

Product Summary (Per Leg)

V _{RRM} (V)	I _O (A)	V _{F(MAX)} (V) @ +25°C	I _{R(MAX)} (mA) @ +25°C
200	20	0.93	0.2

Description and Applications

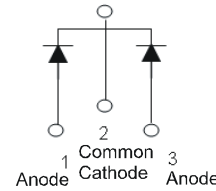
Packaged in the robust industry-standard TO263AB (D2PAK) package, the SBR40U200CTBQ provides very low V_F and excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- SMPS
- DC-DC converters
- AC-DC adaptors

TO263AB (D2PAK)



Top View



Package Pin Out Configuration

Features and Benefits

- Ultra-Low Forward-Voltage Drop
- Low-Leakage Current
- Excellent High-Temperature Stability
- Patented Super Barrier Rectifier SBR[®] Technology
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR40U200CTBQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

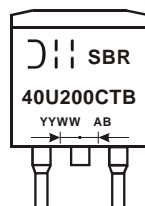
- Package: TO263AB
- Package Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish. Solderable per MIL-STD-202, Method 208 e3
- Polarity: See Below
- Weight: 1.6 grams (Approximate)

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR40U200CTBQ-13	TO263AB (D2PAK)	800	Tape & Reel

- 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



⑆ = Manufacturers' Marking
 SBR40U200CTB = Product Type Marking Code
 AB = Foundry and Assembly Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 24 = 2024)
 WW = Week (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	200	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
Average Rectified Output Current (Per Leg) (Total)	I _O	20 40	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	280	A

Thermal Characteristics (Per Leg) (Note 8)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	14	°C/W
Typical Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	3	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	60	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	15	°C/W
Typical Thermal Resistance, Junction to Lead (Cathode Tab)	R _{θJL}	3	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +175	°C

Electrical Characteristics (Per Leg) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop (Note 7)	V _F	—	0.85 0.70	0.93 0.75	V	I _F = 20A, T _J = +25°C I _F = 20A, T _J = +125°C
Leakage Current (Note 7)	I _R	—	—	0.2 40	mA	V _R = 200V, T _J = +25°C V _R = 200V, T _J = +125°C
Junction Capacitance	C _J	—	500	—	pF	V _R = 4V, T _J = +25°C
Switching Speed	t _{RR}	—	26	—	ns	I _F = 0.5A, I _R = 1A, I _{RR} = 0.25A (RG1)

- Notes:
5. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
 6. 2inch * 2inch Al board.
 7. Short duration pulse test used to minimize self-heating effect.
 8. The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

