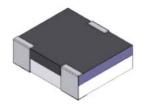


Small Signal Switching Diode, SOT323 Case CDBAV99W/ CDBAV70W/ CDBAW56W/ CDMMBD4148W



FEATURES

- Silicon epitaxial planar diode
- SMD chip pattern, SOT323 case, available also in SOT23 case
- Leadfree and RoHS compliance components
- For small signal switching and operating ambient temperature less than 55°C and voltage withstand less than 60V; not suitable for AC switching input as rectified circuit and high reverse voltage location.

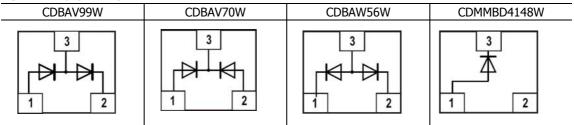
MECHANICAL CHARACTERISTICS

Size: SOT323 caseWeight: approx. 11mg

■ Marking: BAV99 as anode to cathode series dual switching diode

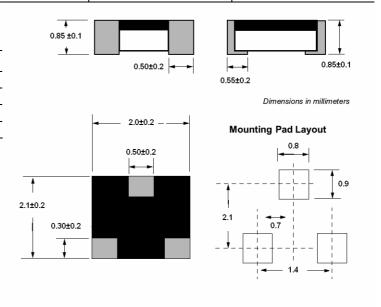
BAV70 as common cathode dual switching diode BAW56 as common anode dual switching diode BD4148 as SOT323 case single switching diode

GRAPHIC SYMBOL



DIMENSIONS

Dimension/mm	SOT323
L	2.0±0.2
W	2.1±0.2
Т	0.85 ± 0.1
С	0.55±0.2



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THERMAL CHARACTERISTICS¹⁾

Parameter at T _{amb} =25°C ¹⁾	Symbol	Value	Unit
Forward Power Dissipation	D	200	mW
Power derating above 25°C	P _{tot}	1.6	mW/ °C
Junction Temperature	T _j	150	°C
Thermal Resistance Junction to Ambient air	$R_{\theta JA}$	625	°C/W
Operating& Storage Temperature range	T _{sta}	-55 to 150	°C

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

MAXIMUM RATING¹⁾

Parameter at T _{amb} =25°C ¹⁾	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	75	V
Average rectified current sin half wave	т	150 ²⁾	mA
rectification with resistive load	$I_{F(AV)}$	130 ³⁾	mA
Repetitive Peak Forward Current at T _{amb} =25°C	I_{FRM}	200	mA
Non-Repetitive Surge Forward Current		500	mA
at t<1s and T _j =25°C	${ m I}_{\sf FSM}$	300	IIIA
at $t \le 8.3$ ms and $T_j = 25$ °C		1000	mA

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

ELECTRICAL CHARACTERISTICS¹⁾

Parameter at T _{amb} =25°C ¹⁾	Symbol	Value	Unit
Forward Voltage at I _F =10mA		0.855 _{MAX}	V
at I _F =50mA	V_{F}	1.0 _{MAX}	V
at I _F =100mA		1.25 _{MAX}	V
Leakage Current at V _R =75V	IR	2.5 _{MAX}	uA
Capacitance at VR=0V,f=1MHz	C_{tot}	4 _{MAX}	pF
Reverse Recovery Time at $I_F = I_R = 10$ mA, $R_L = 100$ Ω	t _{rr}	6 _{MAX}	ns

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

²⁾ Single diode

³⁾ Double diode



TYPICAL CHARACTERISTICS

Figure 1. Forward Characteristic

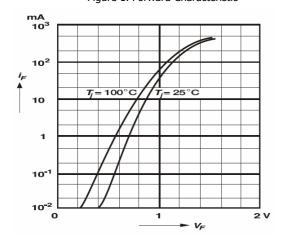


Figure 2. Power De-rating

500
400
400
300
0 20 40 60 80 100 120 140 160 180 200

Figure 3. Forward Current De-rating

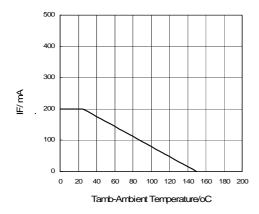
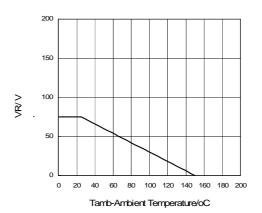


