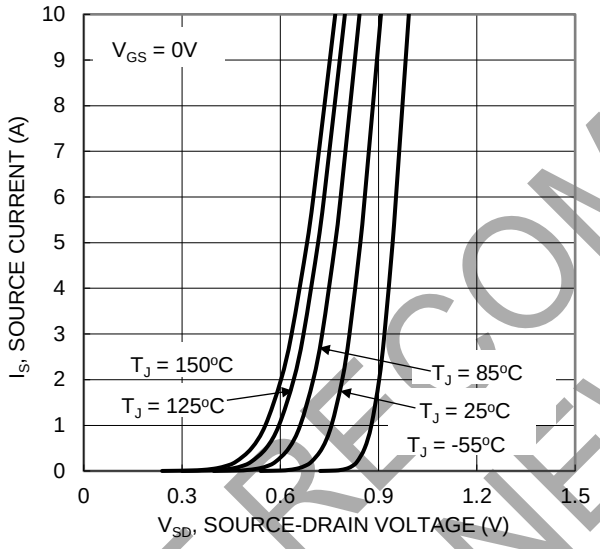


Figure 9. Diode Forward Voltage vs. Current

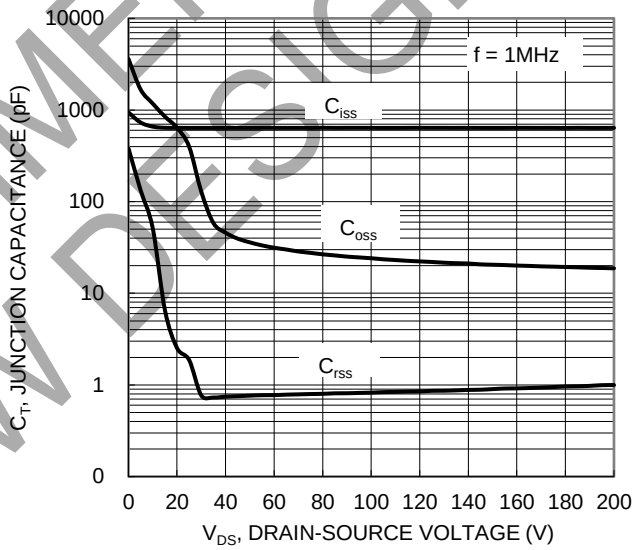


Figure 10. Typical Junction Capacitance

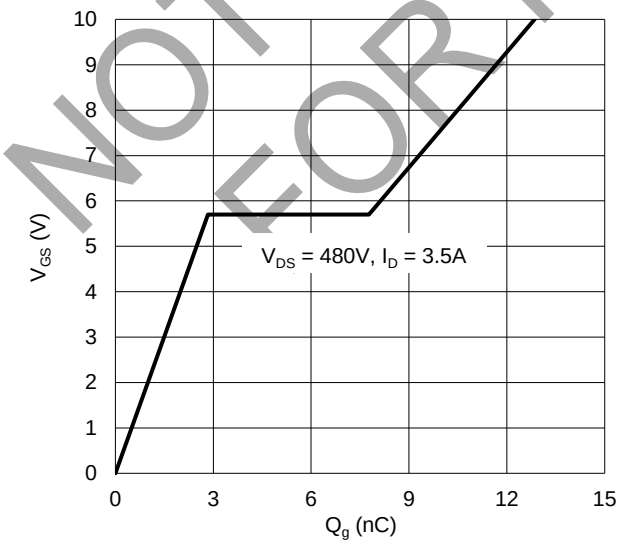


