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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## Product Summary (Per Leg)

$V_{RRM}$ (V)	$I_O$ (A)	$V_F$ (TYP) (V) @ +25°C	$I_R$ (MAX) (mA) @ +25°C
100	20	0.61	0.5

## Description and Applications

Packaged in the robust industry-standard TO220AB and ITO220AB packages, the SBRTF40U100CT and SBRTF40U100CTFP provide ultra 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

## Features and Benefits

- Reduced Ultra-Low Forward Voltage Drop ( $V_F$ ).  
Better Efficiency.  $V_F=0.34V$  at  $I_F=5A$
- Avalanche Rated
- Patented Super Barrier Rectifier Technology (SBR®)
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

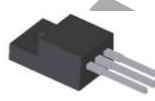
- Case: TO220AB, ITO220AB
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish.  
Solderable per MIL-STD-202, Method 208.③
- Weight  
TO220AB – 1.85 grams (Approximate)  
ITO220AB – 1.65 grams (Approximate)



TO220AB  
Top View



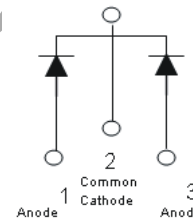
TO220AB  
Bottom View



ITO220AB  
Top View



ITO220AB  
Bottom View



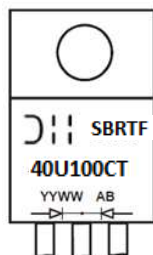
Package Pin-Out  
Configuration

## Ordering Information (Note 4)

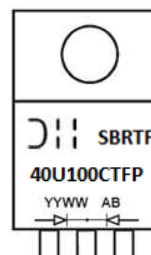
Part Number	Case	Packaging
SBRTF40U100CT	TO220AB	50 Pieces/Tube
SBRTF40U100CTFP	ITO220AB	50 Pieces/Tube

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



SBRTF40U100CT = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 18 = 2018)  
 WW = Week (01 to 53)



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**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	100	V
Average Rectified Output Current (Per Leg) (Total)	I <sub>O</sub>	20 40	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Per Leg)	I <sub>FSM</sub>	200	A
Peak Avalanche Power (1μs, +25°C)	P <sub>ARM</sub>	10,000	W
Non-Repetitive Avalanche Energy (T <sub>J</sub> = +25°C, I <sub>AS</sub> = 9A, L = 10mH)	E <sub>AS</sub>	340	mJ

**Thermal Characteristics (Per Leg)**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance			
TO220AB (Note 5)	R <sub>θJA</sub>	55	°C/W
TO220AB (Note 6)	R <sub>θJC</sub>	1	
TO220AB (Note 6)	R <sub>θJA</sub>	7	
ITO220AB (Note 5)	R <sub>θJA</sub>	45	
ITO220AB (Note 6)	R <sub>θJC</sub>	1.6	
ITO220AB (Note 6)	R <sub>θJA</sub>	11	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 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 (Note 7)	V <sub>F</sub>	—	0.40	—	V	I <sub>F</sub> = 5A, T <sub>J</sub> = +25°C
		—	0.48	0.58		I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C
		—	0.61	0.68		I <sub>F</sub> = 20A, T <sub>J</sub> = +25°C
		—	0.34	—		I <sub>F</sub> = 5A, T <sub>J</sub> = +125°C
		—	—	0.65		I <sub>F</sub> = 20A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	0.08	0.25	mA	V <sub>R</sub> = 90V, T <sub>J</sub> = +25°C
		—	0.15	0.5		V <sub>R</sub> = 100V, T <sub>J</sub> = +25°C
		—	—	30		V <sub>R</sub> = 80V, T <sub>J</sub> = +125°C
		—	35	—		V <sub>R</sub> = 100V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>J</sub>	—	250	—	pF	V <sub>R</sub> = 40V, f = 1.0MHz

Notes:  
 5. Test with no additional heatsink.  
 6. Test with additional heatsink (Aluminum, 50mm x 50mm x 23mm).  
 7. Short duration pulse test used to minimize self-heating effect.

