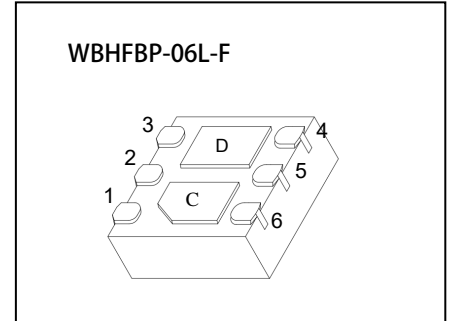


**CJMNT32 PNP Power Transistor with N-MOSFET**

$V_{(BR)DSS}/V_R$	$R_{DS(on)MAX}$	$I_D/I_C$
20V	600mΩ@4.5V	0.8A
	650mΩ@2.5V	
	700mΩ@1.8V	
-32V	/	-1.5A



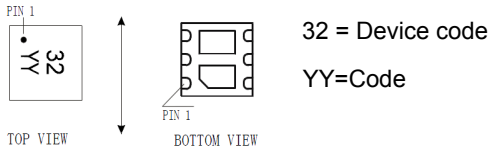
**FEATURE**

- Ultra low collector-to-emitter saturation voltage
- High DC current gain
- Small package WBHFBP-06L-F

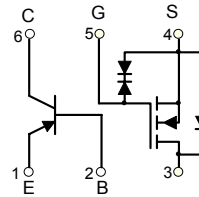
**APPLICATION**

- Charging circuit
- Other power management in portable equipment

**MARKING**



**Equivalent circuit**



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

Symbol	Parameter	Value	Unit
<b>PNP Transistor</b>			
V <sub>CB0</sub>	Collector-Base Voltage	-32	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-32	V
V <sub>EBO</sub>	Emitter-Base Voltage	-6	V
I <sub>C</sub>	Collector Current-Continuous(Note1)	-1.5	A
	Collector Current-Continuous(Note2)	-0.6	A
I <sub>CM</sub>	Collector Current-Pulse(Note3)	-4	A
<b>N-MOSFET</b>			
V <sub>DS</sub>	Drain-Source Voltage	20	V
V <sub>GS</sub>	Gate-Source Voltage	±5	V
I <sub>D</sub>	Continuous Drain Current (note 1)	0.8	A
	Collector Current-Continuous(Note2)	0.69	A
I <sub>DM</sub>	Collector Current-Pulse(Note3)	1.4	A
<b>Power Dissipation, Temperature and Thermal Resistance</b>			
P <sub>D</sub>	PowerDissipation	0.7	W
P <sub>C</sub>	Power Dissipation (T <sub>c</sub> =25°C ,Note1)	2.5	W
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	178.6	°C/W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55~+150	°C
T <sub>L</sub>	Lead Temperature	260	°C

## ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>PNP Transistor</b>						
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-1\text{mA}, I_E=0$	-32			V
Collector-emitter breakdown	$V_{(BR)CEO}$	$I_C=-10\text{mA}, I_B=0$	-32			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}, I_C=0$	-6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-30\text{V}, I_E=0$			-0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-5\text{V}, I_C=0$			-0.1	$\mu\text{A}$
DC current gain	$h_{FE}$	$V_{CE}=-2\text{V}, I_C=-0.5\text{A}$	100		300	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-0.5\text{A}, I_B=-50\text{mA}$			-0.35	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=-0.5\text{A}, I_B=-50\text{mA}$			-1.5	V
Base-emitter voltage	$V_{BE(on)}$	$V_{CE}=-2\text{V}, I_C=-500\text{mA}$			-1.1	V
<b>N-MOSFET</b>						
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	20			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 16\text{V}, V_{GS} = 0\text{V}$			100	nA
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 5\text{V}, V_{DS} = 0\text{V}$			$\pm 1$	$\mu\text{A}$
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.44		1.1	V
Drain-source on-resistance(note 3)	$R_{DS(on)}$	$V_{GS} = 4.5\text{V}, I_D = 0.55\text{A}$		250	600	$\text{m}\Omega$
		$V_{GS} = 2.5\text{V}, I_D = 0.5\text{A}$		330	650	$\text{m}\Omega$
		$V_{GS} = 1.8\text{V}, I_D = 0.35\text{A}$		550	700	$\text{m}\Omega$
Diode forward voltage (note 3)	$V_{SD}$	$I_S = 0.35\text{A}, V_{GS} = 0\text{V}$	0.5		1.1	V
<b>DYNAMIC PARAMETERS (note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 100\text{KHz}$		61		pF
Output Capacitance	$C_{oss}$			17		pF
Reverse Transfer Capacitance	$C_{rss}$			10		pF
<b>SWITCHING PARAMETERS (note 4)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GEN}=4.5\text{V}, V_{DD}=10\text{V},$ $I_D=500\text{mA}, R_{GEN}=6\Omega$ $R_L=10\Omega$		33		ns
Turn-on rise time	$t_r$			102		ns
Turn-off delay time	$t_{d(off)}$			790		ns
Turn-off fall time	$t_f$			439		ns
Total Gate Charge	$Q_g$	$V_{DS}=10\text{V}, V_{GS}=4.5\text{V}$ $I_D=0.6\text{A}$		1.15		nC
Gate-Source Charge	$Q_{gs}$			0.15		nC
Gate-Drain Charge	$Q_{gd}$			0.23		nC

