

BAT54ADW / BAT54CDW / BAT54SDW / BAT54BRW / BAT54TW

List

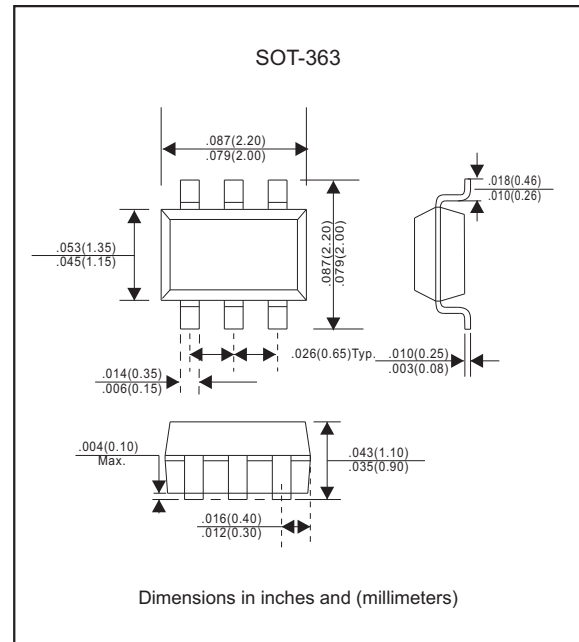
List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....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

BAT54ADW / BAT54CDW / BAT54SDW / BAT54BRW / BAT54TW**200mA Surface Mount Small Signal Schottky Diode Array-30V****Features**

- Fast switching.
- Small surface mount type.
- Up to 200mA current capability.
- Low forward voltage drop ($V_F = 1.00V$ typ. @100mA)
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- High speed ($t_{rr} < 5$ ns)
- Suffix "-H" indicates Halogen-free part, ex.BAT54ADW-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-363
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

Package outline**Maximum ratings and Electrical Characteristics** (AT $T_A=25^\circ C$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Repetitive peak reverse voltage		V_{RRM}			30	V
Reverse voltage		V_R			30	V
Repetitive peak forward current	Rated VR, Square Wave,20KHz	I_{FRM}			300	mA
Forward surge current	$t_p < 1s$	I_{FSM}			600	mA
Forward current		I_F			200	mA
Power dissipation		P_D			200	mW
Thermal Resistance	Junction to ambient ,Note 1	$R_{\theta JA}$		500		$^\circ C/W$
Junction temperature		T_J	-55		+125	$^\circ C$
Storage temperature		T_{STG}	-55		+125	$^\circ C$
Forward voltage	$I_F = 0.1$ mA	V_F			0.240	V
	$I_F = 1$ mA	V_F			0.320	V
	$I_F = 10$ mA	V_F			0.400	V
	$I_F = 30$ mA	V_F			0.500	V
	$I_F = 100$ mA	V_F			1.000	V
Reverse current	$V_R = 25$ V	I_R			2.0	μA
Diode capacitance	$V_R = 1$ V, $f = 1$ MHz	C_T			10.0	pF
Reverse recovery time	$I_F = 10$ mA, $V_R = 10$ mA, $I_{RR} = 0.1 \times I_{R1}$, $R_L = 100 \Omega$	t_{rr}			5	ns

Note 1. Device mounted on FR-4 PCB, 1 inch x0.85 inchx 0.062 inch.

Rating and characteristic curves for each diode (BAT54ADW/CDW/SDW/BRW/TW)