Figure 4. Reverse Voltage De-rating

Tamb-Ambient Temperature/oC



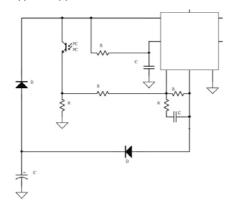
TEST CHARACTERISTICS

Test Item	Test Condition	Requirement	
Solderability	Sn bath at 245±5°C for 2±0.5s	>95% area tin covered	
Resistance to Soldering Heat	Sn bath at 260±5°C for 10±2s	V _F ,V _R & I _R within spec; no mechanical damage	
Humidity Steady State	At 85°C 85%RH for 168hrs	V _F ,V _R & I _R within spec	
Continue Forward Operating Life	At 25°C $I_F = 1.1I_F$ for 1000hrs	V _F ,V _R & I _R within spec	
Thermal Shock	-55 ±5°C/5min to 150±5°C/5min for 10cycles	V _F ,V _R & I _R within spec	
Bending Strength	Bending up to 2mm for 1cycle	V_F , V_R & I_R within spec; no mechanical damage	



APPLICATIONS

- Function: suit for small signal switching application
- Typical Application circuit:



■ Typical Product field: General application except high reverse voltage location

■ 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	△T<150°C	
Dro host Tomporature & Time	100-150 °C	150-200 °C	100-150 °C	
Pre-heat Temperature & Time	60-120s	60-120s	60-120s	
Coldoring Tomporature 9. Time	183 ℃	217 °C	260±5°C	
Soldering Temperature & Time	60-150s	60-150s	5±2s	
Dook Tomporature	230±5°C	245±5°C	260±5°C	
Peak Temperature	<260°C	<260°C	200±3 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

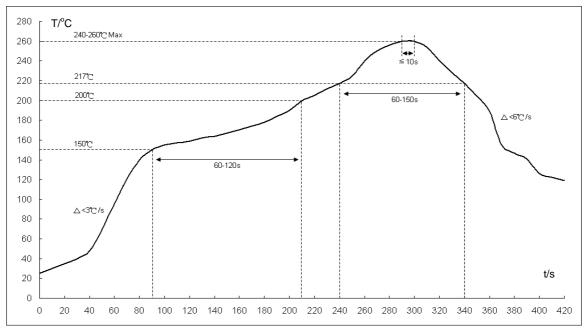


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

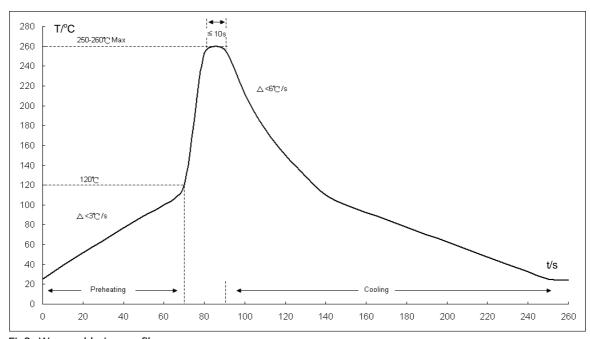


Fig2: Wave soldering profile

- *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

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■ 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

	Hazardous Substance or Element/ppm					
Product	Pb	Cd	Hg	Cr ⁶⁺	PBB	PBDE
	<1000	<100	<1000	<1000	<1000	<1000
	Halogen Substance/ ppm					
Product	F	Cl	E	Br	I	Total
	<900	<900) <9	000	<900	<1500

PACKING METHOD

Product	Quality/Reel	Reel Size	Tape
	5,000pcs	7"	Paper 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, space or life support equipments.