Lead-free Green

20A SBR®
SUPER BARRIER RECTIFIER

Product Summary

V_{RRM} (V)	I_O (A)	V_F Max (V) @ +25°C	I_R Max (mA) @ +25°C
200	10 (Per leg) 20 (Total)	0.86	0.1

Features and Benefits

- Patented SBR® technology provides superior avalanche capability versus Schottky diodes, ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V_F); Better efficiency and cooler operation.
- Reduced high temperature reverse leakage; Increased reliability against thermal runaway failure in high temperature operation.
- **Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Description and Applications

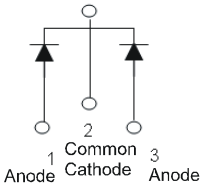
The SBR20A200CTB provides very low V_F and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- DC-DC Converters
- AC-DC Adaptors

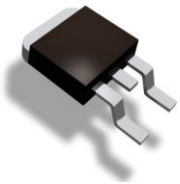
Mechanical Data

- Case: TO263AB (D^2PAK)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight: 1.6 grams (Approximate)

TO263AB (D^2PAK)



Package Pin Out Configuration



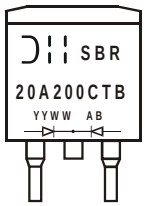
Top View

Ordering Information (Note 4)

Part Number	Case	Packaging
SBR20A200CTB	TO263AB (D^2PAK)	50 pieces/tube
SBR20A200CTB-G	TO263AB (D^2PAK)	50 pieces/tube
SBR20A200CTB-13	TO263AB (D^2PAK)	800/Tape & Reel
SBR20A200CTB-13-G	TO263AB (D^2PAK)	800/Tape & Reel

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.

Marking Information



SBR20A200CTB = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 15 = 2015)
WW = Week (01 - 53)

Maximum Ratings (@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}	200	V
Average Rectified Output Current @ T_C = +150°C	I_O	20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	180	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance (Per Leg) Thermal Resistance Junction to Case (Note 5) Thermal Resistance, Junction to Ambient (Note 5)	 $R_{\theta JC}$ $R_{\theta JA}$	 3 15	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	—	— — 0.66	0.86 0.96 0.72	V	I_F = 10A, T_J = +25°C I_F = 20A, T_J = +25°C I_F = 10A, T_J = +125°C
Leakage Current (Note 6)	I_R	—	0.003 0.51	0.1 10	mA	V_R = 200V, T_J = +25°C V_R = 200V, T_J = +125°C
Reverse Recovery Time	t_{rr}	— —	24 20	30 25	nS	I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A I_F = 1A, V_R = 30V, di/dt = 100A/µs, T_J = +25°C

Notes:
5. Device mounted on 2-inch square. Al board, minimum recommended pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
6. Short duration pulse test used to minimize self-heating effect.

