

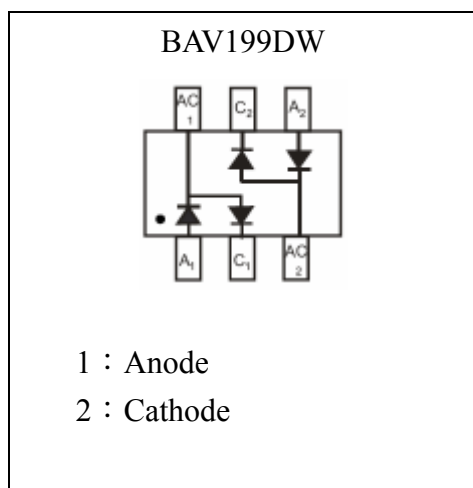
High –speed multi-chip diode

BAV199DW

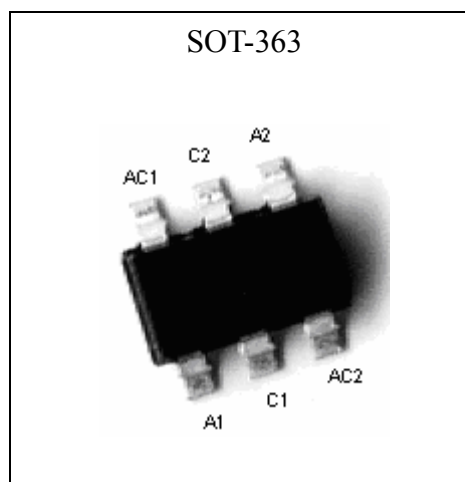
Description

The BAV199DW consists of two set of high-speed switching diodes connected in series, fabricated in planar technology, and encapsulated in the small SOT-363 plastic SMD package.

Equivalent Circuit



Outline



Features

- Small plastic SMD package
- High switching speed: max. 4ns
- Continuous reverse voltage: max. 75V
- Repetitive peak reverse voltage: max. 85V
- Repetitive peak forward current: max. 450mA.
- Very low leakage current
- Pb-free package

Applications

- High-speed switching in thick and thin-film circuits.

**Absolute Maximum Ratings, per diode @ $T_A=25^{\circ}\text{C}$**

Parameters	Symbol	Min	Max	Unit
Repetitive peak reverse voltage	V_{RRM}	-	85	V
Continuous reverse voltage	V_R	-	85	V
Continuous forward current	I_F	-	160	mA
Non-repetitive peak forward current @square wave, $T_j=125^{\circ}\text{C}$ prior to surge	I_{FSM}	$t=1\mu\text{s}$	4	A
		$t=10\text{ms}$	1	A
		$t=1\text{s}$	0.5	A
Total power dissipation (Note 1)	P_{tot}		200	mW
Total power dissipation (Note 2)	P_{tot}		300	mW
Junction Temperature	T_j	-	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-65	+150	$^{\circ}\text{C}$

Electrical Characteristics, per diode @ $T_j=25^{\circ}\text{C}$ unless otherwise specified

Parameters	Symbol	Conditions	Min	Typ.	Max	Unit
Reverse breakdown voltage	$V_{(BR)R}$	$I_R=100\mu\text{A}$	85	-	-	V
Forward voltage	V_F	$I_F=1\text{mA}$	-	-	0.9	V
		$I_F=10\text{mA}$			1	V
		$I_F=50\text{mA}$			1.1	V
		$I_F=150\text{mA}$			1.25	V
Reverse current	I_R	$V_R=75\text{V}$	-	-	5	nA
Diode capacitance	C_D	$V_R=0\text{V}$, $f=1\text{MHz}$	-	2	-	pF
Reverse recovery time	t_{rr}	when switched from $I_F=10\text{mA}$ to $I_R=10\text{mA}$, $R_L=100\Omega$, measured at $I_R=1\text{mA}$	-	-	4	ns

