

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

List

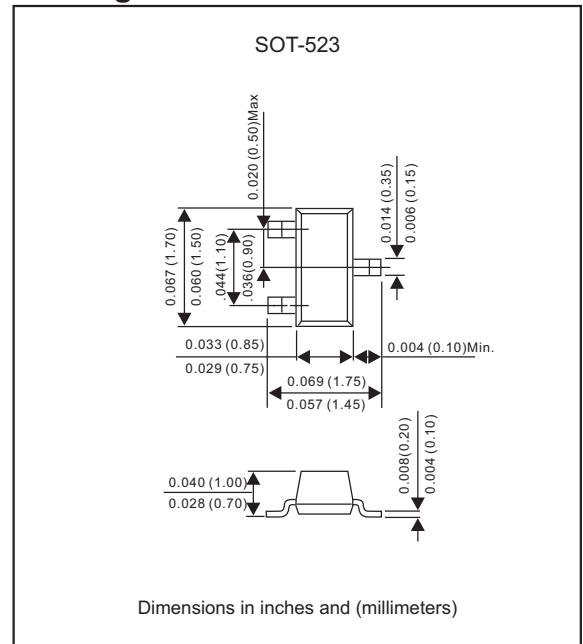
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BAS40T / BAS40-04T / BAS40-05T / BAS40-06T**200mA Surface Mount Small Signal Schottky Diodes 40V****Features**

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

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

Package outline**Maximum ratings** (AT $T_A=25^\circ\text{C}$ 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 $t=1.0\text{s}$	I_{FSM}			0.6	A
Power dissipation	P_D			150	mW
Thermal resistance	$R_{\theta JA}$ $R_{\theta JC}$		667 500		$^\circ\text{C/W}$ $^\circ\text{C/W}$
Operating junction temperature range	T_J	-55		+125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55		+125	$^\circ\text{C}$

