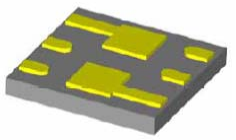
JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

WBFBP-06C Plastic-Encapsulate Transistors

FMMDT5451 TRANSISTOR

WBFBP-06C
(2×2×0.5)
unit: mm



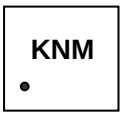
1

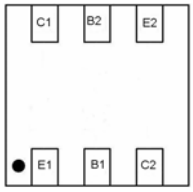
DESCRIPTION
PNP and NPN Epitaxial Silicon Transistor

FEATURES
- Complementary Pair
- One 5551-Type NPN, One 5401-Type PNP
- Ultra-Small Surface Mount Package

APPLICATION
Ideal for Medium Power Amplification and Switching
For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)

MARKING: KNM





E1,B1,C1=NPN 5551 Section
E2,B2,C2=PNP 5401 Section

5551 MAXIMUM RATINGS* T_A=25℃ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	180	V
V_{CEO}	Collector-Emitter Voltage	160	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	0.2	A
P_C	Collector Dissipation	0.15	W
R θ JA	Thermal Resistance, Junction to Ambient	625	K/W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature range	-55-150	℃

5401 MAXIMUM RATINGS* T_A=25℃ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector- Base Voltage	-160	V
V_{CEO}	Collector-Emitter Voltage	-150	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-0.2	A
P_C	Collector Dissipation	0.15	W
R θ JA	Thermal Resistance, Junction to Ambient	625	K/W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature range	-55-150	℃

5551 ELECTRICAL CHARACTERISTICS（Tamb=25℃ unless otherwise specified）

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	Ic=100μA,I_E=0	180			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	Ic=1mA, I_B=0	160			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E= 10μA, I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}= 120V I_E=0			50	nA
Emitter cut-off current	I_{EBO}	V_{EB}= 4V, I_C=0			50	nA
DC current gain	$h_{FE（1）}$	V_{CE}= 5 V, I_C= 1 mA	80			
	$h_{FE（2）}$	V_{CE}= 5 V, I_C = 10 mA	80		250	
	$h_{FE（3）}$	V_{CE}= 5 V, I_C= 50 mA	30			
Collector-emitter saturation voltage	V_{CEsat}	I_C= 10 mA, I_B= 1 mA			0.15	V
		I_C= 50 mA, I_B= 5 mA			0.2	
Base-emitter saturation voltage	V_{BEsat}	I_C= 10 mA, I_B= 1 mA			1	V
		I_C= 50 mA, I_B= 5 mA			1	
Transition frequency	f_T	V_{CE}=10V,I_C=10mA,,f=100MHz	100		300	MHz
Collector output capacitance	C_{ob}	V_{CB}=10V,I_E=0,f=1MHz			6	pF
Noise figure	NF	V_{CE}=5V,I_c=0.2mA, f=1KHZ,Rg=1kΩ			8	dB

5401 ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-100μA , I_E=0	-160			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C= -1mA , I_B=0	-150			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-10μA, I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-120 V , I_E=0			-0.05	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-3V , I_C=0			-0.05	μA
DC current gain	$h_{FE(1)}$	V_{CE}=-5 V, I_C= -1mA	50			
	$h_{FE(2)}$	V_{CE}=-5 V, I_C= -10mA	60		240	
	$h_{FE(3)}$	V_{CE}=-5 V, I_C= -50mA	50			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	I_C=-10 mA, I_B=-1mA			-0.2	V
	$V_{CE(sat)2}$	I_C=-50 mA, I_B=-5mA			-0.5	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	I_C= -10 mA, I_B=-1mA			-1	V
	$V_{BE(sat)2}$	I_C= -50 mA, I_B=-5mA			-1	V
Transition frequency	f_T	V_{CE}= -10V, I_C= -10mA f = 100MHz	100		300	MHz
Output Capacitance	C_{ob}	V_{CB}=-10V, I_E= 0,f=1MHz			6	pF
Noise Figure	NF	V_{CE}= -5.0V, I_C= -200μA, R_S= 10Ω,f = 1.0kHz			8.0	dB