Figure 11. Gate Charge

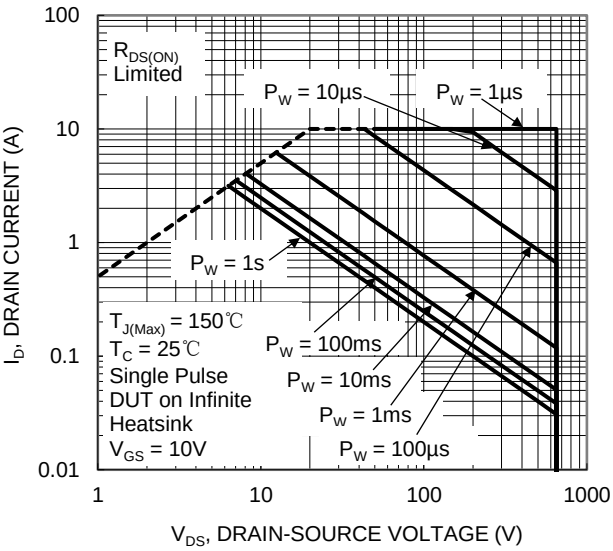


Figure 12. SOA, Safe Operation Area

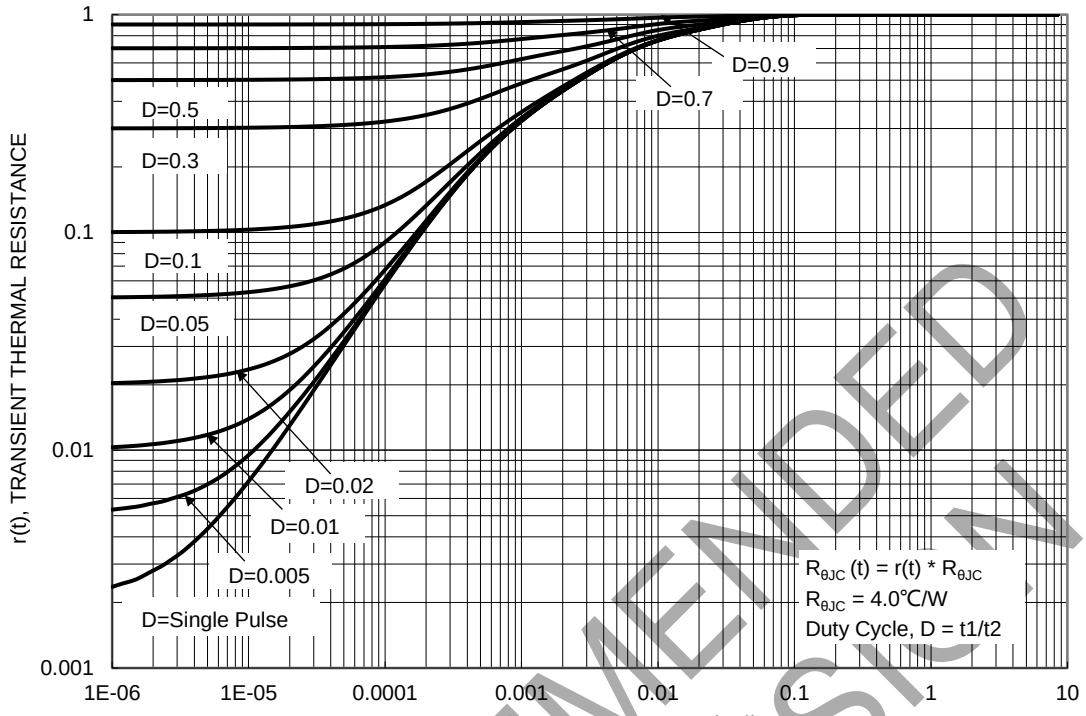
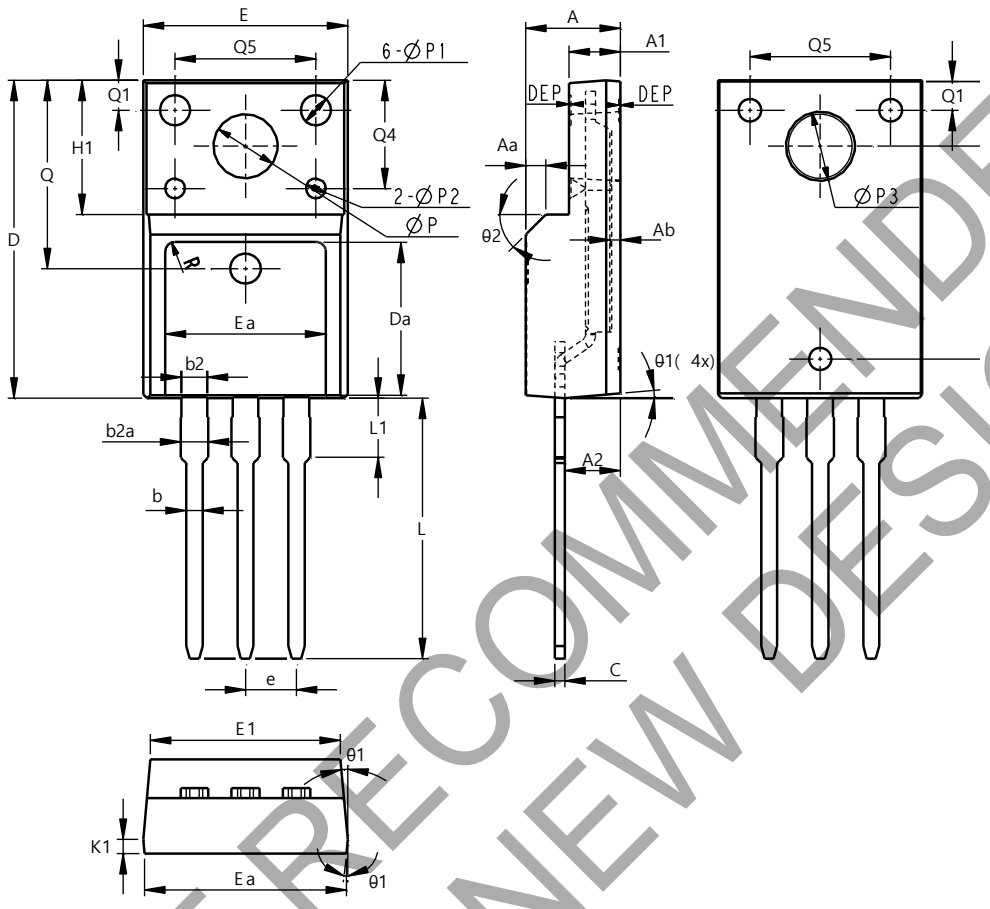


