

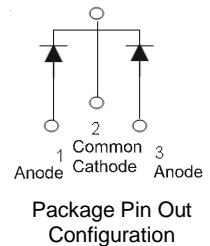
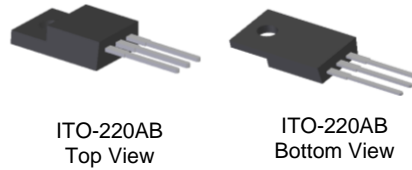
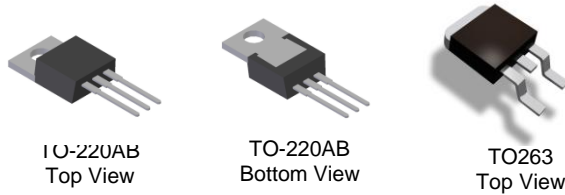


**THE DATASHEET OF  
SBR20A60CTFP-G**



## Features

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability (D2PAK / TO263 Only)**
- **PPAP Capable (Note 4)**
- **Also Available in Green Molding Compound (Note 5)**



## Mechanical Data

- Case: TO-220AB, ITO-220AB, TO263 (D<sup>2</sup>PAK)
- 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 <sup>Ⓔ</sup>
- Weight: TO-220AB – 1.85 grams (Approximate)  
 TO263 (D<sup>2</sup>PAK) – 1.6 grams (Approximate)  
 ITO-220AB – 1.65 grams (Approximate)

## Ordering Information (Notes 5 & 6)

Part Number	Qualification	Case	Packaging
SBR20A60CT	Commercial	TO-220AB	50 pieces/tube
SBR20A60CT-G	Commercial	TO-220AB	50 pieces/tube
SBR20A60CTB	Commercial	TO263	50 pieces/tube
SBR20A60CTB-G	Commercial	TO263	50 pieces/tube
SBR20A60CTB-13	Commercial	TO263	800/Tape & Reel
SBR20A60CTBQ-13	Automotive	TO263	800/Tape & Reel, 13-inch
SBR20A60CTB-13-G	Commercial	TO263	800/Tape & Reel
SBR20A60CTFP	Commercial	ITO-220AB	50 pieces/tube
SBR20A60CTFP-G	Commercial	ITO-220AB	50 pieces/tube
SBR20A60CTFP-JT	Commercial	ITO-220AB (Alternate)	50 pieces/tube
SBR20A60CTFP-JT-G	Commercial	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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR20A60CT-G.
  6. For packaging details, go to our website at <http://www.diodes.com>.

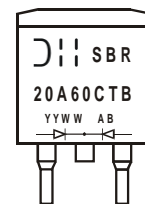
## Marking Information



SBR20A60CT = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 06 = 2006)  
 WW = Week (01 - 53)



SBR20A60CTFP = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 06 = 2006)  
 WW = Week (01 - 53)



SBR20A60CTB = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 06 = 2006)  
 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>	60	V
Working Peak Reverse Voltage	V <sub>VRM</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 (2μS - 1KHz)	I <sub>RRM</sub>	3	A
Isolation Voltage (ITO-220AB Only) From terminal to heatsink t = 3 sec.	V <sub>AC</sub>	2,000	V
Repetitive Peak Avalanche Power (1μs, +25°C)	P <sub>ARM</sub>	7,000	W

### Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Package = TO-220AB Package = TO263 Package = ITO-220AB	R <sub>θJC</sub>	2 2 4	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°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	V <sub>F</sub>	-	-	0.65	V	I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C
			0.47	0.56		I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C
			-	0.79		I <sub>F</sub> = 20A, T <sub>J</sub> = +25°C
Leakage Current (Note 7)	I <sub>R</sub>	-	-	0.5	mA	V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C
				100		V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C

Note: 7. Short duration pulse test used to minimize self-heating effect.