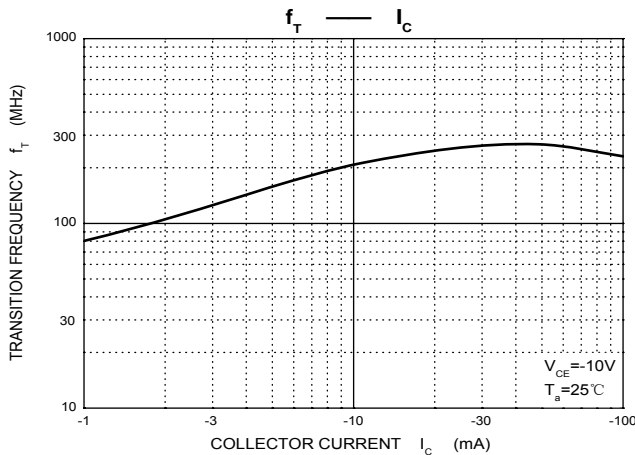
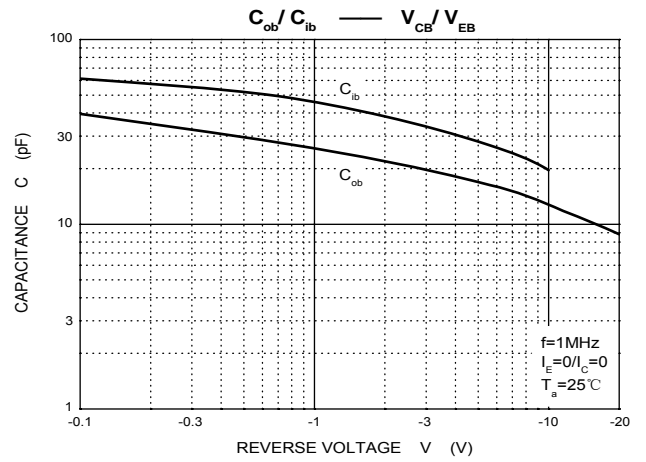
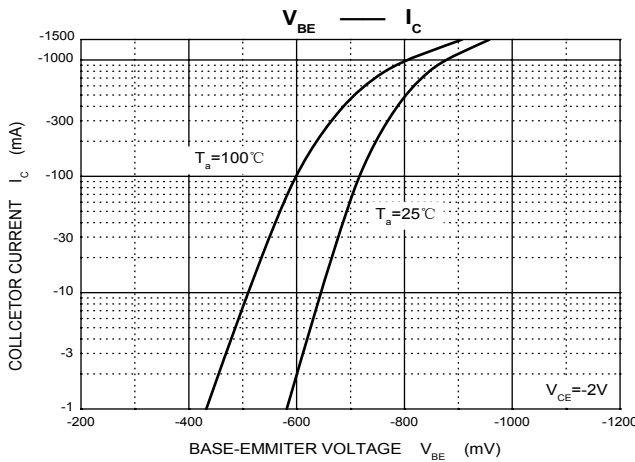
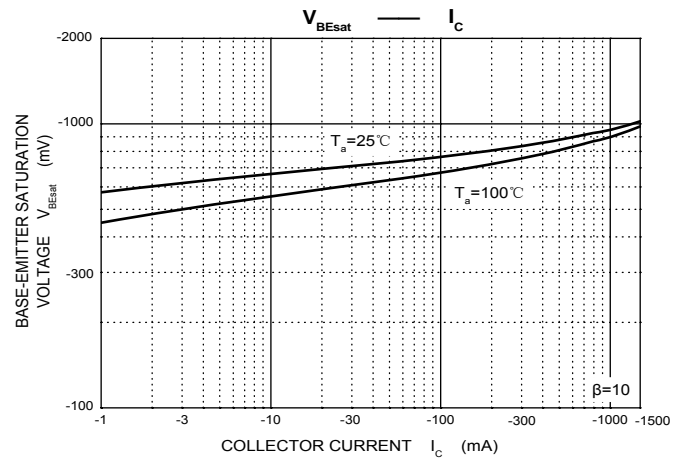
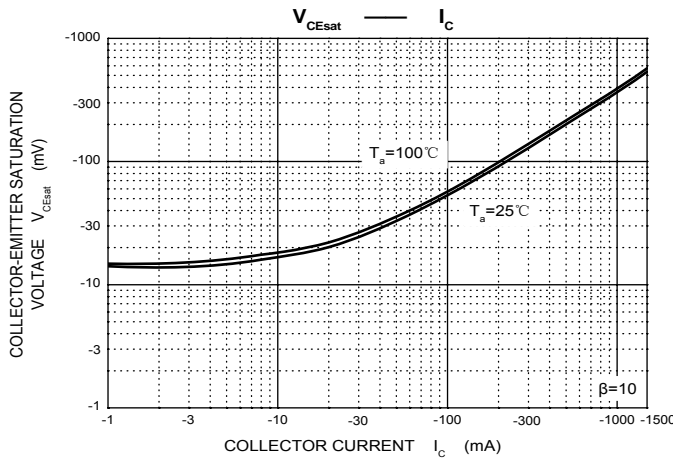
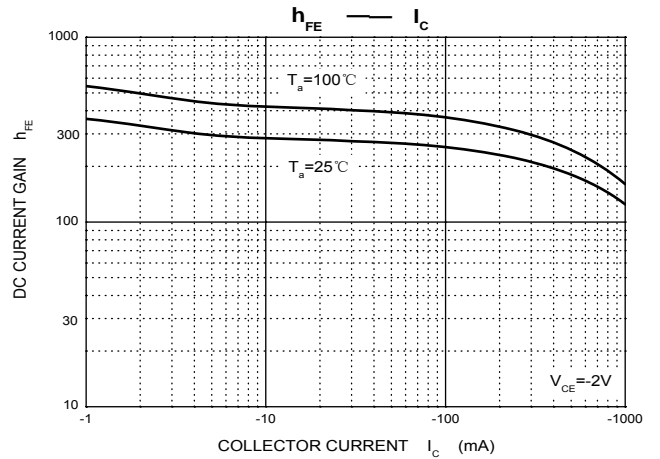
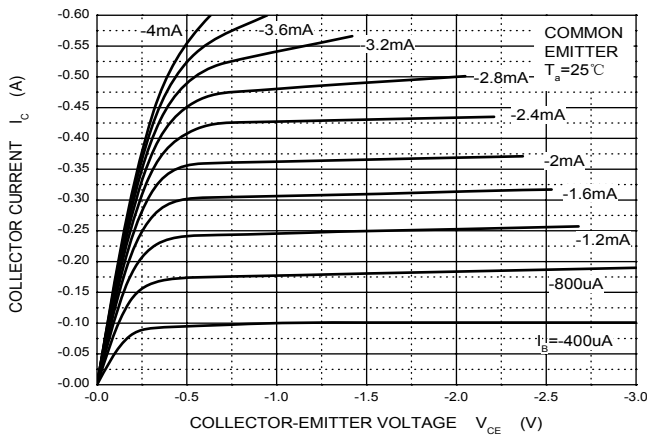
### Notes :

