

## Features

- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Lead Free Finish, RoHS Compliant (Note 2)**
- **Also Available in Green Molding Compound (Note 4)**

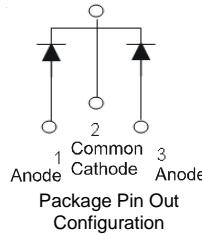
## Mechanical Data

- 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)
- Marking Information: See Page 2
- Ordering Information: See Page 2
- 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


## Maximum Ratings

$\text{@ } T_A = 25^\circ\text{C}$  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 @ $T_C = 110^\circ\text{C}$	$I_O$	20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	200	A
Peak Repetitive Reverse Surge Current (2uS-1Khz)	$I_{RRM}$	3	A
Isolation Voltage (ITO-220AB Only) From terminal to heatsink $t = 3$ sec.	$V_{AC}$	2000	V

## Thermal Characteristics

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

## Electrical Characteristics

$\text{@ } T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	-	0.41	0.47	V	$I_F = 10\text{A}, T_J = 25^\circ\text{C}$ $I_F = 10\text{A}, T_J = 125^\circ\text{C}$ $I_F = 20\text{A}, T_J = 25^\circ\text{C}$
Leakage Current (Note 1)	$I_R$	-	-	0.5 100	mA	$V_R = 40\text{V}, T_J = 25^\circ\text{C}$ $V_R = 40\text{V}, T_J = 125^\circ\text{C}$

Notes:

1. Short duration pulse test used to minimize self-heating effect.
2. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.

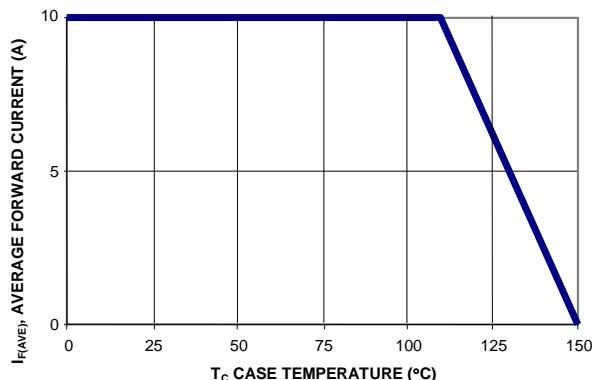


Figure 1: Current Derating Curve, Per Element

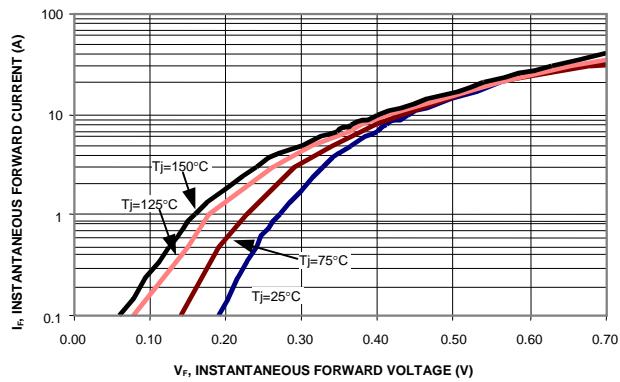


Figure 2: Typical Forward Characteristics, Per Element

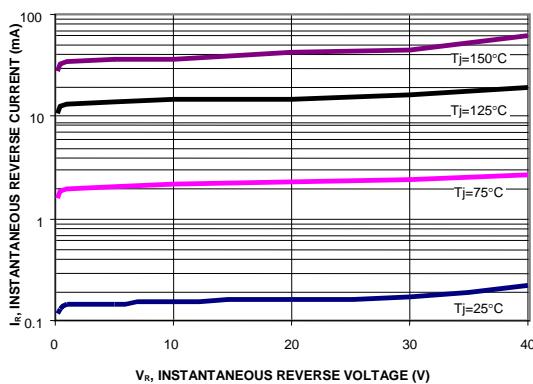


Figure 3: Typical Reverse Characteristics, Per Element

## Ordering Information (Notes 3 & 4)

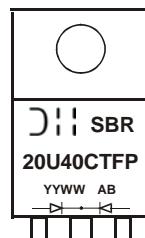
Part Number	Case	Packaging
SBR20U40CT	TO-220AB	50 pieces/tube
SBR20U40CT-G	TO-220AB	50 pieces/tube
SBR20U40CTFP	ITO-220AB	50 pieces/tube
SBR20U40CTFP-G	ITO-220AB	50 pieces/tube

Notes: 3. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
 4. For Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR20U40CT-G.

