20A SBR®
SUPER BARRIER RECTIFIER

Product Summary (@T_A = +25°C)

V_{RRM} (V)	I_O (A)	V_F MAX (V)	I_R MAX (μA)
300	20	0.92	100

Features and Benefits

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Also Available in Green Molding Compound - Halogen and Antimony Free. "Green" Device (Note 3)**

Description and Applications

This Super Barrier Rectifier has been designed to meet the general requirements of commercial applications. It is ideally suited for use as:

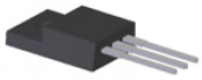
- Polarity Protection Diode
- Re-Circulating Diode
- Boost Diode
- Blocking Diode

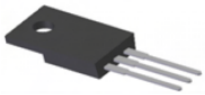
Mechanical Data

- Case: TO-220AB, ITO-220AB, TO263 (D^2Pak)
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Marking Information: See Page 2
- Ordering Information: See Page 1
- Weight: TO-220AB – 1.85 grams (approximate)
  ITO-220AB – 1.65 grams (approximate)
  TO263 (D^2Pak) – 2.1 grams (approximate)

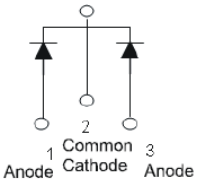

TO-220AB
Top View


TO-220AB
Bottom View


ITO-220AB
Top View


ITO-220AB
Bottom View


D^2Pak
Top View



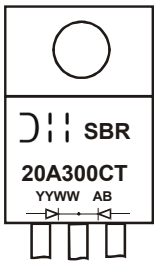
Package Pin-Out
Configuration

Ordering Information (Notes 4 & 5)

	Part Number	Case	Packaging
Pb	SBR20A300CT	TO-220AB	50 pieces/tube
Pb Green	SBR20A300CT-G	TO-220AB	50 pieces/tube
Pb	SBR20A300CTFP	ITO-220AB	50 pieces/tube
Pb Green	SBR20A300CTFP-G	ITO-220AB	50 pieces/tube
Pb Green	SBR20A300CTFP-JT-G	ITO-220AB (Alternate)	50 pieces/tube
Pb	SBR20A300CTB	TO263 (D^2Pak)	50 pieces/tube

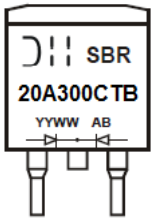
Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "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
5. For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR20A300CT-G.

Marking Information



SBR20A300CT = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two digits of year (ex: 14 = 2014)
WW = Week (01 - 53)

SBR20A300CTFP = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two digits of year (ex: 14 = 2014)
WW = Week (01 - 53)



SBR20A300CTB= Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two digits of year (ex: 08 = 2008)
WW = Week (01-52)

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

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	300	V
Average Rectified Output Current (Per Leg) (Total)	I_O	10 20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	180	A
Peak Repetitive Reverse Surge Current (2μS-1Khz)	I_{RRM}	3	A
Isolation Voltage (ITO-220AB Only) From terminal to heatsink t = 3 sec.	V_{AC}	2000	V

Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Package = TO-220AB Package = ITO-220AB Package = TO263	$R_{\theta JC}$	2 4 2	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +175	°C

Electrical Characteristics (Per Leg) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	— — —	— 0.70 —	0.92 0.78 1.06	V	I_F = 10A, T_J = +25°C I_F = 10A, T_J = +125°C I_F = 20A, T_J = +25°C
Leakage Current (Note 6)	I_R	— —	— —	0.1 10	mA	V_R = 300V, T_J = +25°C V_R = 300V, T_J = +125°C
Reverse Recovery Time	T_{rr}	—	45	—	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Using heatsink (by black Aluminum 45mm * 20mm * 12mm)