FIG.1-TYPICAL FORWARD

CHARACTERISTICS

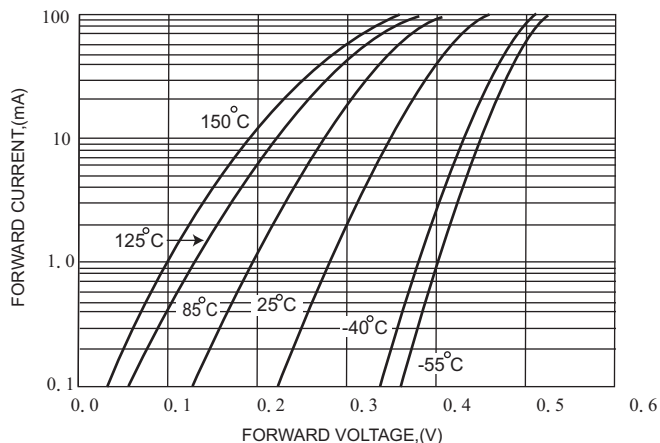


FIG.2 - TYPICAL REVERSE

CHARACTERISTICS

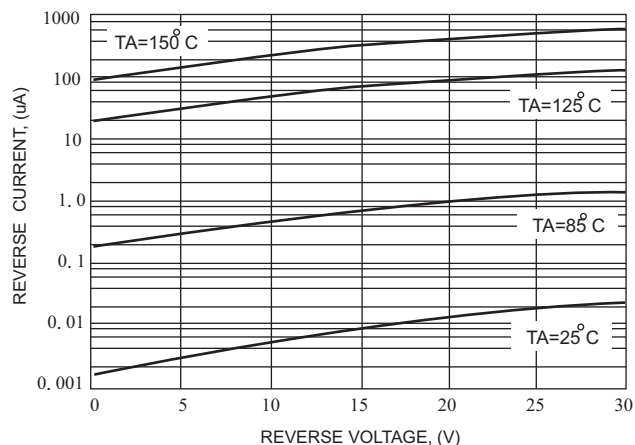
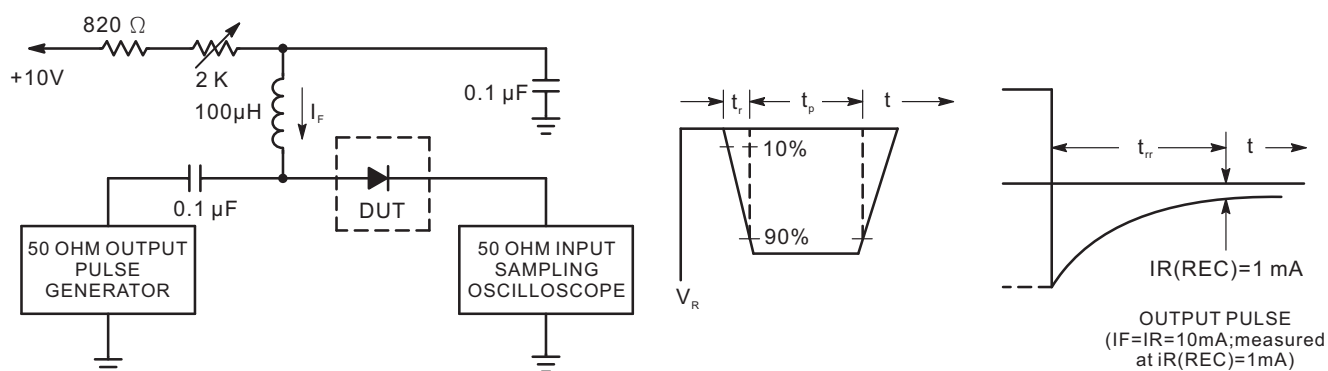
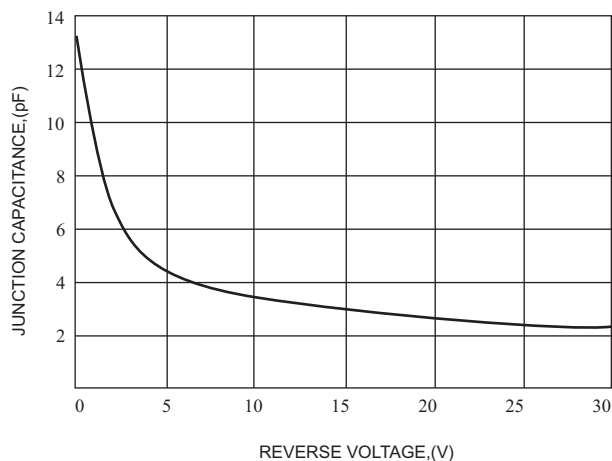


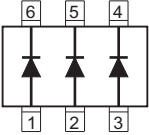
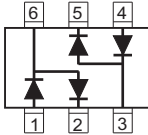
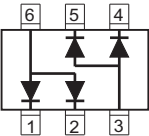
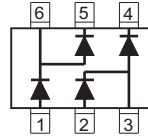
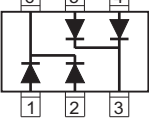
FIG.3-TYPICAL JUNCTION CAPACITANCE



- Notes : 1. A2.0 Kohm variable resistor adjusted for a forward Current (I_F) of 10mA.
2. Input pulse is adjusted so $I_R(\text{peak})$ is equal to 10 mA.
3. $t_p \gg t_{rr}$.

