

TOSHIBA TRANSISTOR   SILICON NPN EPITAXIAL PLANAR TYPE (PCT PROCESS)

2SC2715

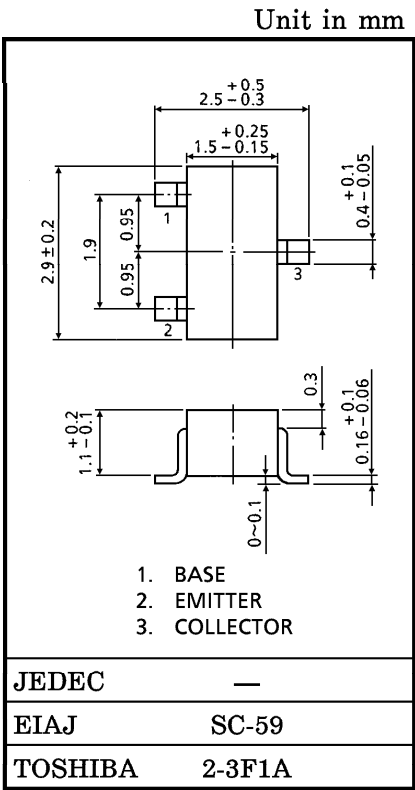
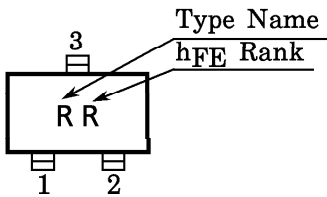
HIGH FREQUENCY AMPLIFIER APPLICATIONS

- High Power Gain :  $G_{pe}=2\text{dB}$  (Typ.) ( $f=10.7\text{MHz}$ )
- Recommended for FM IF, OSC Stage and AM CONV. IF Stage.

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
Base Current	$I_B$	10	mA
Collector Power Dissipation	$P_C$	150	wA
Junction Temperature	$T_j$	125	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	$-55\sim125$	$^{\circ}\text{C}$

Marking



Weight : 0.012g

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

(Note)  $h_{FE}$  Classification    R : 40~80,    O : 70~140,    Y : 120~240

## y PARAMETER (Typ.)

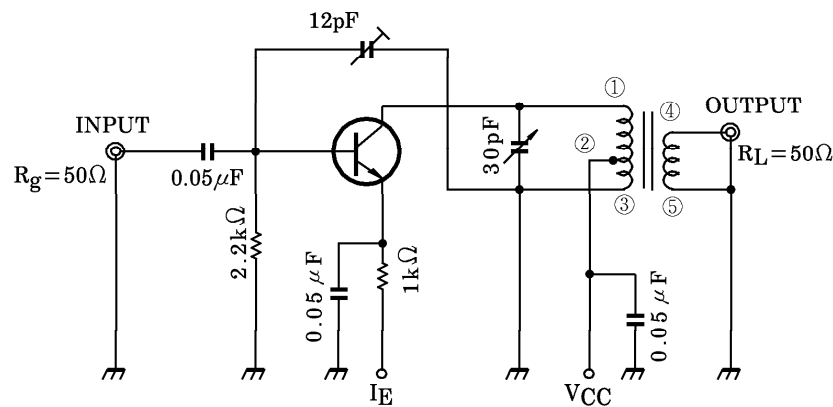
(1) (COMMON EMITTER  $f = 455MHz, T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	2SC2715-R	2SC2715-O	2SC2715-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	mS
Input Capacitance	$C_{ie}$	53	46	38	pF
Output Conductance	$g_{oe}$	1.9	2.7	4.8	$\mu S$
Output Capacitance	$C_{oe}$	2.6	2.8	3.6	pF
Forward Transfer Admittance	$ y_{fe} $	38	38	38	mS
Phase Angle of Forward Transfer Admittance	$\theta_{fe}$	-0.79	-0.83	-0.92	°
Reverse Transfer Admittance	$ y_{re} $	5.7	5.7	6.2	$\mu S$
Phase Angle of Reverse Transfer Admittance	$\theta_{re}$	-90	-90	-90	°

