



WBFBP-03D Plastic-Encapsulate Transistors

TRANSISTOR

DESCRIPTION

PNP Epitaxial Silicon Transistor

FEATURES

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (TK3904LLD03)
- Ultra-Small Surface Mount Package
- Also Available in Lead Free Version

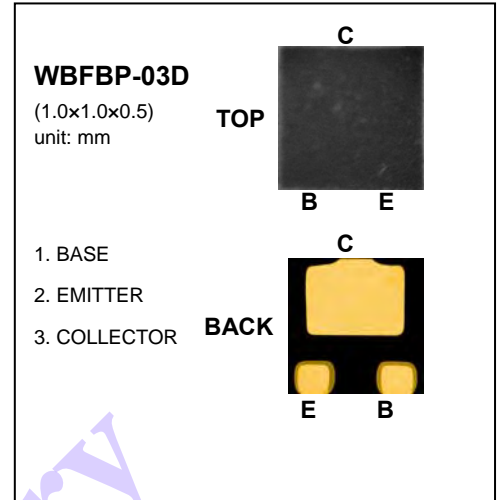
APPLICATION

General Purpose Amplifier, switching
 For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)

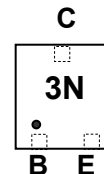
Pb-Free package is available

RoHS product for packing code suffix "G"

Halogen free product for packing code suffix "H"



MARKING:3N



MAXIMUM RATINGS(T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector-Base Voltage	-40	V
V _{CE0}	Collector-Emitter Voltage	-40	V
V _{EBO}	Emitter-Base Voltage	-5	V
I _C	Collector Current -Continuous	-200	mA
P _D	Power Dissipation	100	mW
R _{θJA}	Thermal Resistance, Junction to Ambient	1250	°C/W
T _J	Operating Temperature	150	°C
T _{stg}	Storage and Temperature	-55~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Mlin	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =-10μA, I _E =0	-40			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =-1mA, I _B =0	-40			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =-10μA, I _C =0	-5			V
Collector cut-off current	I _{CEX}	V _{CE} =-30V, V _{EB(off)} =-3V			-0.05	μA
Emitter cut-off current	I _{EBO}	V _{EB} =-5V, I _C =0			-0.1	μA
DC current gain	h _{FE(1)}	V _{CE} =-1V, I _C =-0.1mA	60			
	h _{FE(2)}	V _{CE} =-1V, I _C =-1mA	80			
	h _{FE(3)}	V _{CE} =-1V, I _C =-10mA	100		300	
	h _{FE(4)}	V _{CE} =-1V, I _C =-50mA	60			
	h _{FE(5)}	V _{CE} =-1V, I _C =-100mA	30			
Collector-emitter saturation voltage	V _{CE(sat)1}	I _C =-10mA, I _B =-1mA			-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



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ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector output capacitance	C _{ob}	V _{CB} =-5V, I _E =0, f=1MHz			4.5	pF
Input capacitance	C _{ib}	V _{EB} =-0.5V, I _C =0, f=1MHz			10	pF
Noise figure	NF	V _{CE} =-5V, I _C =0.1mA, f=1KHz, R _S =1KΩ			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

Preliminary