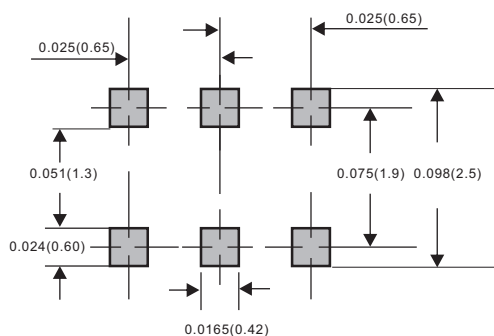
Recovery Time Equivalent Test Circuit

BAT54ADW / BAT54CDW / BAT54SDW / BAT54BRW / BAT54TW**Pinning information**

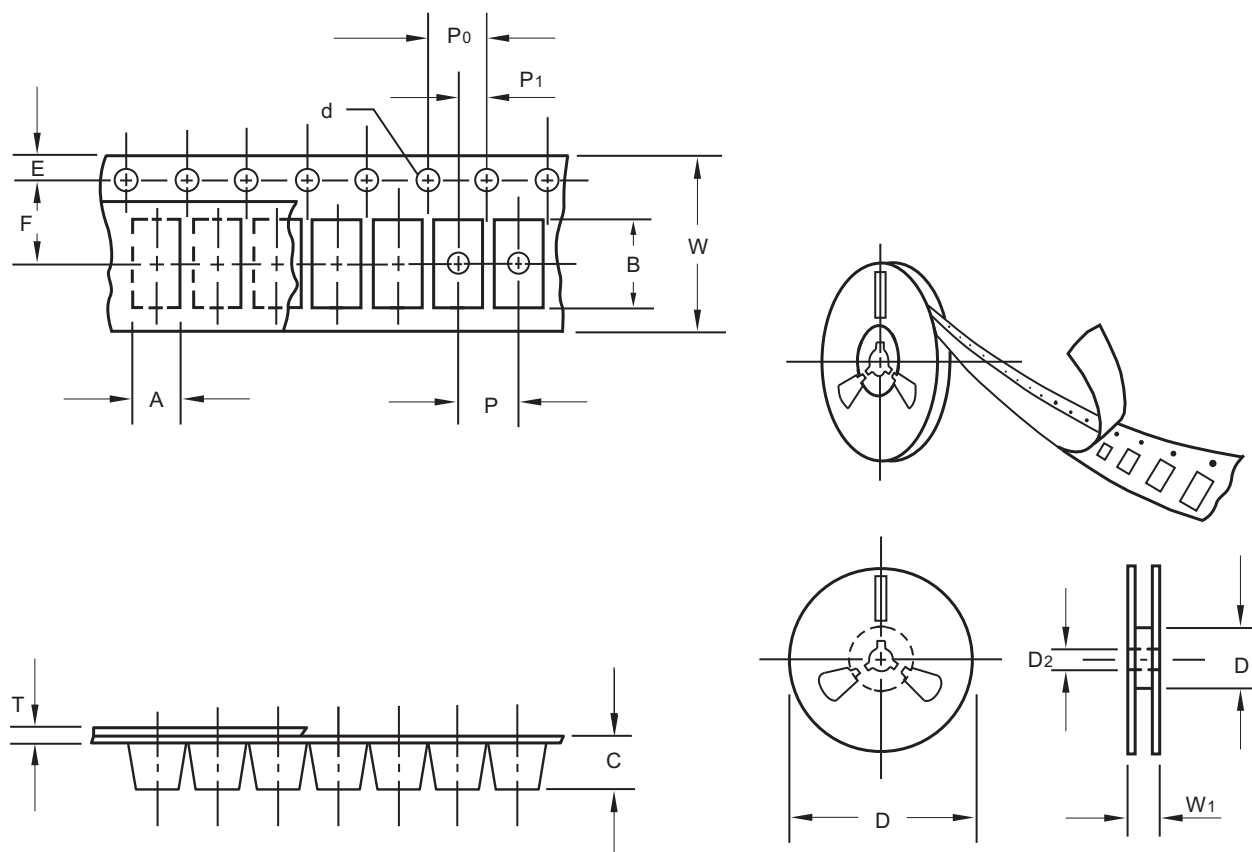
Type number	Marking code	Symbol	Type number	Marking code	Symbol
BAT54TW	KL A		BAT54SDW	KL 8	
BAT54ADW	KL 6		BAT54BRW	KL B	
BAT54CDW	KL 7				

