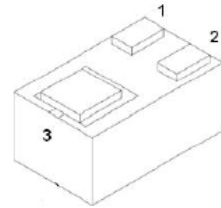


**WBFBP-03E Plastic-Encapsulate Transistors****TK3906LED03** TRANSISTOR (PNP)**FEATURE**

- Ultra Small SMD Plastic Package
- Epitaxial Planar Die Construction
- Complementary to TK3904LED03
- Available in Lead Free Version

APPLICATION

- General-Purpose Amplification and Switching Transistor for Portable Equipment : (i.e. Mobile phone, MP3, MD, CD-ROM, DVD-ROM, Note book PC, etc.)

WBFBP-03E

1. BASE
2. EMITTER
3. COLLECTOR

MARKING: 3N**Top View****MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)**

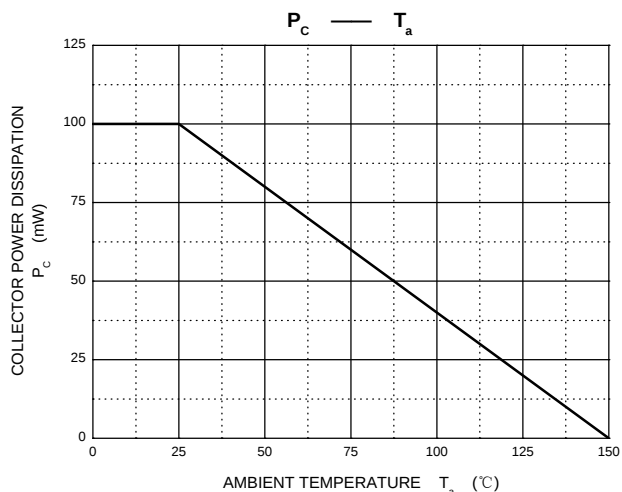
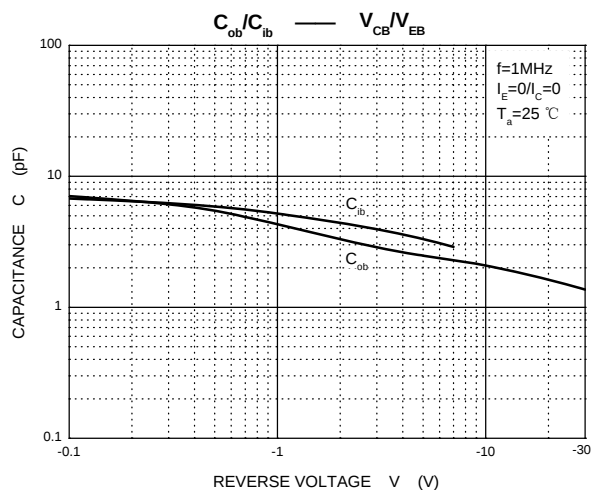
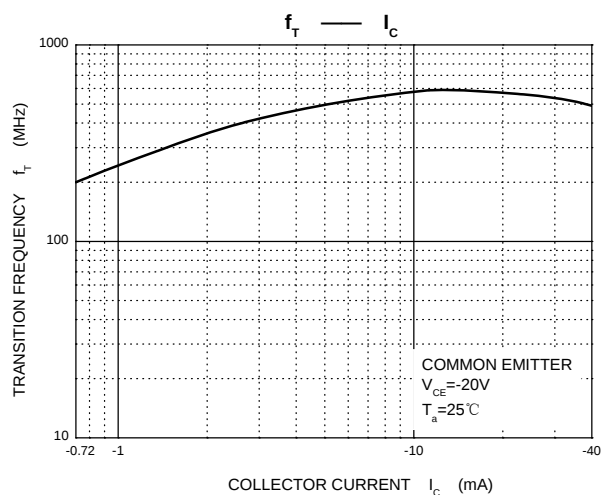
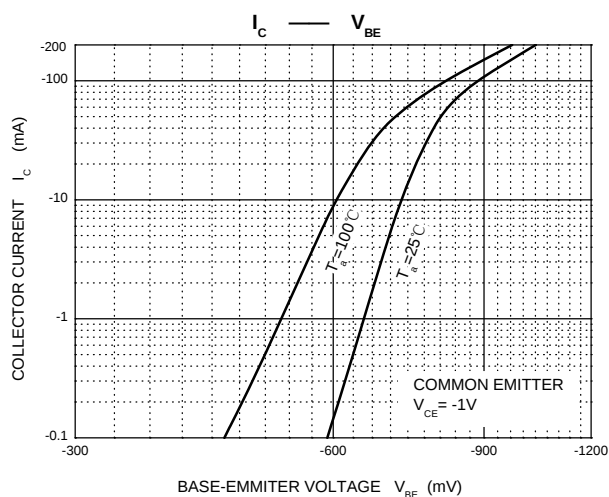
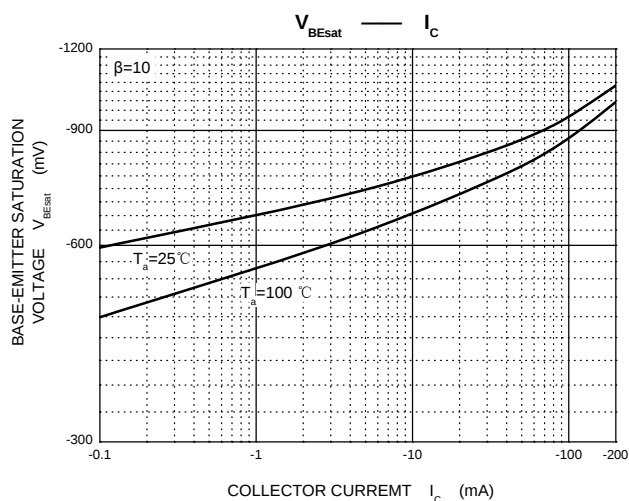
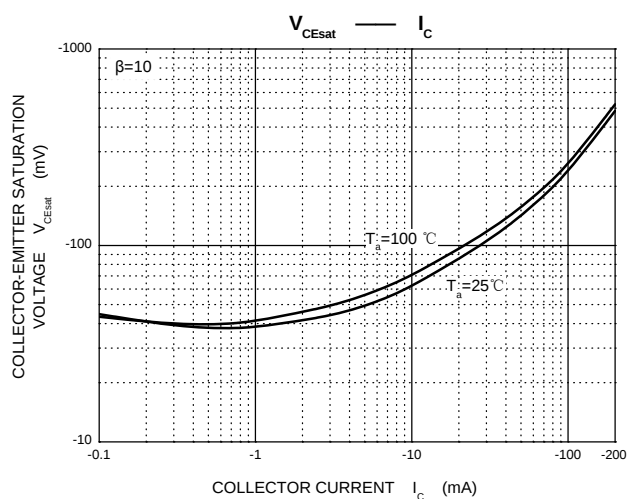
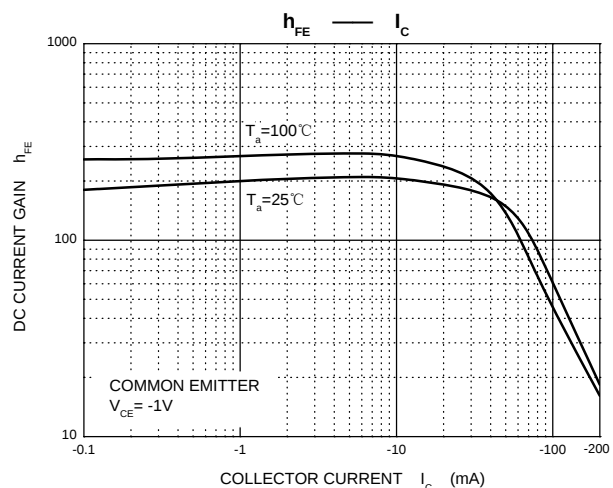
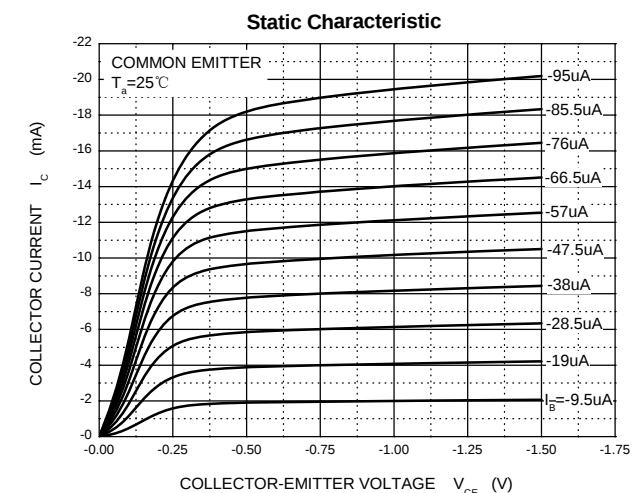
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-200	mA
P_C	Collector Power Dissipation	100	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	1250	$^{\circ}\text{C/W}$
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

