

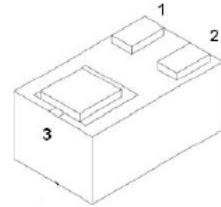
## FEATURE

- Low Current
- Low Voltage
- Ultra Small SMD Plastic Package
- Complementary to TP847LED03
- For General-purpose Switching and Amplification

## MARKING: D2



## WBFBP-03E



1. BASE
2. EMITTER
3. COLLECTOR

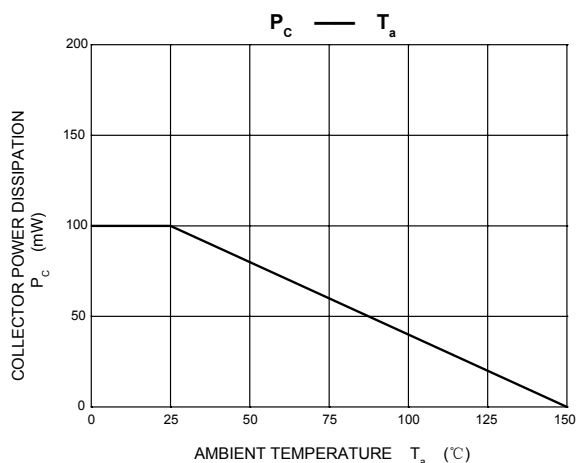
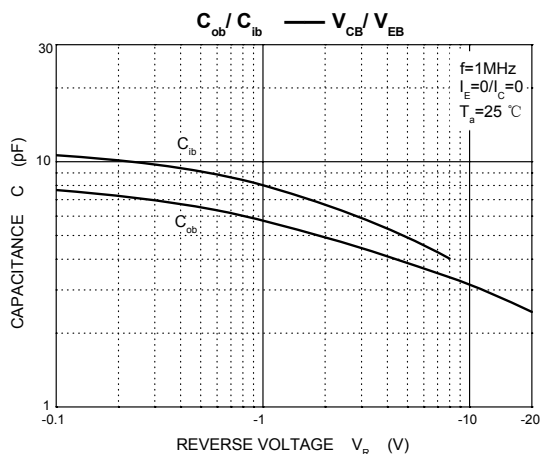
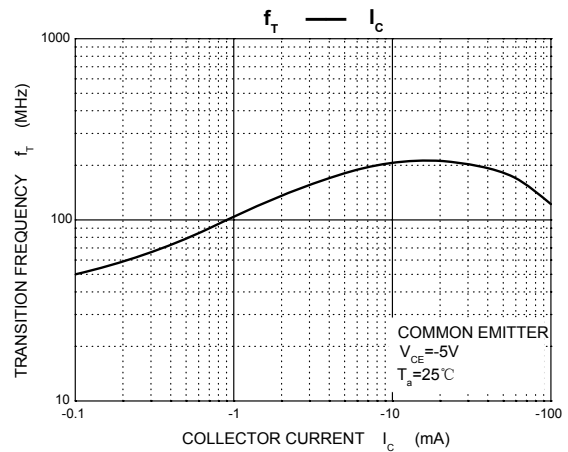
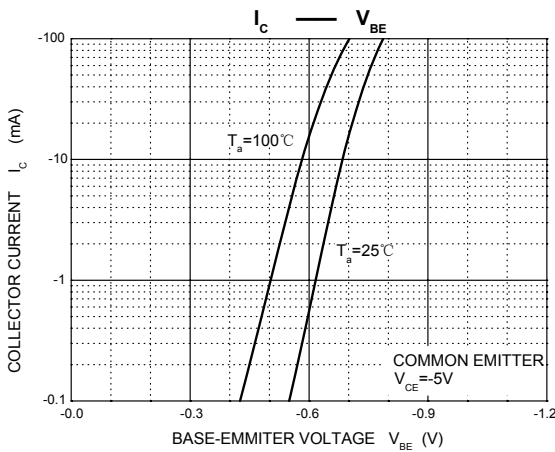
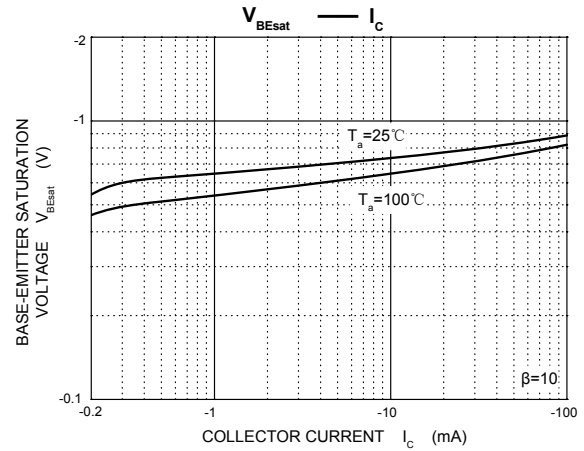
