

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V) @+25°C	I <sub>R</sub> 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<sub>F</sub>); 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

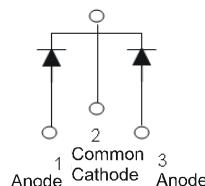
TO263AB (D2PAK)



Top View

## 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 ⑥3
- Polarity: See Below
- Weight: 1.6 grams (Approximate)



Package Pinout Configuration

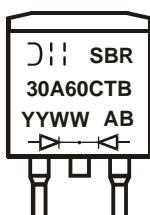
## Ordering Information (Note 4)

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** (@ $T_A = +25^\circ\text{C}$ , 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	$V_{RRM}$		
Working Peak Reverse Voltage	$V_{RWM}$	60	V
DC Blocking Voltage	$V_{RM}$		
Average Rectified Output Current	$I_o$	30	A
Non-Repetitive Peak Forward Surge Current 8.3ms	$I_{FSM}$	180	A
Single Half Sine Wave Superimposed on Rated Load			
Repetitive Peak Avalanche Power (1μs, +25°C)	$P_{ARM}$	6000	W
Non-Repetitive Avalanche Energy ( $T_J = +25^\circ\text{C}$ , $I_{AS} = 12\text{A}$ , $L = 10\text{mH}$ )	$E_{AS}$	600	mJ

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	9	°C/W
Operating and Storage Temperature Range (Note 6)	$T_J, T_{STG}$	-55 to +150	°C

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	0.57 0.55	0.63 —	V	$I_F = 15.0\text{A}, T_J = +25^\circ\text{C}$ $I_F = 15.0\text{A}, T_J = +125^\circ\text{C}$
Leakage Current (Note 7)	$I_R$	—	0.11 40	0.33 —	mA	$V_R = 60\text{V}, T_J = +25^\circ\text{C}$ $V_R = 60\text{V}, T_J = +125^\circ\text{C}$
Junction Capacitance	$C_J$	—	640	—	pF	$V_R = 4\text{V}, T_J = +25^\circ\text{C}$
Switching Speed	$t_{RR}$	—	29	—	ns	$I_F = 0.5\text{A}, I_R = 1\text{A}$ $I_{RR} = 0.25\text{A}$ (RG1)

Notes: 5. Device mounted on Polyimide substrate, 125mm<sup>2</sup> copper pad, double-sided, PC boards.  
 6. The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D / dT_J < 1 / R_{\theta JA}$ .  
 7. Short duration pulse test used to minimize self-heating effect.

