

Product Summary (Per Leg)

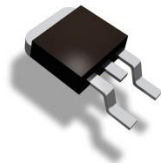
V _{RRM} (V)	I _O (A)	V _{F(MAX)} (V) @ +25°C	I _{R(MAX)} (mA) @ +25°C
200	20	0.93	0.2

Description and Applications

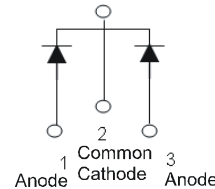
Packaged in the robust industry-standard TO263AB (D2PAK) package, the SBR40U200CTBQ provides very low V_F and excellent reverse leakage stability at high temperatures. They are ideal for use as a rectifier, freewheel diode or blocking diode in:

- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

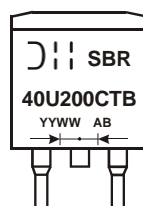
- Case: TO263AB
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish. Solderable per MIL-STD-202, Method 208 **e3**
- Polarity: See Below
- Weight: 1.6 grams (Approximate)

Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
SBR40U200CTBQ	Automotive	TO263AB (D2PAK)	50/Tube
SBR40U200CTBQ-13	Automotive	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. Automotive products are AEC-Q101 qualified and are PPAP capable. Please refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



⑆ = Manufacturers' Code Marking
 SBR40U200CTB = Product Type Marking Code
 AB = Foundry and Assembly Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 19 = 2019)
 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)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	14	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	60	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 7)	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 8)	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 8)	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: 6. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.
7. 2inch*2inch Al board.
8. Short duration pulse test used to minimize self-heating effect.