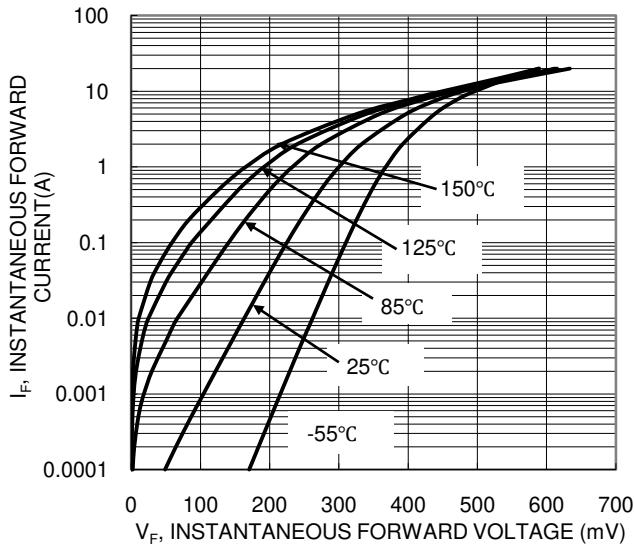


Figure 1. Typical Forward Characteristics

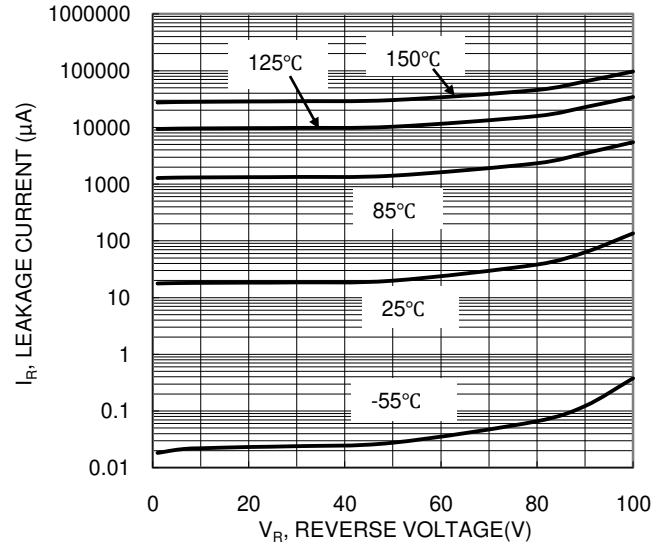


Figure 2. Typical Reverse Characteristics

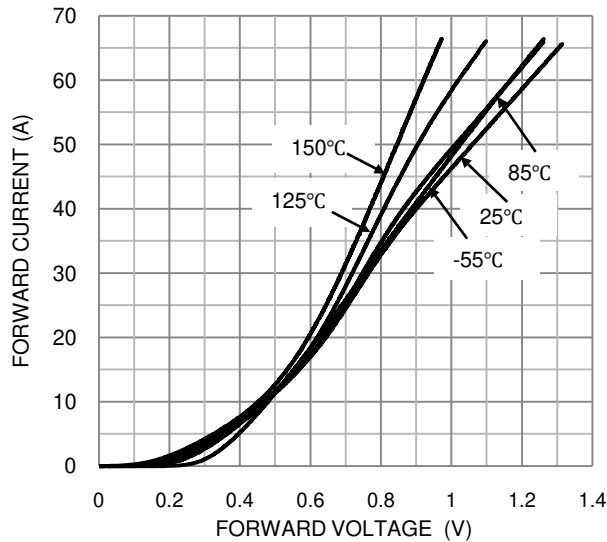


Figure 3. High Current Forward Characteristics

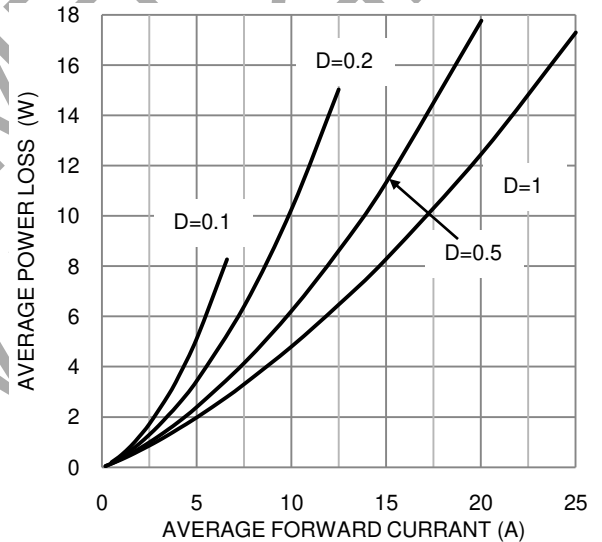


Figure 4. Forward Power Loss Characteristics  
Per Diode  $T_A = +25^\circ\text{C}$

