



**THE DATASHEET OF  
SBR20A120CT-E1**



## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F(MAX)</sub> (V) @ +25°C	I <sub>R(MAX)</sub> (mA) @ +25°C
120	10 (Per leg) 20 (Total)	0.79	0.1

## Description and Applications

The SBR20A120CT & SBR20A120CTFP provide very low V<sub>F</sub> and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

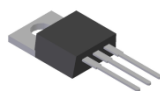
- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

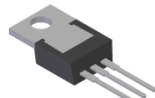
- Patented SBR technology provides superior avalanche capability versus Schottky diodes, ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V<sub>F</sub>); Better efficiency and cooler operation.
- Reduced high temperature reverse leakage; Increased reliability against thermal runaway failure in high temperature operation.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

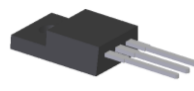
- Case: TO-220AB, ITO-220AB
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (63)
- Marking Information: See Below
- Ordering Information: See Below
- Weight: TO-220AB – 1.85 grams (Approximate)
- ITO-220AB – 1.65 grams (Approximate)



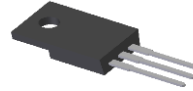
TO-220AB  
Top View



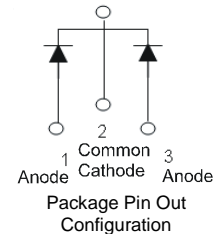
TO-220AB  
Bottom View



ITO-220AB  
Top View



ITO-220AB  
Bottom View



## Ordering Information (Notes 4 & 5)

Part Number	Case	Packaging
SBR20A120CT	TO-220AB	50 pieces/tube
SBR20A120CT-G	TO-220AB	50 pieces/tube
SBR20A120CTFP	ITO-220AB	50 pieces/tube
SBR20A120CTFP-G	ITO-220AB	50 pieces/tube
SBR20A120CTFP-JT-G	ITO-220AB (Alternate)	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> 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/datasheets/ap02007.pdf>.
  5. For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR20A120CT-G.

## Marking Information



SBR20A120CT = 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)



SBR20A120CTFP = Product Type Marking Code  
 AB = Foundry and Assembly Code  
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 WW = Week (01 - 53)

## Maximum Ratings (Per Leg) (@T<sub>A</sub> = +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	V <sub>RRM</sub>	120	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
Average Rectified Output Current Per Device (Per Leg) (Total)	I <sub>O</sub>	10 20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	180	A
Peak Repetitive Reverse Surge Current (2uS-1KHz)	I <sub>RRM</sub>	3	A
Isolation Voltage (ITO-220AB Only) From Terminal to Heatsink t = 3 seconds	V <sub>AC</sub>	2000	V

## Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Package = TO-220AB (Note 6) Package = ITO-220AB (Note 6)	R <sub>θJC</sub>	2 4	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +175	°C

## Electrical Characteristics (Per Leg) (@T<sub>A</sub> = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Per Leg)	V <sub>F</sub>	-	0.75	0.79	V	I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C
			0.62	0.65		I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C
			0.87	0.92		I <sub>F</sub> = 20A, T <sub>J</sub> = +25°C
Leakage Current (Note 7)	I <sub>R</sub>	-	25	100	μA mA	V <sub>R</sub> = 120V, T <sub>J</sub> = +25°C
			6.3	20		V <sub>R</sub> = 120V, T <sub>J</sub> = +125°C

Notes: 6. Test with Aluminum heatsink 50\*50\*23 mm.  
 7. Short duration pulse test used to minimize self-heating effect.