Thermal Characteristics

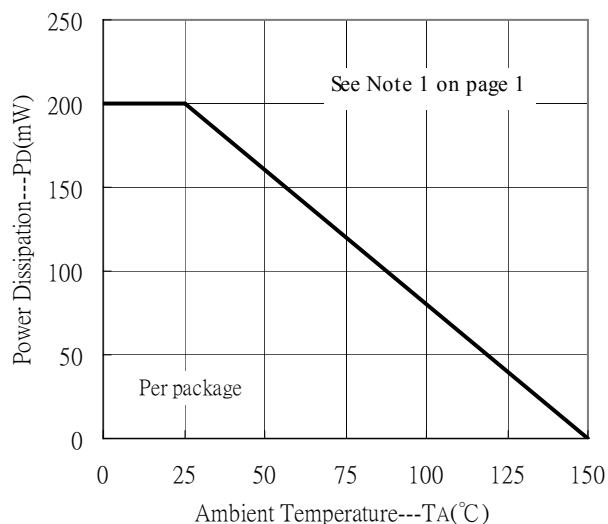
Symbol	Parameter	Conditions	Value	Unit
$R_{th,j-a}$	thermal resistance from junction to ambient	Note 1	625	$^{\circ}\text{C/W}$
$R_{th,j-a}$	thermal resistance from junction to ambient	Note 2	417	$^{\circ}\text{C/W}$

Note : 1. Device mounted on a FR-4 PCB with copper area of 1 inch $\times$ 0.82 inch and thickness 0.062 inch .2. Device mounted on a Alumina PCB with area of 0.4 inch $\times$ 0.3 inch and thickness 0.024 inch .**Ordering Information**

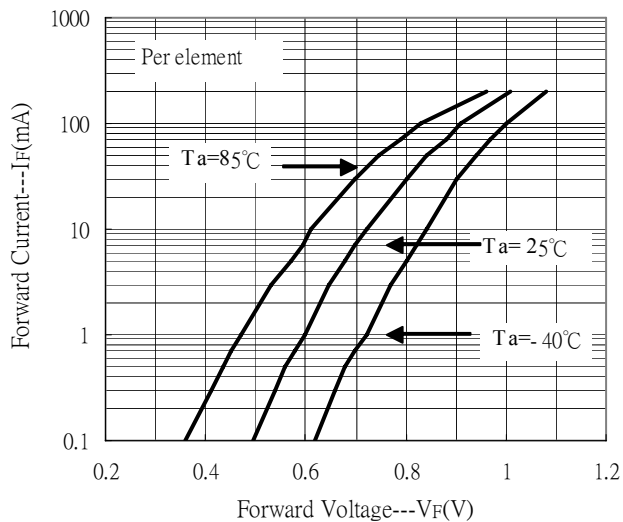
Device	Package	Shipping	Marking
BAV199DW	SOT-363 (Pb-free)	3000 pcs / Tape & Reel	K52

