



**THE DATASHEET OF
SBR1045D1Q-13**



Features

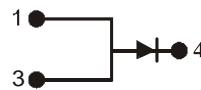
- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: TO252 (DPAK)
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 ⁽³⁾
- Weight: 0.33 grams (approximate)



Top View



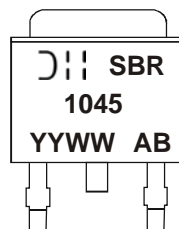
Polarity

Ordering Information (Note 2)

Part Number	Qualification	Case	Packaging
SBR1045D1-13	Commercial	TO252 (DPAK)	2500/Tape & Reel, 13-inch
SBR1045D1Q-13	Automotive	TO252 (DPAK)	2500/Tape & Reel, 13-inch

- 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



SBR1045 = Product Type Marking Code
 AB = Foundry and Assembly Code
 YYWW = Date Code Marking
 YY = Last two digits of year (ex: 08 = 2008)
 WW = Week (01 - 53)

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}	45	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_{RM}		
RMS Reverse Voltage	$V_{R(RMS)}$	32	V
Average Rectified Output Current @ $T_C = 140^\circ\text{C}$	I_O	10	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	90	A
Repetitive Peak Avalanche Power (1 μs , 25 $^\circ\text{C}$)	P_{ARM}	5000	W

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance			
Thermal Resistance Junction to Ambient (Note 3)	$R_{\theta JA}$	29	$^\circ\text{C/W}$
Thermal Resistance Junction to Case (Note 3)	$R_{\theta JC}$	3	
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 4)	$V_{(BR)R}$	45	-	-	V	$I_R = 0.45\text{mA}$
Forward Voltage Drop (per leg)	V_F	-	0.42	0.48	V	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$
		-	0.37	0.41		$I_F = 5\text{A}, T_J = 125^\circ\text{C}$
		-	-	0.58		$I_F = 10\text{A}, T_J = 25^\circ\text{C}$
		-	0.50	0.56		$I_F = 10\text{A}, T_J = 125^\circ\text{C}$
Leakage Current (Note 4)	I_R	-	50	500	μA	$V_R = 45\text{V}, T_J = 25^\circ\text{C}$
		-	12	40	mA	$V_R = 45\text{V}, T_J = 125^\circ\text{C}$
Total Capacitance	C_T	-	400	-	pF	$V_R = 5\text{V}, f = 1\text{MHz}$ $T_J = 25^\circ\text{C}$

- Notes:
- Device mounted on polyimide substrate, 240mm² Copper pad, double-sided PC Board.
 - Short duration pulse test used to minimize self-heating effect.
 - Device mounted on polyimide substrate, 2" * 2" Copper pad, double-sided PC Board with minimum recommended pad layout.

