

BC847BPDW

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BC847BPDW

Dual Transistor (NPN + PNP)

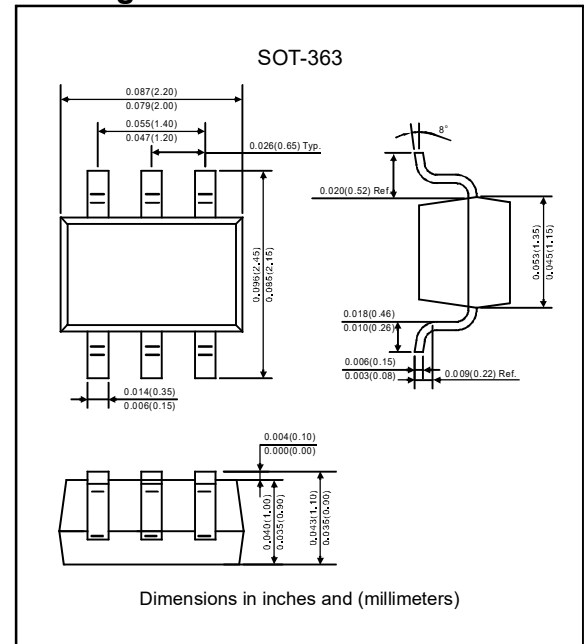
Features

- Epitaxial die construction.
- Two isolated NPN/PNP (BC847BW + BC857BW) Transistors in one package.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228.
- Suffix "-H" indicates Halogen free part, ex. BC847BPDW-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 TR1 (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector to base voltage	V_{CBO}	50	V
Collector to Emitter Voltage	V_{CEO}	45	V
Emitter to base voltage	V_{EBO}	6	V
Collector current	I_C	100	mA
Total power dissipation	P_C	200	mW
Junction temperature	T_J	+150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics of TR1 (At $T_A=25^\circ\text{C}$ unless otherwise)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector to base breakdown voltage	$I_C=10\mu\text{A}$, $I_E=0$	BV_{CBO}	50			V
Collector to emitter breakdown voltage	$I_C=10\text{mA}$, $I_B=0$	BV_{CEO}	45			V
Emitter to base breakdown voltage	$I_E=1\mu\text{A}$, $I_C=0\text{V}$	BV_{EBO}	6			V
Collector cut-off current	$V_{CB}=30\text{V}$, $I_E=0$	I_{CBO}			15	nA
Emitter cut-off current	$V_{EB}=5\text{V}$, $I_C=0$	I_{EBO}			15	nA
DC current gain	$V_{CE}=5\text{V}$, $I_C=2\text{mA}$	h_{FE}	200		450	
Collector-Emitter saturation voltage	$I_C=10\text{mA}$, $I_B=500\mu\text{A}$	$V_{CE(sat)}$			0.25	V
	$I_C=100\text{mA}$, $I_B=5\text{mA}$				0.6	
Base-emitter saturation voltage	$I_C=10\text{mA}$, $I_B=2\text{mA}$	$V_{BE(sat)}$		0.7		V
	$I_C=100\text{mA}$, $I_B=10\text{mA}$			0.9		
Base-emitter voltage	$V_{CE}=5\text{V}$, $I_C=2\text{mA}$	$V_{BE(ON)}$	0.58		0.7	V
	$V_{CE}=5\text{V}$, $I_C=10\text{mA}$				0.72	
Current gain bandwidth product	$V_{CE}=5\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	f_T	100			MHz
Output capacitance	$V_{CB}=10\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{ob}			6.0	pF
Noise figure	$V_{CE}=5\text{V}$, $I_C=200\mu\text{A}$, $f=1\text{KHz}$, $R_g=2\text{K}\Omega$, $\Delta f=200\text{Hz}$	NF			10	dB