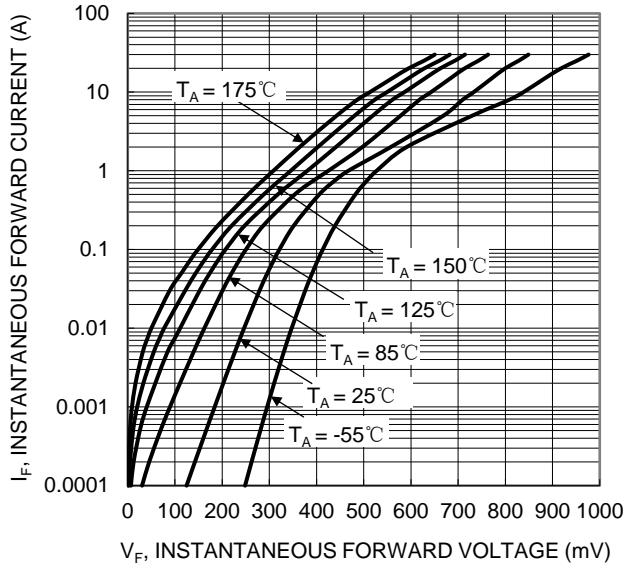


Figure 1. Typical Forward Characteristics

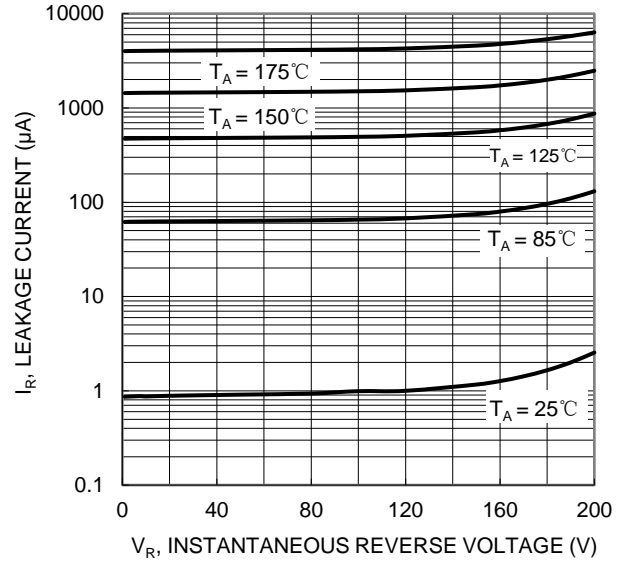


Figure 2. Typical Reverse Characteristics

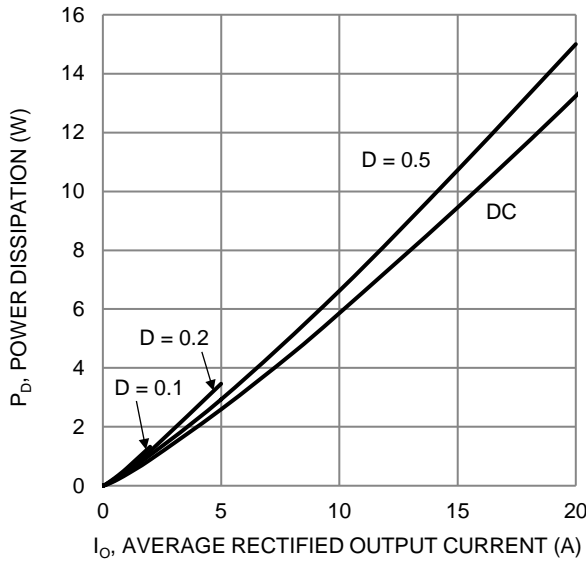


Figure 3. Forward Power Dissipation $T_J = 125^\circ\text{C}$

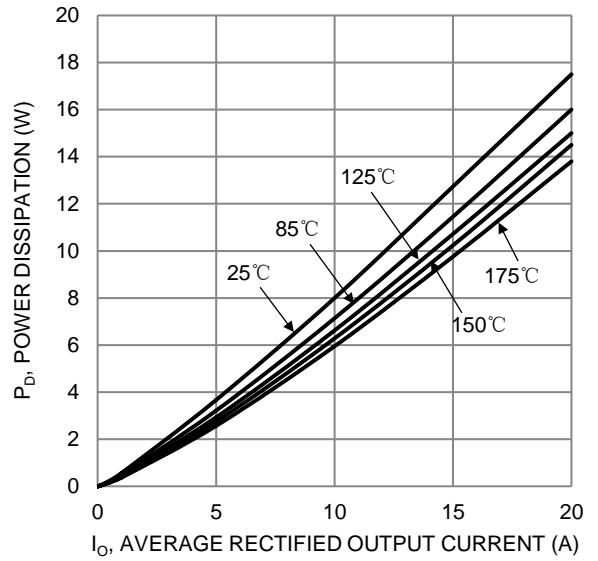


Figure 4. Forward Power Dissipation $D = 0.5$

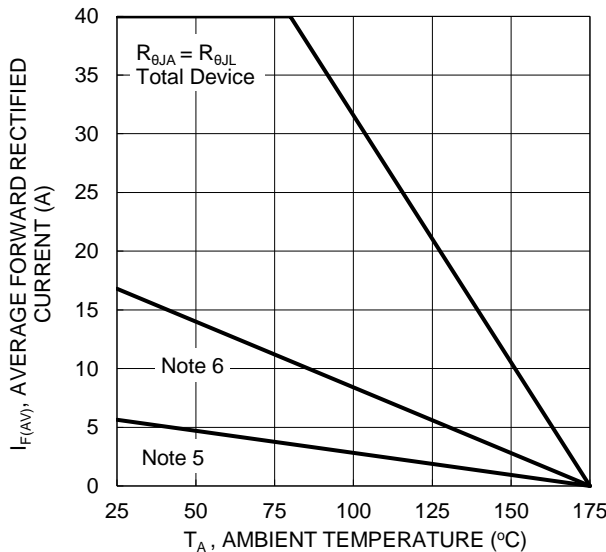


Figure 5. Forward Current Derating Curve

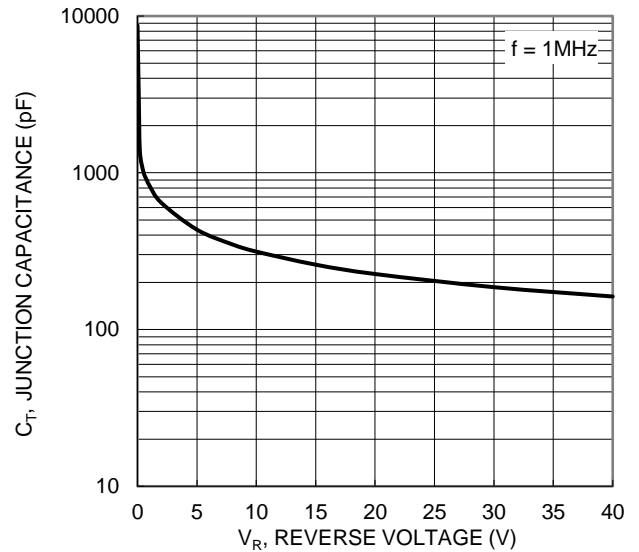


