

## Product Summary

$V_{RRM}$ (V)	$I_o$ (A)	$V_F$ Max (V) @+25°C	$I_R$ Max (mA) @+25°C
60	30	0.63	0.33

## Features and Benefits

- 100% avalanche tested
- Patented SBR technology provides a superior avalanche capability than Schottky diodes ensuring more rugged and reliable end applications.
- Reduced ultra-low-forward voltage drop ( $V_F$ ); better efficiency and cooler operation.
- Reduced high-temperature reverse leakage; increased reliability against thermal runaway failure in high-temperature operation
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR30A60CTBQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

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

## Description and Applications

This Super Barrier Rectifier (SBR<sup>®</sup>) diode has been designed to meet the stringent requirements of automotive applications. It is ideally suited to be used as:

- Polarity protection diodes
- Re-circulating diodes
- Switching diodes

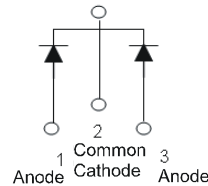
## Mechanical Data

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

TO263AB (D2PAK)



Top View



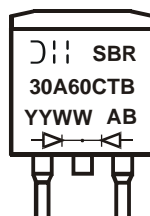
Package Pinout Configuration

## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR30A60CTBQ-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



SBR30A60CTB = 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<sub>A</sub> = +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 <sub>RRM</sub>	60	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
Average Rectified Output Current	I <sub>O</sub>	30	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I <sub>FSM</sub>	180	A
Repetitive Peak Avalanche Power (1μs, +25°C)	P <sub>ARM</sub>	6000	W
Non-Repetitive Avalanche Energy (T <sub>J</sub> = +25°C, I <sub>AS</sub> = 12A, L = 10mH)	E <sub>AS</sub>	600	mJ

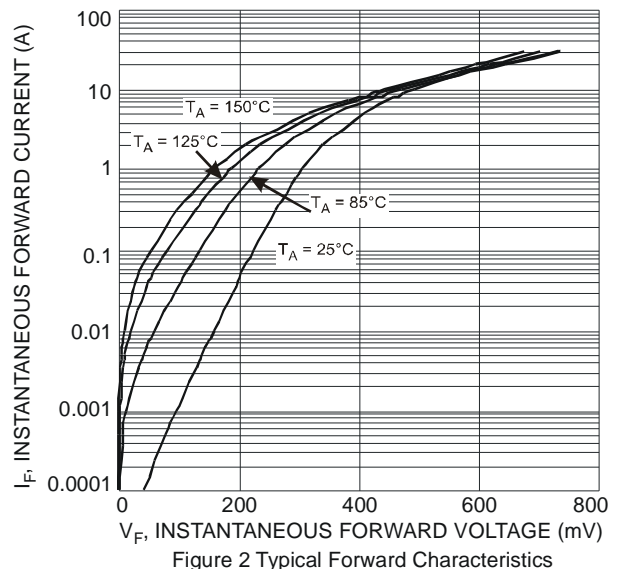
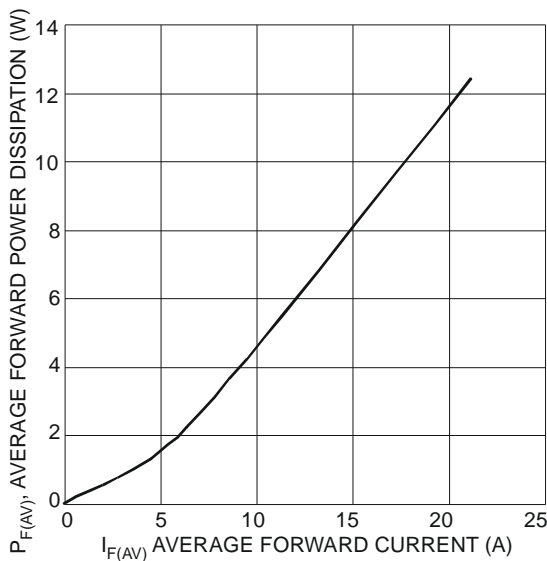
### Thermal Characteristics