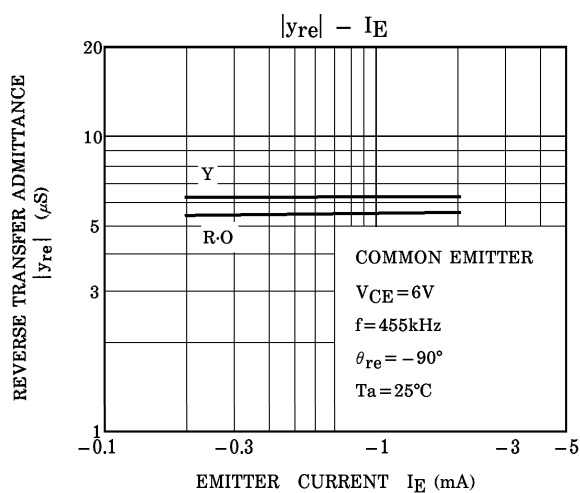
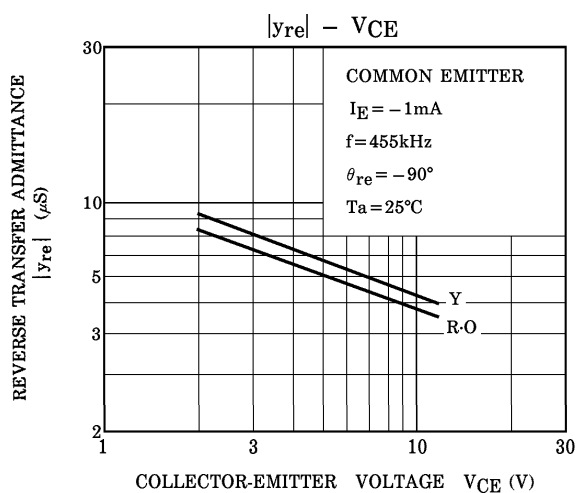
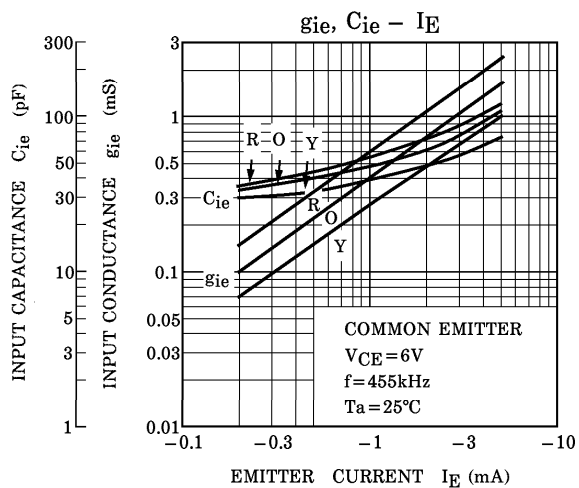
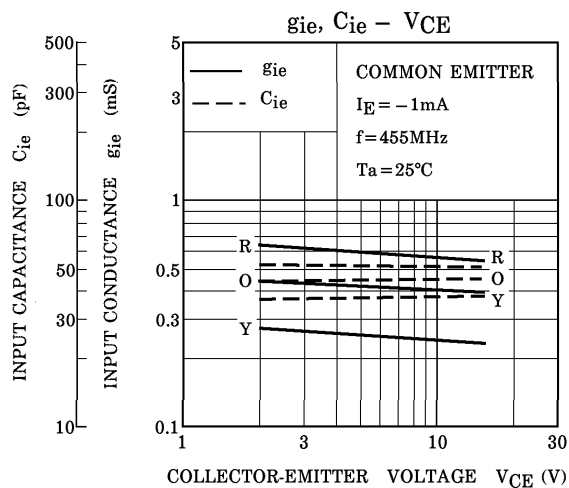
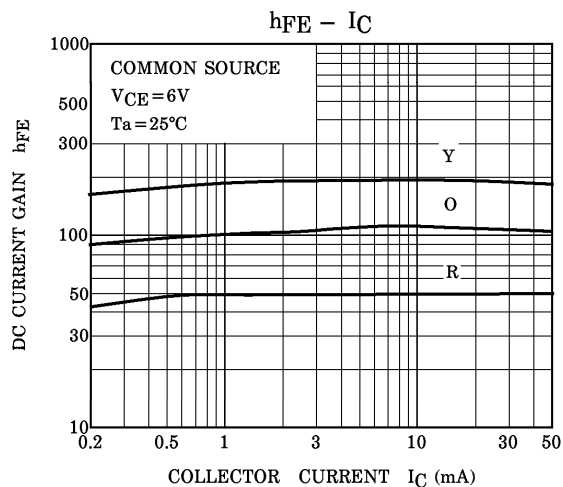
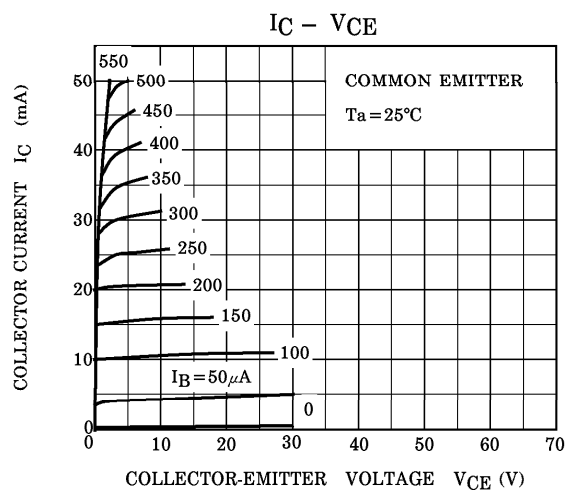
(2) (COMMON EMITTER  $f = 10.7\text{MHz}$ ,  $T_a = 25^\circ\text{C}$ )