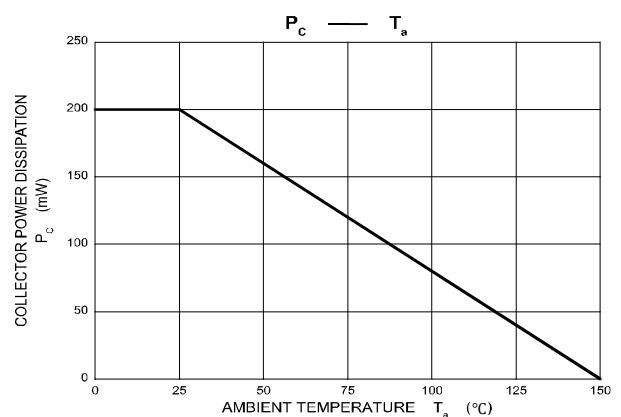
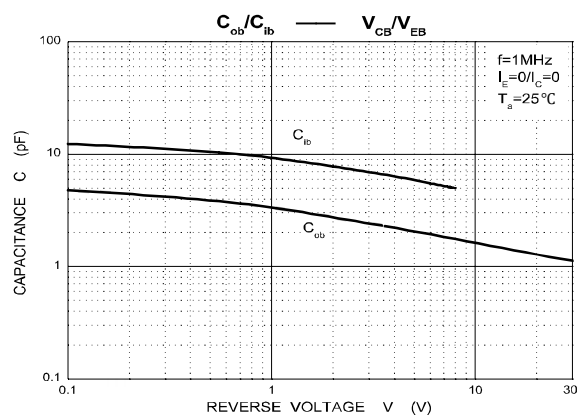
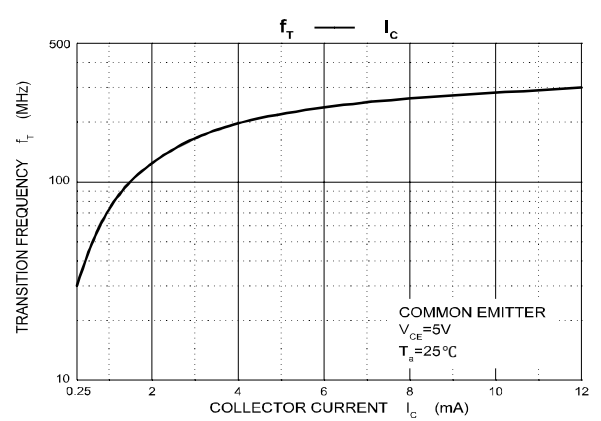
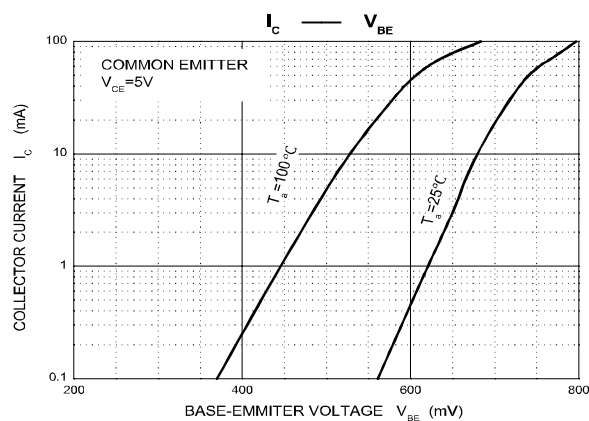
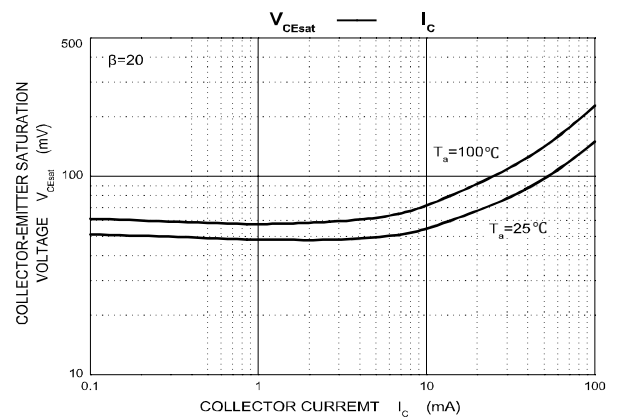
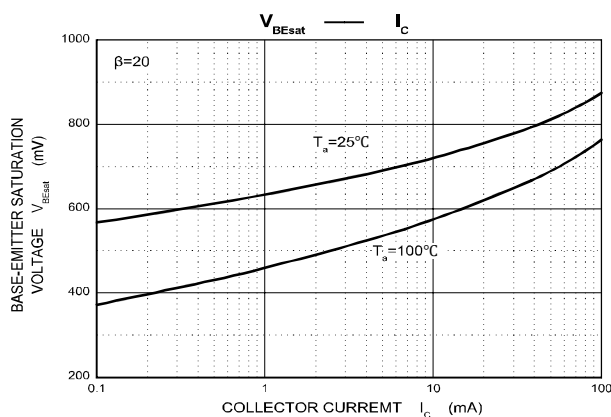
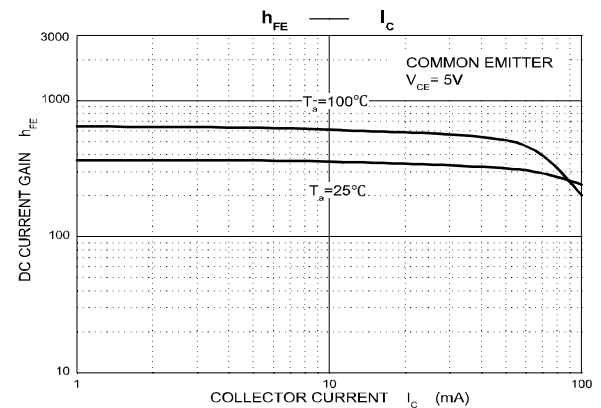
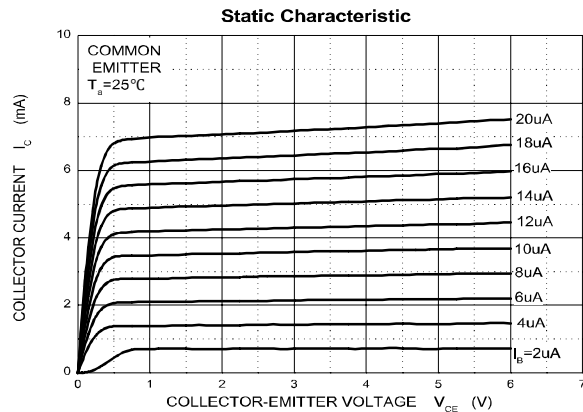
BC847BPDW**Maximum ratings TR2** (At $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector to base voltage	$-V_{CBO}$	50	V
Collector to Emitter Voltage	$-V_{CEO}$	45	V
Emitter to base voltage	$-V_{EBO}$	5	V
Collector current	$-I_C$	100	mA
Total power dissipation	P_C	200	mW
Junction temperature	T_J	+150	$^{\circ}\text{C}$
Storage temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