Typical Characteristics

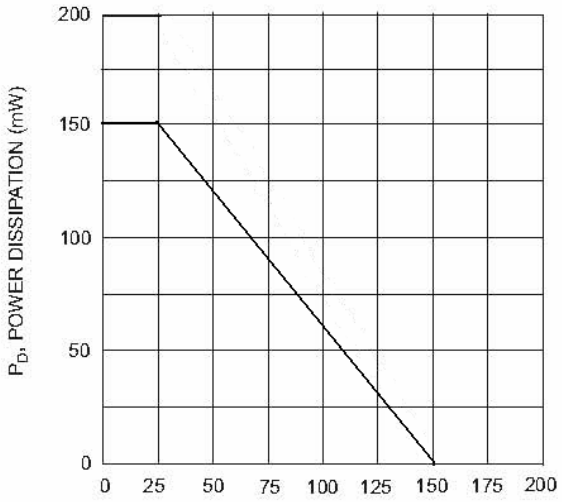


Fig. 1, Max Power Dissipation vs Ambient Temperature (Total Device)

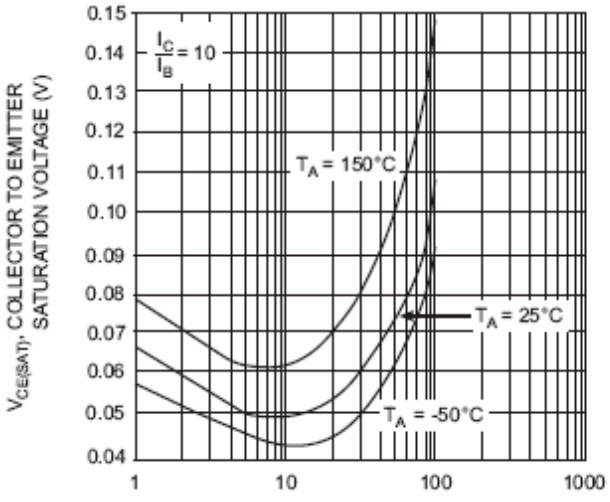


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current (NPN5551)

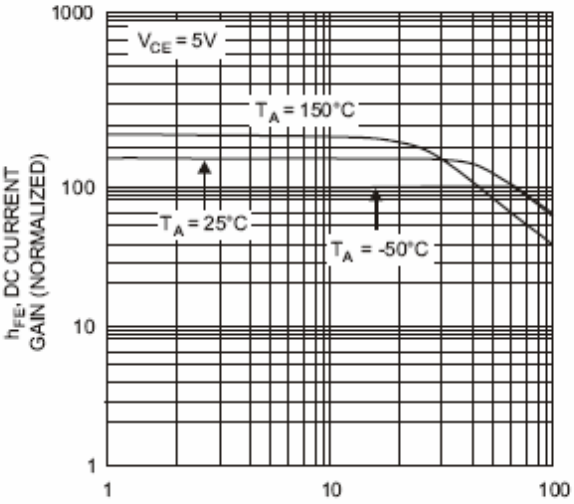


Fig. 3, DC Current Gain vs Collector Current (NPN5551)

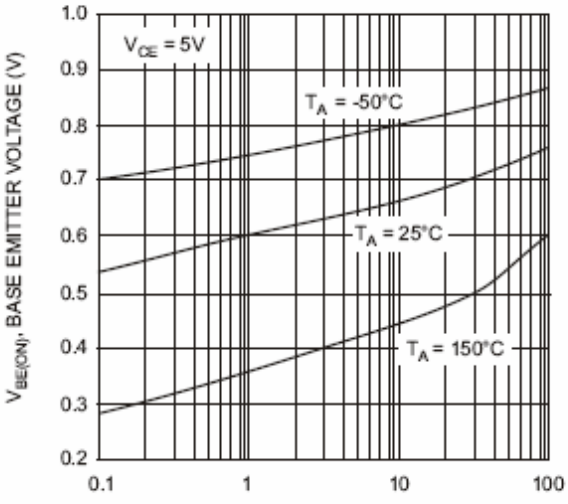


Fig. 4, Base Emitter Voltage vs. Collector Current (NPN5551)

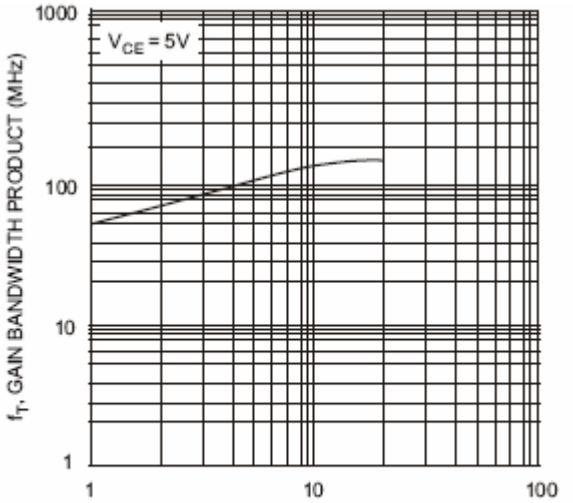


Fig. 5, Gain Bandwidth Product vs. Collector Current (NPN5551)