Characteristic Curves

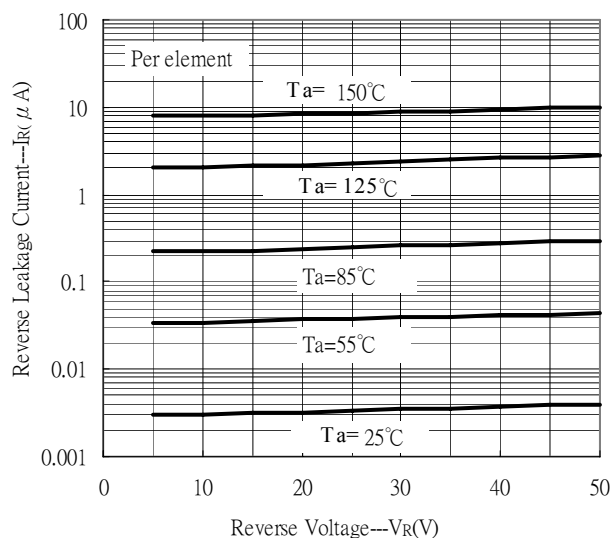
Power Derating Curve



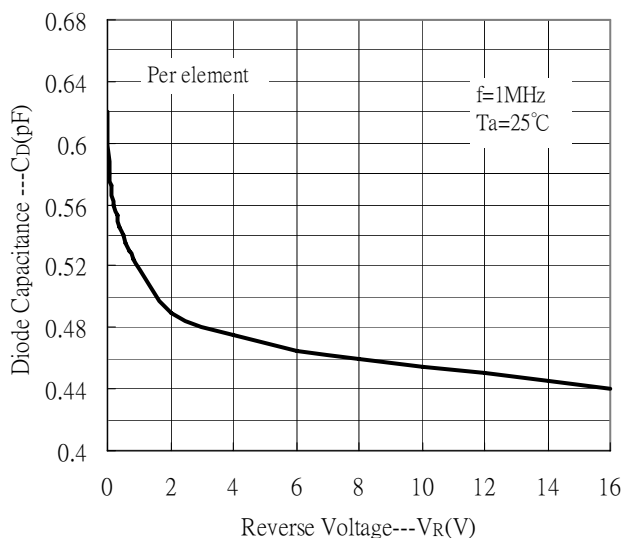
Forward Current vs Forward Voltage



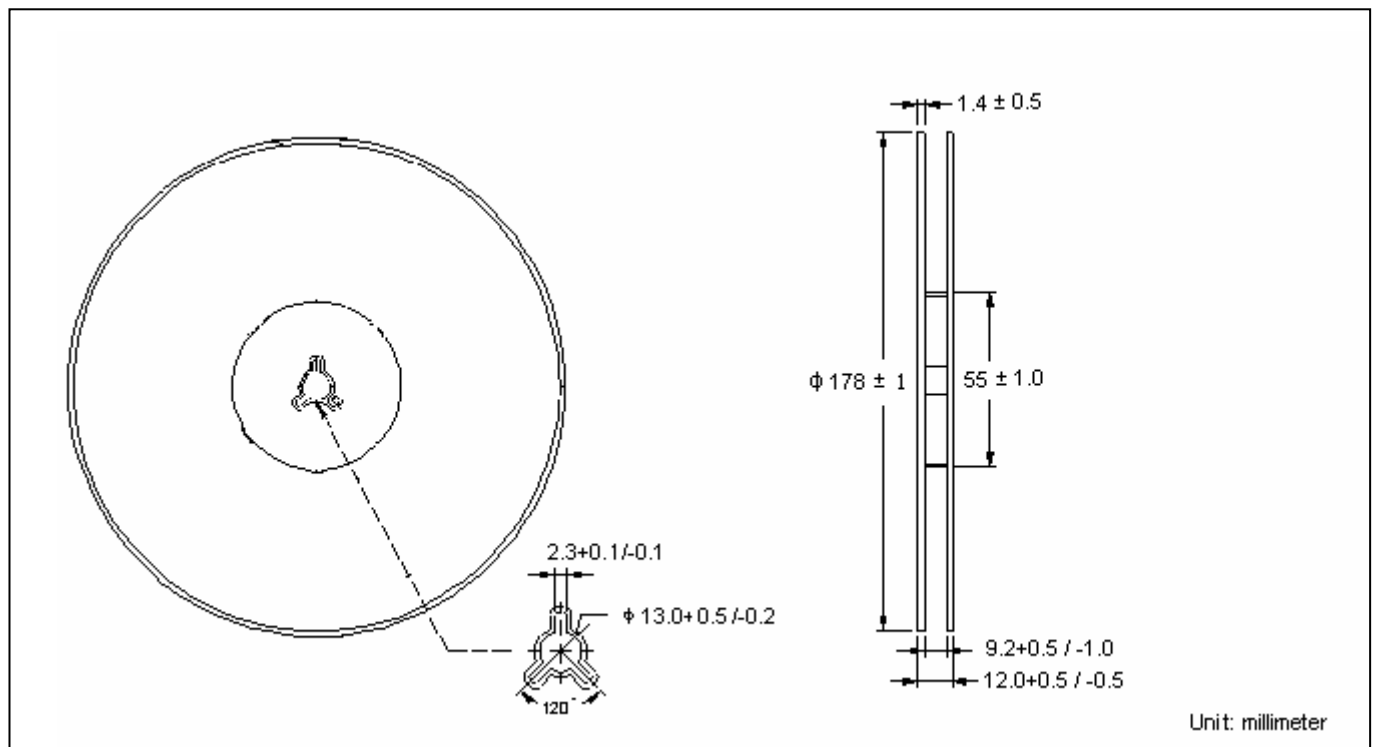
Reverse Leakage Current vs Reverse Voltage