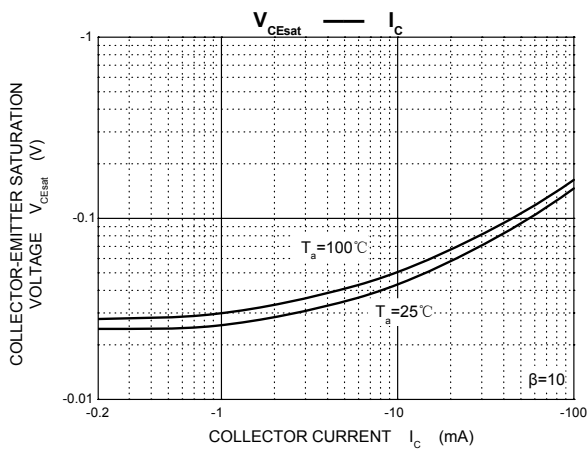
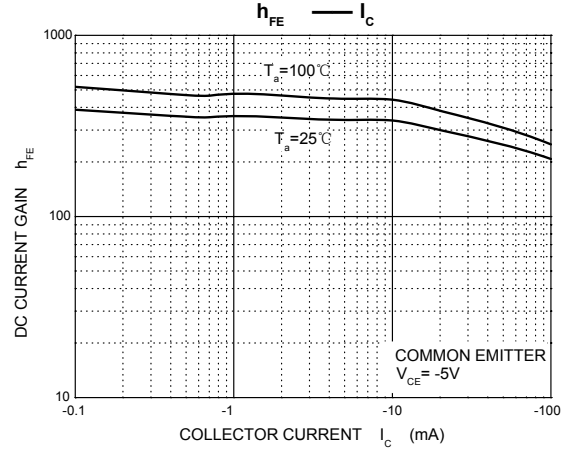
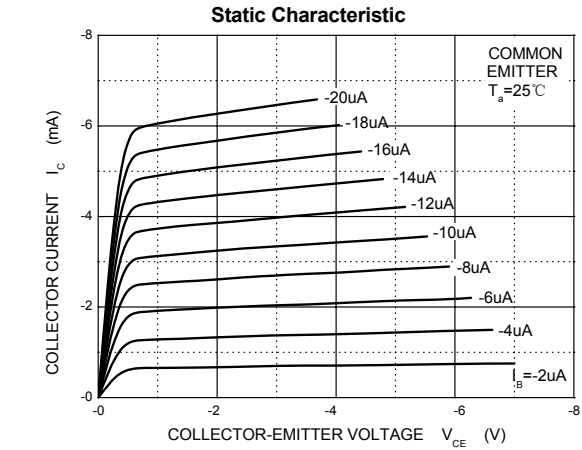
## MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	-50	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-45	V
V <sub>EBO</sub>	Emitter-Base Voltage	-6	V
I <sub>C</sub>	Collector Current	-100	mA
P <sub>C</sub>	Collector Power Dissipation	100	mW
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	1250	°C/W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55~+150	°C

