

Product Summary (@T_A = +25°C)

V _{RRM} (V)	I _O (A)	V _F (V)	I _R (μA)	t _{RR} (ns)
650	30	2.1	10	35

Description and Applications

Suitable for switching power supplies and power switching circuit applications and also in EV OBC, PFC diodes site & DC to DC, high power PSU, server power, PV inverter applications.

Features and Benefits

- Soft, Hyper-Fast Switching Capability
- Specifically Suited for Continuous-Conduction Mode Power Factor Correction
- High Reliability and Efficiency
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- The DTHP30R07DQ 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/>

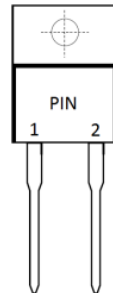
Mechanical Data

- Package: TO220AC
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Finish — Matte Tin Annealed over Copper Lead-Frame. Solderable per MIL-STD-202, Method 208 ③
- Polarity: See Diagram
- Weight: 1.894 grams (Approximate)

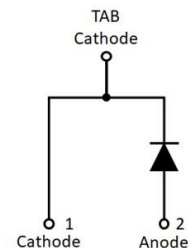
TO220AC (Type WX)



Top View



Top View Pinout



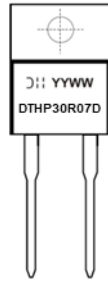
Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DTHP30R07DQ	TO220AC (Type WX)	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

TO220AC (Type WX)



DTHP30R07D = Product Type Marking Code
 DTH = Manufacturer's Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 25 for 2025)
 WW = Week Code (01 to 53)

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

Single phase, half wave, 60Hz, resistive or inductive load.
 For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	650	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _R		
Average Rectified Output Current @ T _C = +125°C	I _O	30	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I _{FSM}	320	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Notes 5, 6)	R _{θJC}	0.9	°C/W
Typical Thermal Resistance Junction to Lead (Notes 5, 6)	R _{θJL}	0.8	°C/W
Operating and Storage Temperature Range (Note 6)	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
Reverse Breakdown Voltage (Note 7)	V _{(BR)R}	650	725	—	V	I _R = 100μA
Forward Voltage (Note 8)	V _F	—	1.8	2.1	V	I _F = 30A, T _J = +25°C
		—	1.5	—	V	I _F = 30A, T _J = +125°C
Reverse Leakage Current (Note 7)	I _R	—	—	10	μA	V _R = 650V, T _J = +25°C
		—	20	200	μA	V _R = 650V, T _J = +125°C
Reverse-Recovery Time	t _{RR}	—	27	35	ns	I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A
Reverse-Recovery Current, T _J = +125°C	I _{RM}	—	8.5	—	A	I _F = 30A, V _R = 400V, dI _F /dt = 200A/μs
Reverse-Recovery Charge, T _J = +125°C	Q _{RR}	—	450	—	nC	I _F = 30A, V _R = 400V, dI _F /dt = 200A/μs

Notes: 5. Thermal resistance test performed in accordance with JESD-51. The unit mounted on Al heatsink (42mm*100mm*26.9mm).
 6. The heat generated must be less than the thermal conductivity from junction to case: dP_D/dT_J < 1/R_{θJC} or junction to ambient: dP_D/dT_J < 1/R_{θJA}.
 7. Short duration pulse test used to minimize self-heating effect.
 8. 300μs pulse width, 2% duty cycle.