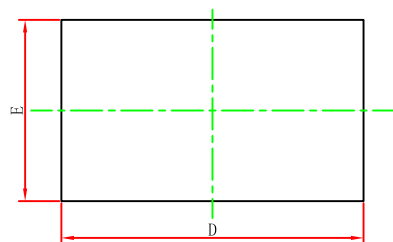
Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	-5			V
Collector cut-off current	I_{CEX}	$V_{CE}=-30\text{V}, V_{EB(off)}=-3\text{V}$			-50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0$			-100	nA
DC current gain	$h_{FE(1)}$	$V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$	60			
	$h_{FE(2)}$	$V_{CE}=-1\text{V}, I_C=-1\text{mA}$	80			
	$h_{FE(3)}$	$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	100		300	
	$h_{FE(4)}$	$V_{CE}=-1\text{V}, I_C=-50\text{mA}$	60			
	$h_{FE(5)}$	$V_{CE}=-1\text{V}, I_C=-100\text{mA}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C=-10\text{mA}, I_B=-1\text{mA}$			-0.25	V

	$V_{CE(sat)2}$	$I_C=-50mA, I_B=-5mA$			-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C=-10mA, I_B=-1mA$	-0.65		-0.85	V
	$V_{BE(sat)2}$	$I_C=-50mA, I_B=-5mA$			-0.95	V
Transition frequency	f_T	$V_{CE}=-20V, I_C=-10mA, f=100MHz$	250			MHz
Collector output capacitance	C_{ob}	$V_{CB}=-5V, I_E=0, f=1MHz$			4.5	pF
Base Input capacitance	C_{ib}	$V_{EB}=-0.5V, I_E=0, f=1MHz$			10	pF
Noise figure	NF	$V_{CE}=-5V, I_E=-0.1mA, f=1kHz,$ $R_G=1k\Omega$			4	dB
Delay time	t_d	$V_{CC}=-3V, V_{BE(OFF)}=0.5V,$ $I_C=-10mA, I_{B1}=-1mA$			35	ns
Rise time	t_r				35	ns
Storage time	t_s	$V_{CC}=-3V, I_C=-10mA,$ $I_{B1}= I_{B2}=-1mA$			225	ns
Fall time	t_f				75	ns

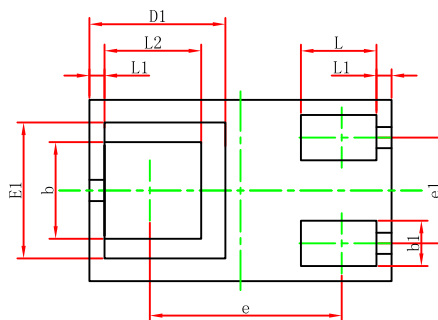
Typical Characteristics



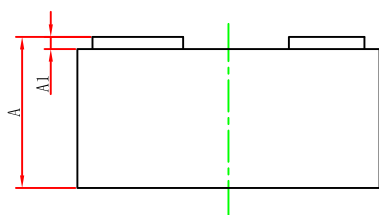
WBFBP-03E Package Outline Dimensions



TOP VIEW



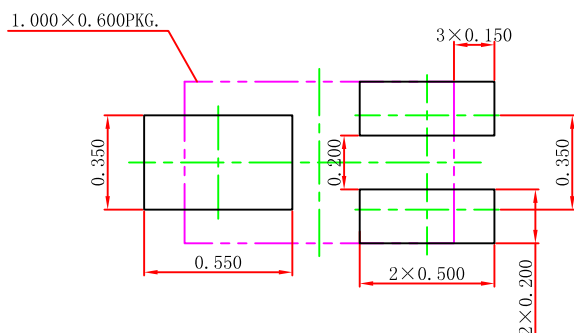
BOTTOM VIEW



SIDE VIEW

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:

