

BAS116T/BAV170T/BAW156T/BAV199T**List**

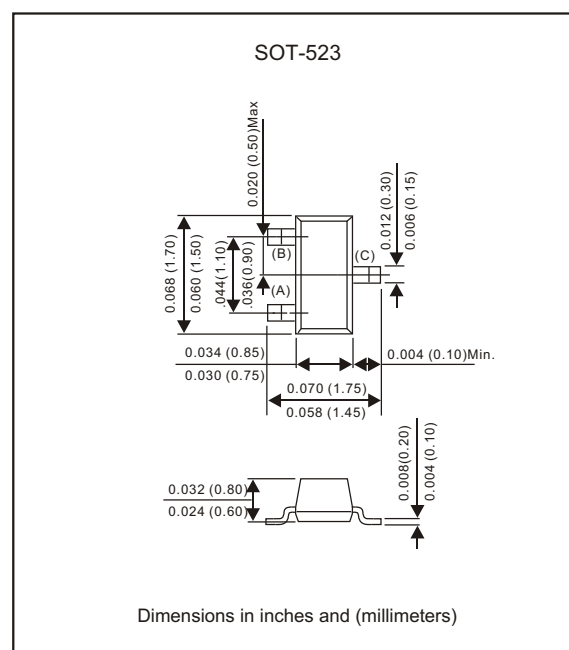
List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6
High reliability test capabilities.....	7

BAS116T/BAV170T/BAW156T/BAV199T**150mW Surface Mount
Switching Diode-85V****Features**

- Fast speed switching.
- For general purposeswitching application.
- High conductance.
- Silicon epitaxial planarchip.
- Suffix "-H" indicates Halogen-free part, ex.BAS116T-H.
- Lead-free parts meetRoHS requirments.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-523
- Terminals: Solder plated, solderable per
MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.003 gram

Package outline**Maximum ratings** (AT $T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	Min.	Typ.	Max.	UNIT
Reverse Voltage		V_R		85		V
Forward Continuous Current	Single Diode	I_{FM}		215		mA
	Double Diode			125		
Non-Repetitive Peak Forward Surge Current	@t = 1.0us	I_{FSM}		4.0		A
	@t = 1.0ms			1.0		
	@t = 1.0s			0.5		
POWER Dissipation		P_D		150		mW
Thermal Resistance Junction to Ambient		$R_{\theta JA}$		833		$^\circ\text{C/W}$
Operating Temperature Range		T_J	-55		+150	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-65		+175	$^\circ\text{C}$
Reverse Breakdown Voltage	$I_{BR} = 100\mu\text{A}$	V_{BR}	85			V
Reverse Voltage Leakage Current	at $V_R = 75\text{V}$	I_R			5.0	nA
	at $V_R = 75\text{V}, T_J = 150^\circ\text{C}$				80	
Diode Capacitance	$V_R = 0\text{V}, f = 1.0\text{MHz}$	C_T		2.0		pF
Reverse Recovery Time	$I_F = I_R = 10\text{mA}, I_{rr} = 0.1 \times I_R, R_L = 100_{\Omega}$	T_{rr}		3.0		μs
Forward Voltage	at $I_F = 1.0\text{mA}$	V_F			900	mV
	at $I_F = 10\text{mA}$				1000	
	at $I_F = 50\text{mA}$				1100	
	at $I_F = 150\text{mA}$				1250	

Rating and characteristic curves for each diode (BAS116T/BAV170T/BAW156T/BAV199T)

