

## Product Summary

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	T <sub>RR</sub> Typ (nS)	V <sub>F</sub> max (V)	I <sub>R</sub> max (mA)
400	6	120	0.91	0.05

## Description and Applications

The SBR6U400P5 uses patented SBR technology which offers ultra low VF, excellent high temperature stability and soft switching characteristics for reduced EMI.

Packaged in the compact patented PowerDI-5 package, this product also offers excellent thermal efficiency and high surge current handling capability.

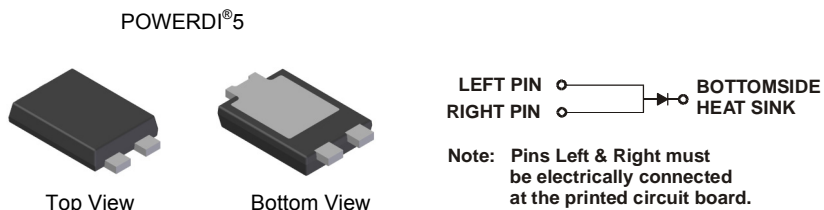
- DC – DC Converters
- High Frequency Rectification
- Telecom Power Supply

## Features and Benefits

- Ultra Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Interlocking Clip Design for High Surge Current Capacity
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- 175°C Operating Junction Temperature
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**

## Mechanical Data

- Case: POWERDI<sup>®</sup>5
- Case Material: Molded Plastic, 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 <sup>Ⓔ</sup>
- Weight: 0.093grams (approximate)

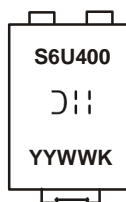


## Ordering Information (Note 2)

Part Number	Case	Packaging
SBR6U400P5-13	POWERDI <sup>®</sup> 5	5000/Tape & Reel

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.  
2. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



S6U400 = Product Type Marking Code  
 Dii = Manufacturers' code marking  
 K = Factory designator  
 YYWW = Date Code Marking  
 YY = Last two digits of year (ex: 10 for 2010)  
 WW = Week code (01 to 53)

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**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	400	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_{RM}$		
Average Rectified Output Current (See Figure 1)	$I_O$	6	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	220	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance Junction to Ambient (Note 3)	$R_{\theta JA}$	30	$^\circ\text{C}/\text{W}$
Maximum Thermal Resistance Junction to Case (Note 4)	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +175	$^\circ\text{C}$

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	-	0.83	-	V	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$
		-	0.85	0.91		$I_F = 6\text{A}, T_J = 25^\circ\text{C}$
		-	0.72	0.77		$I_F = 6\text{A}, T_J = 125^\circ\text{C}$
Leakage Current (Note 5)	$I_R$	-	0.8	50	$\mu\text{A}$	$V_R = 400\text{V}, T_J = 25^\circ\text{C}$
		-	-	5	$\text{mA}$	$V_R = 400\text{V}, T_J = 125^\circ\text{C}$
Reverse Recovery Time	$t_{rr}$	-	120	-	nS	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{RR} = 0.25\text{A}$
Junction Capacitance	$C_J$	-	100	-	pF	$V_R = 4.0\text{V}, f = 1\text{MHz}$

- Notes:
- FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
  - Device mounted on Polyimide substrate PC board, 16\*MRP layout <http://www.diodes.com>.
  - Short duration pulse test used to minimize self-heating effect.

