

## 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)**
- **Also Available in Green Molding Compound**
  - Halogen and Antimony Free. "Green" Device (Note 3)

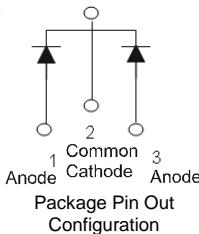
## Mechanical Data

- 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 (E3)
- 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
SBR2040CT	TO-220AB	50 pieces/tube
SBR2040CT-G	TO-220AB	50 pieces/tube
SBR2040CTFP	ITO-220AB	50 pieces/tube
SBR2040CTFP-G	ITO-220AB	50 pieces/tube
SBR2040CTFP-JT-G	ITO-220AB (Alternate)	50 pieces/tube

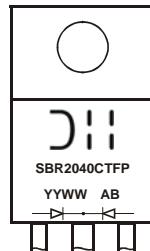
## Notes:

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: SBR2040CT-G.

## Marking Information



SBR2040CT = 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)



SBR2040CTFP = 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) (@ $T_A = +25^\circ\text{C}$ , 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	$V_{RRM}$		
Working Peak Reverse Voltage	$V_{RWM}$	40	V
DC Blocking Voltage	$V_{RM}$		
Average Rectified Output Current Per Device (Per Leg)	$I_O$	20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	120	A
Peak Repetitive Reverse Surge Current (2μS-1Khz)	$I_{RRM}$	2	A
Isolation Voltage (ITO-220AB Only) From terminal to heatsink $t = 3\text{sec.}$	$V_{AC}$	2000	V

## Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance			
Package = TO-220AB	$R_{\theta JC}$	2	$^\circ\text{C/W}$
Package = ITO-220AB		4	
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

## Electrical Characteristics (Per Leg) (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.43	0.53 0.48	V	$I_F = 10\text{A}, T_J = +25^\circ\text{C}$ $I_F = 10\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 6)	$I_R$	—	—	0.5 100	mA	$V_R = 40\text{V}, T_J = +25^\circ\text{C}$ $V_R = 40\text{V}, T_J = +125^\circ\text{C}$

Note: 6. Short duration pulse test used to minimize self-heating effect.