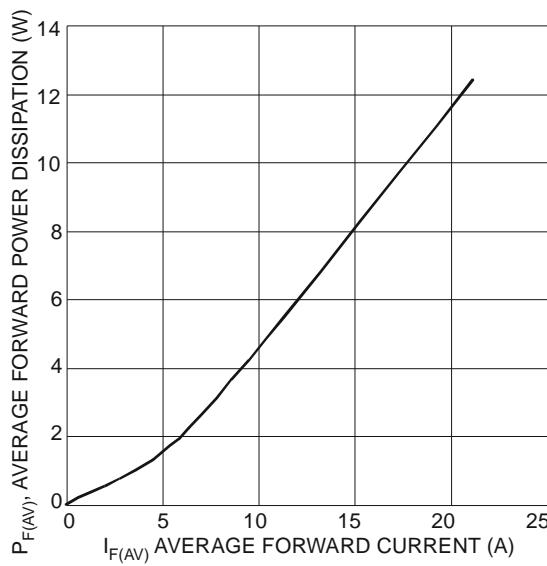


Figure 1 Forward Power Dissipation

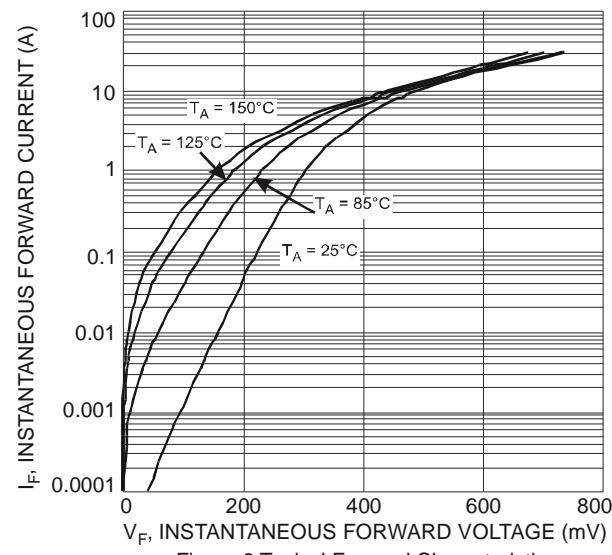
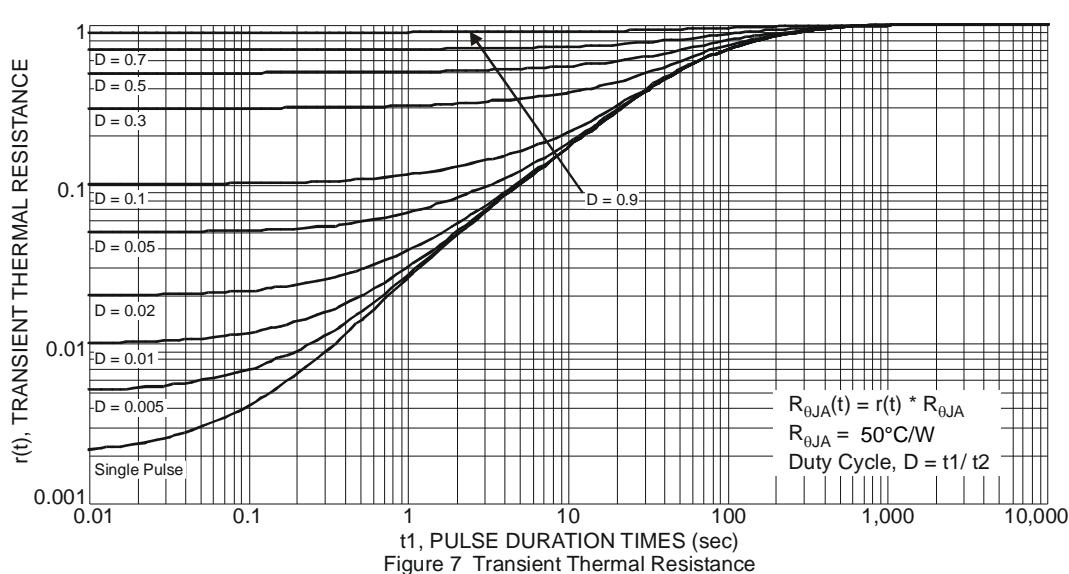
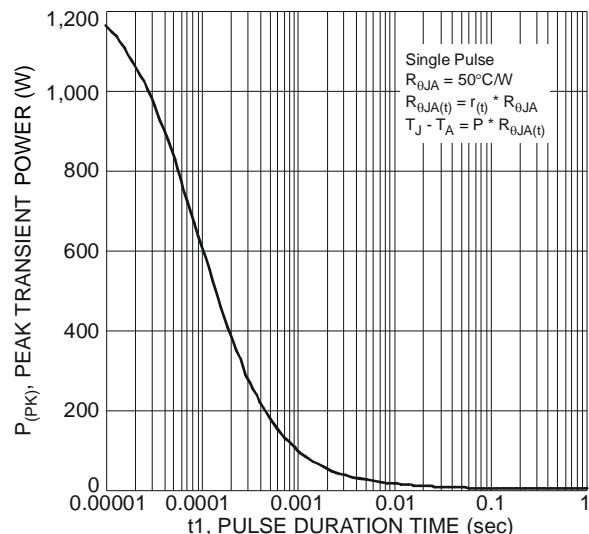
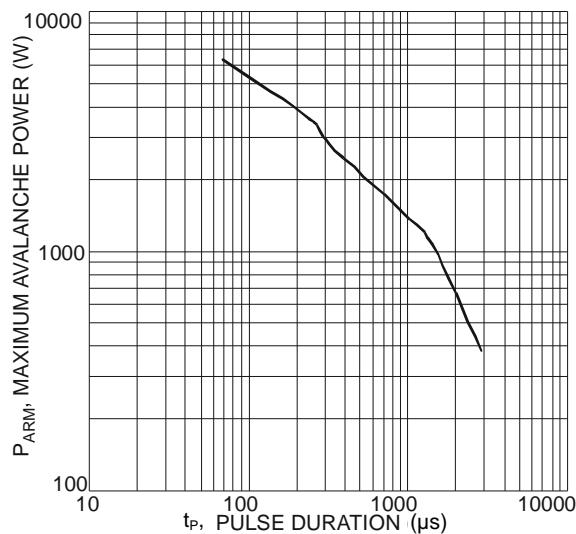
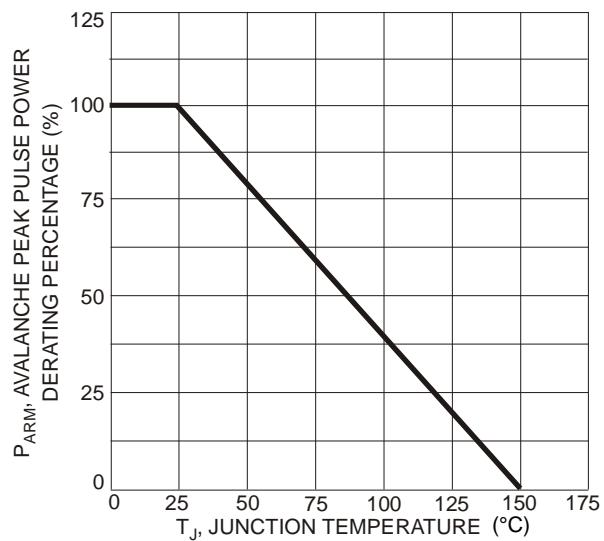
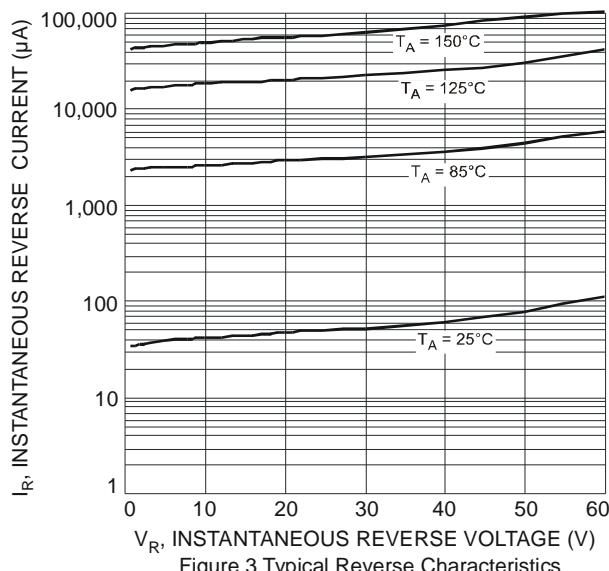