Suggested solder pad layout

SOT-363



Dimensions in inches and (millimeters)

BAT54ADW / BAT54CDW / BAT54SDW / BAT54BRW / BAT54TW**Packing information**

unit:mm

Item	Symbol	Tolerance	SOT-363
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.50
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	62.00
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 accordance with EIA standard RS-481-A and specifications listed above.

BAT54ADW / BAT54CDW / BAT54SDW / BAT54BRW / BAT54TW

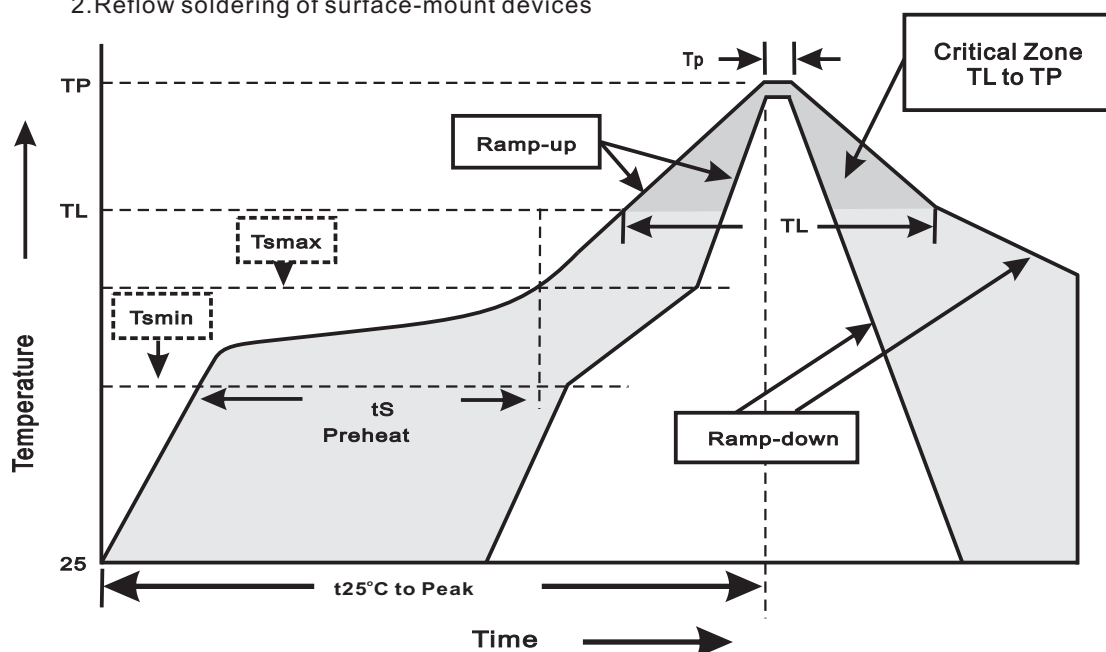
Reel packing

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-363	7"	3000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.50

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

BAT54ADW / BAT54CDW / BAT54SDW / BAT54BRW / BAT54TW**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 $T_J=125^{\circ}\text{C}$ 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. 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	Peak Forward Current at $t=1\text{s}$	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A=85^{\circ}\text{C}$, $\text{RH}=85\%$ for 1000hrs.	MIL-STD-750D METHOD-1021
11. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031