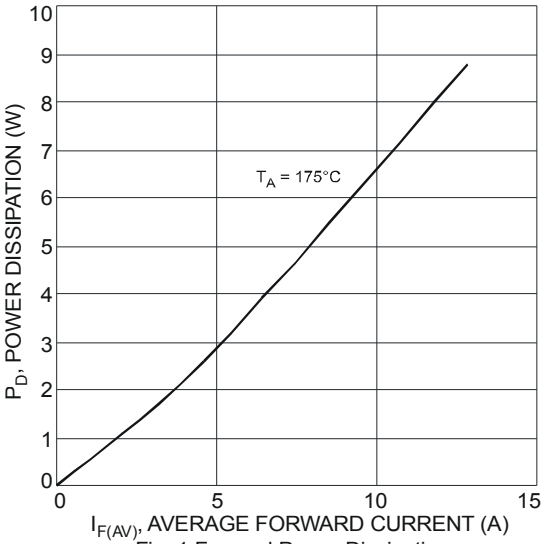


Fig. 1 Forward Power Dissipation

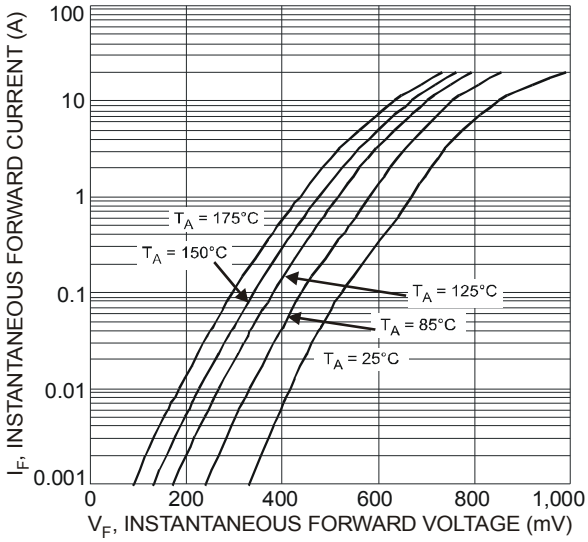


Fig. 2 Typical Forward Characteristics

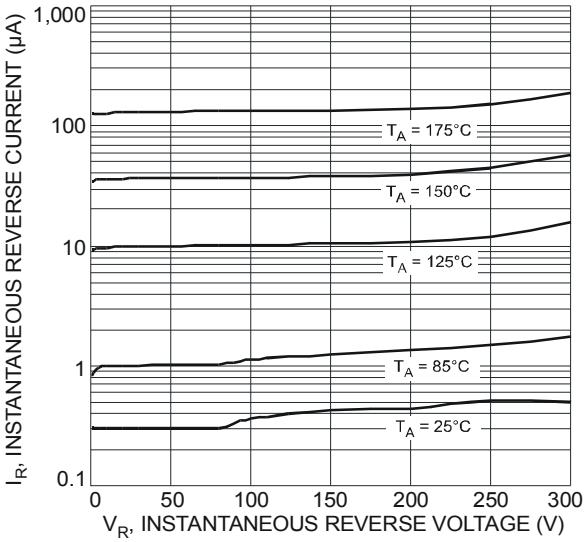


Fig. 3 Typical Reverse Characteristics

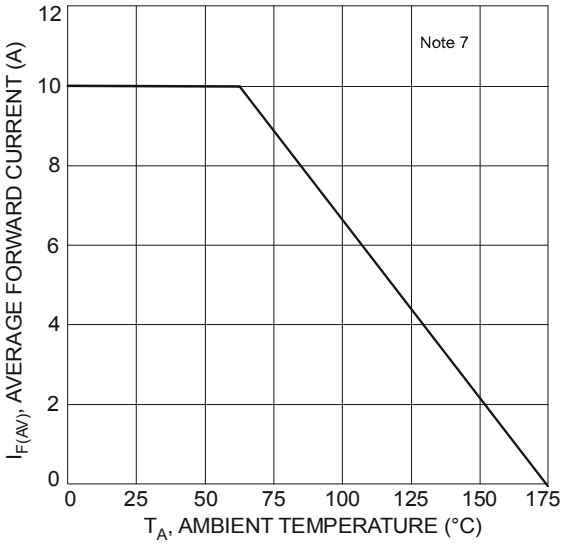


Fig. 4 Forward Current Derating Curve

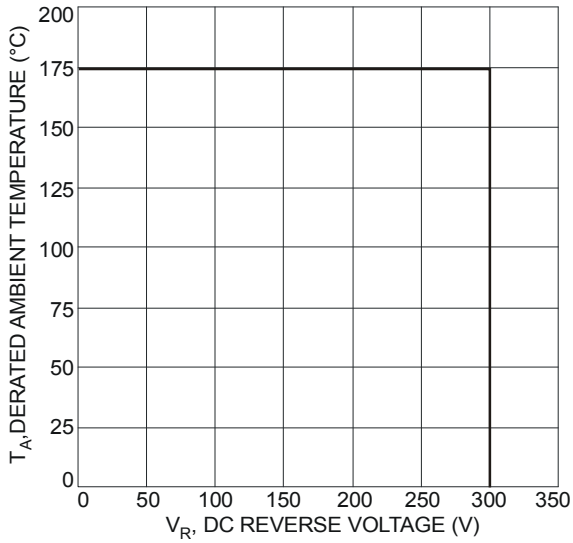
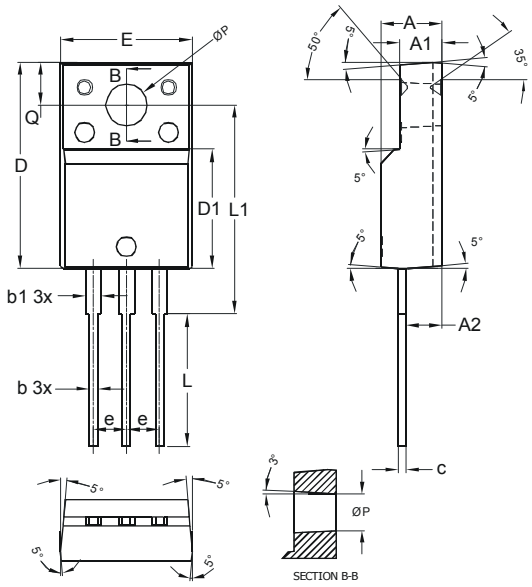