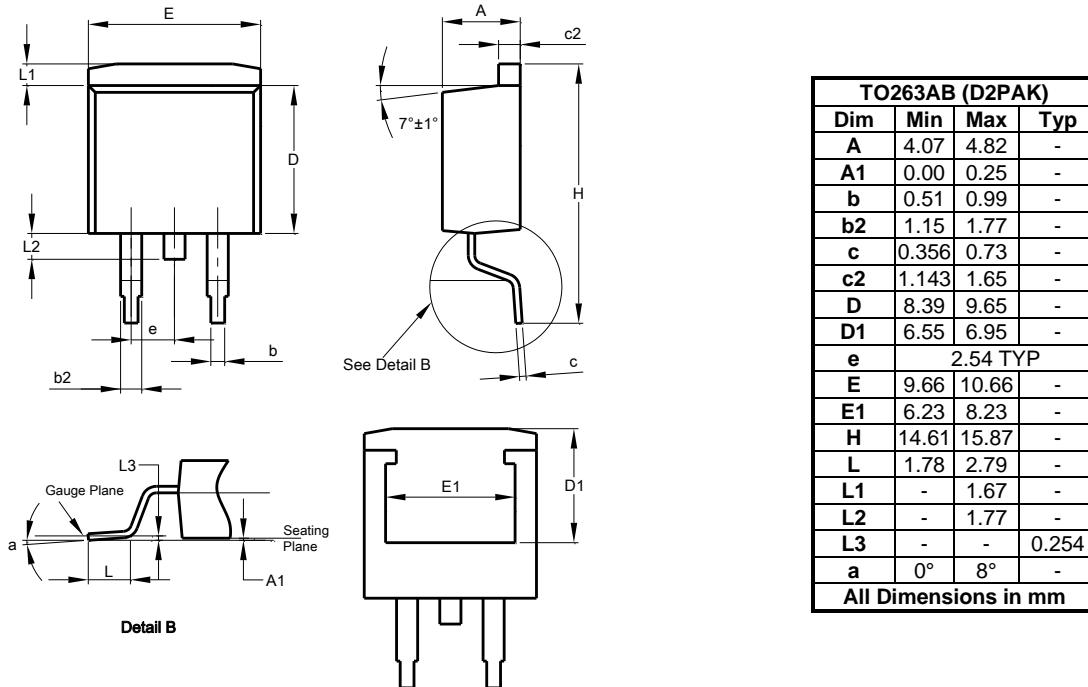
Figure 2 Typical Forward Characteristics



## Package Outline Dimensions

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

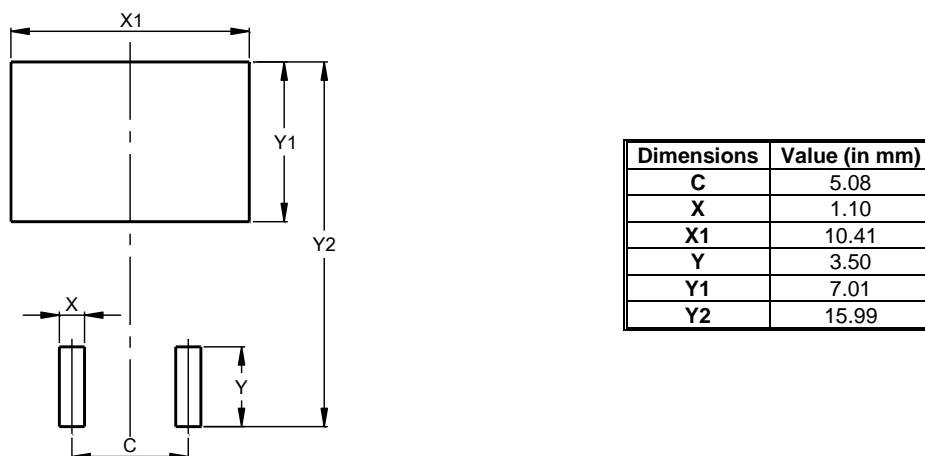
TO263AB (D2PAK)



## Suggested Pad Layout

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

TO263AB (D2PAK)



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