Electrical characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

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

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

FIG.1-TYPICAL FORWARD

CHARACTERISTICS

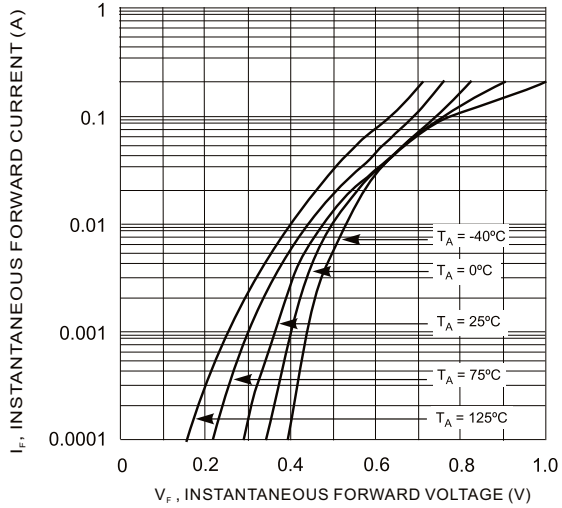


FIG.2 - TYPICAL REVERSE

CHARACTERISTICS

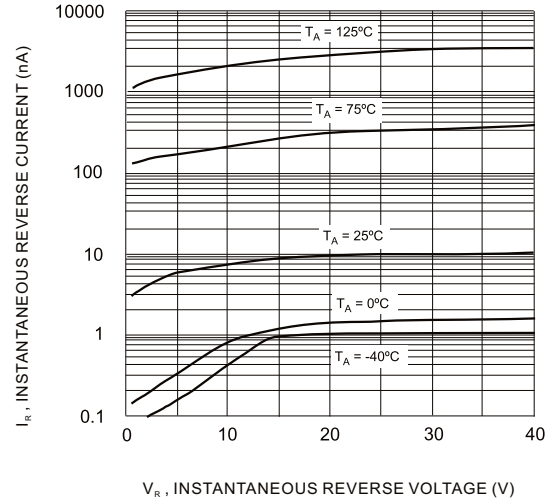


FIG.3-TYPICAL JUNCTION CAPACITANCE

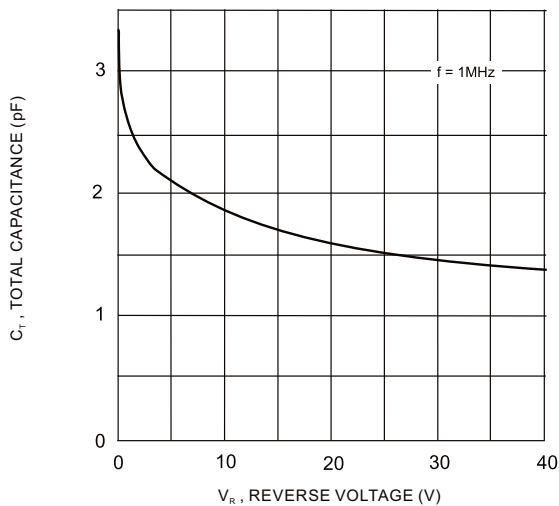
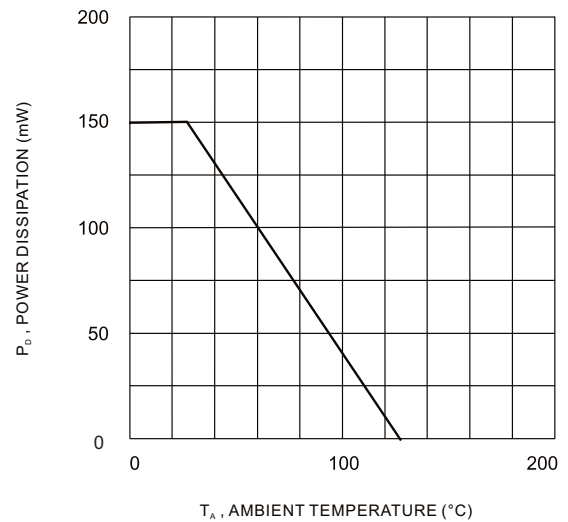
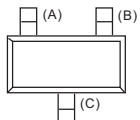
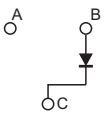
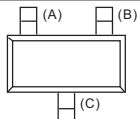
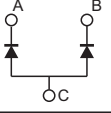
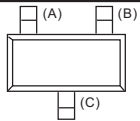
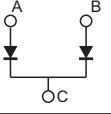
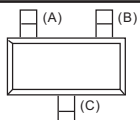
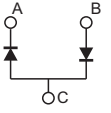
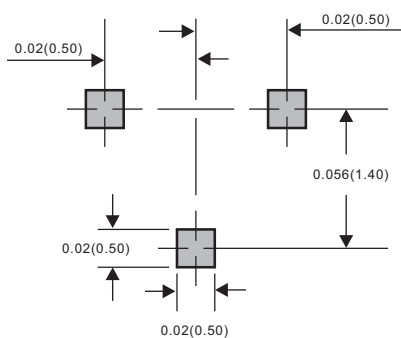