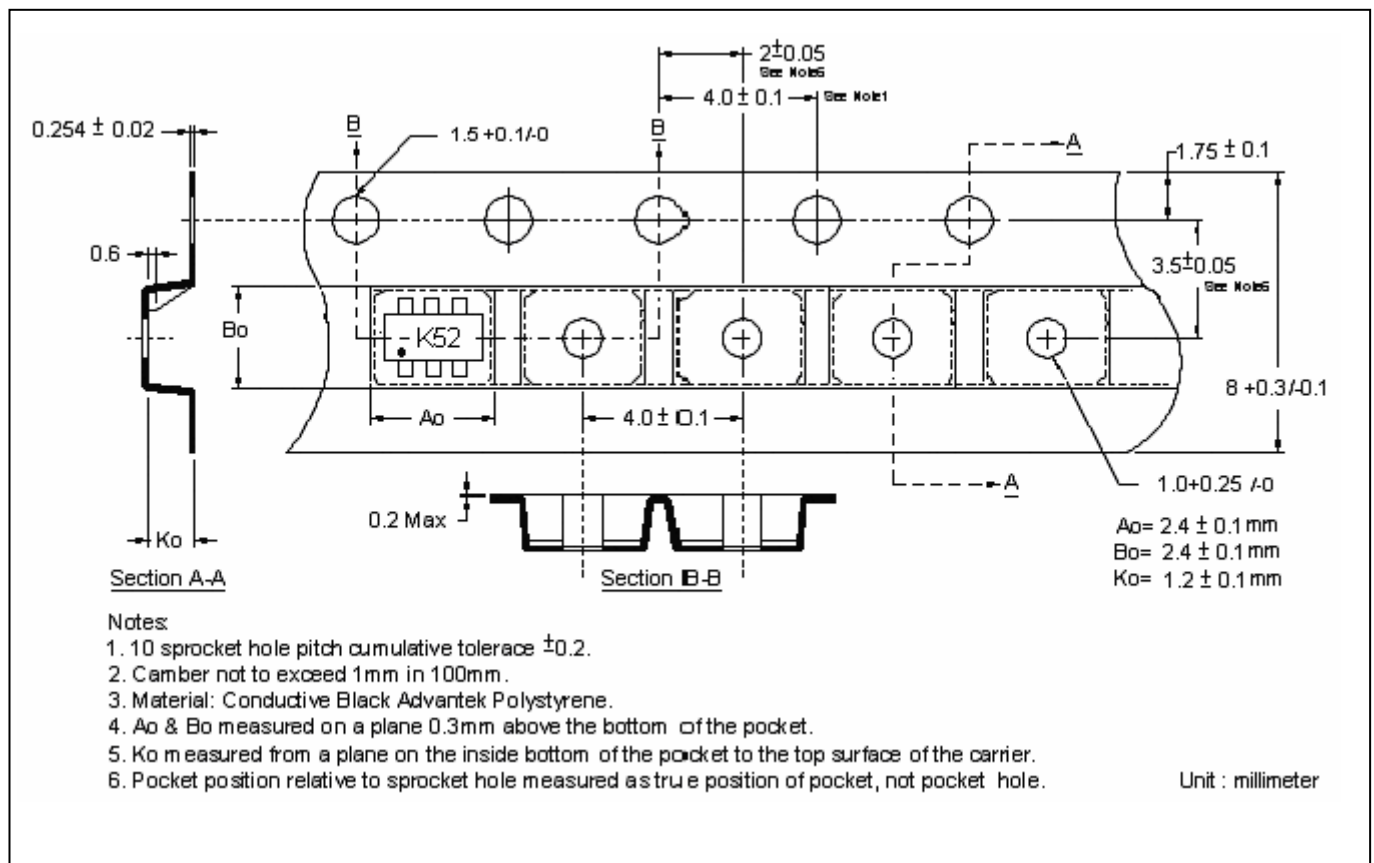
Capacitance vs Reverse Voltage



Reel Dimension