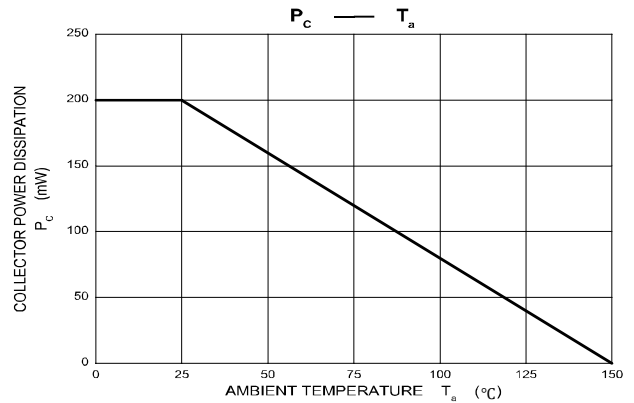
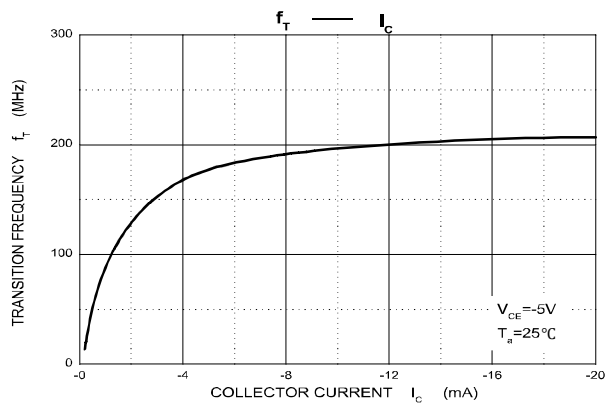
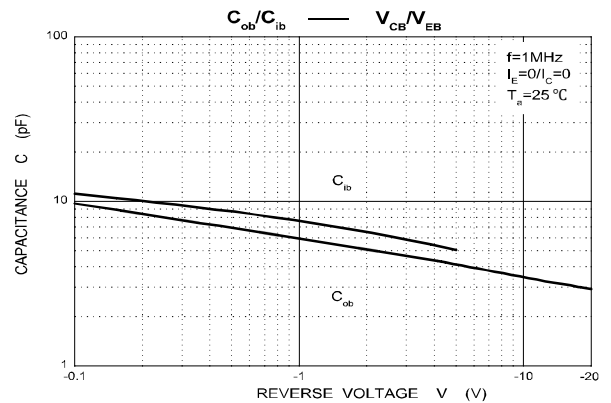
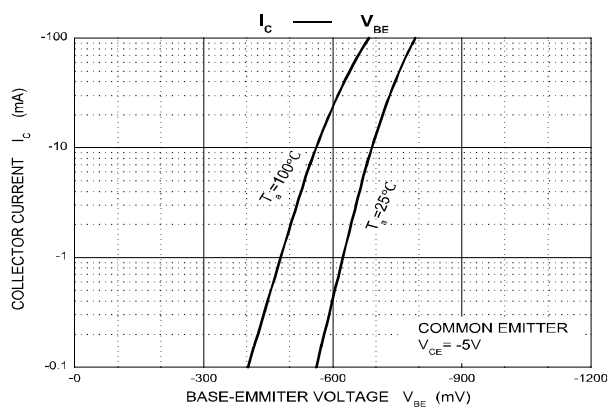
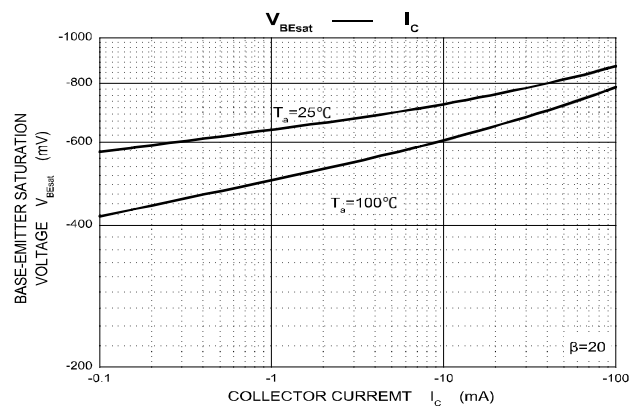
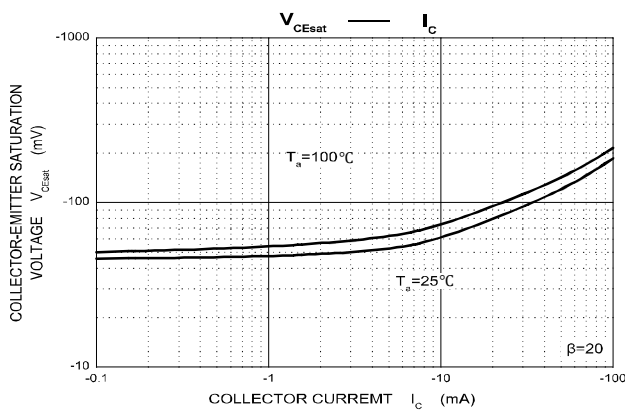
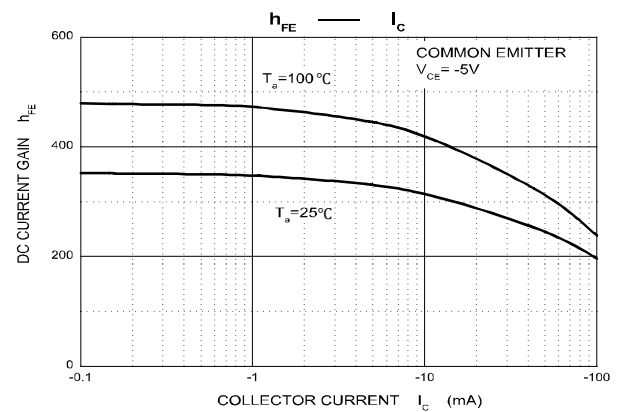
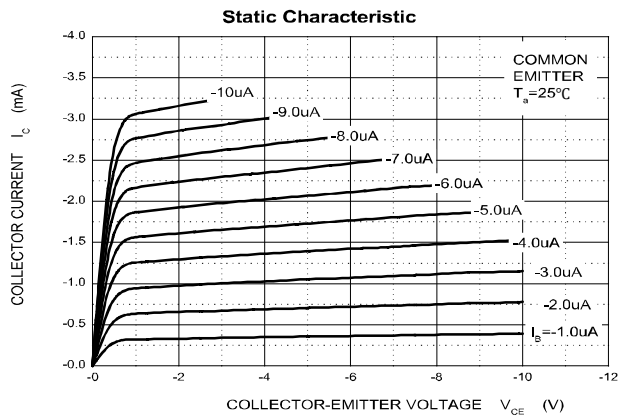
Electrical characteristics of TR2 (At $T_A=25^{\circ}\text{C}$ unless otherwise)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector to base breakdown voltage	$-I_C=10\mu\text{A}, I_E=0$	$-BV_{CBO}$	50			V
Collector to emitter breakdown voltage	$-I_C=10\text{mA}, I_B=0$	$-BV_{CEO}$	45			V
Emitter to base breakdown voltage	$-I_E=1\mu\text{A}, I_C=0\text{V}$	$-BV_{EBO}$	5			V
Collector cut-off current	$-V_{CB}=30\text{V}, I_E=0$	$-I_{CBO}$			15	nA
Emitter cut-off current	$-V_{EB}=5\text{V}, I_C=0$	$-I_{EBO}$			15	nA