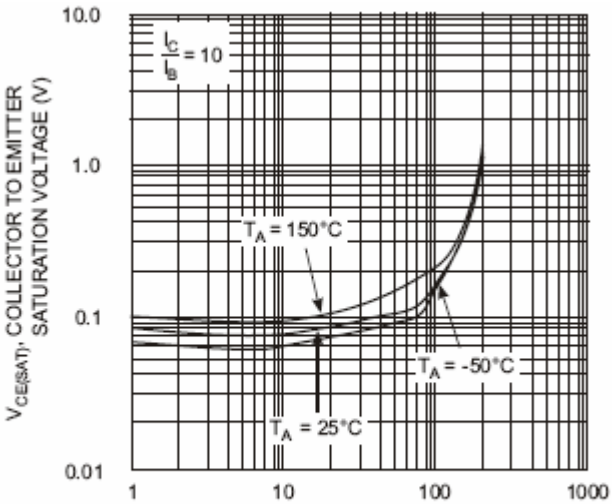


Fig. 6, Collector Emitter Saturation Voltage vs. Collector Current (PNP5401)

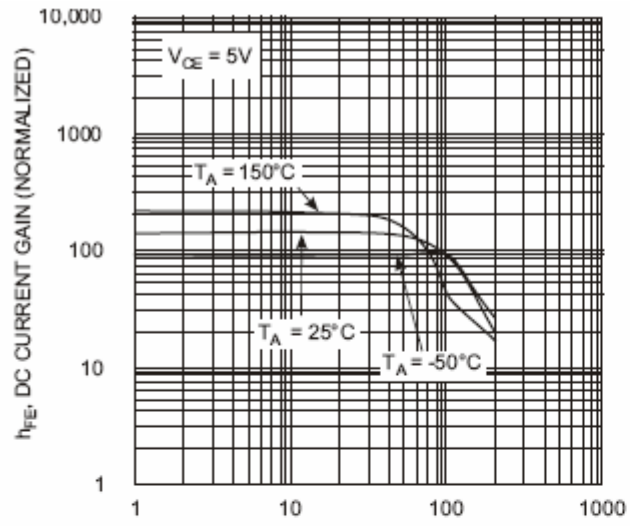


Fig. 7, DC Current Gain vs. Collector Current (PNP5401)

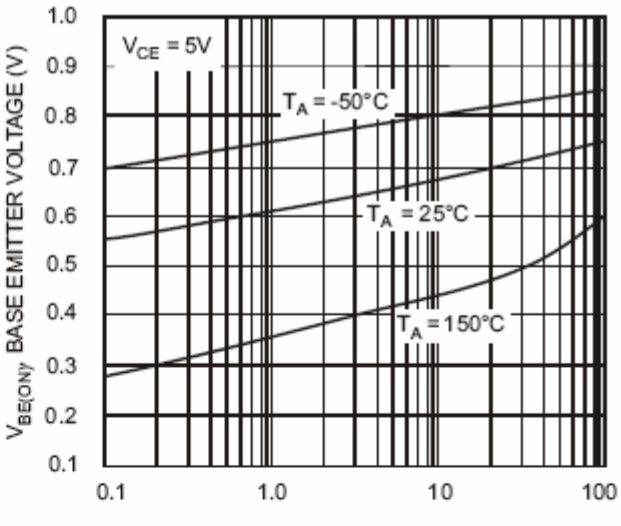


Fig. 8, Base Emitter Voltage vs. Collector Current (PNP5401)