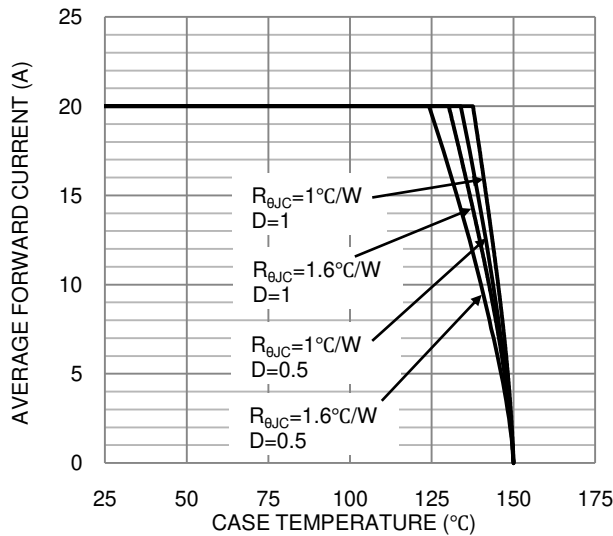


Figure 5. Current Derating per Leg

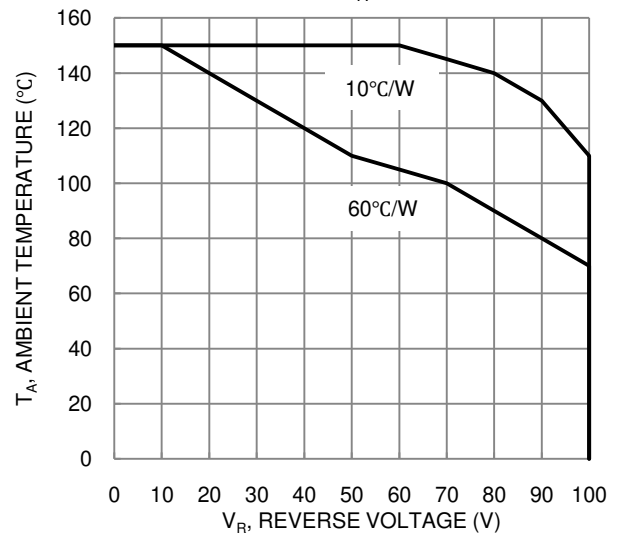


Figure 6. Reverse Safe Operating Area

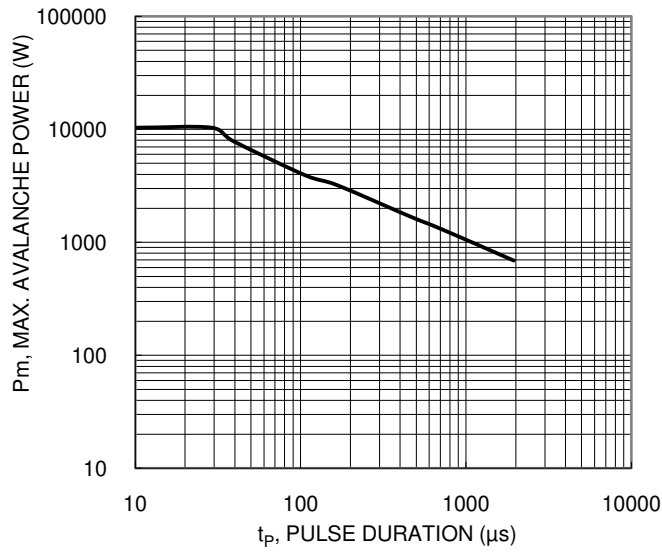


Figure 7. Max. Avalanche Power

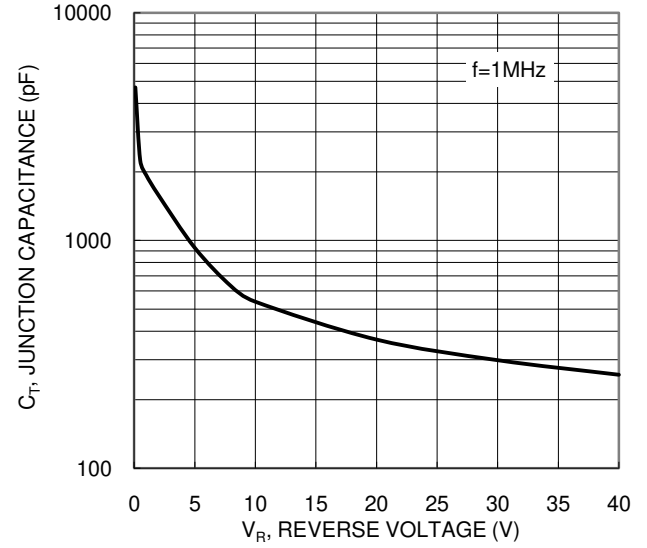


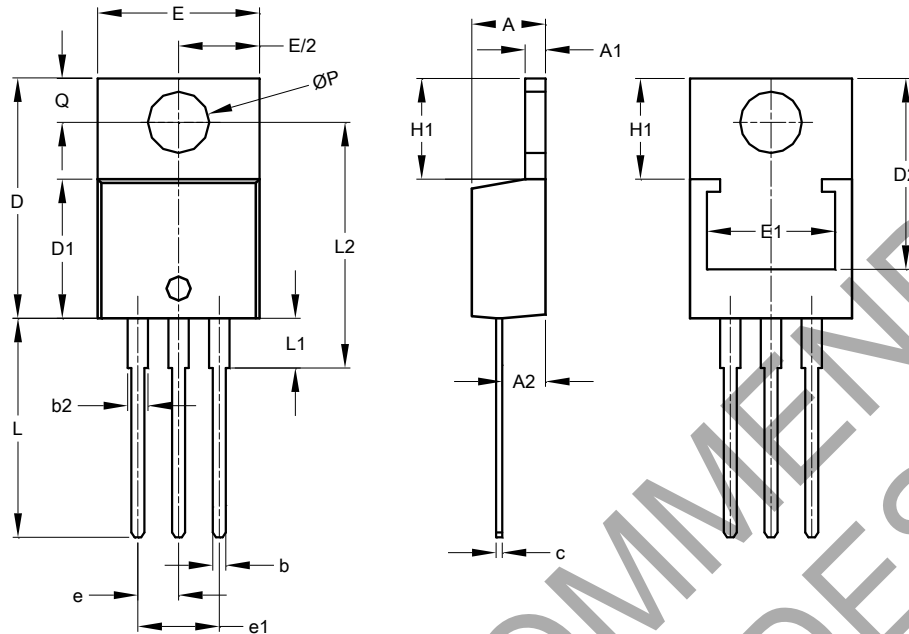
Figure 8. Typical Junction Capacitance

NOT RECOMMENDED  
FOR NEW DESIGN