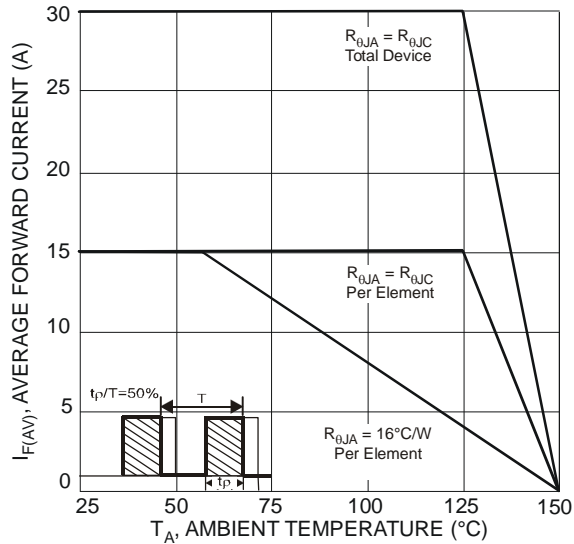


Figure 1 Forward Current Derating Curve

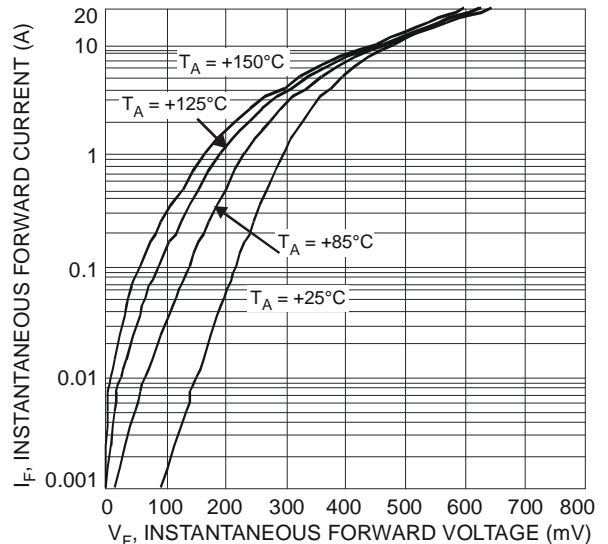


Figure 2 Typical Forward Characteristics

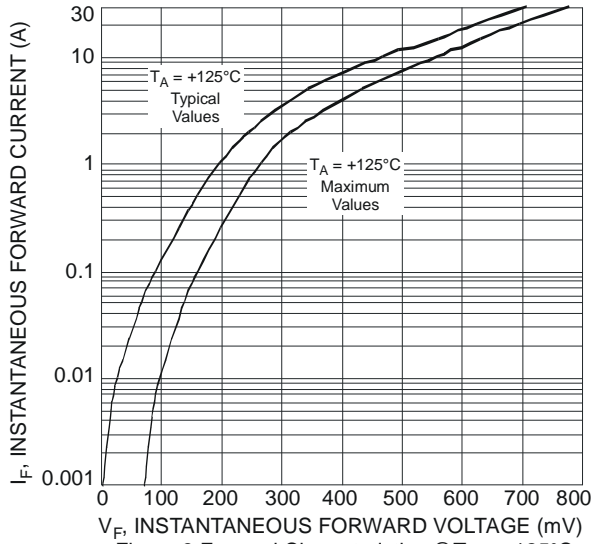


Figure 3 Forward Characteristics @ T<sub>A</sub> = +125°C