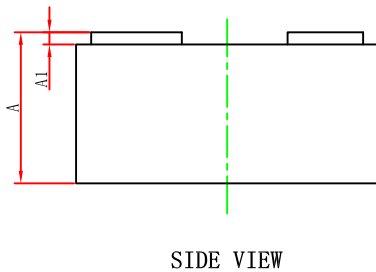
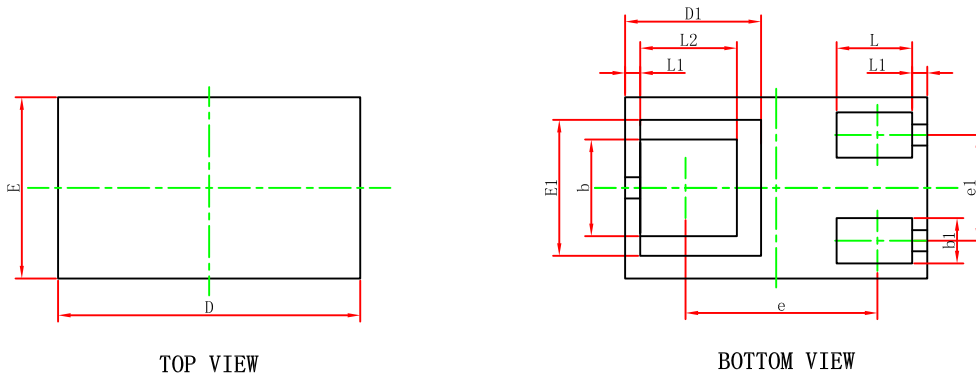
## ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-10μA, I <sub>E</sub> =0	-50			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-10mA, I <sub>B</sub> =0	-45			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-6			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =-30V, I <sub>E</sub> =0			-15	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =-5V, I <sub>C</sub> =0			-15	nA
DC current gain	h <sub>FE</sub> *	V <sub>CE</sub> =-5V, I <sub>C</sub> =-2mA	220		475	
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub> *	I <sub>C</sub> =-10mA, I <sub>B</sub> =-0.5mA			-0.2	V
	V <sub>CE(sat)2</sub> *	I <sub>C</sub> =-100mA, I <sub>B</sub> =-5mA			-0.4	V
Base-emitter saturation voltage	V <sub>BE(sat)1</sub> *	I <sub>C</sub> =-10mA, I <sub>B</sub> =-0.5mA		-0.7		V
	V <sub>BE(sat)2</sub> *	I <sub>C</sub> =-100mA, I <sub>B</sub> =-5mA		-0.9		V
Base-emitter voltage	V <sub>BE1</sub> *	V <sub>CE</sub> =-5V, I <sub>C</sub> =-2mA			-0.7	V
	V <sub>BE2</sub> *	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA			-0.77	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA, f=100MHz	100			MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHz		2.5		pF
Noise figure	NF	V <sub>CE</sub> =-5V, I <sub>E</sub> =-0.2mA, f=1kHz, R <sub>S</sub> =1kΩ, B=200Hz		10		dB

\*Pulse test: pulse width ≤300μs, duty cycles ≤ 2.0%.

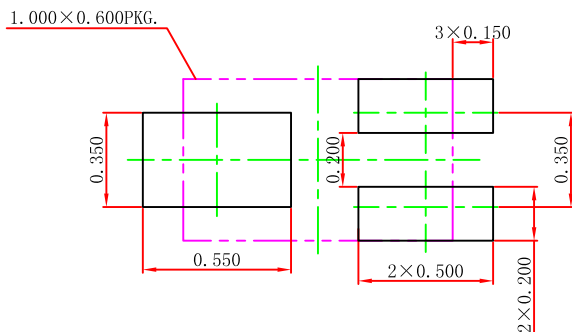


**WBFBP-03E Package Outline Dimensions**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.010	0.100	0.000	0.004
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
D1	0.450REF.		0.018REF.	
E1	0.450REF.		0.018REF.	
b	0.270	0.370	0.011	0.015
b1	0.100	0.200	0.004	0.008
e	0.635REF.		0.025REF.	
e1	0.300	0.400	0.012	0.016
L	0.200	0.300	0.008	0.012
L1	0.050REF.		0.002REF.	
L2	0.270	0.370	0.011	0.015