DC current gain	$-V_{CE}=5\text{V}, -I_C=2\text{mA}$	h_{FE}	200		475	
Collector-Emitter saturation voltage	$-I_C=10\text{mA}, -I_B=500\mu\text{A}$	$-V_{CE(sat)}$			0.3	V
	$-I_C=100\text{mA}, -I_B=5\text{mA}$				0.65	
Base-emitter saturation voltage	$-I_C=10\text{mA}, -I_B=500\mu\text{A}$	$-V_{BE(sat)}$		0.7		V
	$-I_C=100\text{mA}, -I_B=5\text{mA}$				0.95	
Base-emitter voltage	$-V_{CE}=5\text{V}, -I_C=2\text{mA}$	$-V_{BE(ON)}$	0.6		0.75	V
	$-V_{CE}=5\text{V}, -I_C=10\text{mA}$				0.82	
Current gain bandwidth product	$-V_{CE}=5\text{V}, -I_C=10\text{mA}, f=100\text{MHz}$	f_T	100			MHZ
Output capacitance	$-V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$	C_{ob}			4.5	pF
Noise figure	$-V_{CE}=5\text{V}, -I_C=200\mu\text{A}, f=1\text{KHz}, R_g=2\text{K}\Omega, \Delta f=200\text{HZ}$	NF			10	dB