## Marking Information



SBR20U40CT = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last two digits of year (ex: 06 = 2006)  
 WW = Week (01-52)

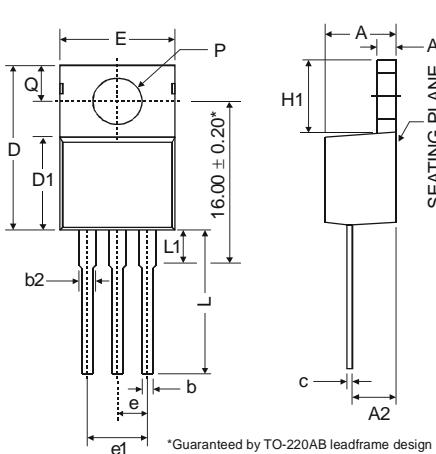


SBR20U40CTFP = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last two digits of year (ex: 06 = 2006)  
 WW = Week (01-52)

SBR is a registered trademark of Diodes Incorporated.

SBR20U40  
 Document number: DS30975 Rev. 4 - 2

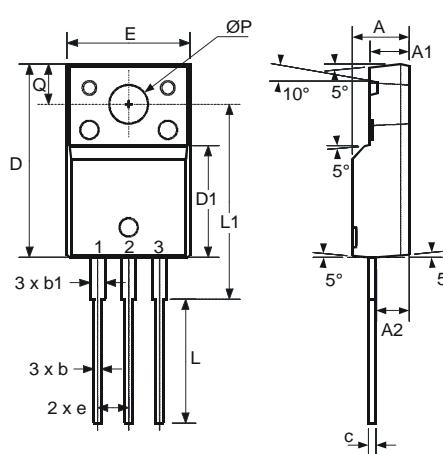
## Package Outline Dimensions



Guaranteed by TO-220AB leadframe design

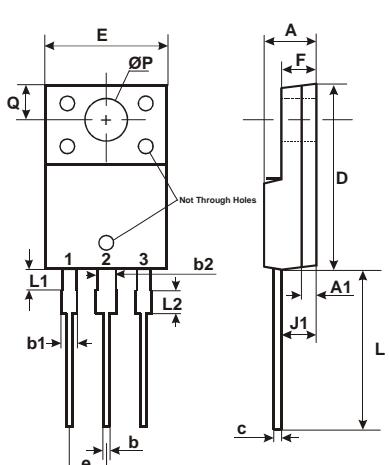
TO-220AB			
Dim	Min	Typ	Max
<b>A</b>	3.56	-	4.82
<b>A1</b>	0.51	-	1.39
<b>A2</b>	2.04	-	2.92
<b>b</b>	0.39	0.81	1.01
<b>b2</b>	1.15	1.24	1.77
<b>c</b>	0.356	-	0.61
<b>D</b>	14.22	-	16.51
<b>D1</b>	8.39	-	9.01
<b>e</b>	2.54		
<b>e1</b>	5.08		
<b>E</b>	9.66	-	10.66
<b>H1</b>	5.85	-	6.85
<b>L</b>	12.70	-	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 (Note 5)			
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 (Note 5)		
DIM.	MIN.	MAX.
<b>A</b>	4.30	4.70
<b>A1</b>	1.3	
<b>b</b>	0.50	0.75
<b>b1</b>	1.10	1.35
<b>b2</b>	1.50	1.75
<b>c</b>	0.50	0.75
<b>D</b>	14.80	15.20
<b>E</b>	9.96	10.36
<b>e</b>	2.54 typ	
<b>F</b>	2.80	3.20
<b>J1</b>	2.50	2.90
<b>L</b>	12.80	13.60
<b>L1</b>	1.70	1.90
<b>L2</b>	1.90	2.10
<b>ØP</b>	3.50 typ	
<b>Q</b>	2.70 typ	

## II Dimensions in mm

Notes: 5. For product manufactured with Date Code 0733 (week 33, 2007) and newer, please refer to ITO-220AB dimensions. For product manufactured prior to Date Code 0733, please refer to ITO-220AB ALTERNATE dimensions.

## IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

## LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.