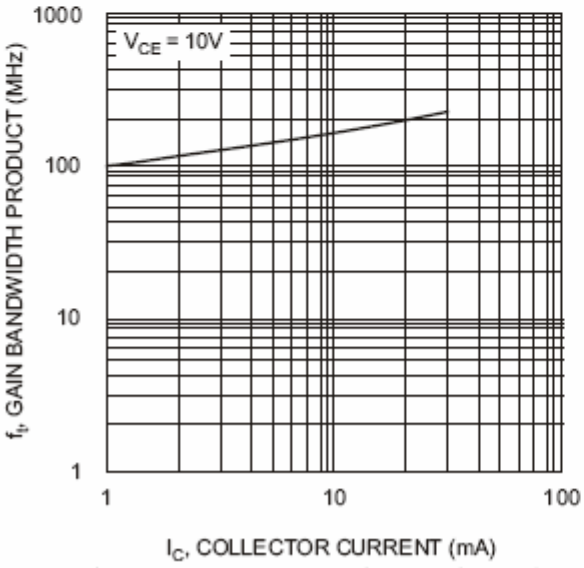
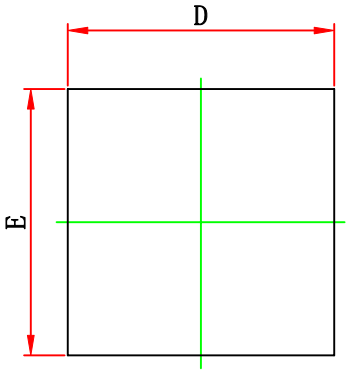
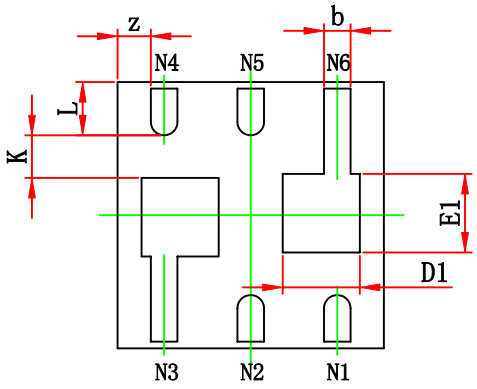


Fig. 9, Gain Bandwidth Product vs Collector Current (PNP5401)

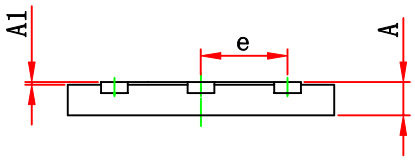
WBFBP-06C(2×2×0.5) PACKAGE OUTLINE DIMENSIONS



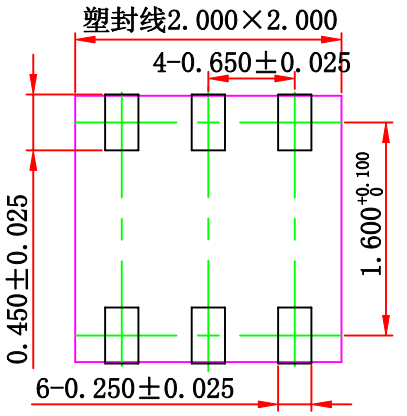
TOP VIEW



BOTTOM VIEW



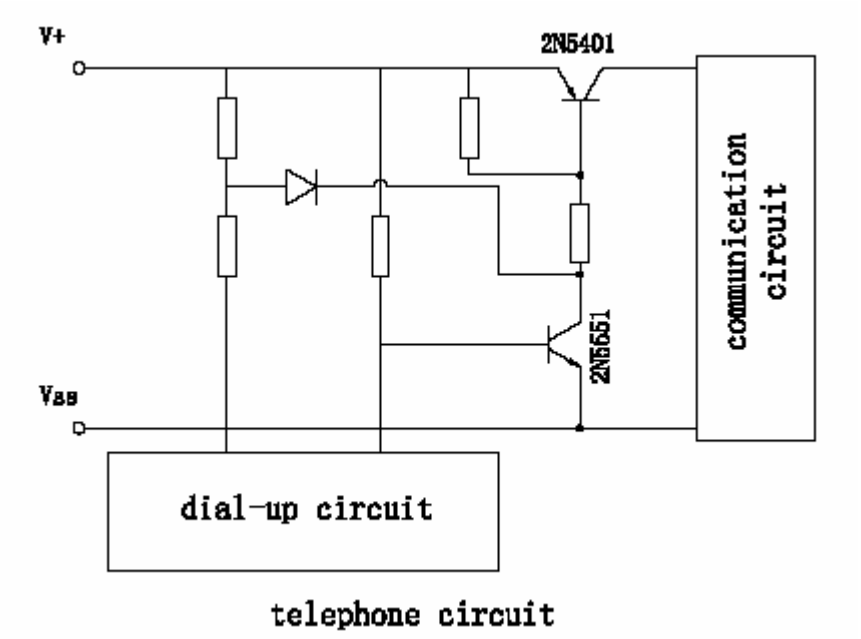
SIDE VIEW



LAND PATTERN RECOMMENDATION
推 荐 焊 盘 图

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.000	0.100	0.000	0.004
b	0.150	0.250	0.006	0.010
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.590 REF.		0.023 REF.	
E1	0.590 REF.		0.023 REF.	
e	0.650 TYP.		0.026 TYP.	
L	0.400 REF.		0.016 REF.	
k	0.300 REF.		0.012 REF.	
z	0.500 REF.		0.020 REF.	

APPLICATION CIRTCUITS



telephone circuit