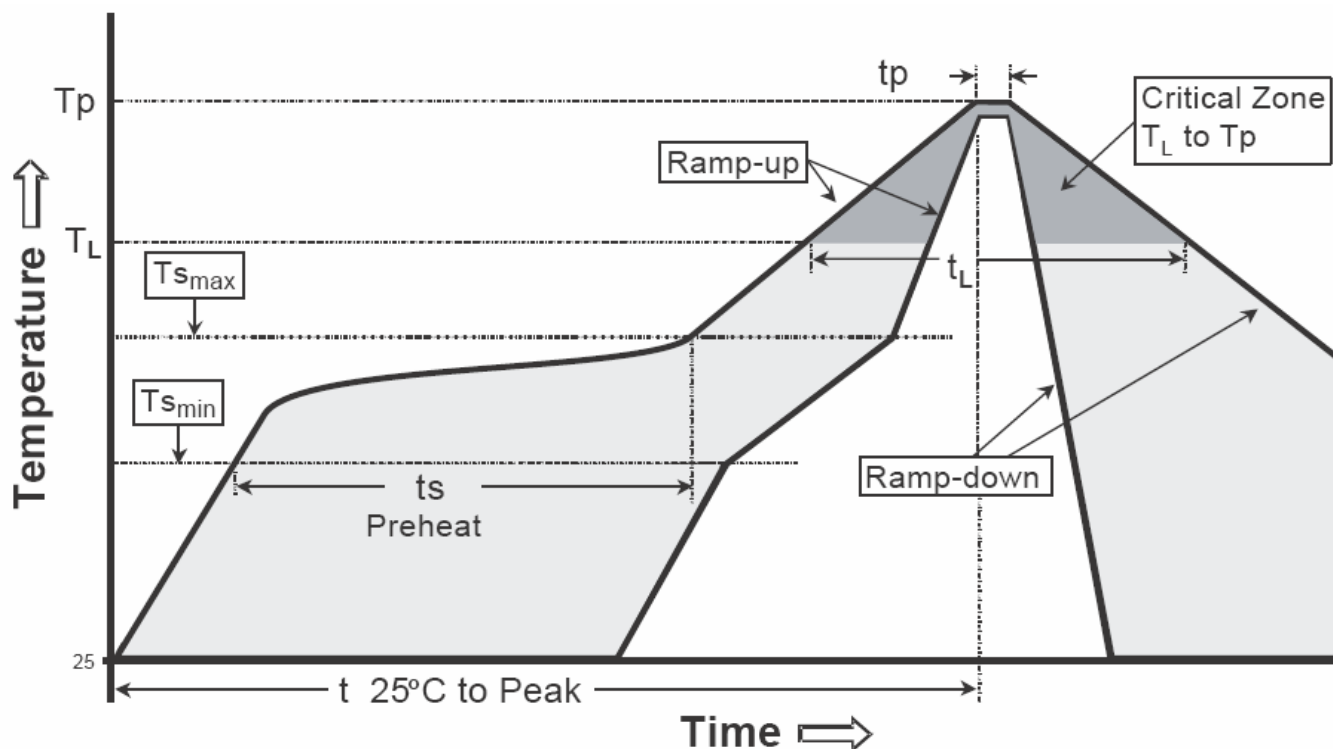
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

