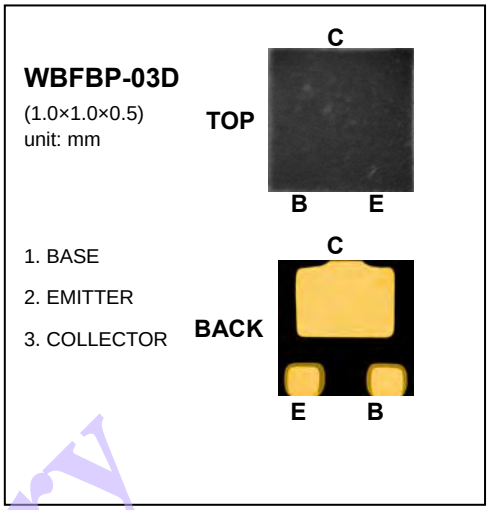
WILLAS

RoHS COMPLIANT

WBFBP-03D Plastic-Encapsulate Transistors

TK3906LLD03

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

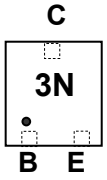
APPLICATION
General Purpose Amplifier, switching
For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)

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℃ 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 -Continuous	-200	mA
P_D	Power Dissipation	100	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	1250	℃/W
T_J	Operating Temperature	150	℃
T_{stg}	Storage and Temperature	-55~150	℃

ELECTRICAL CHARACTERISTICS (T_a=25℃ 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℃ 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