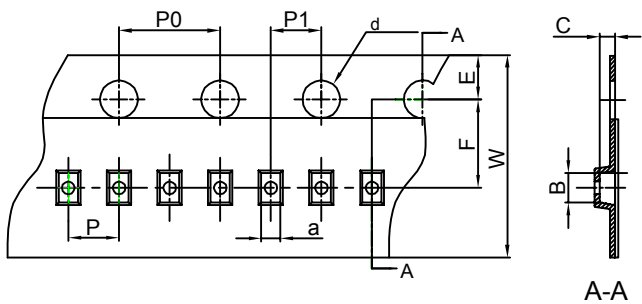
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.050\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

WBFBP-03E(1.0×0.6×0.5) Tape and Reel

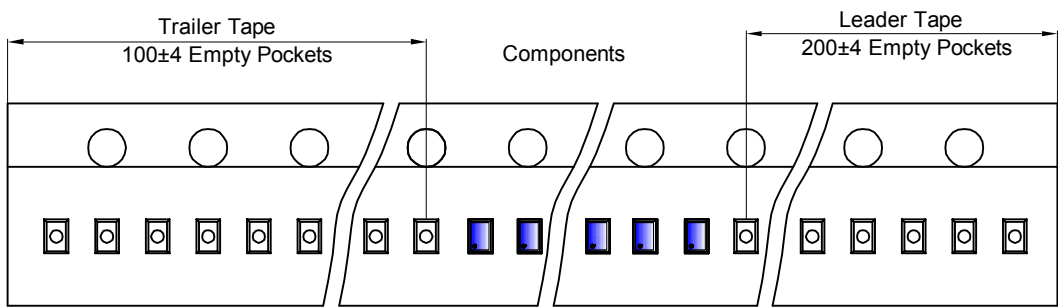
WBFBP-03E(1.0×0.6×0.5) Embossed Carrier Tape



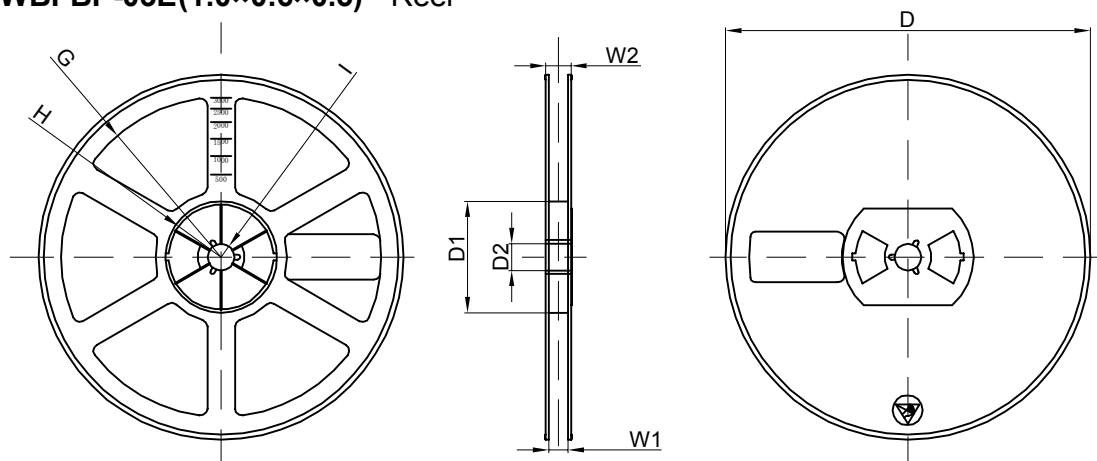
Packaging Description:
WBFBP-03E(1.0×0.6×0.5) parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static 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
WBFBP-03E(1.0×0.6×0.5)	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	