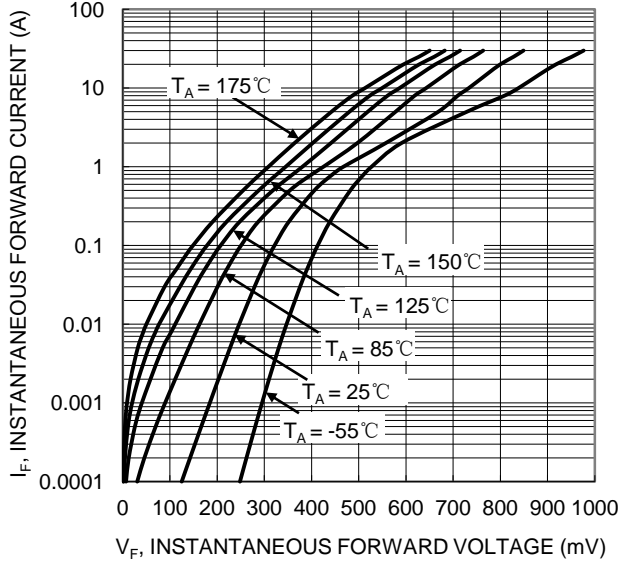


Figure 1. Typical Forward Characteristics

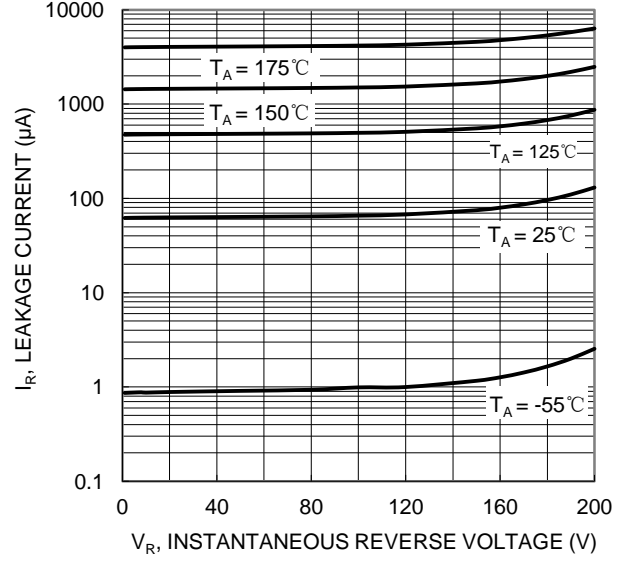


Figure 2. Typical Reverse Characteristics

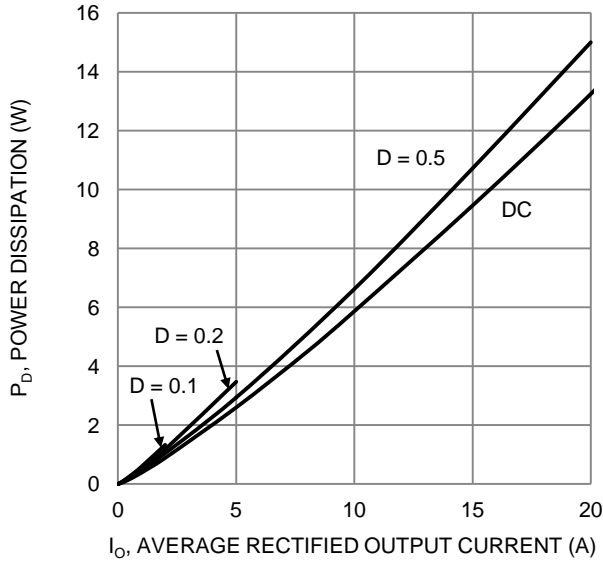


Figure 3. Forward Power Dissipation $T_J = 125^\circ\text{C}$

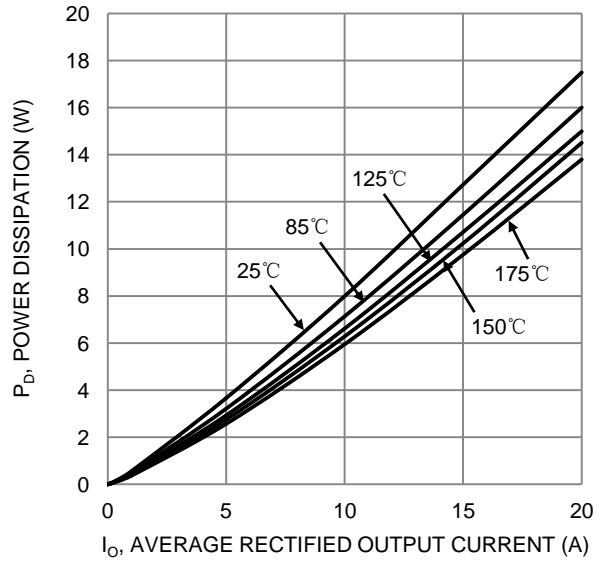


Figure 4. Forward Power Dissipation $D = 0.5$

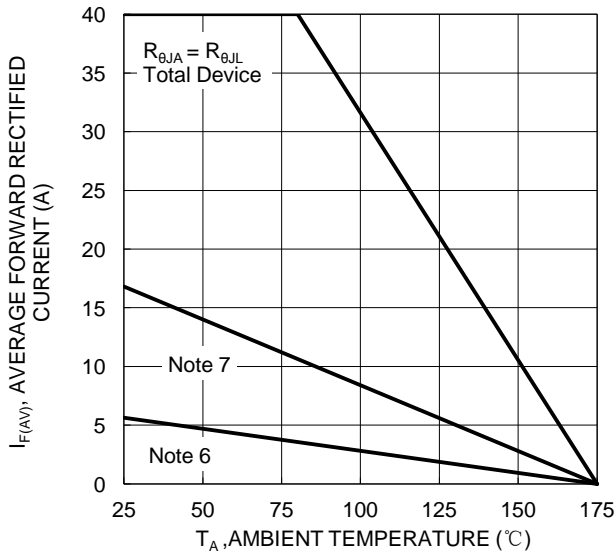


Figure 5. Forward Current Derating Curve

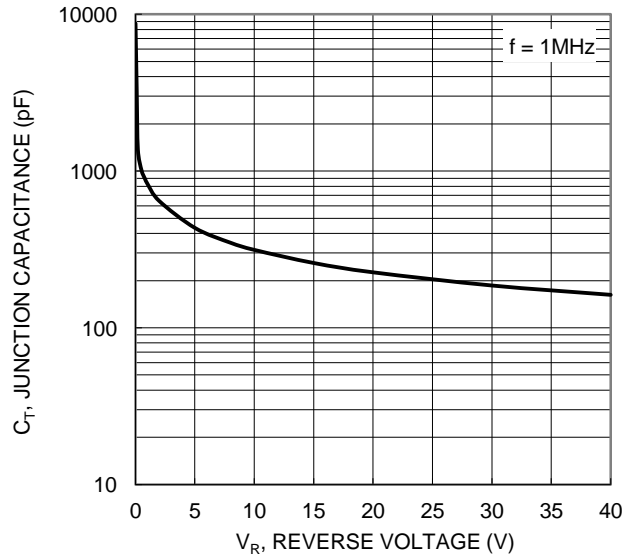
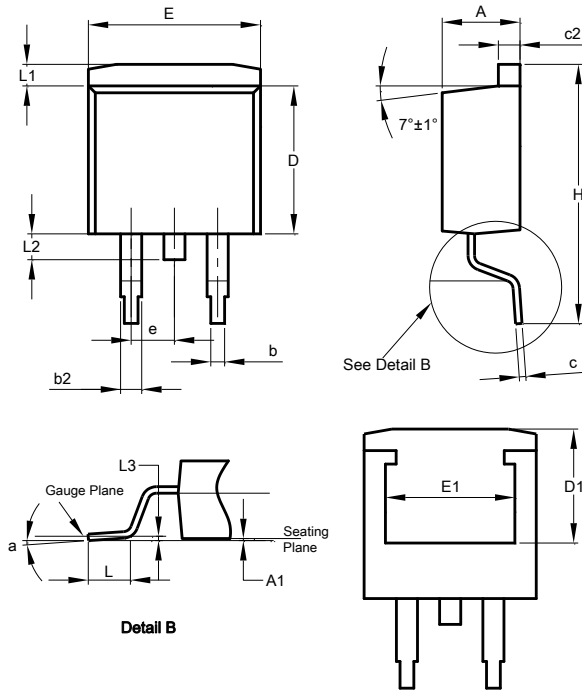


Figure 6. Typical Junction Capacitance

Package Outline Dimensions

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

TO263AB (D2PAK)

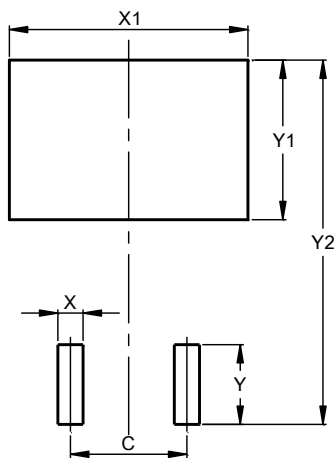


TO263AB (D2PAK)			
Dim	Min	Max	Typ
A	4.07	4.82	-
A1	0.00	0.25	-
b	0.51	0.99	-
b2	1.15	1.77	-
c	0.356	0.73	-
c2	1.143	1.65	-
D	8.39	9.65	-
D1	6.55	6.95	-
e	2.54 TYP		
E	9.66	10.66	-
E1	6.23	8.23	-
H	14.61	15.87	-
L	1.78	2.79	-
L1	-	1.67	-
L2	-	1.77	-
L3	-	-	0.254
a	0°	8°	-
All Dimensions in mm			

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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