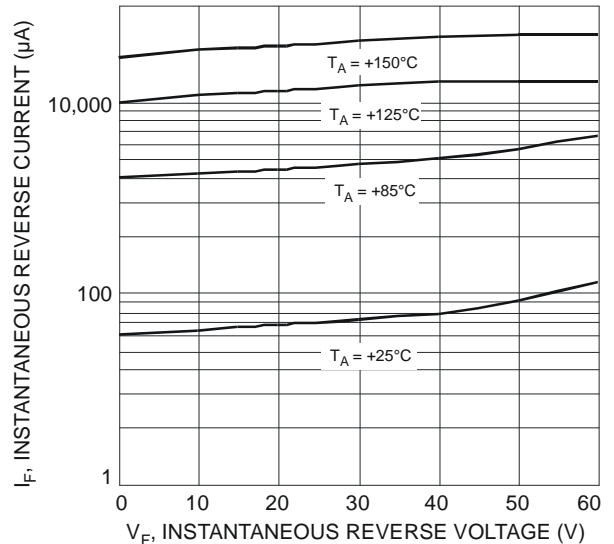


Figure 4 Typical Reverse Characteristics

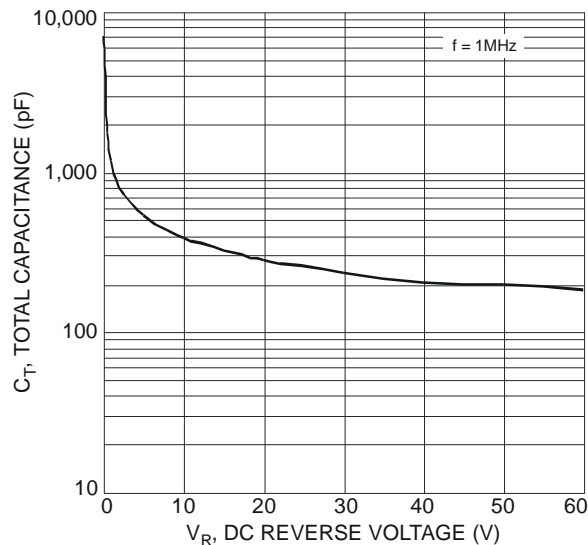


Figure 5 Total Capacitance vs. Reverse Voltage

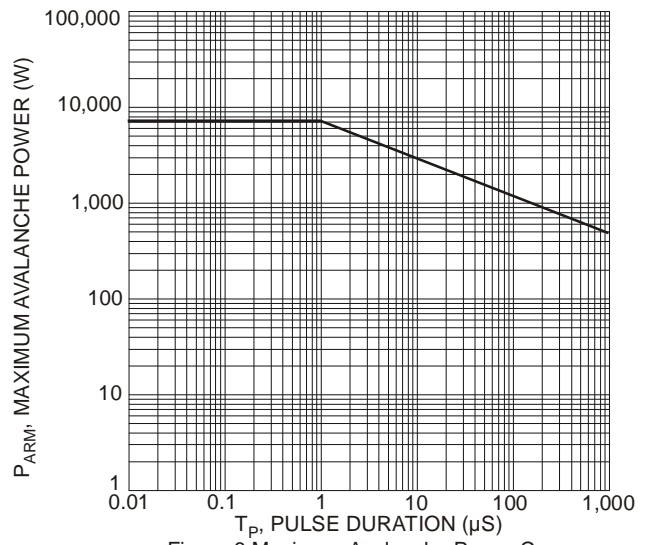
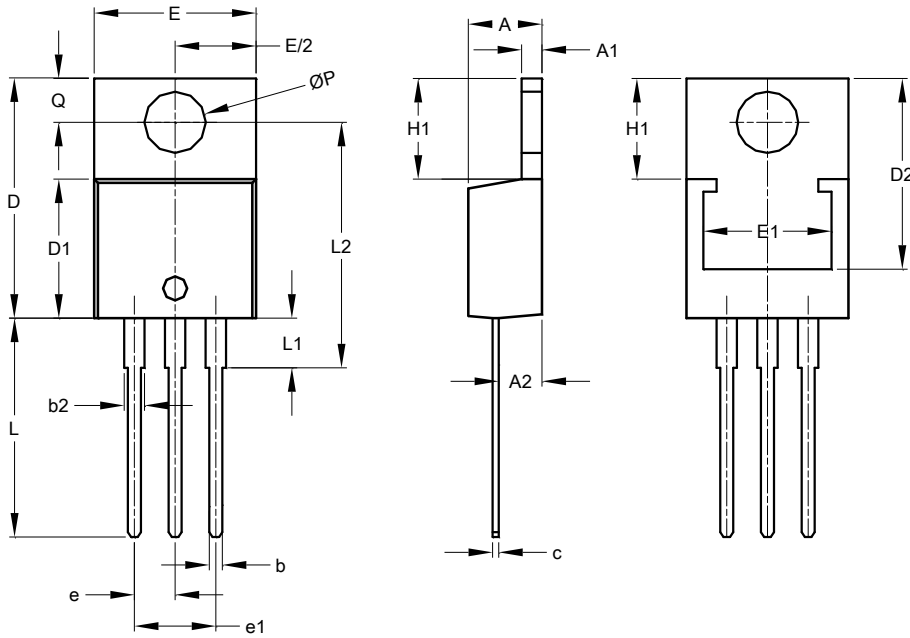