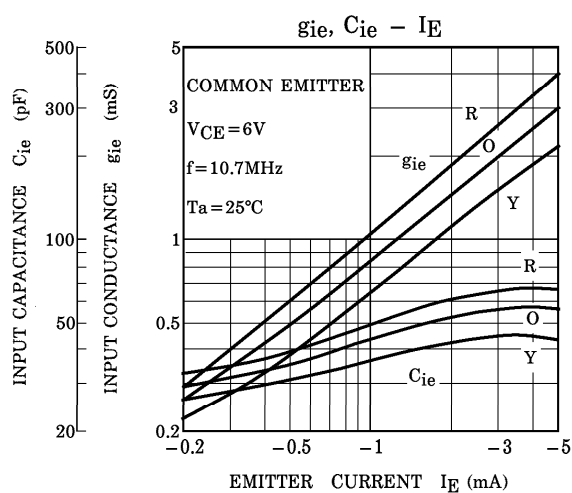
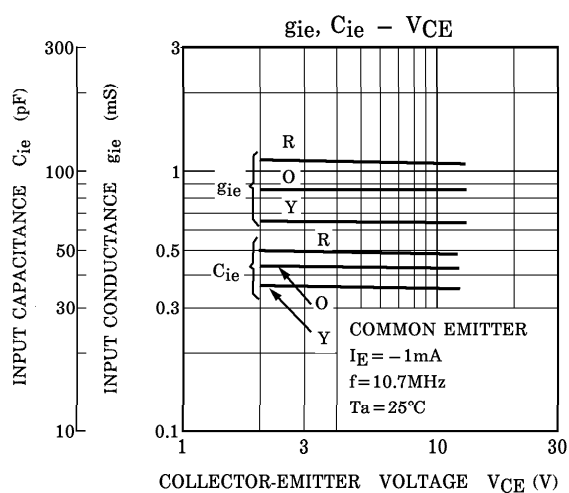
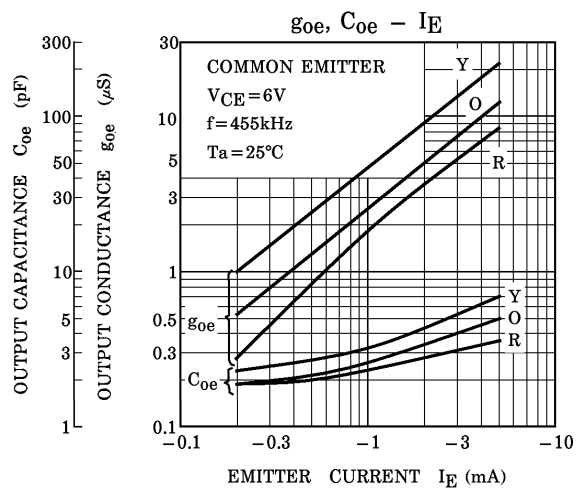
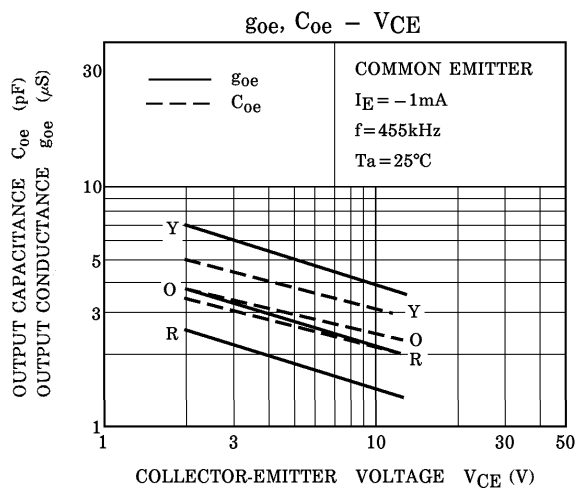
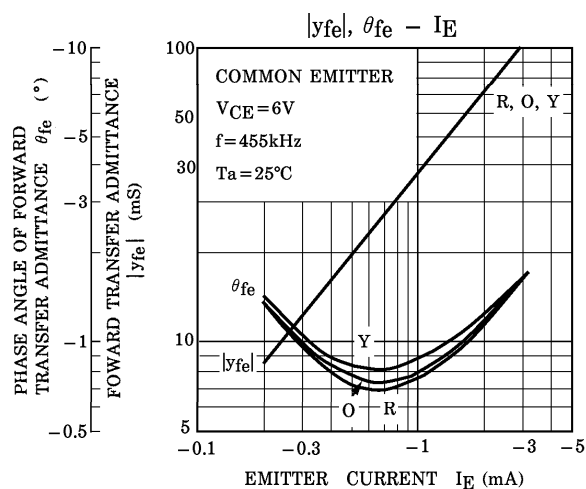
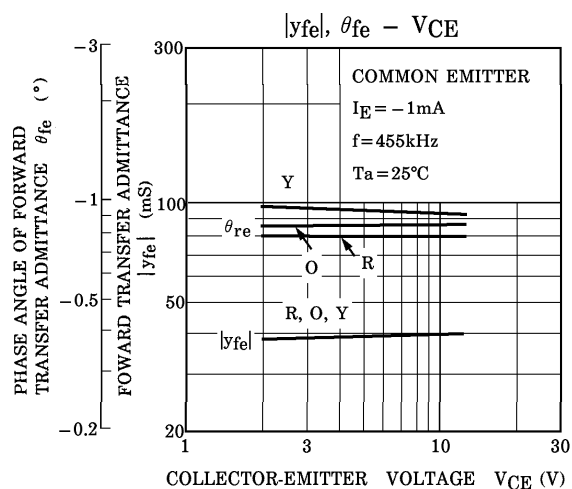
CHARACTERISTIC	SYMBOL	2SC2715 – R	2SC2715 – O	2SC2715 – Y	UNIT
Collector Emitter Voltage	$V_{CE}$	6	6	6	V
Emitter Current	$I_E$	–1	–1	–1	mA
Input Conductance	$g_{ie}$	1.04	0.85	0.65	mS
Input Capacitance	$C_{ie}$	49	43	36	pF
Output Conductance	$g_{oe}$	10	15	28	$\mu\text{S}$
Output Capacitance	$C_{oe}$	2.7	2.9	3.6	pF
Forward Transfer Admittance	$ y_{fe} $	37	37	37	mS
Phase Angle of Forward Transfer Admittance	$\theta_{fe}$	–9.6	–10.4	–11.5	°
Reverse Transfer Admittance	$ y_{re} $	120	120	140	$\mu\text{S}$
Phase Angle of Reverse Transfer Admittance	$\theta_{re}$	–90	–90	–90	°