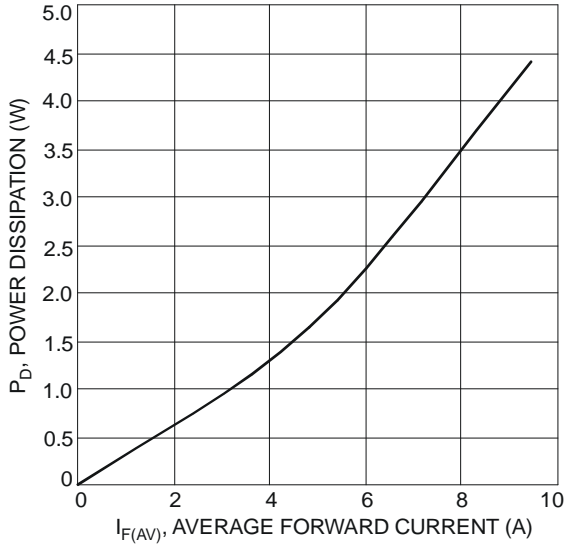


Fig. 1 Forward Power Dissipation

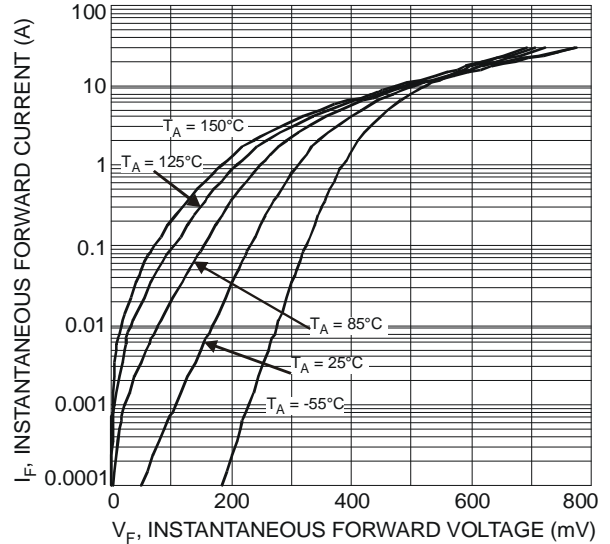


Fig. 2 Typical Forward Characteristics

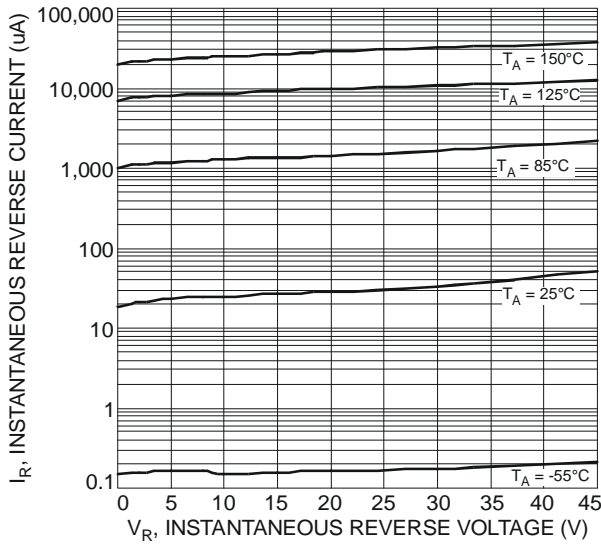


Fig. 3 Typical Reverse Characteristics

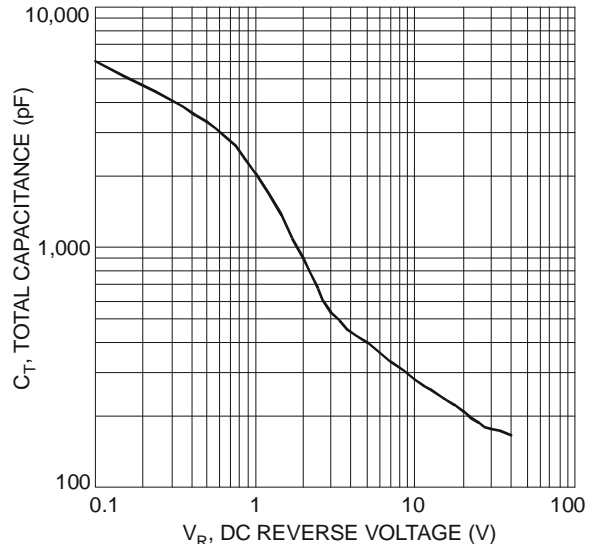


Fig. 4 Total Capacitance vs. Reverse Voltage

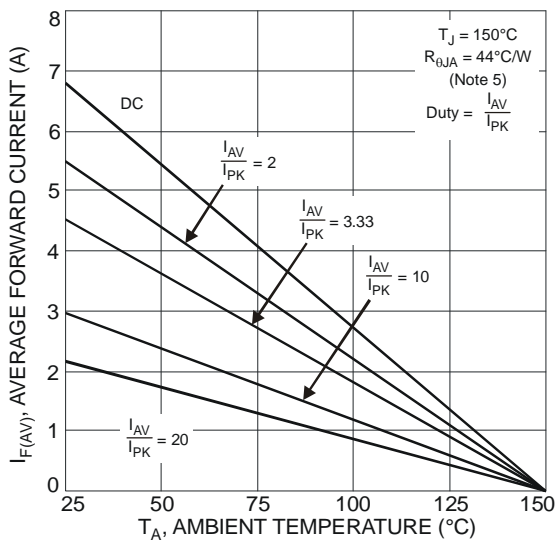


Fig. 5 Forward Current Derating Curve

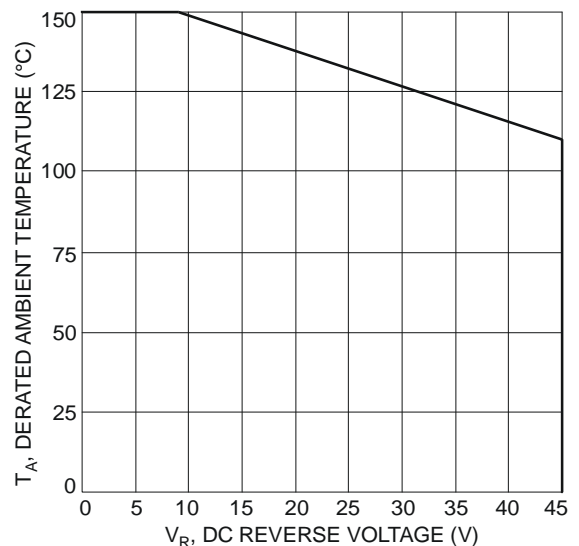
