

SILICON NPN TRANSISTOR EPITAXIAL PLANAR TYPE (PCT PROCESS)

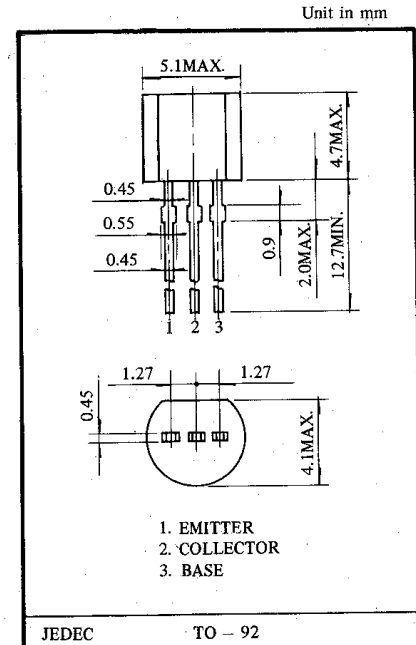
KTC380TM

APPLICATIONS

- High Frequency Amplifiers
- FM/IF, OSC or AM/CONV, IF

FEATURES

- High Power Gain, $G_{pe}=29\text{dB}$ (Typ.) at $f=10.7\text{MHz}$
- $P_c \text{ max}=300\text{mW}$



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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector - Base Voltage	V_{CBO}	35	V
Collector - Emitter Voltage	V_{CEO}	30	V
Emitter - Base Voltage	V_{EBO}	4	V
Collector Current	I_c	50	mA

CHARACTERISTIC	SYMBOL	RATING	UNIT
Emitter Current	I_E	-50	mA
Collector Power Dissipation	P_c	300	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$

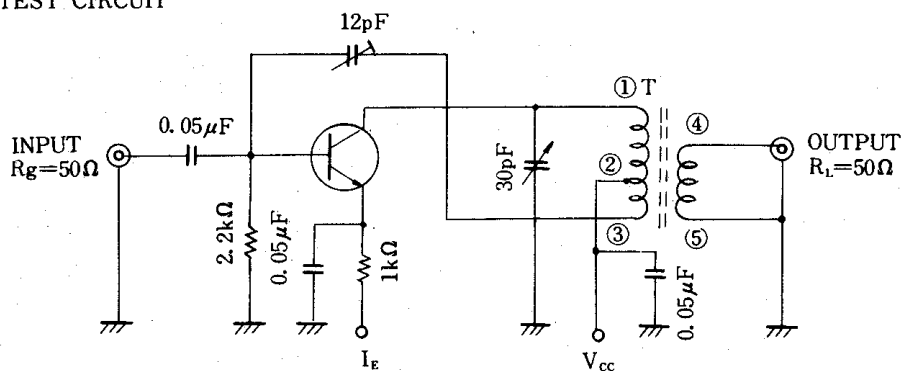
■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut off Current	I_{CBO}	$V_{CB}=35\text{V}, I_E=0$	-	-	0.1	μA
Emitter Cut off Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$	-	-	1.0	μA
DC Current Gain	h_{FE}	$V_{CE}=12\text{V}, I_C=2\text{mA}$	40	-	240	
Collector - Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	-	-	0.4	V
Base - Emitter Voltage	V_{BE}	$I_C=10\text{mA}, I_B=1\text{mA}$	-	-	1.0	V
Transition Frequency	f_T	$V_{CE}=10\text{V}, I_E=-1\text{mA}$	100	-	400	MHz
Output Capacitance	C_{ob}	$V_{CE}=10\text{V}, I_E=0, f=1\text{MHz}$	1.4	2.0	3.2	pF
Collector to Base Time Constant	$C_c \cdot r_{bb'}$	$V_{CE}=10\text{V}, I_E=-1\text{mA}, f=30\text{MHz}$	10	-	50	pS
Power Gain	G_{pe}	$V_{CC}=6\text{V}, I_E=-1\text{mA}, f=10.7\text{Hz (Fig. 1)}$	27	29	33	dB

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

R	40~80	O	70~140	Y	120~240
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Fig. Gpe TEST CIRCUIT



T : ①-② 0.1mm ϕ UEW 20T
 ②-③ 0.1mm ϕ UEW 8T
 ④-⑤ 0.1mm ϕ UEW 2T

y PARAMETERS (Typ.)

(1) (COMMON EMITTER $f=455\text{kHz}$, $T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	KTC380TM-R	KTC380TM-O	KTC380TM-Y	UNIT
Collector-Emitter Voltage	V_{CE}	6	6	6	V
Emitter Current	I_E	-1	-1	-1	mA
Input Conductance	g_{ie}	0.58	0.41	0.26	m Ω
Input Capacitance	C_{ie}	53	46	38	pF
Output Conductance	g_{oe}	1.9	2.7	4.8	$\mu\Omega$
Output Capacitance	C_{oe}	2.6	2.8	3.6	pF
Forward Transfer Admittance	$ y_{fe} $	38	38	38	m Ω
Phase Angle of Forward Transfer Admittance	θ_{fe}	-0.79	-0.83	-0.92	°
Reverse Transfer Admittance	$ y_{re} $	5.7	5.7	6.2	$\mu\Omega$
Phase Angle of Reverse Transfer Admittance	θ_{re}	-90	-90	-90	°

(2) (COMMON EMITTER $f=10.7\text{MHz}$, $T_a=25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	KTC380TM-R	KTC380TM-O	KTC380TM-Y	UNIT
Collector-Emitter Voltage	V_{CE}	6	6	6	V
Emitter Current	I_E	-1	-1	-1	mA
Input Conductance	g_{ie}	1.04	0.85	0.65	m Ω
Input Capacitance	C_{ie}	49	43	36	pF
Output Conductance	g_{oe}	10	15	28	$\mu\Omega$
Output Capacitance	C_{oe}	2.7	2.9	3.6	pF
Forward Transfer Admittance	$ y_{fe} $	37	37	37	m Ω
Phase Angle of Forward Transfer Admittance	θ_{fe}	-9.6	-10.4	-11.5	°
Reverse Transfer Admittance	$ y_{re} $	120	120	140	$\mu\Omega$
Phase Angle of Reverse Transfer Admittance	θ_{re}	-90	-90	-90	°