



JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

WBFBP-03D Plastic-Encapsulate Transistors

TK3904LLD03 TRANSISTOR

DESCRIPTION

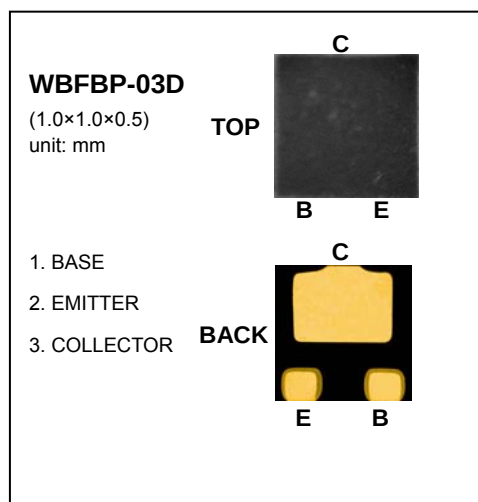
NPN Epitaxial Silicon Transistor

FEATURES

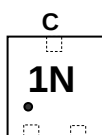
Epitaxial Planar Die Construction
Complementary PNP Type Available (TK3906LLD03)
Ultra-Small Surface Mount Package
Also Available in Lead Free Version

APPLICATION

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



MARKING:1N



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MAXIMUM RATINGS* T_A=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CBO}	Collector-Base Voltage	60	V
V _{CEO}	Collector-Emitter Voltage	40	V
V _{EBO}	Emitter-Base Voltage	6	V
I _C	Collector Current -Continuous	0.2	A
P _C	Collector Dissipation	0.1	W
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55-150	°C

ELECTRICAL CHARACTERISTICS (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =10μA, I _E =0	60			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	6			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	40			
	h _{FE(2)}	V _{CE} =1V, I _C =1mA	70			
	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			0.2	V
	V _{CE(sat)2}	I _C =50mA, I _B =5mA			0.3	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	300			MHz

ELECTRICAL CHARACTERISTICS (Tamb=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	pF
Noise figure	NF	$V_{CE}=5V, I_C=0.1mA$			5	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	$V_{CC}=3V, I_C=10mA$			200	nS
Fall time	t_f	$I_{B1}=I_{B2}=1mA$			50	nS

Typical Characteristics

TK3904LLD03

