BAS40T / BAS40-04T /BAS40-05T / BAS40-06T

List

BAS40T / BAS40-04T /BAS40-05T / BAS40-06T

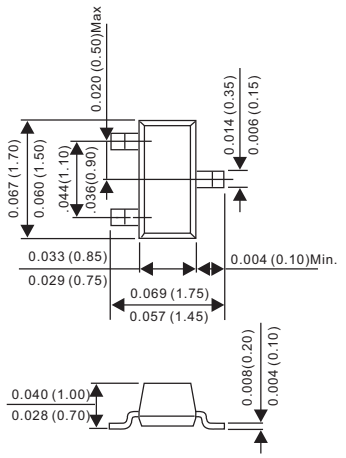
200mA Surface Mount Small Signal Schottky Diodes 40V

Features

- Low current rectification and high speed switching
- Small surface mount type
- Up to 200mA current capability
- Low forward voltage drop (V_F max=1.00V@I_F=40mA)
- Silicon epitaxial planar chip, metal silicon junction
- High speed (trr < 5 ns)
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free parts, ex. BAS40T-H

Package outline

SOT-523



Dimensions in inches and (millimeters)

Mechanical data

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

Maximum ratings (AT T_A=25°C unless otherwise noted)

Parameter		Symbol	MIN.	TYP.	MAX.	Unit
Peak repetitive peak reverse voltage		V_{RRM}			40	V
DC blocking voltage		V_R			40	V
Forward continuous current		I_{FM}			200	mA
Average rectified output current		I_O			200	mA
Non-repetitive peak forward Surge current	t=1.0s	I_{FSM}			0.6	A
Power dissipation		P_D			150	mW
Thermal resistance	Junction to ambient Junction to case	$R_{\theta JA}$ $R_{\theta JC}$		667 500		°C/W °C/W
Operating junction temperature range		T_J	-55		+125	°C
Storage temperature range		T_{STG}	-55		+125	°C

Electrical characteristics (AT T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Reverse Breakdown Voltage	I_R=10μA	$V_{(BR)R}$	40			V
Forward voltage	I_F=1mA	V_F			0.38	V
	I_F=40mA	V_F			1.0	V
Reverse current	V_R=30V	I_R			0.2	μA
Diode capacitance	V_R=0V, f=1MHz	C_T			5.0	pF
Reverse recovery time	I_F=I_R=10mA, I_{RR}=0.1 X I_R, R_L=100Ω	t_{rr}			5	ns

Rating and characteristic curves for each diode (BAS40T / BAS40-04T / BAS40-05T / BAS40-06T)