## Package Outline Dimensions

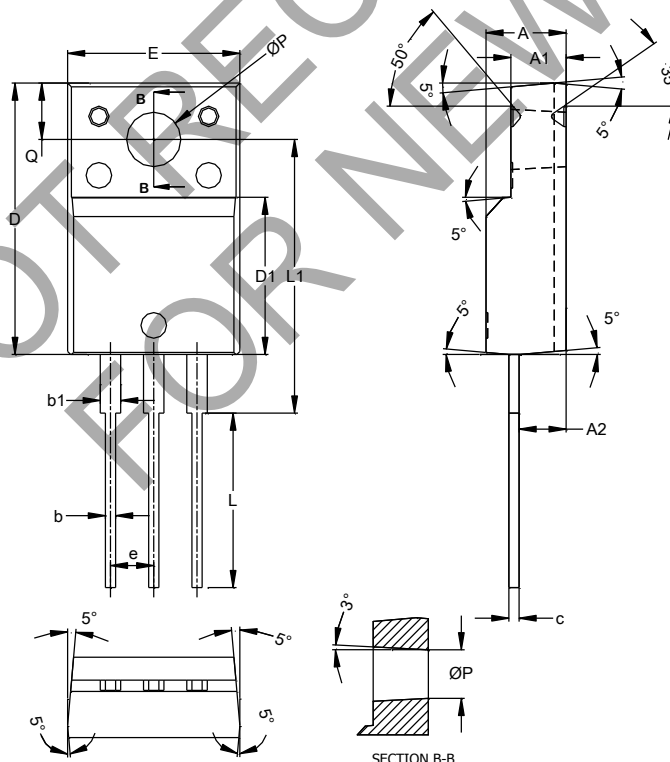
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### (1) Package Type: TO220AB



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	-	4.42	-
L2	15.80	17.51	16.00
P	3.54	4.08	-
Q	2.54	3.42	-
All Dimensions in mm			

### (2) Package Type: ITO220AB



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			

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