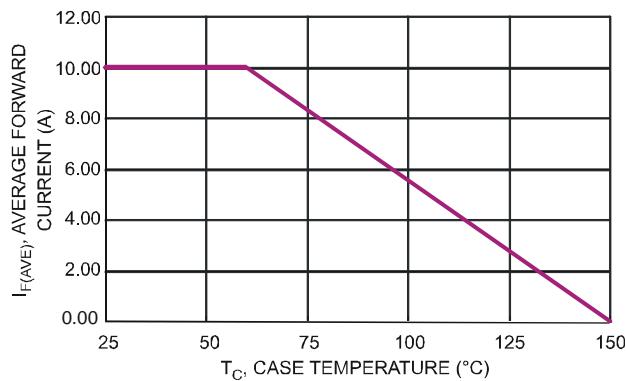


Figure 1 Current Derating Curve, Per Element

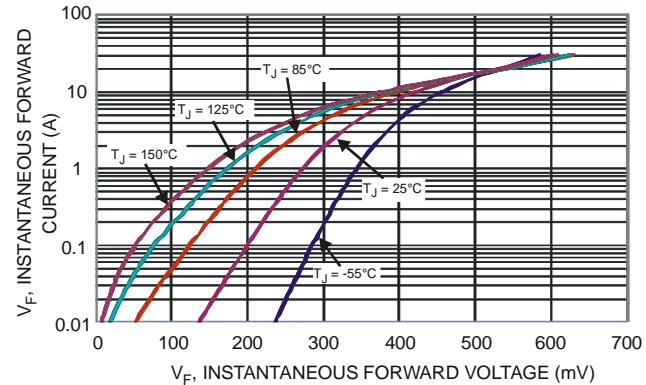


Figure 2 Typical Forward Characteristics, Per Element

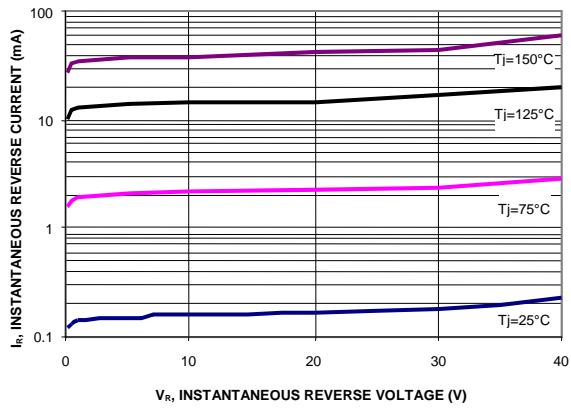
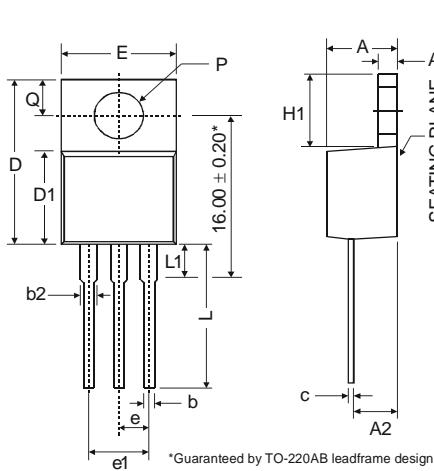


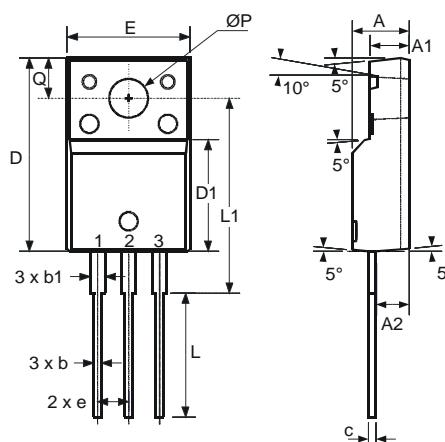
Figure 3 Typical Reverse Characteristics, Per Element

## Package Outline Dimensions



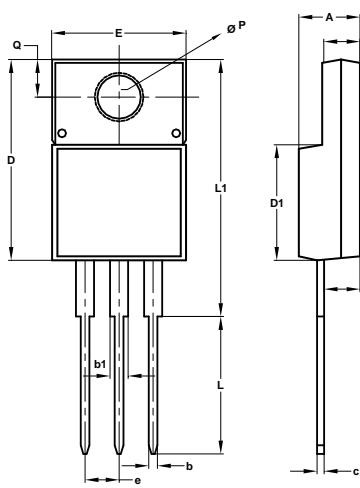
TO-220AB			
Dim	Min	Typ	Max
<b>A</b>	3.56	-	4.82
<b>A1</b>	0.51	-	1.39
<b>A2</b>	2.04	-	2.92
<b>b</b>	0.39	0.81	1.01
<b>b2</b>	1.15	1.24	1.77
<b>c</b>	0.356	-	0.61
<b>D</b>	14.22	-	16.51
<b>D1</b>	8.39	-	9.01
<b>e</b>	2.54		
<b>e1</b>	5.08		
<b>E</b>	9.66	-	10.66
<b>H1</b>	5.85	-	6.85
<b>L</b>	12.70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

All Dimensions in mm



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

All Dimensions in mm



ITO-220AB (Alternate)		
Dim	Min	Max
<b>A</b>	4.36	4.77
<b>A1</b>	2.54	3.10
<b>A2</b>	2.54	2.80
<b>b</b>	0.55	0.75
<b>b1</b>	1.20	1.50
<b>c</b>	0.38	0.68
<b>D</b>	14.50	15.50
<b>D1</b>	8.38	8.89
<b>e</b>	2.41	2.67
<b>E</b>	9.72	10.27
<b>L</b>	9.87	10.67
<b>L1</b>	15.8	17.00
<b>P</b>	3.08	3.39
<b>Q</b>	2.60	3.00

All Dimensions in mm

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