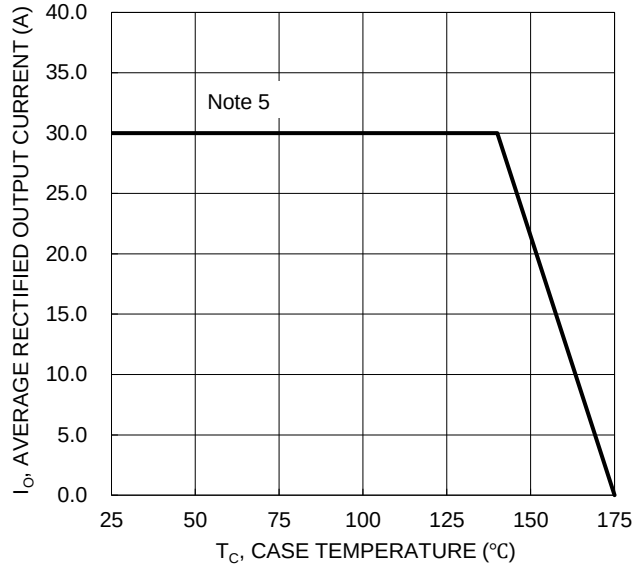


Figure 1. DC Forward Current Derating

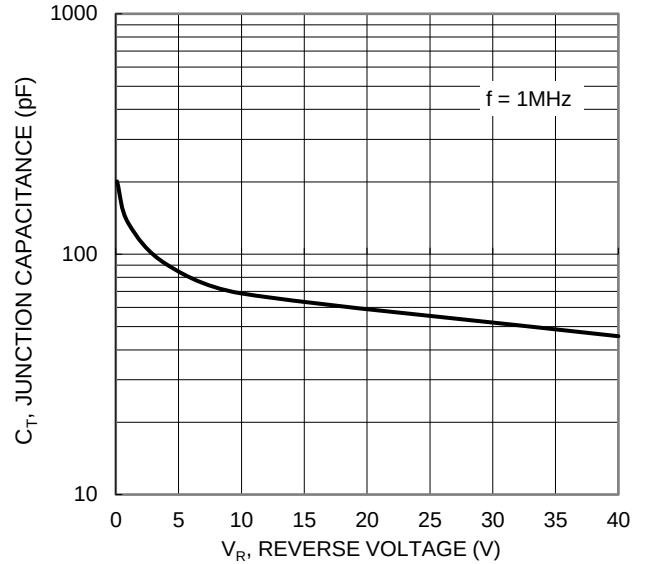


Figure 2. Typical Junction Capacitance

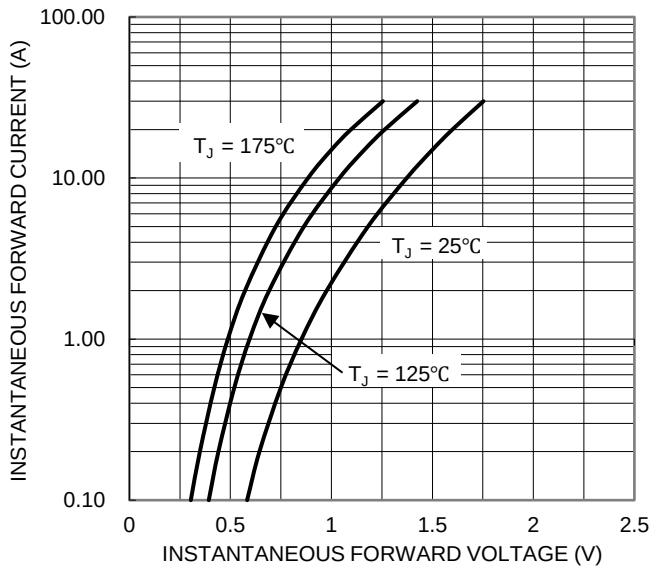


Figure 3. Typical Forward Characteristics

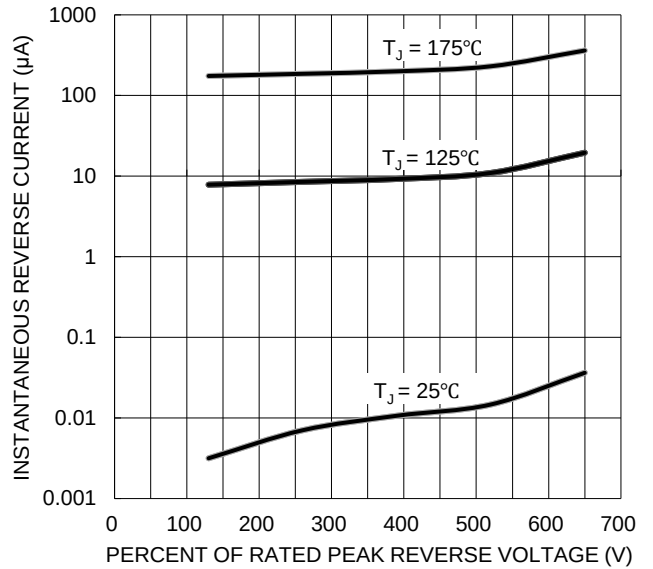
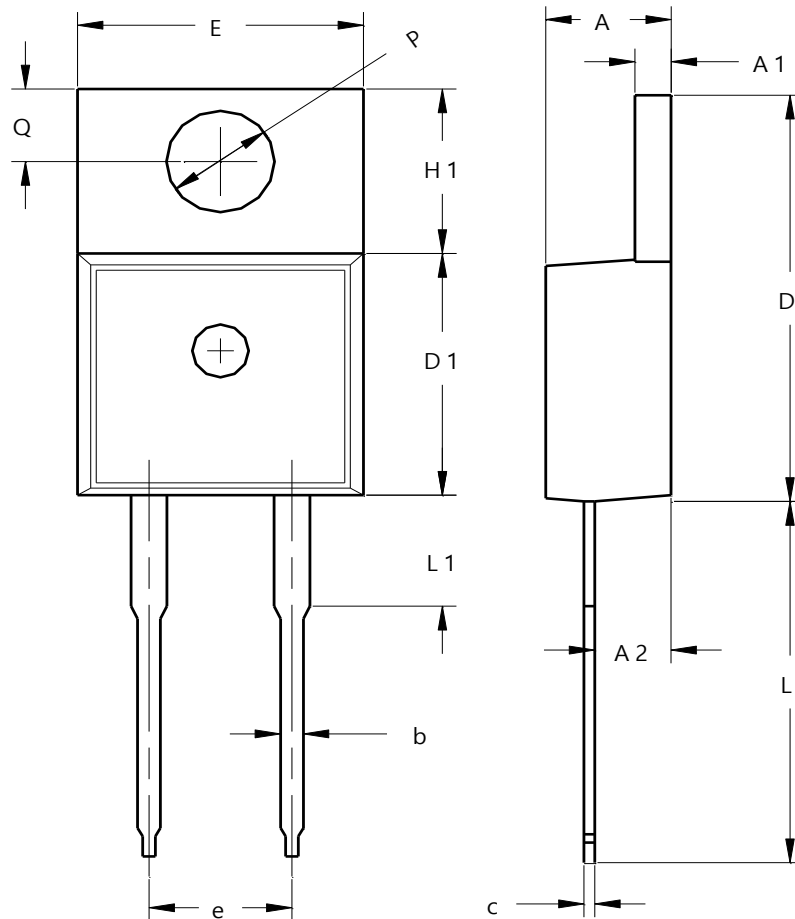


Figure 4. Typical Reverse Characteristics

Package Outline Dimensions

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

TO220AC (Type WX)



TO220AC (Type WX)		
Dim	Min	Typ
A	3.56	4.83
A1	1.14	1.40
A2	2.03	2.92
b	0.51	1.14
c	0.30	0.64
D	14.40	15.20
D1	8.26	9.28
E	9.65	10.67
e	4.83	5.33
H1	5.84	6.86
L	12.70	14.73
L1	--	4.20
PØ	3.53	4.09
Q	2.54	3.43
All Dimensions in mm		

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