FIG.1 - POWER DERATING CURVE

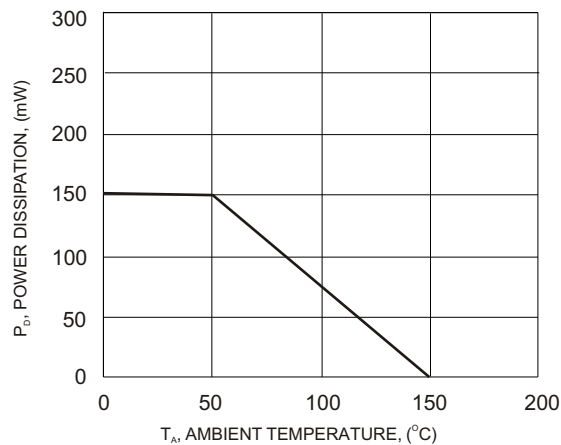


FIG.2 - FORWARD CHARACTERISTICS

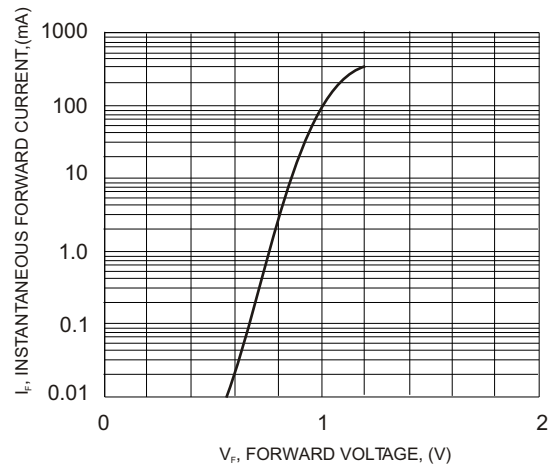


FIG.3 - TEPICAL REVERSE CHARACTERISTICS

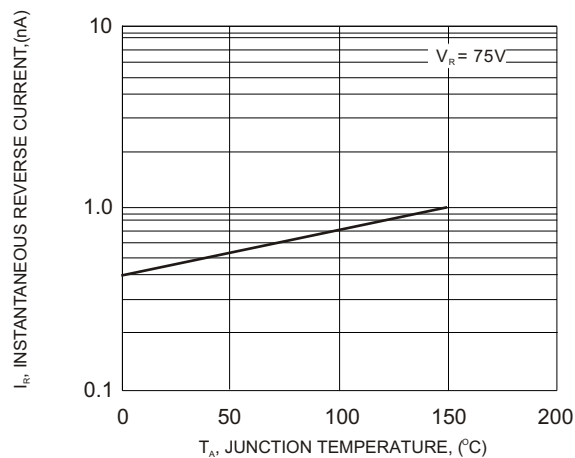
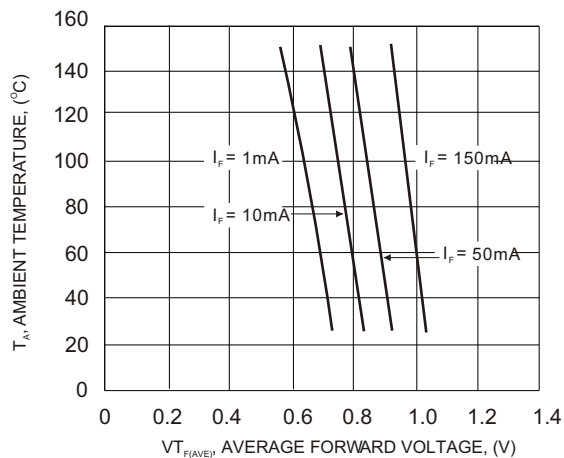
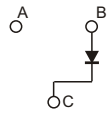
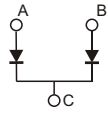
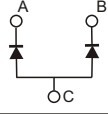
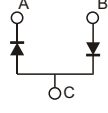
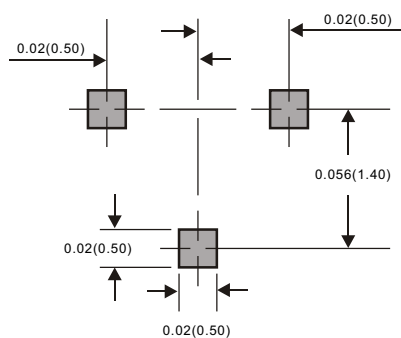