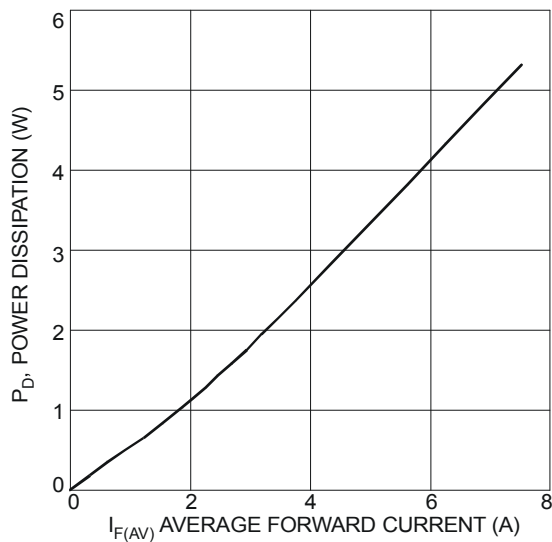


Fig. 1 Forward Power Dissipation

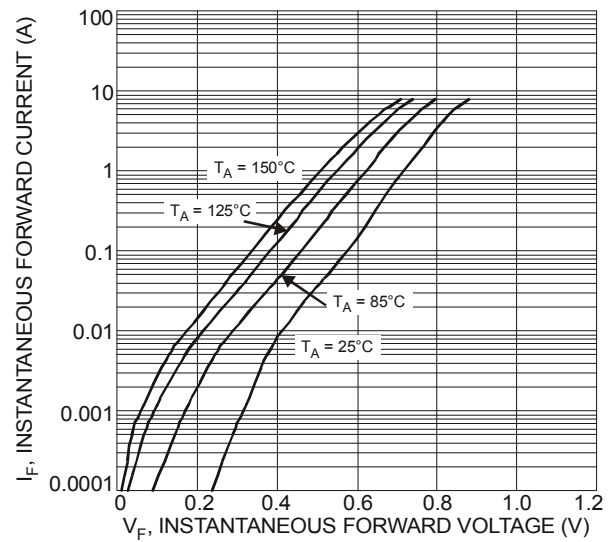


Fig. 2 Typical Forward Characteristics

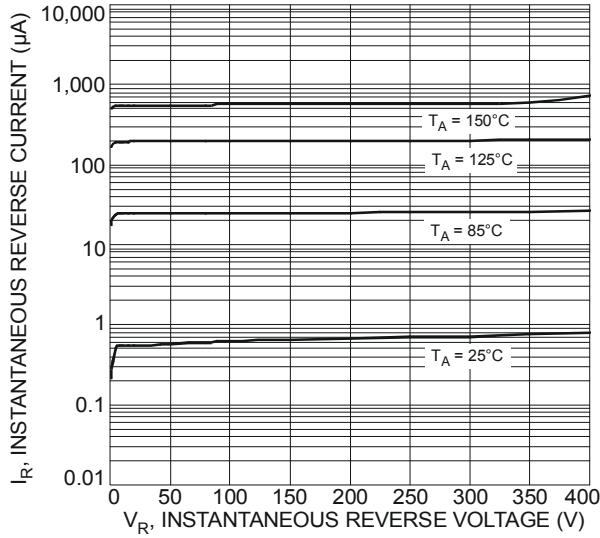


Fig. 3 Typical Reverse Characteristics

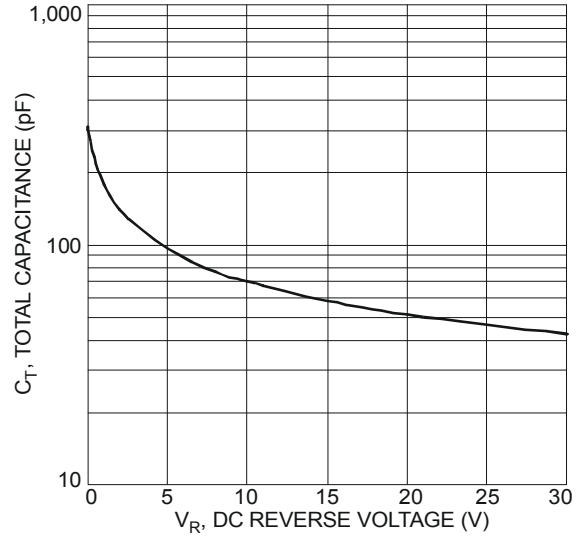


Fig. 4 Total Capacitance vs. Reverse Voltage

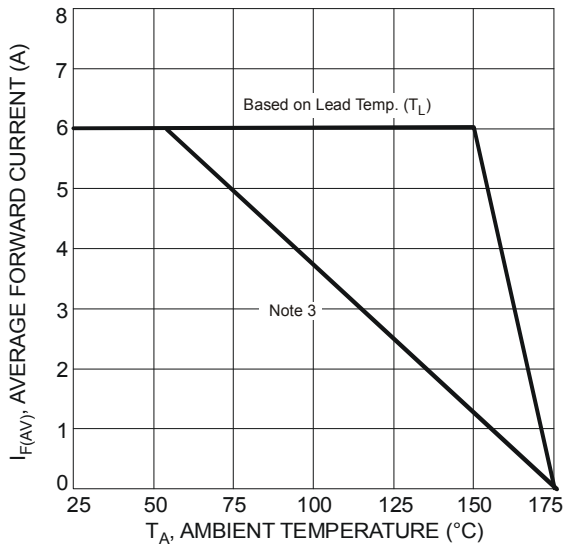
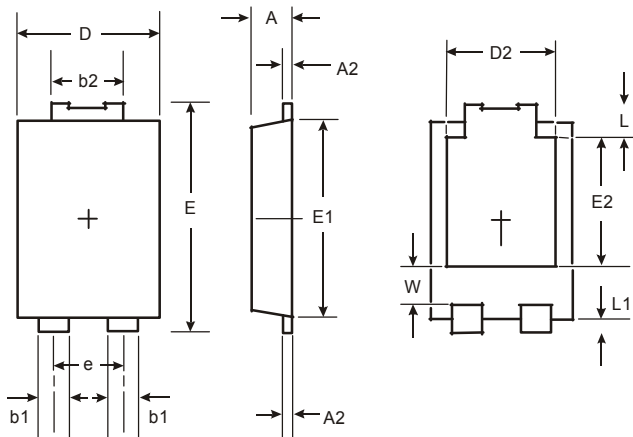


Fig. 5 Forward Current Derating Curve

## Package Outline Dimensions



POWERDI <sup>®</sup> 5		
Dim	Min	Max
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41
All Dimensions in mm		

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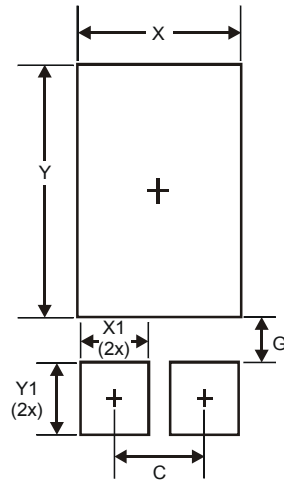
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## Suggested Pad Layout



Dimensions	Value (in mm)
<b>C</b>	1.840
<b>G</b>	0.852
<b>X</b>	3.360
<b>X1</b>	1.390
<b>Y</b>	4.860
<b>Y1</b>	1.400

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