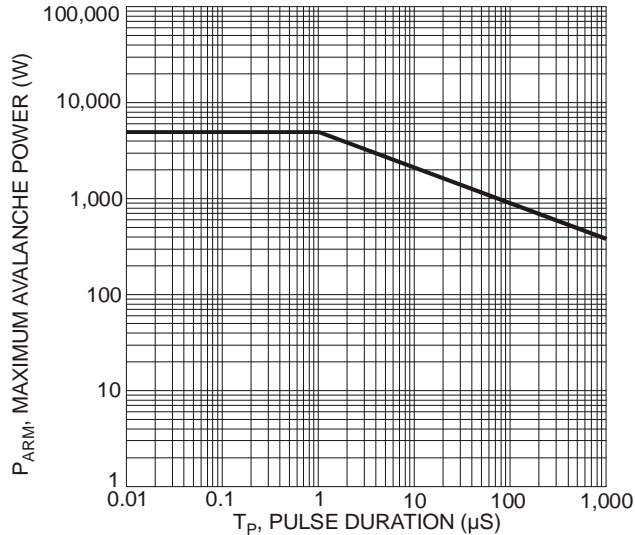
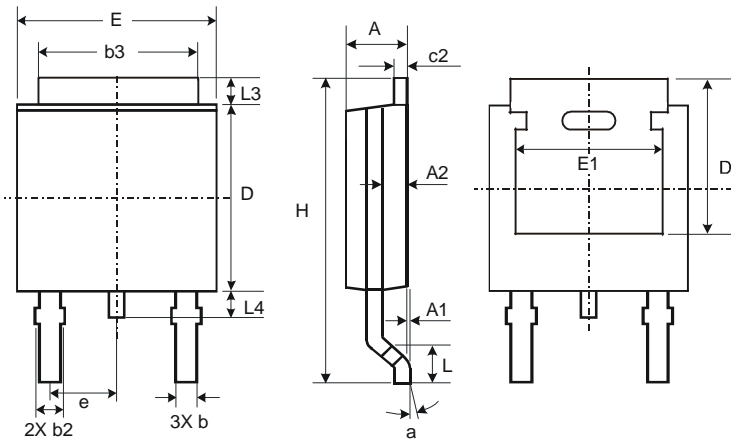


Fig. 6 Operating Temperature Derating

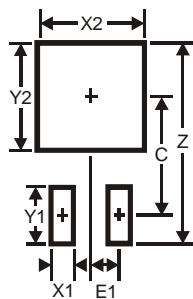


Package Outline Dimensions



TO252			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c2	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
E	6.45	6.70	6.58
E1	4.32	-	-
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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