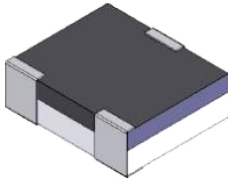


**Small Signal Switching Diode**

➤ **CDBAV99/CDBAV70/CDBAW56/CDMMBD4148**

**FEATURES**

- Silicon epitaxial planar diode
- SMD chip pattern, dual diode with anode to cathode
- Leadfree and RoHS compliance components

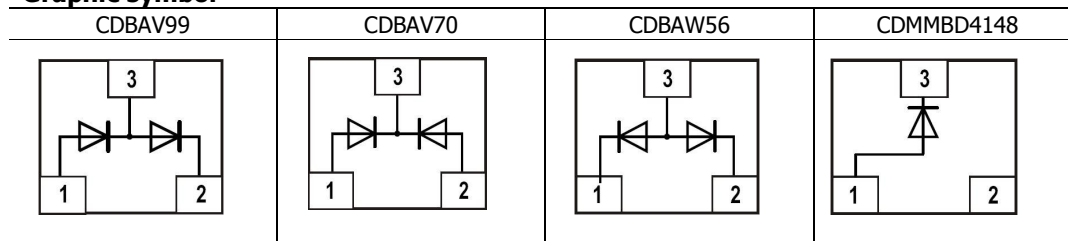
MECHANICAL CHARACTERISTICS

- Size: SOT-23 case
- Weight: approx. 21mg
- Marking: BAV99 as anode to cathode series dual switching diode

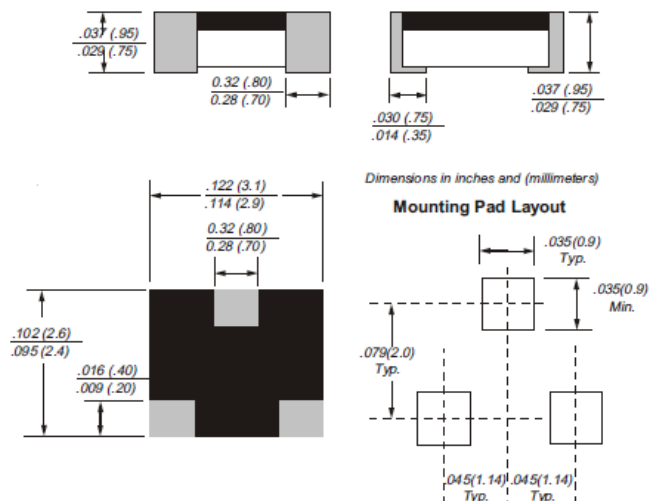
BAV70 as common cathode dual switching diode

BAW56 as common anode dual switching diode

BD4148 as SOT-23 case single switching diode

Graphic symbol**DIMENSIONS**

Dimension/mm	SOT-23CD
L	3.0±0.1
W	2.5±0.1
T	0.85±0.1
C	0.55±0.2

SOT-23CD

**THERMAL CHARACTERISTICS¹⁾**

Parameter at $T_{amb}=25^{\circ}\text{C}^{1)}$	Symbol	Value	Unit
Forward Power Dissipation Power derating above 25°C	P_{tot}	300	mW
		2.4	mW/ $^{\circ}\text{C}$
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Thermal Resistance Junction to Ambient air	$R_{\theta JA}$	430	$^{\circ}\text{C/W}$
Operating& Storage Temperature range	T_{stg}	-55 to 150	$^{\circ}\text{C}$

1) Valid provided that electrodes are kept at ambient temperature.

MAXIMUM RATING¹⁾

Parameter at $T_{amb}=25^{\circ}\text{C}^{1)}$	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	70	V
Non-Repetitive Peak Reverse Voltage	V_{RSM}	100	V
Average rectified current sin half wave rectification with resistive load	$I_{F(AV)}$	150 ²⁾	mA
		130 ³⁾	mA
Repetitive Peak Forward Current at $T_{amb}=25^{\circ}\text{C}$	I_{FRM}	200	mA
Non-Repetitive Surge Forward Current at $t < 1\text{s}$ and $T_j=25^{\circ}\text{C}$ at $t \leq 8.3\text{ms}$ and $T_j=25^{\circ}\text{C}$	I_{FSM}	500	mA
		1000	mA

1) Valid provided that electrodes are kept at ambient temperature.

2) Single diode loader

3) Double diode loader

ELECTRICAL CHARACTERISTICS¹⁾

Parameter at $T_{amb}=25^{\circ}\text{C}^{1)}$	Symbol	Value	Unit
Forward Voltage at $I_F=10\text{mA}$ at $I_F=100\text{mA}$	V_F	0.855 _{MAX}	V
		1.0 _{MAX}	V
Leakage Current at $V_R=70\text{V}$	I_R	2.5 _{MAX}	μA
Capacitance at $V_R=6\text{V}, f=1\text{MHz}$	C_{tot}	4 _{MAX}	pF
Reverse Recovery Time at $V_R=6\text{V } I_F=I_R=10\text{mA}, R_L=50\Omega$	t_{rr}	4 _{MAX}	ns

1) Valid provided that electrodes are kept at ambient temperature.



TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristic

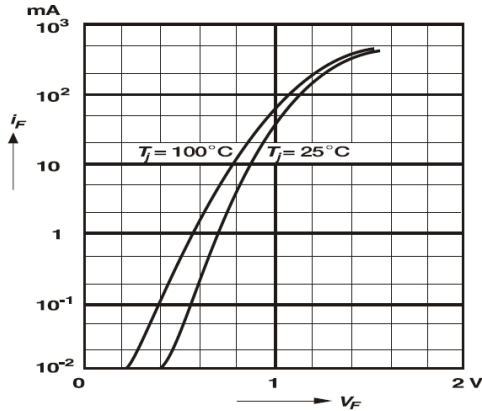


Figure 2. Power De-rating

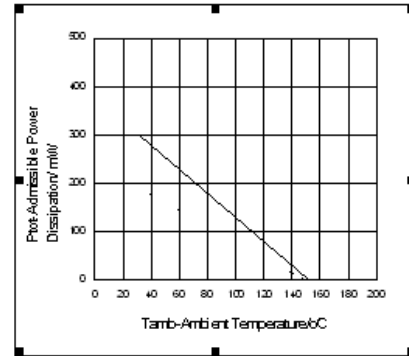


Figure 3. Forward Current De-rating

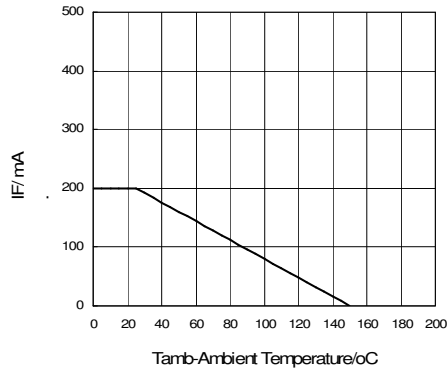
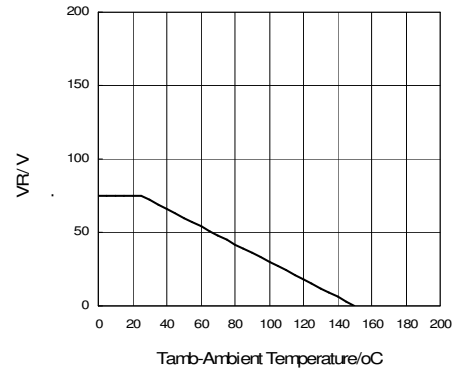


Figure 4. Reverse Voltage De-rating



TEST CHARACTERISTICS

Test Item	Test Condition	Requirement
Solderability	Sn bath at $245 \pm 5^\circ\text{C}$ for $2 \pm 0.5\text{s}$	>95% area tin covered
Resistance to Soldering Heat	Sn bath at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{s}$	V_F, V_Z & I_R within spec; no mechanical damage
Humidity Steady State	At 85°C 85%RH for 168hrs	V_F, V_Z & I_R within spec
Continue Forward Operating Life	At 25°C $I_F = 1.1 I_{F\text{max}}$ for 1000hrs	V_F, V_Z & I_R within spec
Thermal Shock	$-55 \pm 5^\circ\text{C}/5\text{min}$ to $150 \pm 5^\circ\text{C}/5\text{min}$ for 10cycles	V_F, V_Z & I_R within spec



Bending Strength	Bending up to 2mm for 1cycle	V_F, V_Z & I_R within spec; no mechanical damage
------------------	------------------------------	---

APPLICATIONS

- Function: Fast switching
- Soldering Condition:

Soldering Condition & Caution

- Recommended Soldering Condition
(Refer to IPC/JEDEC J-STD-020D 4-1&5.2)

Recommended Profile Condition	Sn-Pb Soldering	Leadfree Soldering	Wave Soldering
Ramp-up rate (from pre-heat stage)	<3°C/s	<3°C/s	$\Delta T < 150^\circ\text{C}$
Pre-heat Temperature & Time	100-150 °C 60-120s	150-200 °C 60-120s	100-150 °C 60-120s
Soldering Temperature & Time	183 °C 60-150s	217 °C 60-150s	260±5°C 5±2s
Peak Temperature	230±5°C <260°C	245±5°C <260°C	260±5°C
Time within 5°C of peak temperature	10-20s	20-30s	-
Ramp-down rate	<6°C/s	<6°C/s	<6°C/s
Time 25°C to peak temperature	<6min	<8min	-

Manual Soldering: Approx. 350°C for 3s, avoid solder iron tip direct touch the components body