Rating and characteristic curves (BC847BPDW / TR1)

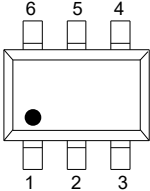
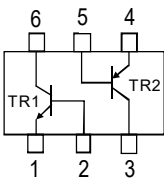


Rating and characteristic curves (BC847BPDW / TR2)



BC847BPDW

Pinning information

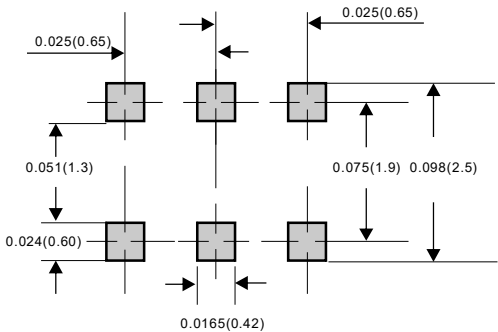
Pin	Simplified outline	Symbol
BC847BPDW		

Marking

Type number	Marking code
BC847BPDW	7P

Suggested solder pad layout

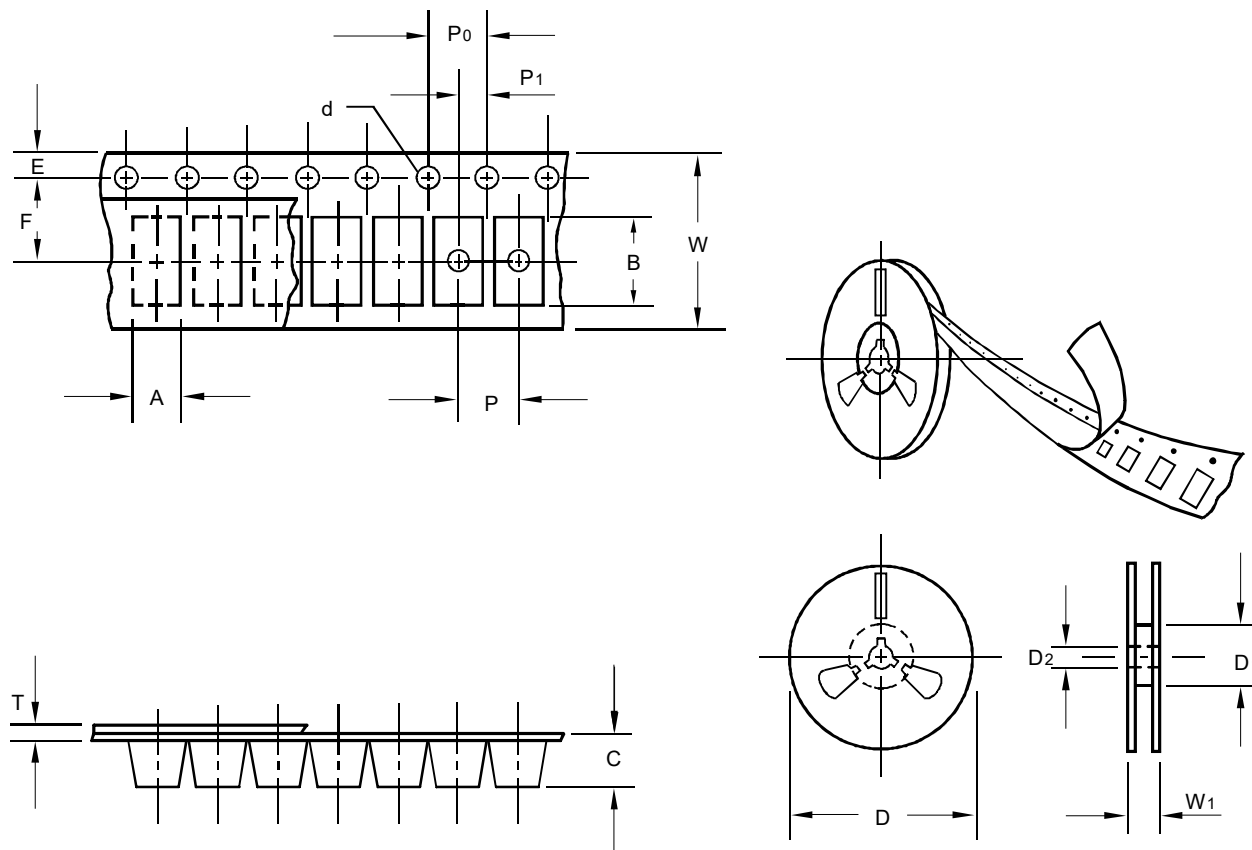
SOT-363



Dimensions in inches and (millimeters)

BC847BPDW