Figure 6. Typical Junction Capacitance

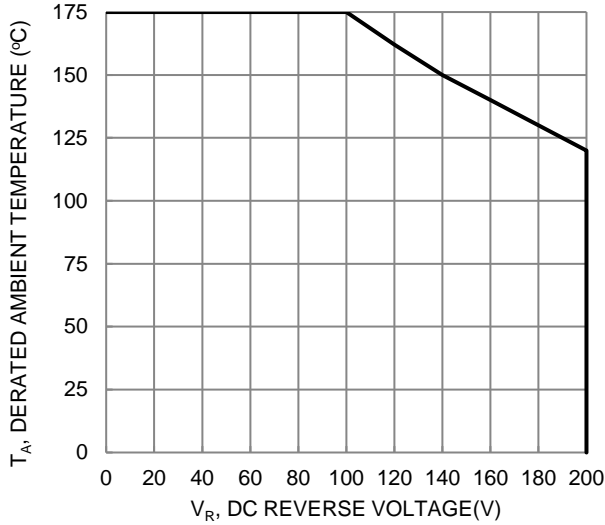


Figure 7. Operating Temperature Derating

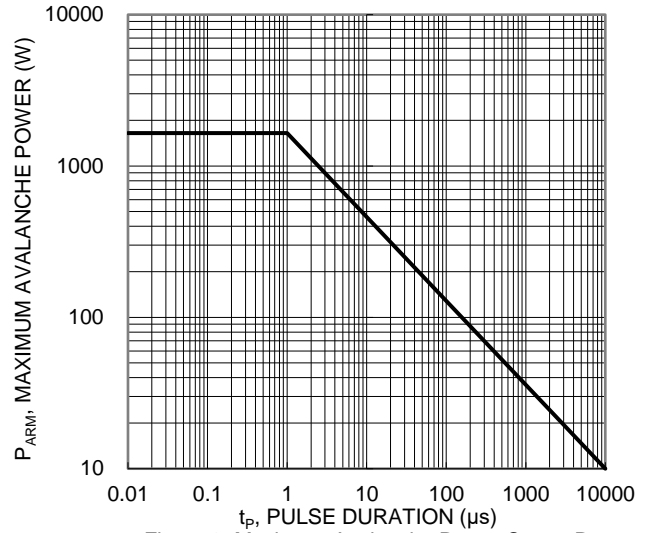


Figure 8. Maximum Avalanche Power Curve, Per Element

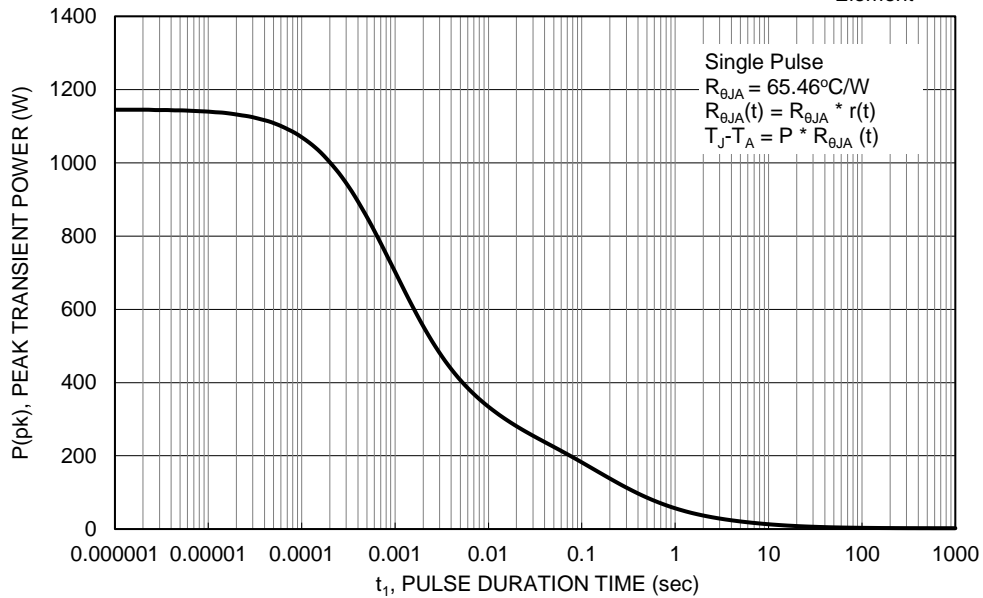


Figure 9. Single Pulse Maximum Power Dissipation

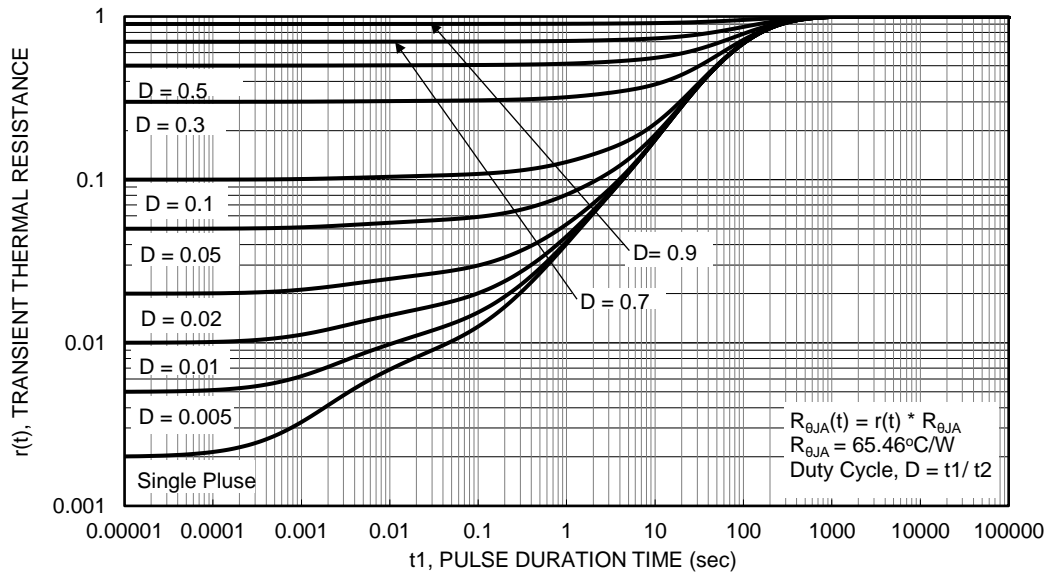
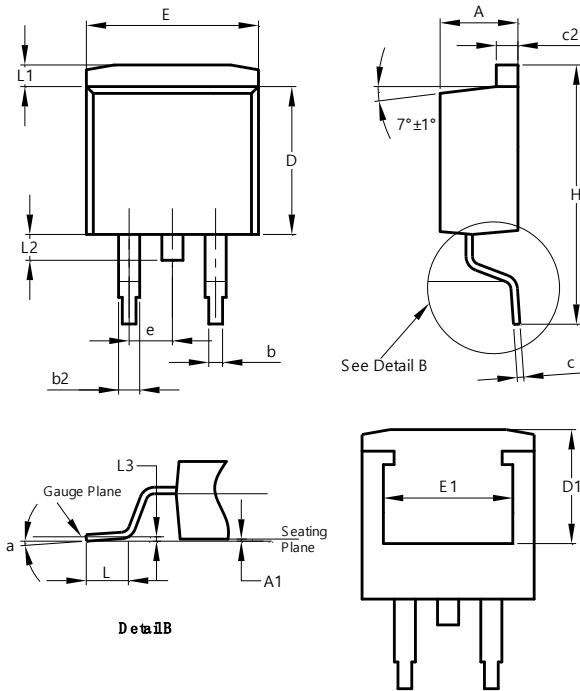


Figure 10. Transient Thermal Resistance

Package Outline Dimensions

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

TO263AB (D2PAK)

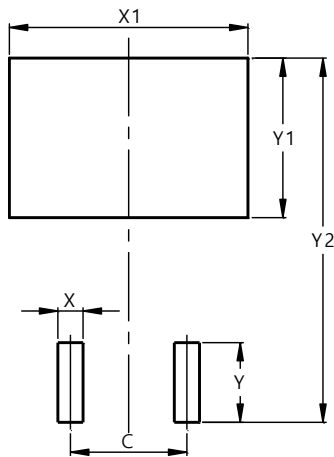


TO263AB (D2PAK)			
Dim	Min	Max	Typ
A	4.07	4.82	-
A1	0.00	0.25	-
b	0.51	0.99	-
b2	1.15	1.77	-
c	0.356	0.73	-
c2	1.143	1.65	-
D	8.39	9.65	-
D1	6.55	6.95	-
e	2.54 TYP		
E	9.66	10.66	-
E1	6.23	8.23	-
H	14.61	15.87	-
L	1.78	2.79	-
L1	-	1.67	-
L2	-	1.77	-
L3	-	-	0.254
a	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> 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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