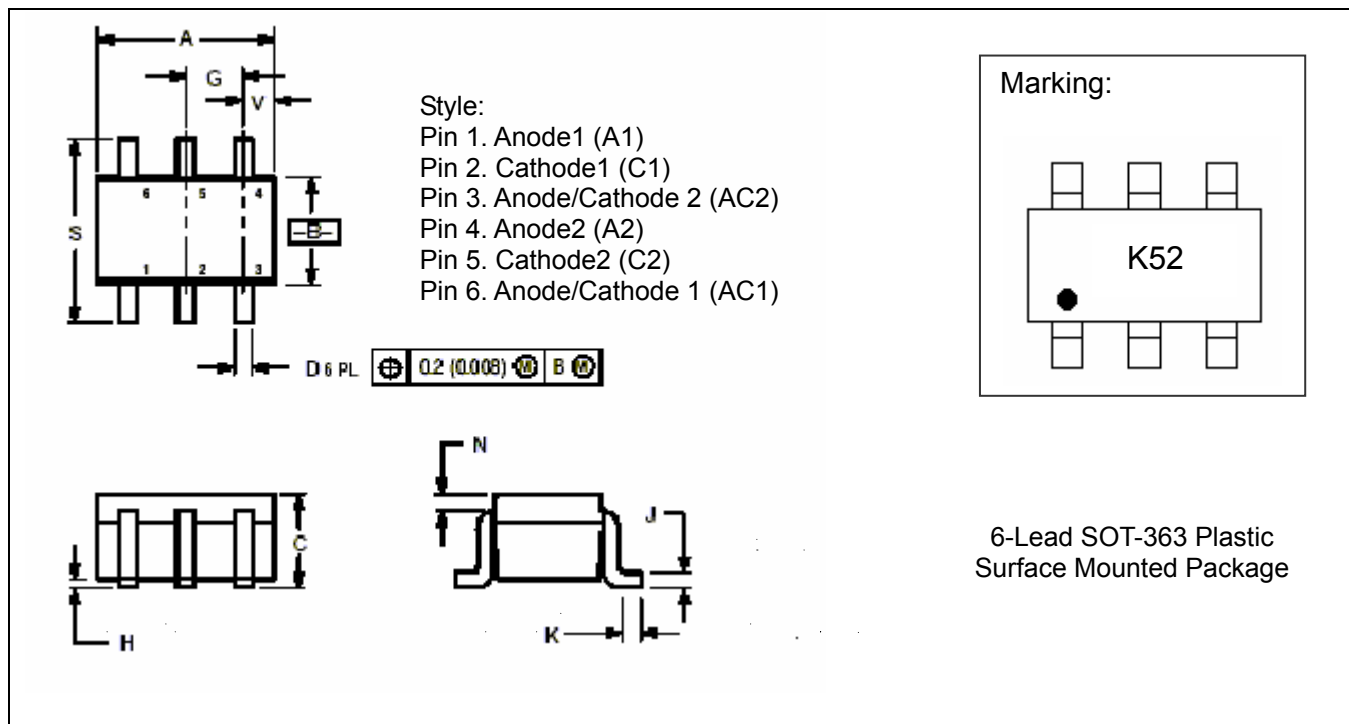
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (TL)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-363 Dimension



*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.071	0.087	1.8	2.2	J	0.004	0.010	0.1	0.25
B	0.045	0.053	1.15	1.35	K	0.004	0.012	0.1	0.30
C	0.031	0.043	0.8	1.1	N	0.008 REF		0.20 REF	
D	0.004	0.012	0.1	0.3	S	0.079	0.087	2.00	2.40
G	0.026BSC		0.65BSC		Y	0.012	0.016	0.30	0.40
H	-	0.004	-	0.1					

Notes : 1. Controlling dimension : millimeters.

2. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3. If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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