- 1.Surface mounted on FR4 board using 1 square inch pad size,1oz copper.
- 2.Surface mounted on FR4 board using the minimum pad size,1oz copper.
3. Pulse test : Pulse width=300 $\mu\text{s}$ , duty cycle $\leq 2\%$ .
4. These parameters have no way to verify.

# Typical Characteristics

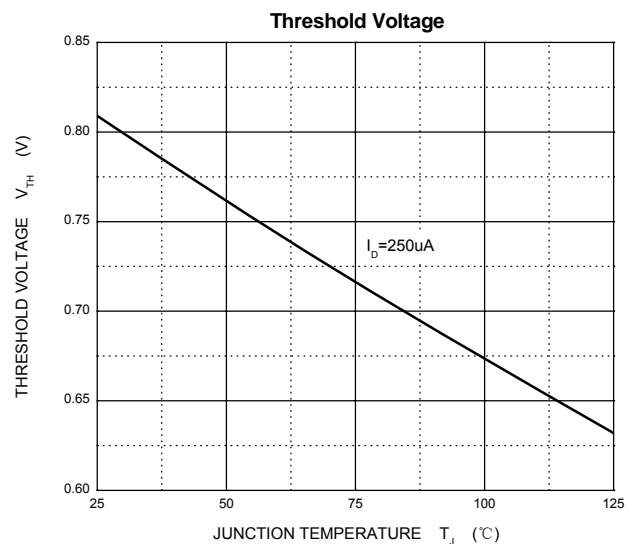
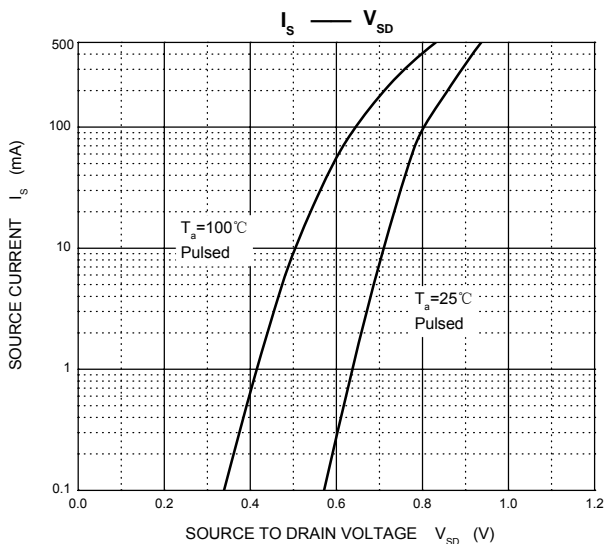
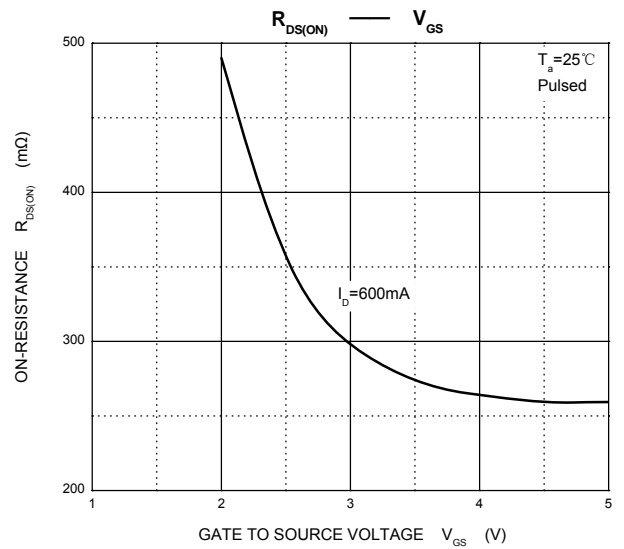
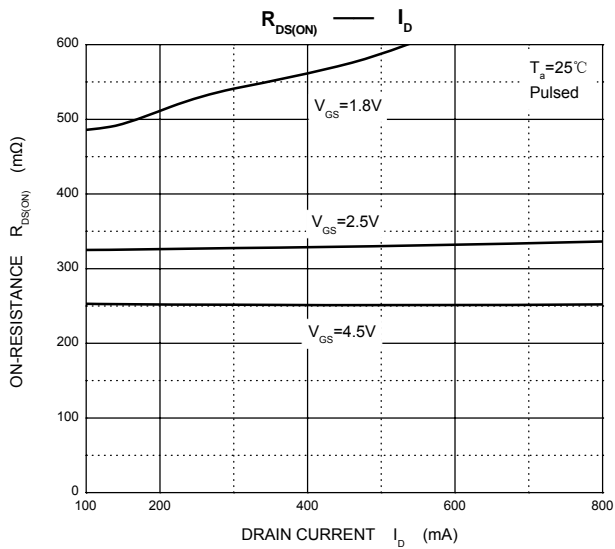
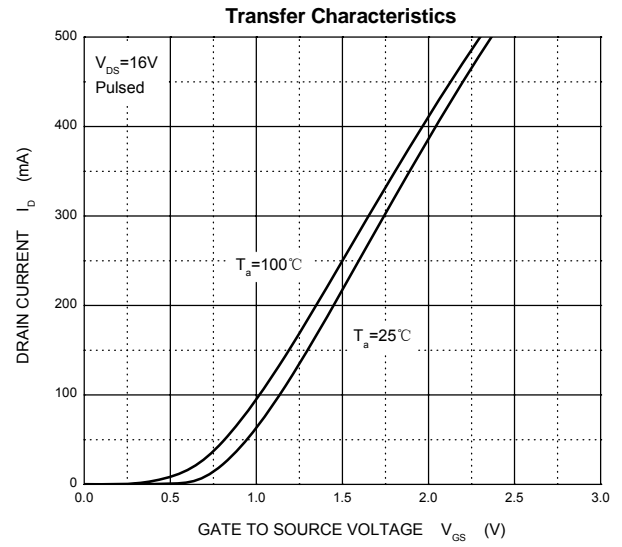
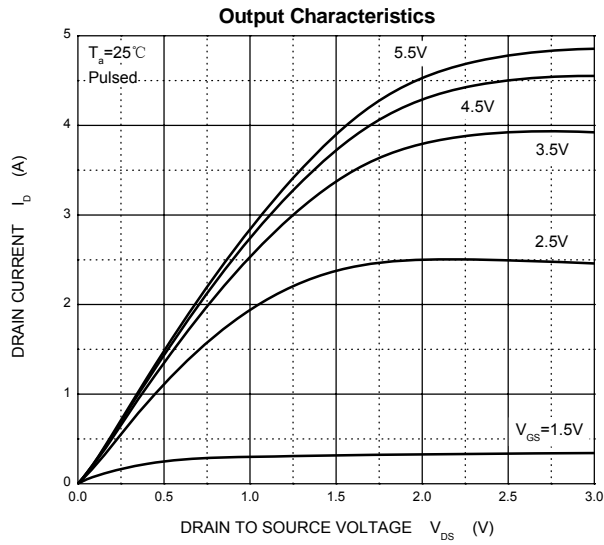
## PNP Transistor