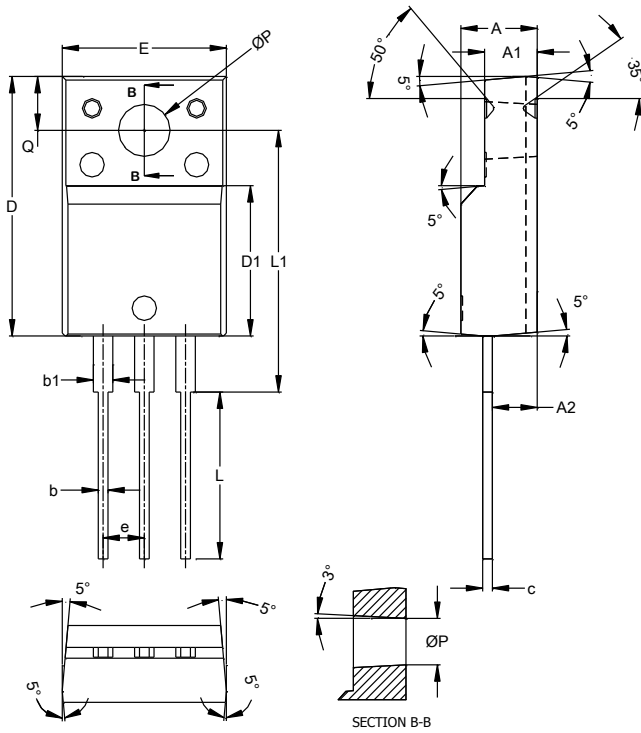
Figure 6 Maximum Avalanche Power Curve

**Package Outline Dimensions**

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



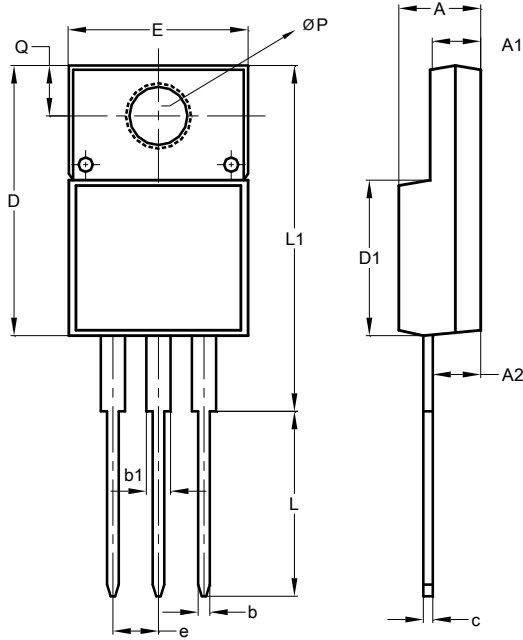
TO220AB			
Dim	Min	Max	Typ
A	3.56	4.82	-
A1	0.51	1.39	-
A2	2.04	2.92	-
b	0.39	1.01	0.81
b2	1.15	1.77	1.24
c	0.356	0.61	-
D	14.22	16.51	-
D1	8.39	9.01	-
D2	11.45	12.87	-
e	-	-	2.54
e1	-	-	5.08
E	9.66	10.66	-
E1	6.86	8.89	-
H1	5.85	6.85	-
L	12.70	14.73	-
L1	-	6.35	-
L2	15.80	16.20	16.00
P	3.54	4.08	-
Q	2.54	3.42	-
All Dimensions in mm			



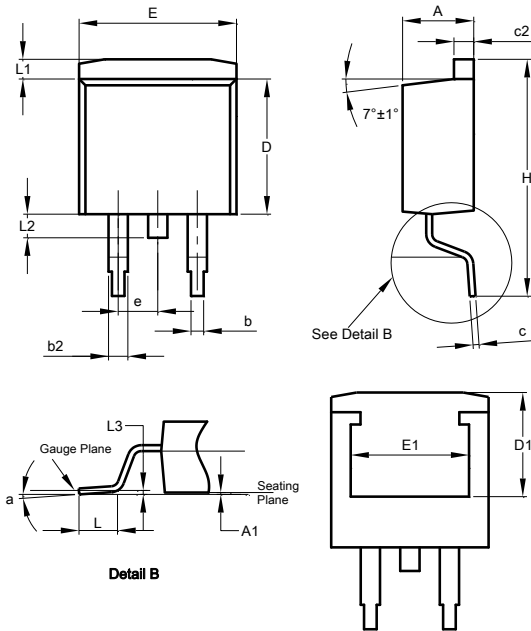
ITO220AB			
Dim	Min	Max	Typ
A	4.50	4.90	4.70
A1	3.04	3.44	3.24
A2	2.56	2.96	2.76
b	0.50	0.75	0.60
b1	1.10	1.35	1.20
c	0.50	0.70	0.60
D	15.67	16.07	15.87
D1	8.99	9.39	9.19
E	9.91	10.31	10.11
e	--	--	2.54
L	9.45	10.05	9.75
L1	15.80	16.20	16.00
P	2.98	3.38	3.18
Q	3.10	3.50	3.30
All Dimensions in mm			

**Package Outline Dimensions** (continued)

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



ITO220AB (Type E)		
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		

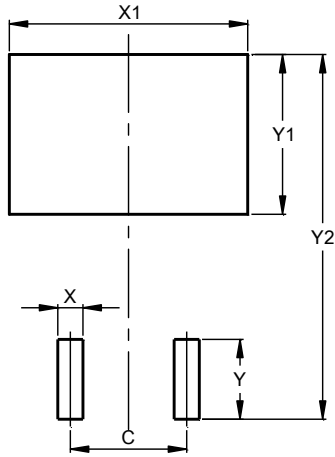


TO263AB (D2PAK)			
Dim	Min	Max	Typ
A	4.07	4.82	-
A1	0.00	0.25	-
b	0.51	0.99	-
b2	1.15	1.77	-
c	0.356	0.73	-
c2	1.143	1.65	-
D	8.39	9.65	-
D1	6.55	6.95	-
e	2.54 TYP		
E	9.66	10.66	-
E1	6.23	8.23	-
H	14.61	15.87	-
L	1.78	2.79	-
L1	-	1.67	-
L2	-	1.77	-
L3	-	-	0.254
a	0°	8°	-
All Dimensions in mm			

**Suggested Pad Layout**

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

**TO263AB (D2PAK)**



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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