FIG.4 - TYPICAL FORWARD VOLTAGE VS AMBIENT TEMPERATURE

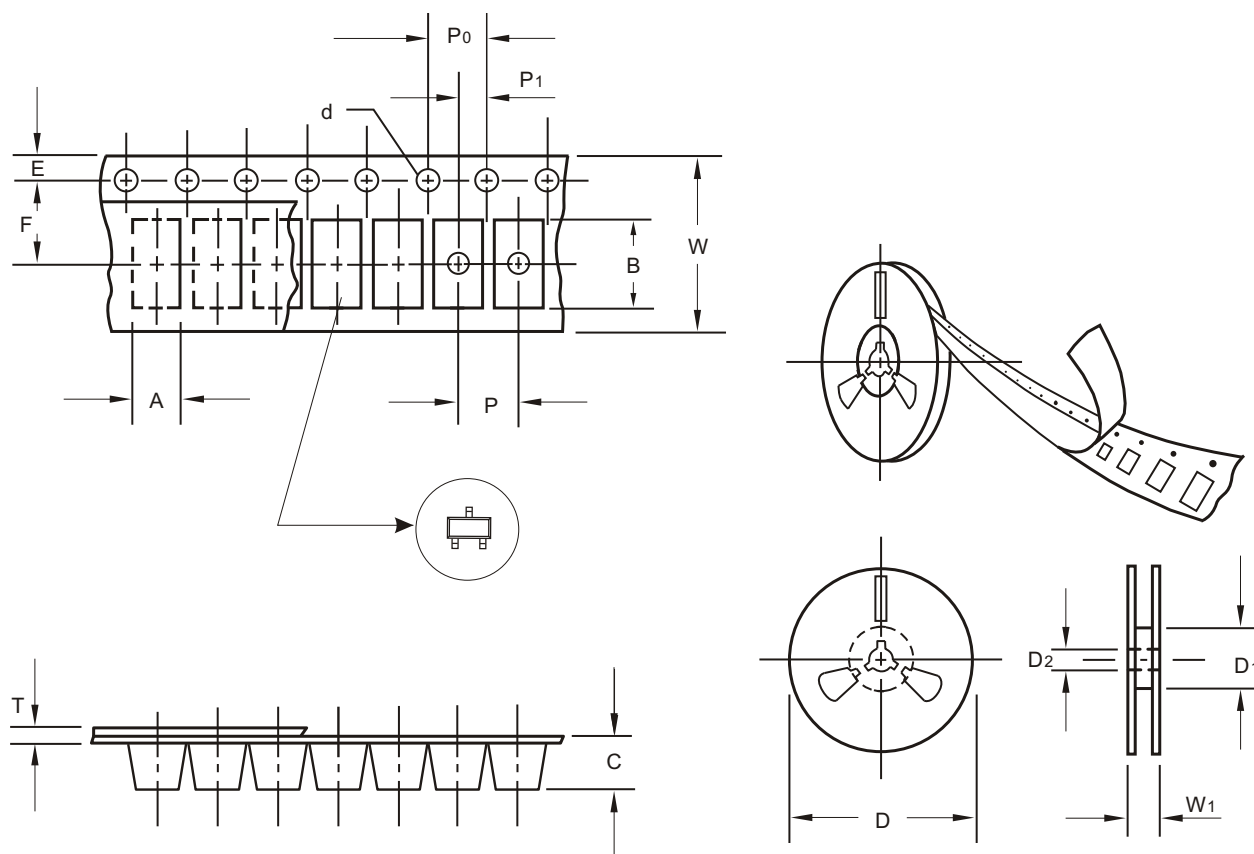


BAS116T/BAV170T/BAW156T/BAV199T**Pinning information**

Type number	Marking code	Symbol
BAS116T	50	
BAV170T	51	
BAW156T	53	
BAV199T	52	

Suggested solder pad layout**SOT-523**

Dimensions in inches and (millimeters)

BAS116T/BAV170T/BAW156T/BAV199T**Packing information**

unit:mm

Item	Symbol	Tolerance	SOT-523
Carrier width	A	0.1	1.73
Carrier length	B	0.1	1.85
Carrier depth	C	0.1	0.90
Sprocket hole	d	0.1	1.5
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	60.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

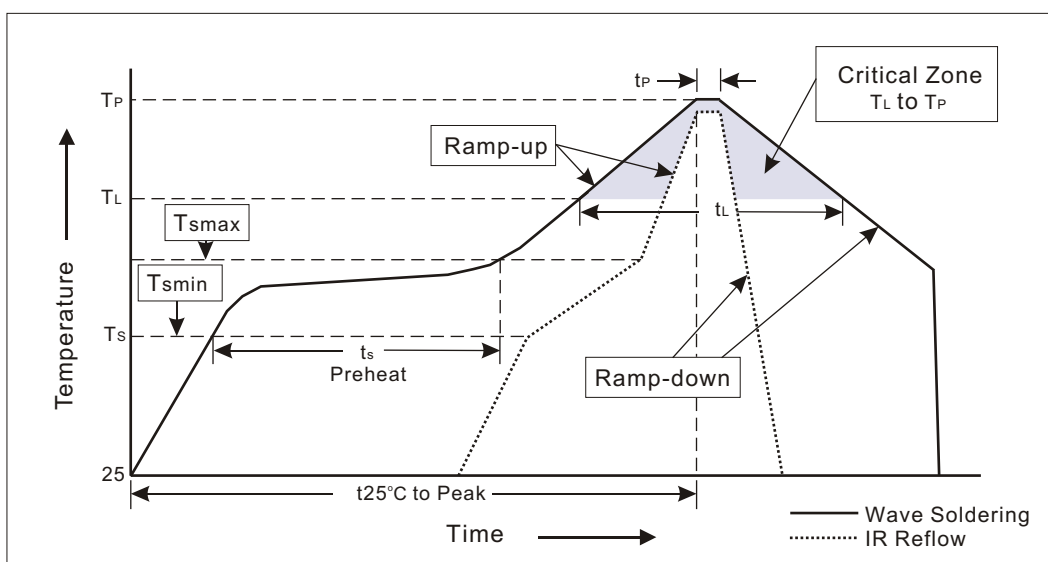
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-523	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=10°C~35°C Humidity=65%±15%
- 2.Reflow soldering of surface-mount devices



3.Flow (wave)soldering (solder dipping)

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{Smin}) -Temperature Max(T_{Smax}) -Time(min to max)(t_s)	100°C 150°C 60~120sec
T_{Smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	183°C 60~150sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

BAS116T/BAV170T/BAW156T/BAV199T**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$ immerse body into solder $1/16''\pm1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R=80\%$ rate at $T_A=150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1026
4. Forward Operation Life	Rated average rectifier current at $T=25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs.	
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	8.3ms single half sine-wave superimposed on rated load, one surge.	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A=65^{\circ}\text{C}$, RH=98% for 1000hrs.	MIL-STD-750D METHOD-1038
11. High Temperature Storage Life	at 175°C for 1000hrs.	MIL-STD-750D METHOD-1031
12. Solvent Resistance	Dip into Freon at 25°C for 1 min.	MIL-STD-202F METHOD-215