Static Characteristic

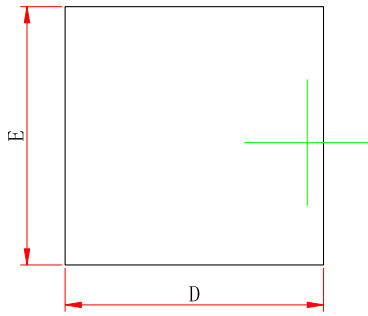


# Typical Characteristics

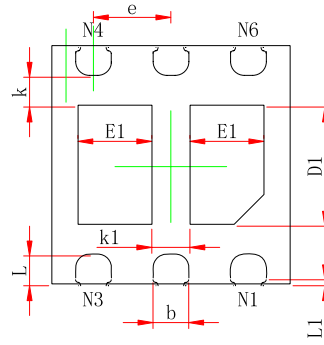
## N-channel Characteristics



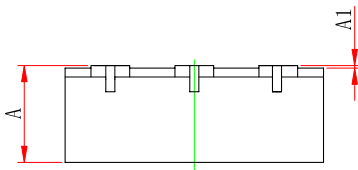
# WBHFBP-06L-F Package Outline Dimensions



TOP VIEW  
[顶视图]



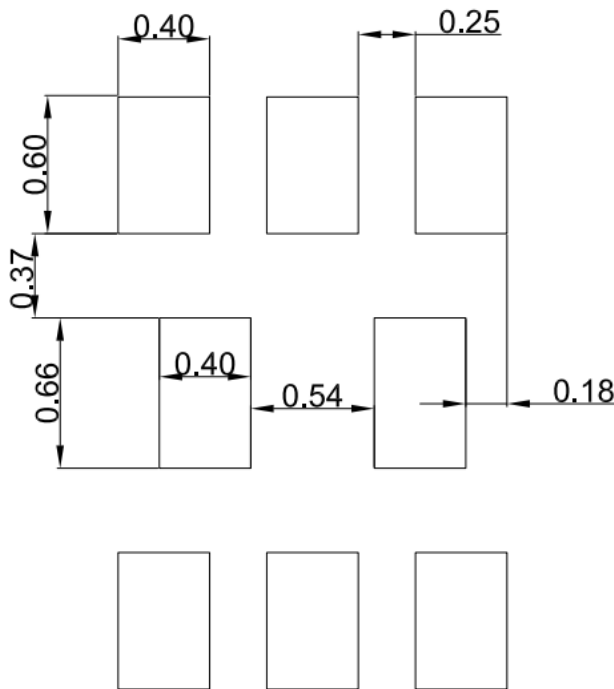
BOTTOM VIEW  
[背视图]



SIDE VIEW  
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
D	1.950	2.050	0.077	0.081
E	1.950	2.050	0.077	0.081
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
b	0.250	0.350	0.010	0.014
e	0.600	0.700	0.024	0.028
k	0.200MIN.		0.008MIN.	
k1	0.320REF.		0.013REF.	
L	0.200	0.300	0.008	0.012
L1	0.050REF.		0.002REF.	

## WBHFBP-06L-F Suggested Pad Layout



**Note:**

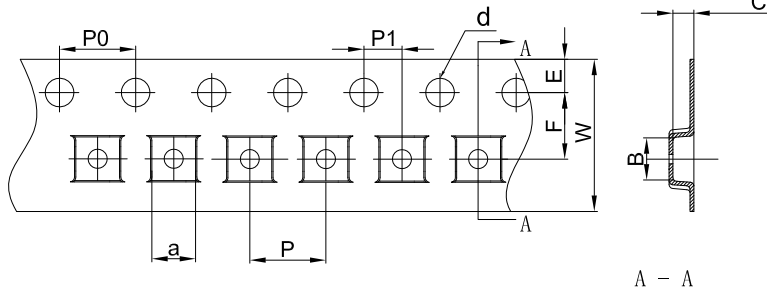
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050\text{mm}$ .
3. The pad layout is for reference purposes only.