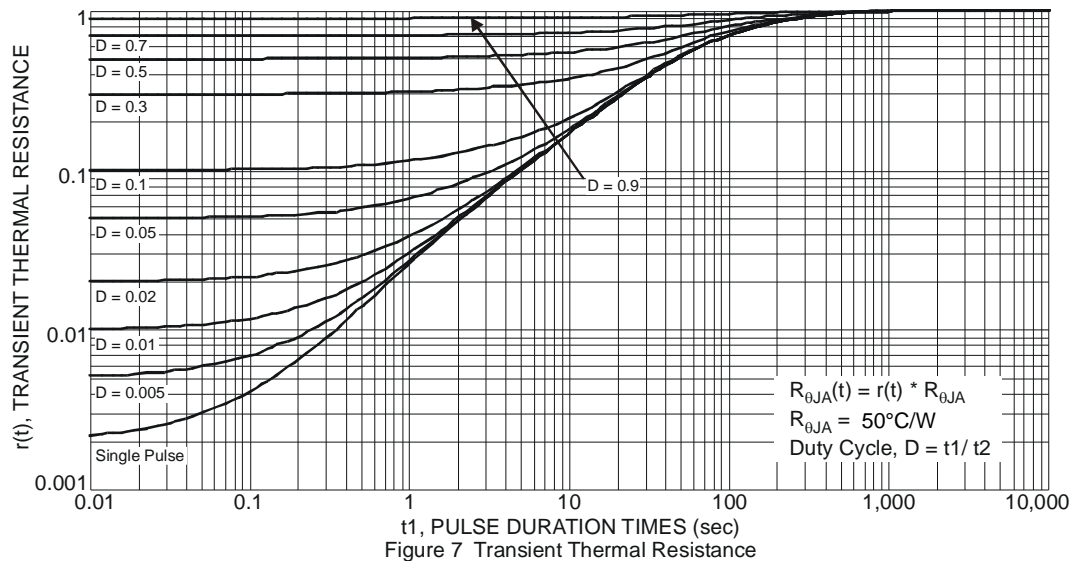
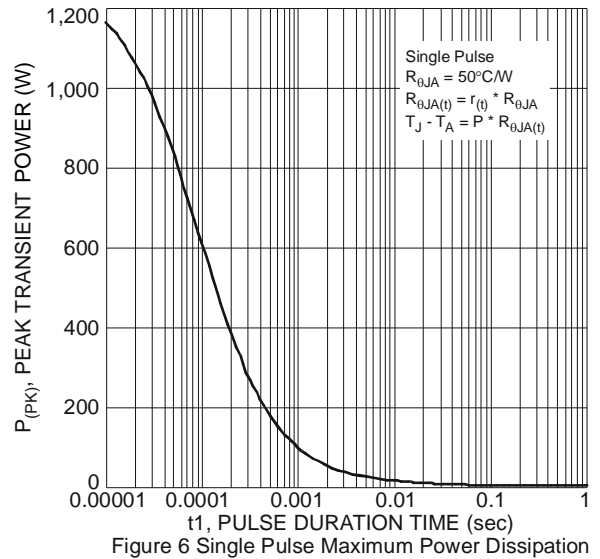
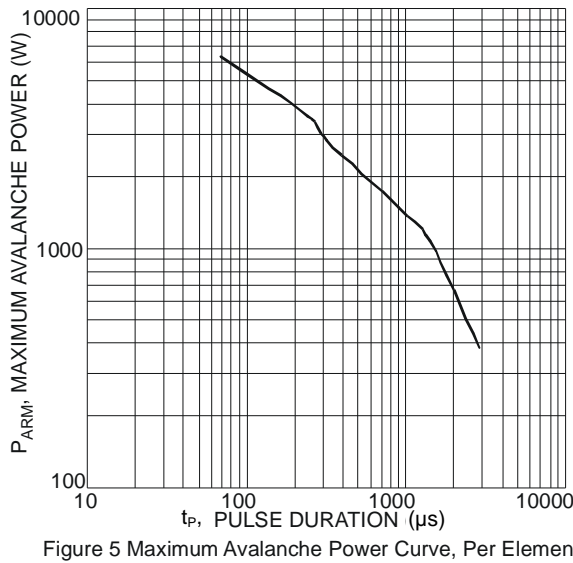
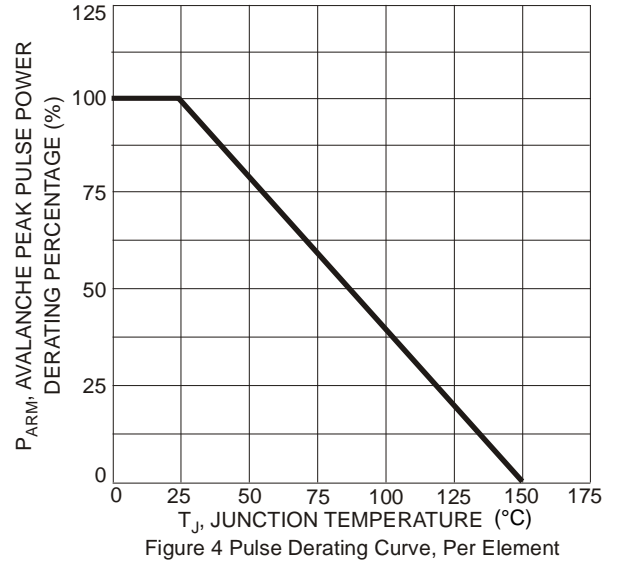
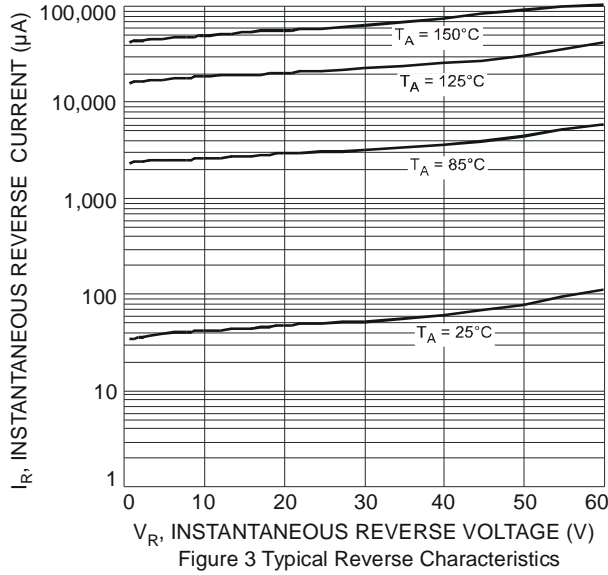
Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 5)	R <sub>θJC</sub>	9	°C/W
Operating and Storage Temperature Range (Note 6)	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	0.57 0.55	0.63 —	V	I <sub>F</sub> = 15.0A, T <sub>J</sub> = +25°C I <sub>F</sub> = 15.0A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	0.11 40	0.33 —	mA	V <sub>R</sub> = 60V, T <sub>J</sub> = +25°C V <sub>R</sub> = 60V, T <sub>J</sub> = +125°C
Junction Capacitance	C <sub>J</sub>	—	640	—	pF	V <sub>R</sub> = 4V, T <sub>J</sub> = +25°C
Switching Speed	t <sub>RR</sub>	—	29	—	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A I <sub>RR</sub> = 0.25A (RG1)