FIG.1-TYPICAL FORWARD CHARACTERISTICS

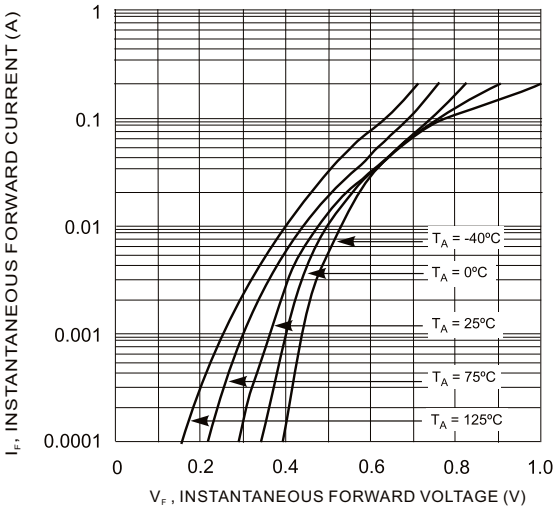


FIG.2 - TYPICAL REVERSE CHARACTERISTICS

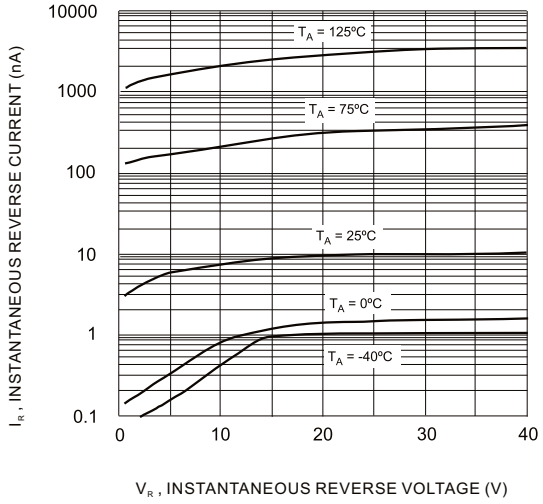


FIG.3-TYPICAL JUNCTION CAPACITANCE

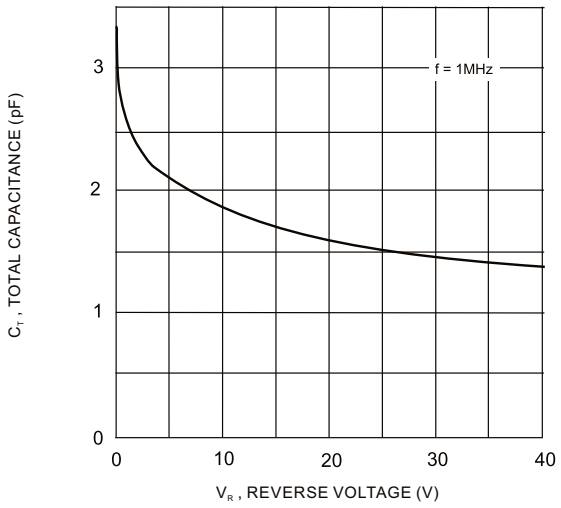
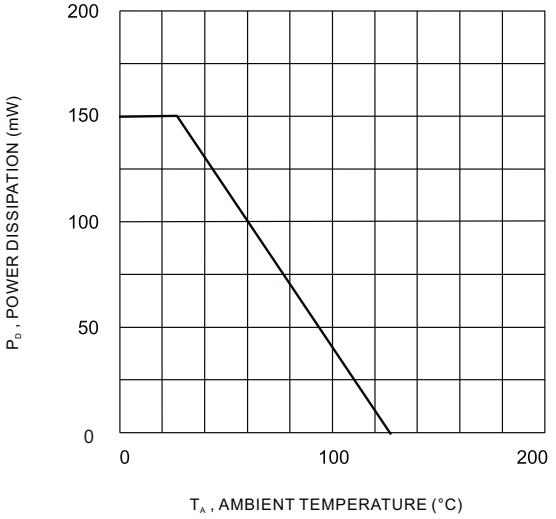


Fig. 4 Power Derating Curve, Total Package



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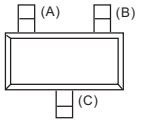
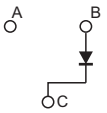
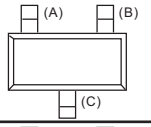
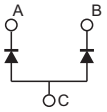
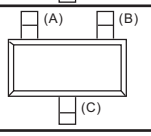
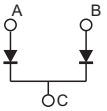
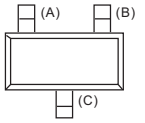
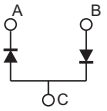
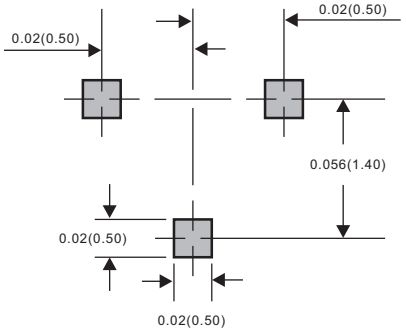
Pinning information

Type number	Marking code	Simplified outline	Symbol
BAS40T	43,43h		
BAS40-06T	46		
BAS40-05T	45		
BAS40-04T	44		

Suggested solder pad layout

SOT-523



Dimensions in inches and (millimeters)