**NOTICE**

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# WBHFBP-06L-F Tape and Reel

## WBHFBP-06L-F Embossed Carrier Tape



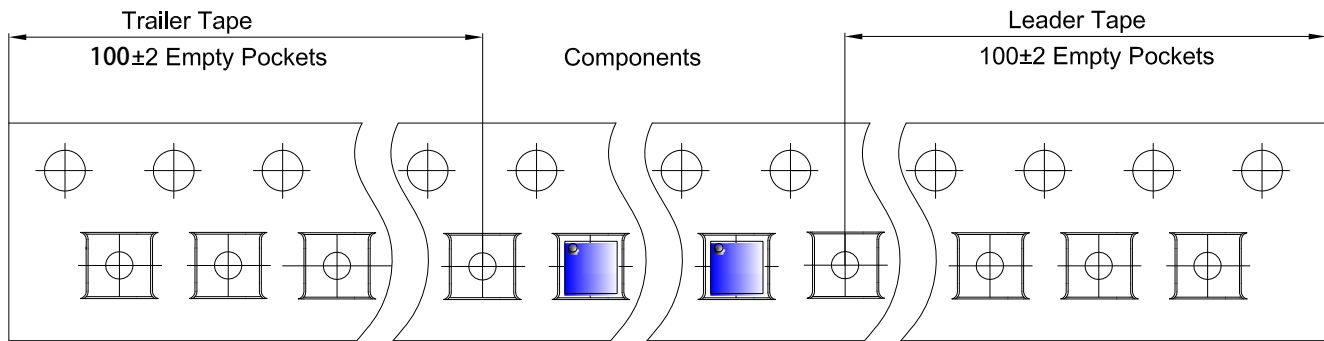
### Packaging Description:

WBHFBP-06L-F 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 3,000 units per 7" or 18.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

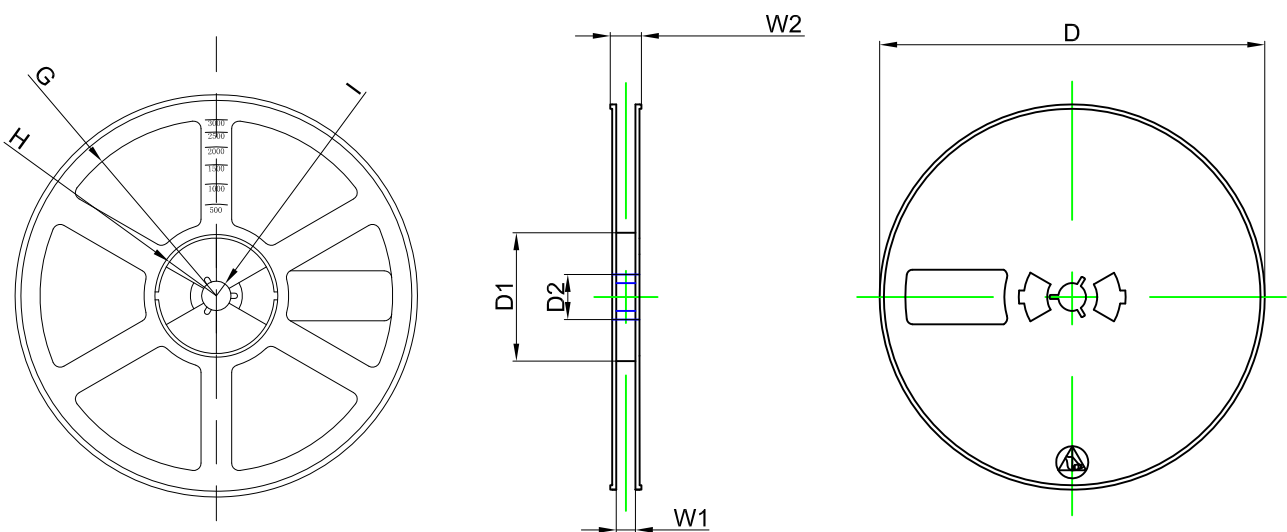
Dimensions are in millimeter

Pkg type	a	B	C	d	E	F	P0	P	P1	W
DFNWB2×2-6L	2.30	2.30	1.10	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

## WBHFBP-06L-F Tape Leader and Trailer



## WBHFBP-06L-F Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø180.00	60.00	13.00	R78.00	R25.60	R6.50	9.50	13.10

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	

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