

SILICON NPN TRANSISTOR EPITAXIAL PLANAR TYPE (PCT PROCESS)

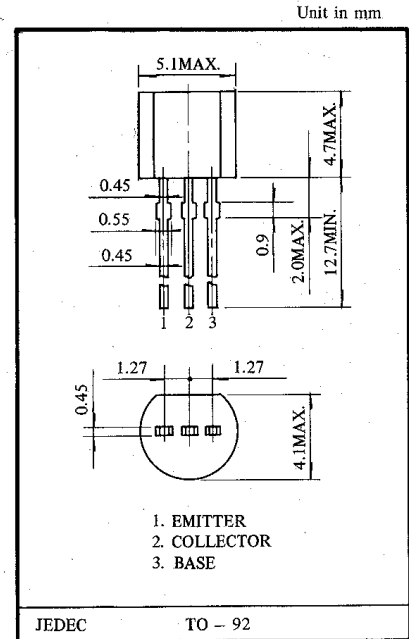
KTC 1923

APPLICATIONS

- FM, RF, MIX, or IF Amplifier
- High Frequency Amplifier

FEATURES

- Excellent Noise Figure, $NF=2.5\text{dB}$ (Typ.) at $f=100\text{MHz}$
- Non-destructive against static voltage, 1500V at $C=30\text{pF}$
- High Transition Frequency, $f_T=600\text{MHz}$ (Typ.)
- Small Feedback Capacitance $C_{re}=0.65\text{pF}$ (Typ.)



■ MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT	CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector - Base Voltage	V_{CBO}	40	V	Emitter Current	I_E	-20	mA
Collector - Emitter Voltage	V_{CEO}	30	V	Collector Power Dissipation	P_c	100	mW
Emitter - Base Voltage	V_{EBO}	4	V	Junction Temperature	T_j	125	$^\circ\text{C}$
Collector Current	I_c	20	mA	Storage Temperature Range	T_{stg}	-55 - 125	$^\circ\text{C}$

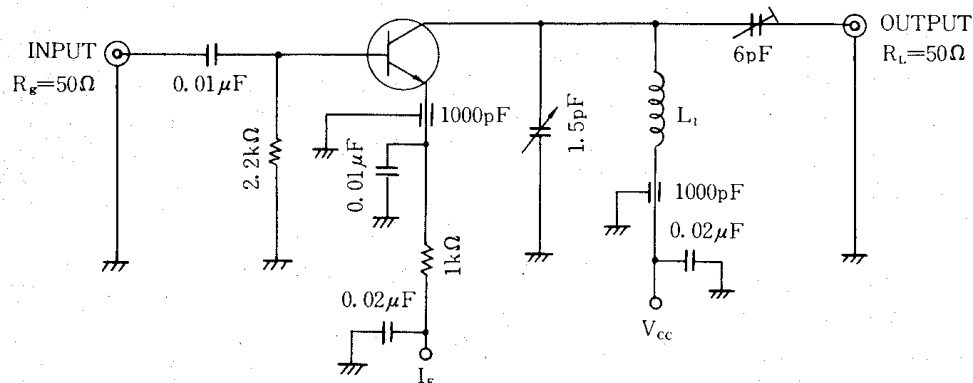
■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut off Current	I_{CBO}	$V_{CB}=18\text{V}, I_E=0$	-	-	0.5	μA
Emitter Cut off Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$	-	-	0.5	μA
DC Current Gain	h_{FE}	$V_{CE}=6\text{V}, I_C=1\text{mA}$	25	-	140	
Reverse Transfer Capacitance	C_{re}	$V_{CE}=6\text{V}, f=1\text{MHz}$	-	0.65	-	pF
Transition Frequency	f_T	$V_{CE}=6\text{V}, I_E=-1\text{mA}$	-	600	-	MHz
Collector to Base Time Constant	$C_C \cdot r_{bb'}$	$V_{CE}=6\text{V}, I_E=-1\text{mA}, f=30\text{MHz}$	-	-	30	pS
Noise Figure	NF	$V_{CE}=6\text{V}, I_E=-1\text{mA},$	-	2.5	4.0	dB
Power Gain	G_{Pe}	$f=100\text{MHz}$	18	20	-	dB

■ NOTE: According to h_{FE} Classified as follows

BN	25~50	R	40~80	O	70~140

Fig. NF, G_{pe} TEST CIRCUIT.



L_1 : 0.8mm ϕ SILVER PLATED COPPER WIRE, 4Turns.
10mm ID, 8mm Length.

y PARAMETER (Typ.)

(1) (COMMON EMITTER $V_{ce}=6V$, $I_E=-1mA$, $f=100MHz$)

CHARACTERISTIC	SYMBOL	TYP.	UNIT
Input Conductance	g_{ie}	2.9	m Ω
Input Capacitance	C_{ie}	10.2	pF
Reverse Transfer Admittance	$ y_{re} $	0.33	m Ω
Phase Angle of Reverse Transfer Admittance	θ_{re}	-90	°
Forward Transfer Admittance	$ y_{fe} $	40	m Ω
Phase Angle of Forward Transfer Admittance	θ_{fe}	-20	°
Output Conductance	g_{oe}	45	$\mu\Omega$
Output Capacitance	C_{oe}	1.1	pF

(2) (COMMON BASE $V_{ce}=6V$, $I_E=-1mA$, $f=100MHz$)

CHARACTERISTIC	SYMBOL	TYP.	UNIT
Input Conductance	g_{ib}	34	m Ω
Input Capacitance	C_{ib}	-10	pF
Reverse Transfer Admittance	$ y_{rb} $	0.27	m Ω
Phase Angle of Reverse Transfer Admittance	θ_{rb}	-105	°
Forward Transfer Admittance	$ y_{fb} $	34	m Ω
Phase Angle of Forward Transfer Admittance	θ_{fb}	165	°
Output Conductance	g_{ob}	45	$\mu\Omega$
Output Capacitance	C_{ob}	1.1	pF