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

ITO220AB (Type TH)



ITO220AB (Type TH)			
Dim	**Min**	**Max**	**Typ**
A	4.50	4.90	4.70
A1	2.34	2.74	2.54
A2	2.63	2.89	2.76
Aa	1.00 REF		
Ab	0.30	0.60	0.56
b	0.75	0.90	0.80
b2	1.23	1.38	1.28
b2a	1.25	1.45	1.35
c	0.45	0.60	0.50
D	15.47	16.27	15.87
Da	7.55	8.05	7.80
e	2.54 BSC		
E	9.86	10.46	10.16
E1	9.26	9.66	9.46
Ea	7.70	8.30	8.00
Eb	9.76	10.34	10.04
H1	6.70 REF		
L	12.58	13.38	12.98
L1	2.81	3.05	2.93
K1	0.65	0.75	0.70
Q	9.40 REF		
Q1	1.00	2.00	1.50
Q2	13.50	14.30	13.90
Q3	3.15	3.45	3.30
Q4	5.15	5.65	5.40
Q5	6.70	7.30	7.00
ØP	3.06	3.40	3.18
ØP1	1.40	1.60	1.50
ØP2	0.95	1.05	1.00
ØP3	3.30	3.60	3.45
θ1	3º	7º	5º
θ2	-	45º	-
R	0.50 REF		
DEP	0.05	0.15	0.10
All Dimensions in mm			

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