Fig. 4 Power Derating Curve, Total Package

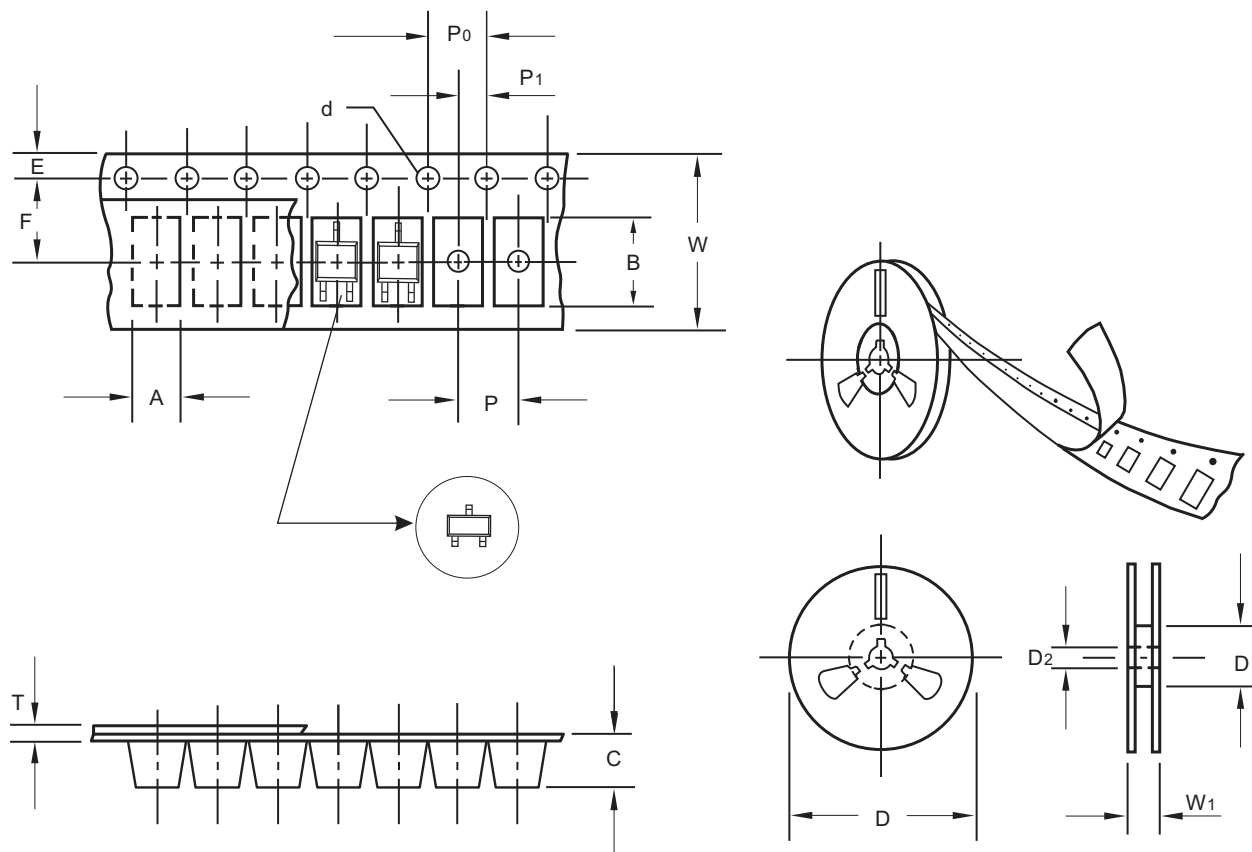


BAS40T / BAS40-04T / BAS40-05T / BAS40-06T**Pinning information**

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)

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

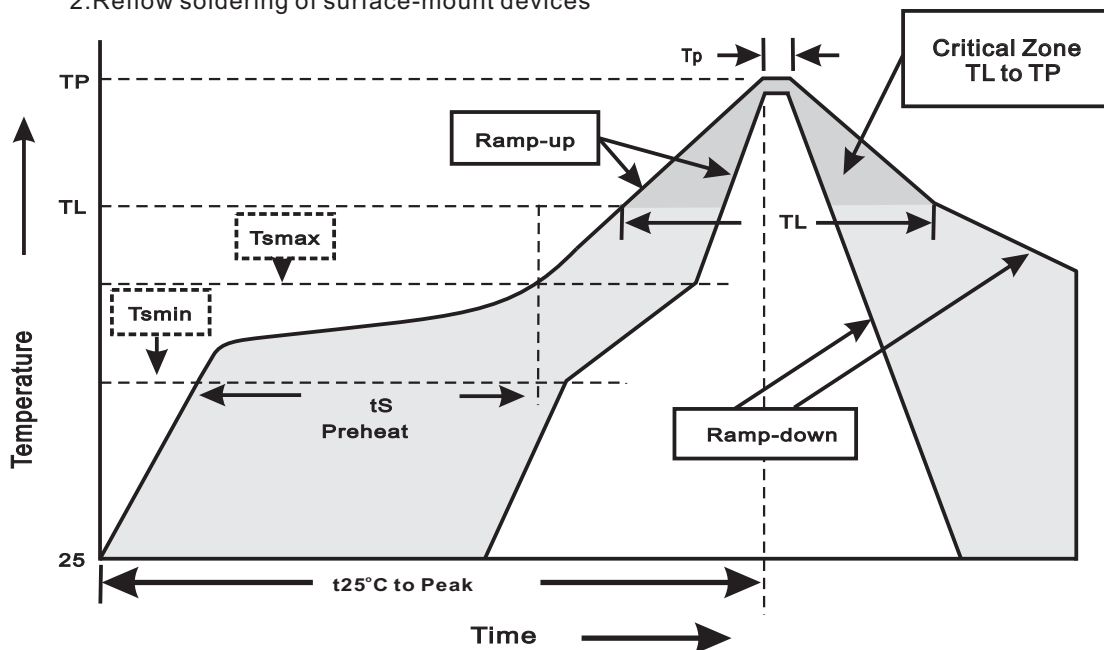
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BAS40T / BAS40-04T / BAS40-05T / BAS40-06T**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(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} 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

BAS40T / BAS40-04T / BAS40-05T / BAS40-06T**High reliability test capabilities**

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