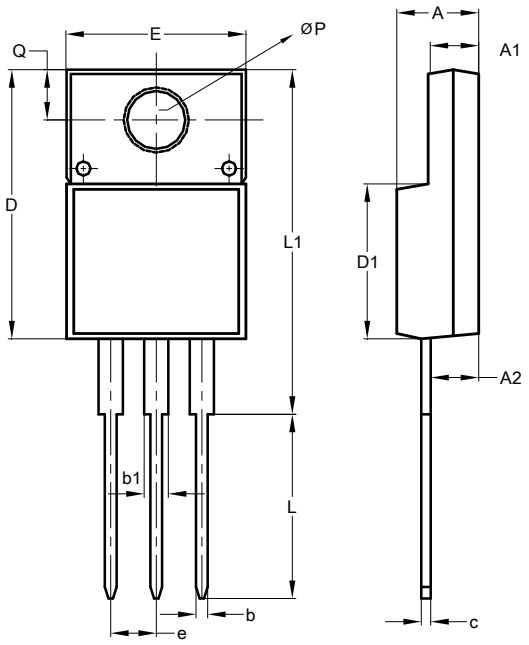
Fig. 5 Operating Temperature Derating

Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



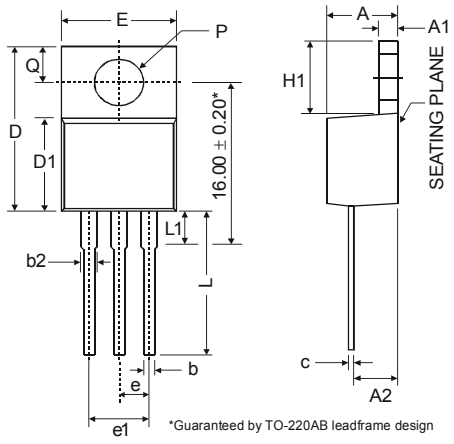
ITO-220AB			
Dim	**Min**	**Typ**	**Max**
A	4.50	4.70	4.90
A1	3.04	3.24	3.44
A2	2.56	2.76	2.96
b	0.50	0.60	0.75
b1	1.10	1.20	1.35
c	0.50	0.60	0.70
D	15.67	15.87	16.07
D1	8.99	9.19	9.39
e		2.54	
E	9.91	10.11	10.31
L	9.45	9.75	10.05
L1	15.80	16.00	16.20
P	2.98	3.18	3.38
Q	3.10	3.30	3.50
All Dimensions in mm			



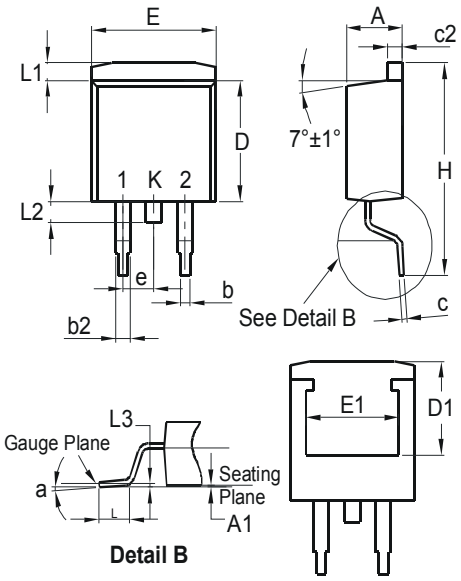
ITO220AB Alternate		
Dim	**Min**	**Max**
A	4.36	4.77
A1	2.54	3.10
A2	2.54	2.80
b	0.55	0.75
b1	1.20	1.50
c	0.38	0.68
D	14.50	15.50
D1	8.38	8.89
e	2.41	2.67
E	9.72	10.27
L	9.87	10.67
L1	15.8	17.00
P	3.08	3.39
Q	2.60	3.00
All Dimensions in mm		

Package Outline Dimensions (Cont.)

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



TO-220AB			
Dim	**Min**	**Typ**	**Max**
A	3.56	-	4.82
A1	0.51	-	1.39
A2	2.04	-	2.92
b	0.39	0.81	1.01
b2	1.15	1.24	1.77
c	0.356	-	0.61
D	14.22	-	16.51
D1	8.39	-	9.01
e	2.54		
e1	5.08		
E	9.66	-	10.66
H1	5.85	-	6.85
L	12.70	-	14.73
L1	-	-	6.35
P	3.54	-	4.08
Q	2.54	-	3.42
All Dimensions in mm			



TO263		
Dim	**Min**	**Max**
A	4.07	4.82
A1	0.00	0.25
b	0.51	0.99
b2	1.15	1.77
c	0.356	0.73
c2	1.143	1.65
D	8.39	9.65
D1	6.55	—
E	9.66	10.66
E1	6.23	—
e	2.54 Typ	
H	14.61	15.87
L	1.78	2.79
L1	—	1.67
L2	—	1.77
a	0°	8°
All Dimensions in mm		

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