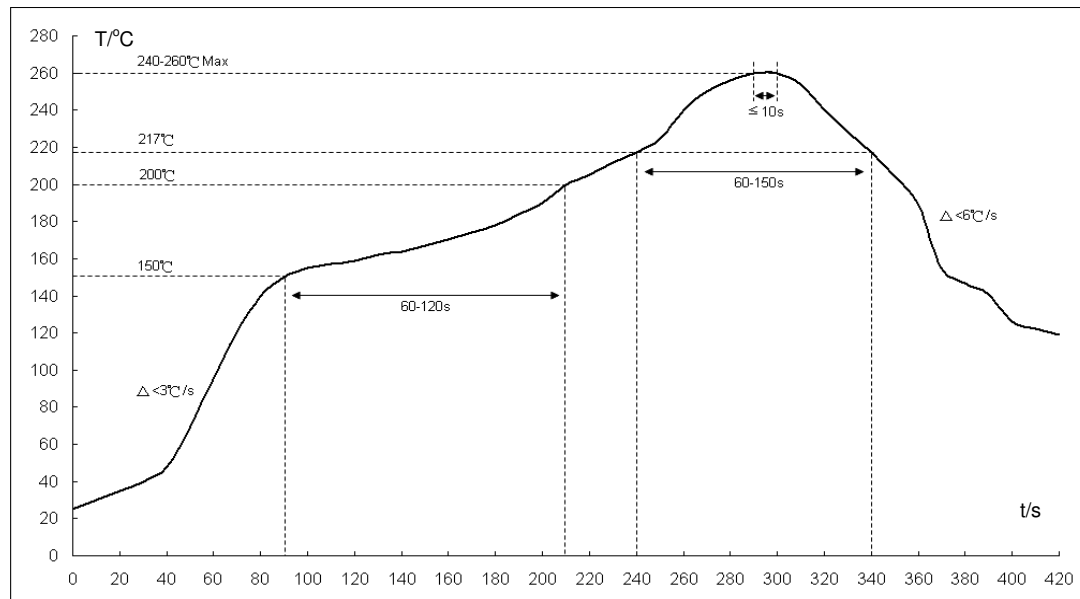
Recommended Soldering Profile

Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

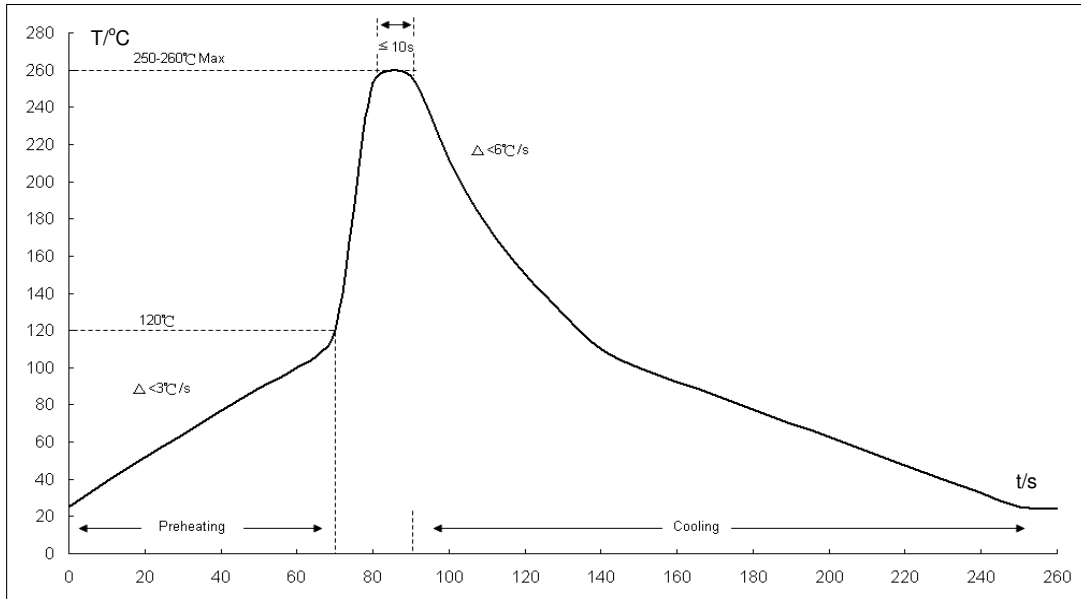


Fig2: Wave soldering profile

- *1. The recommended profiles are referring to IPC/JEDEC J-STD-020D & IEC-60068-2-58
- *2. Chip diodes are able to stand maximum soldering temperature up to 260°C max for 10s, and the soldering cycles with max 3 times, referring to IEC-60068-2-58

- Storage Condition: Product termination solderability can degrade due to high temperature and humidity or chemical environment. Storage condition must be in an ambient temperature of <40°C and ambient humidity of <75%RH, and free from chemical.

ENVIRONMENTAL CHARACTERISTICS

Product	Hazardous Substance or Element/ppm					
	Pb	Cd	Hg	Cr ⁶⁺	PBB	PBDE
	<1000	<100	<1000	<1000	<1000	<1000

Product	Halogen Substance/ ppm				
	F	Cl	Br	I	Total
	<900	<900	<900	<900	<1500

PACKING METHOD



SOT-23CD SERIES

Crownpo Technology

Product	Quality/Reel	Reel Size	Tape
	5,000pcs	7"	Embossed tape

DISCLAIMERS

These products are not designed for use in applications where any failure or malfunction may resulted in personal injury, death or severe property or environmental damage such as medical, military, aircraft,



SOT-23CD SERIES

Crownpo Technology

space or life support equipments.