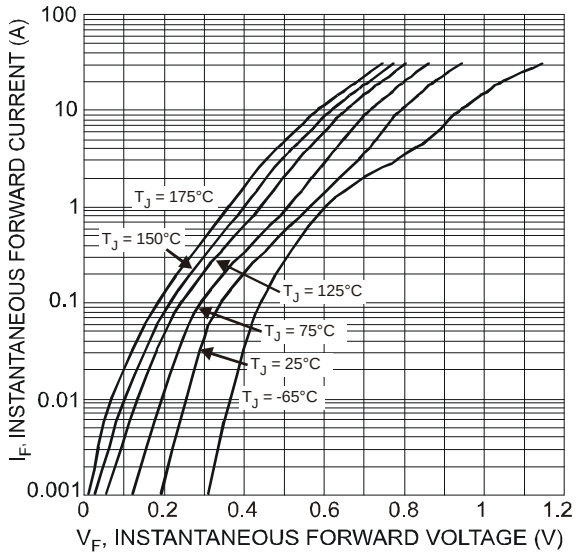


Fig. 1 Typical Forward Characteristics

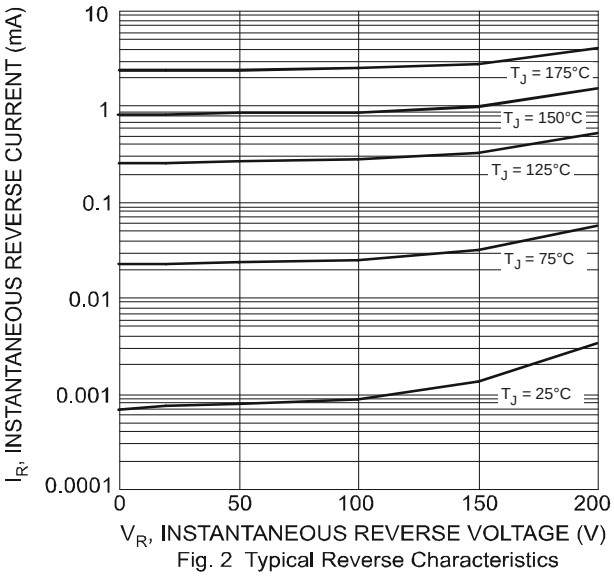


Fig. 2 Typical Reverse Characteristics

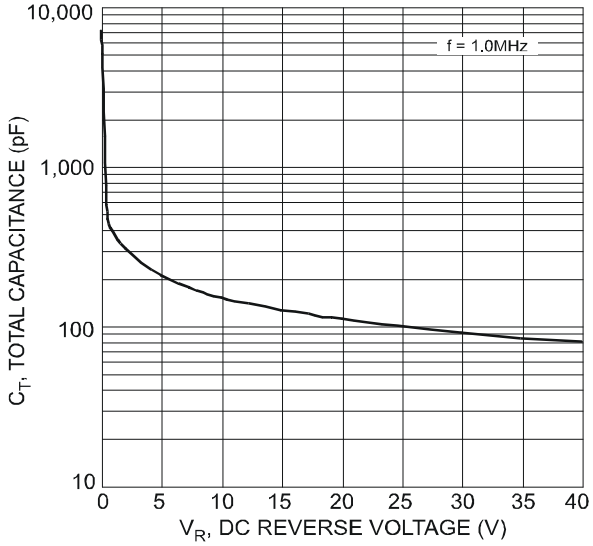


Fig. 3 Total Capacitance vs. Reverse Voltage

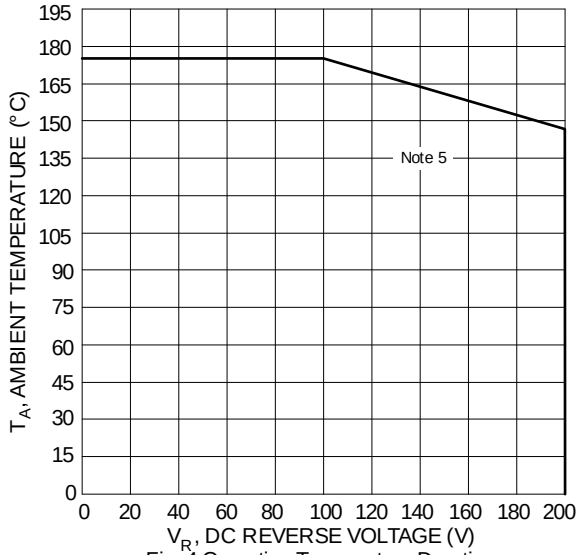
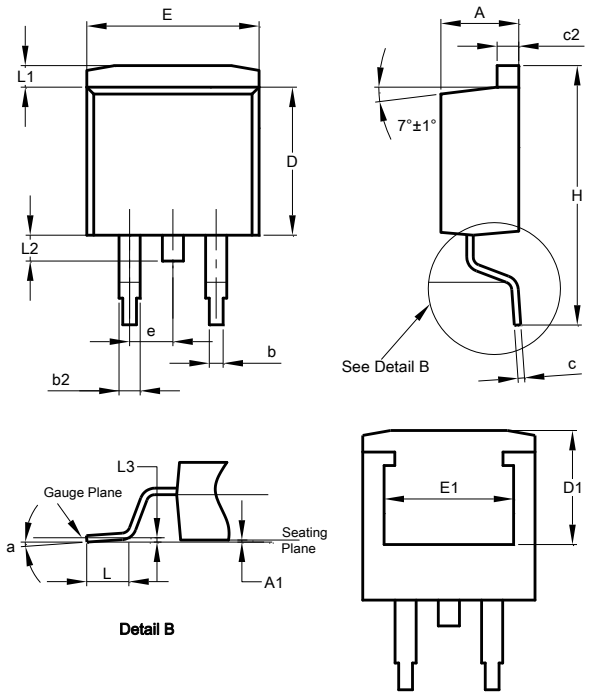


Fig. 4 Operating Temperature Derating

Package Outline Dimensions

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

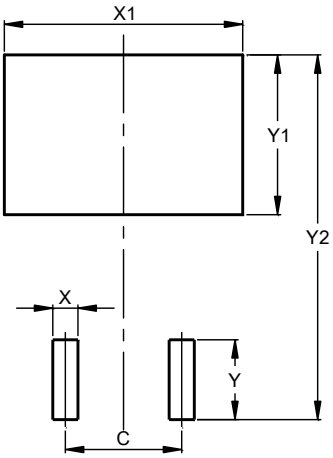
TO263AB (D2PAK)



TO263AB (D2PAK)			
Dim	**Min**	**Max**	**Typ**
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	6.95	-
e	2.54 TYP		
E	9.66	10.66	-
E1	6.23	8.23	-
H	14.61	15.87	-
L	1.78	2.79	-
L1	-	1.67	-
L2	-	1.77	-
L3	-	-	0.254
a	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
C	5.08
X	1.10
X1	10.41
Y	3.50
Y1	7.01
Y2	15.99

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