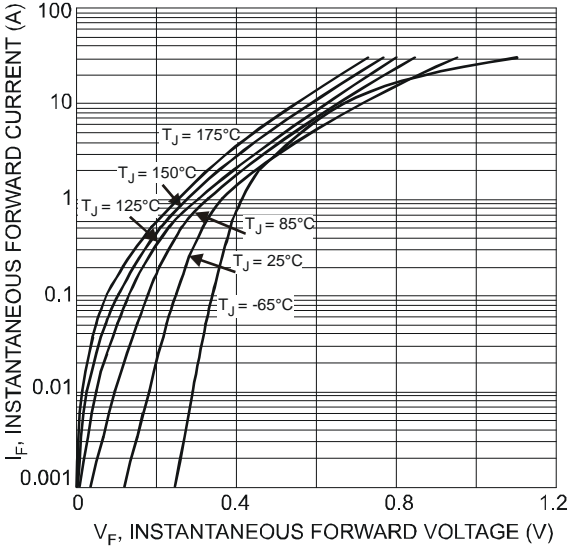


Fig. 1 Typical Forward Characteristics

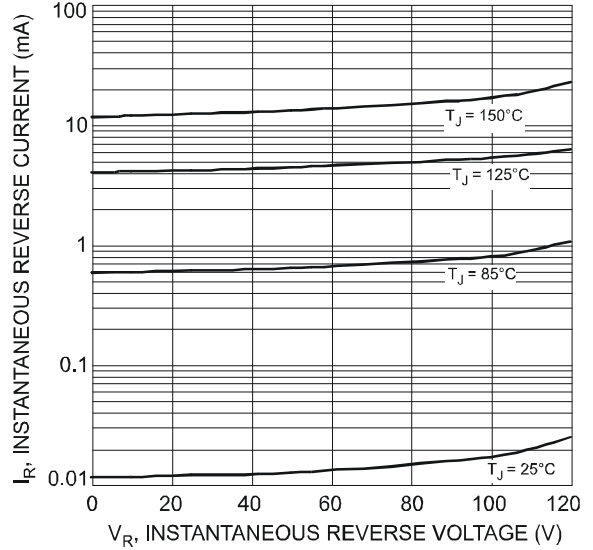


Fig. 2 Typical Reverse Characteristics

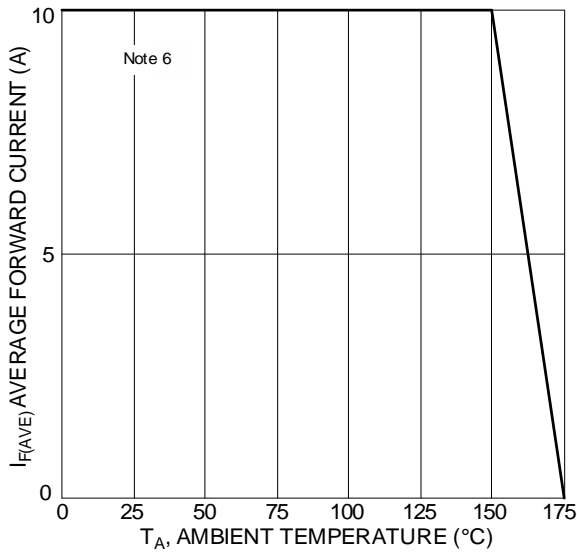
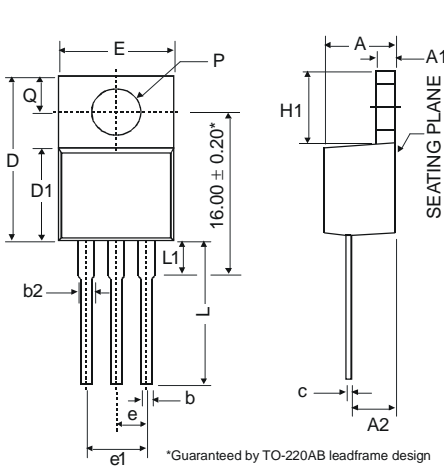
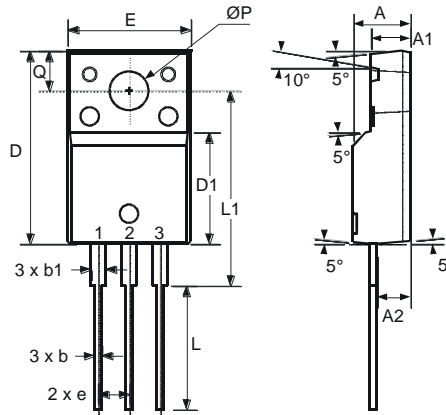


Fig. 3 Current Derating Curve

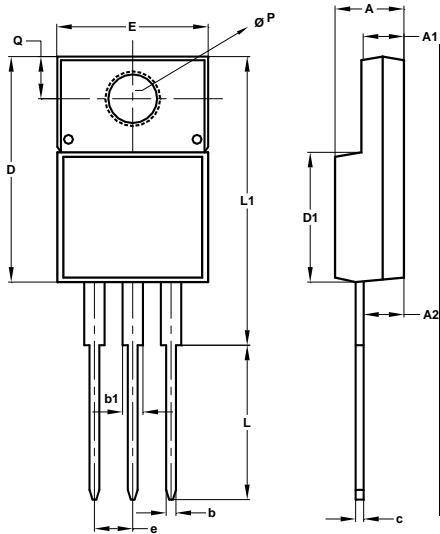
**Package Outline Dimensions**



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
<b>All Dimensions in mm</b>			



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
<b>All Dimensions in mm</b>			



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
<b>All Dimensions in mm</b>		

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