**WBFBP-03E Suggested Pad Layout**

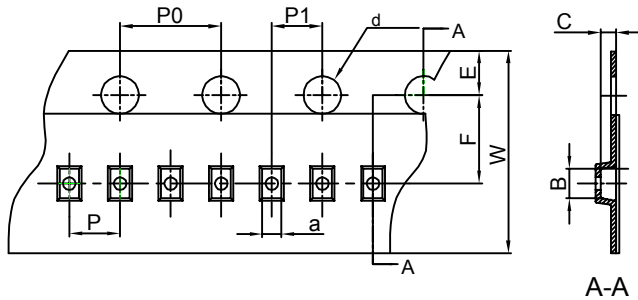


**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050$ mm.
3. The pad layout is for reference purposes only.

**WBFBP-03E(1.0×0.6×0.5) Tape and Reel**

**WBFBP-03E(1.0×0.6×0.5) Embossed Carrier Tape**

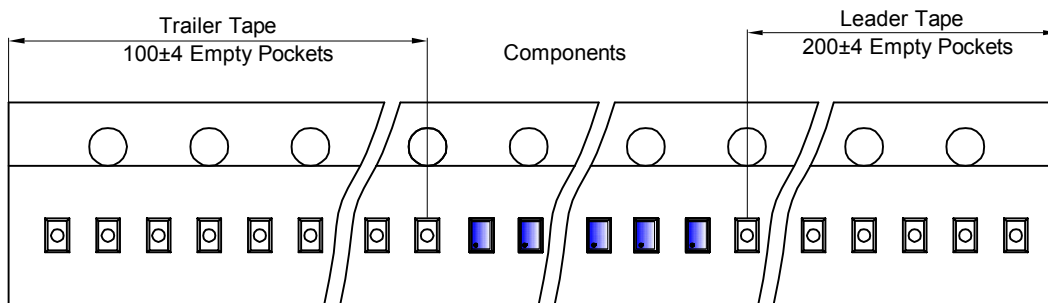


**Packaging Description:**

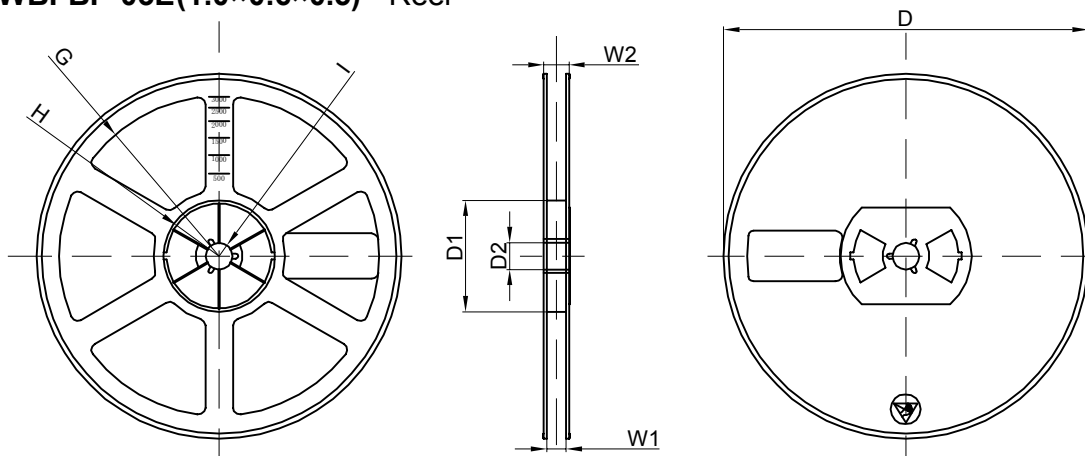
**WBFBP-03E(1.0×0.6×0.5)** parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 10,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	a	B	C	d	E	F	P0	P	P1	W
<b>WBFBP-03E (1.0×0.6×0.5)</b>	0.66	1.15	0.66	Ø1.50	1.75	3.50	4.00	2.00	2.00	8.00

**WBFBP-03E(1.0×0.6×0.5) Tape Leader and Trailer**



**WBFBP-03E(1.0×0.6×0.5) Reel**



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
10000 pcs	7 inch	150,000 pcs	203×203×195	600,000 pcs	438×438×220	