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	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
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

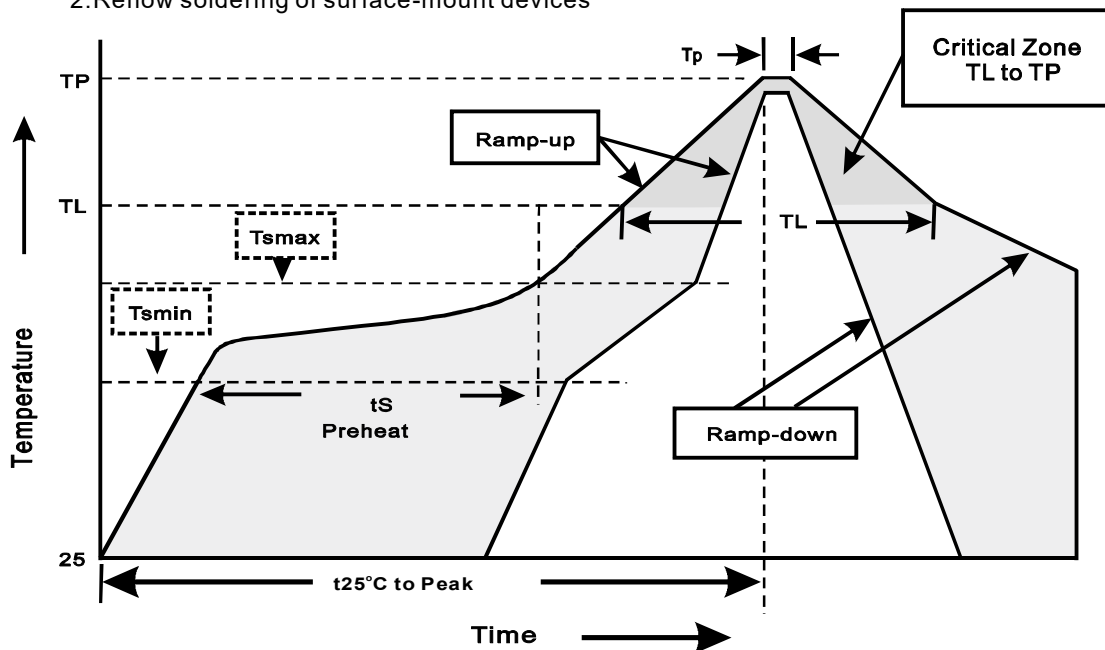
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BC847BPDW**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"	3,000	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 _{smmin}) - Temperature Max(T _{smmax}) - Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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