- Notes:
- Device mounted on Polyimide substrate, 125mm<sup>2</sup> copper pad, double-sided, PC boards.
  - The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D / dT_J < 1 / R_{\theta JA}$ .
  - Short duration pulse test used to minimize self-heating effect.

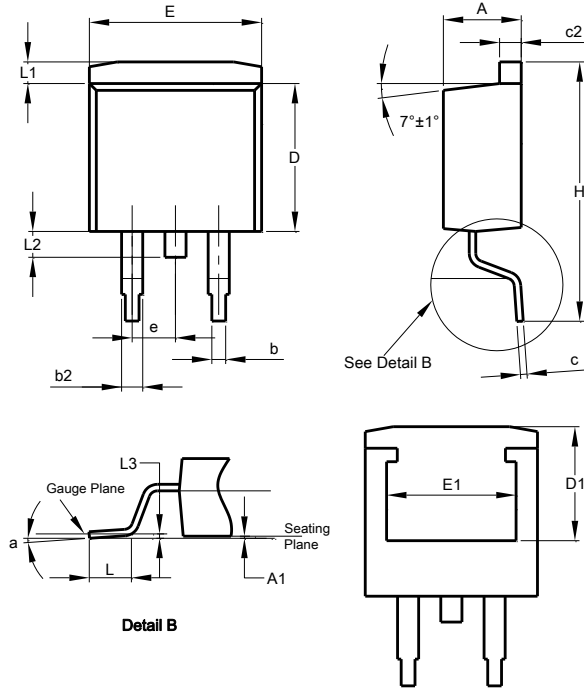




## Package Outline Dimensions

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

### TO263AB (D2PAK)

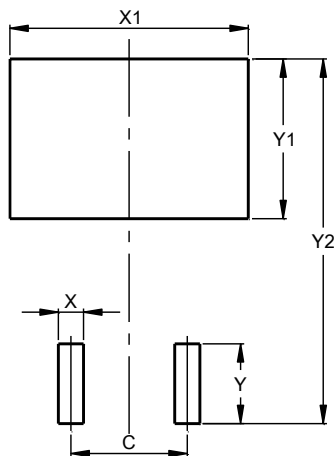


TO263AB (D2PAK)			
Dim	Min	Max	Typ
A	4.07	4.82	-
A1	0.00	0.25	-
b	0.51	0.99	-
b2	1.15	1.77	-
c	0.356	0.73	-
c2	1.143	1.65	-
D	8.39	9.65	-
D1	6.55	6.95	-
e	2.54 TYP		
E	9.66	10.66	-
E1	6.23	8.23	-
H	14.61	15.87	-
L	1.78	2.79	-
L1	-	1.67	-
L2	-	1.77	-
L3	-	-	0.254
a	0°	8°	-
All Dimensions in mm			

## 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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