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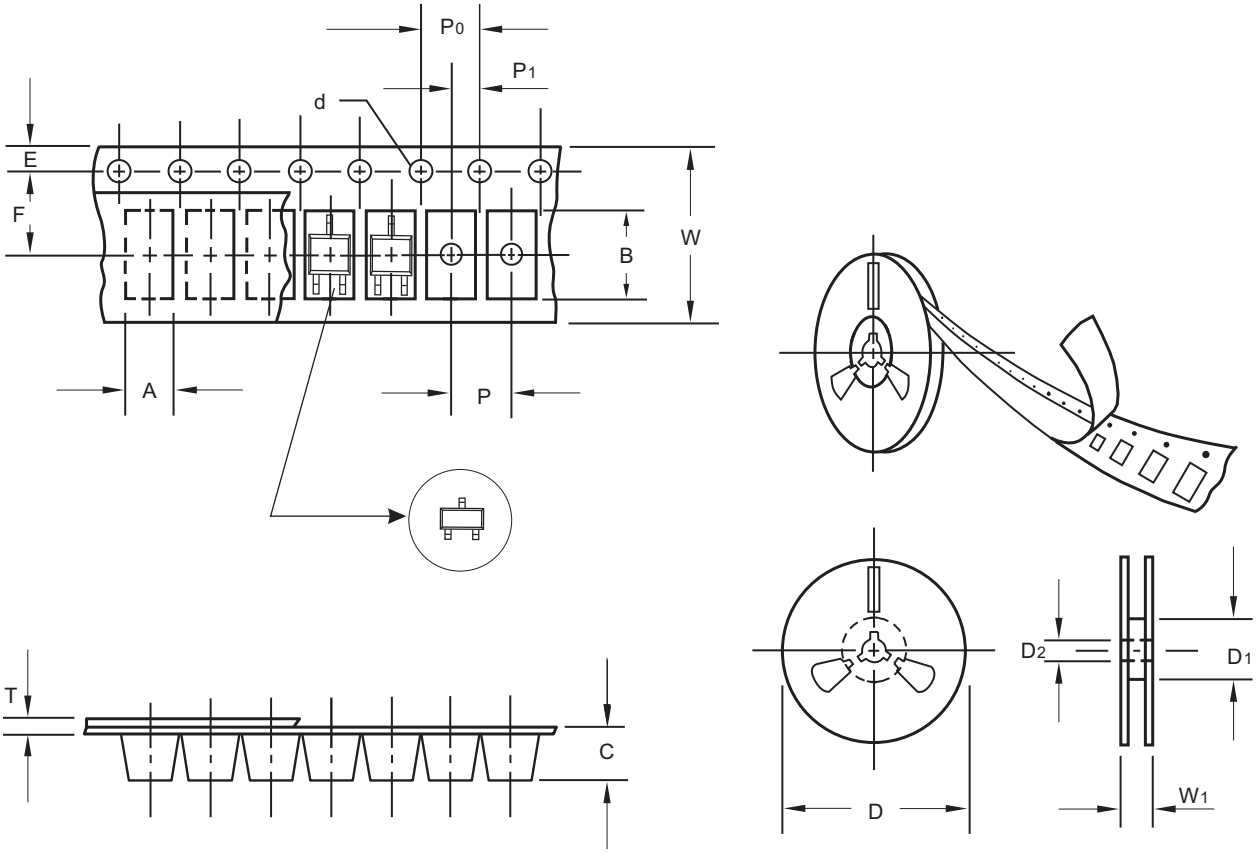
Packing information



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	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	60.00
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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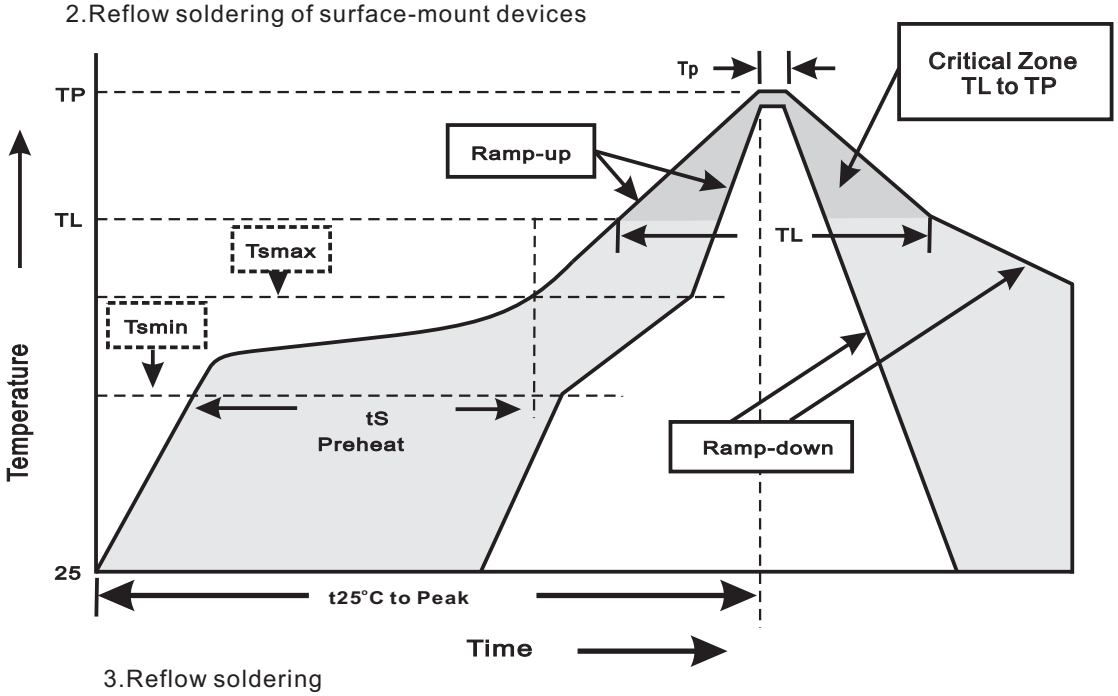
Reel packing

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*123*183	178	382*257*387	240,000	11.6

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%

2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	 <3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
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°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=125°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	Forward surge current t=1.0s	MIL-STD-750D METHOD-4066-2
9. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031