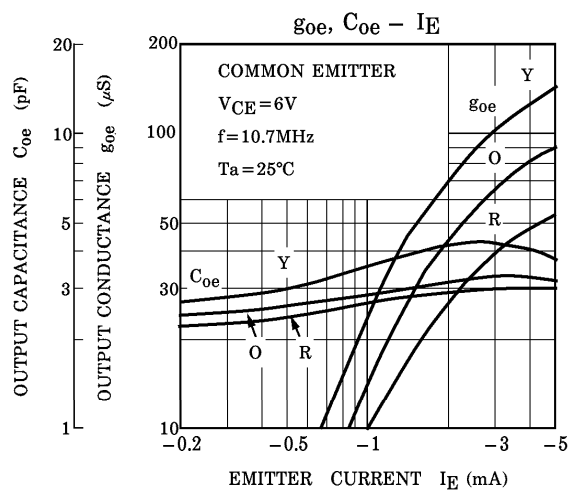
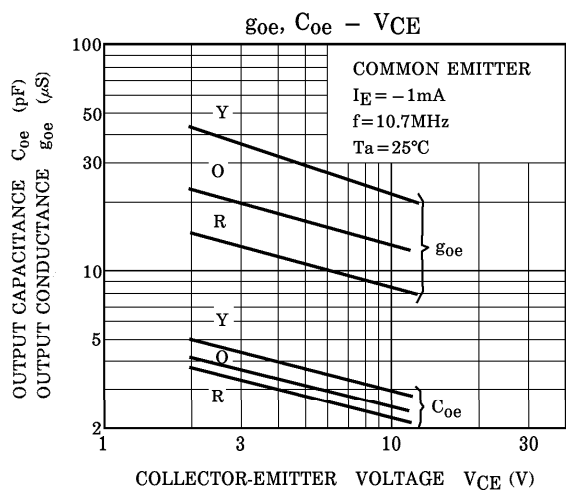
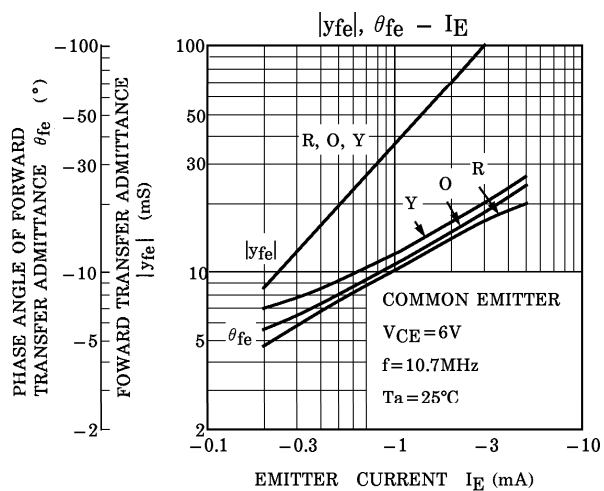
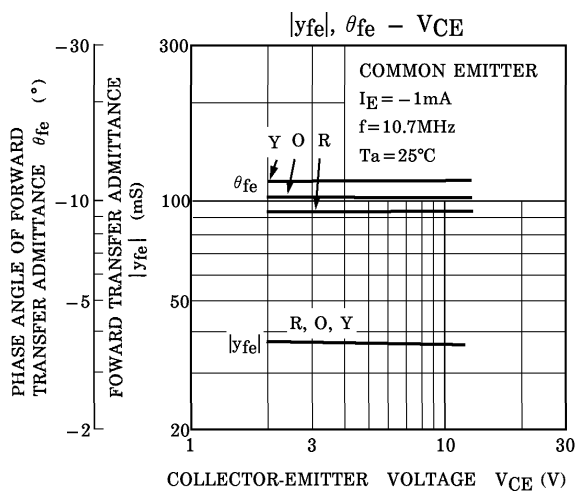
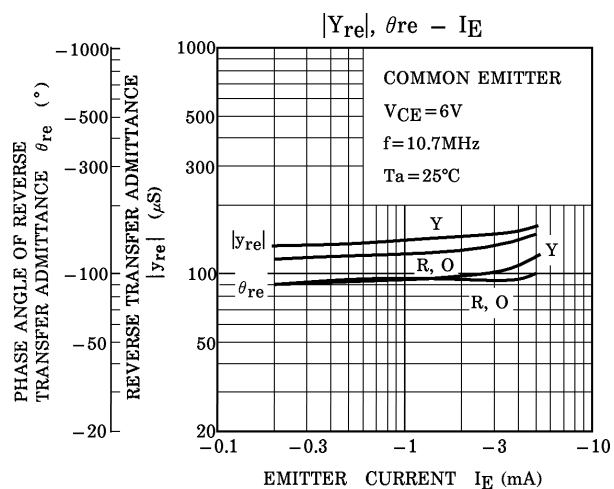
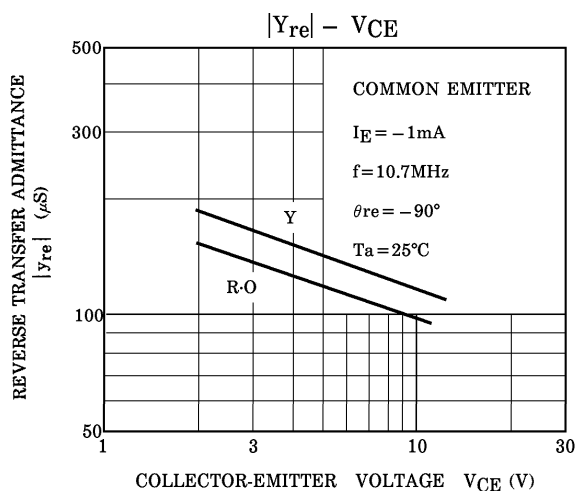
Fig. NF,  $G_{pe}$  TEST CIRCUIT

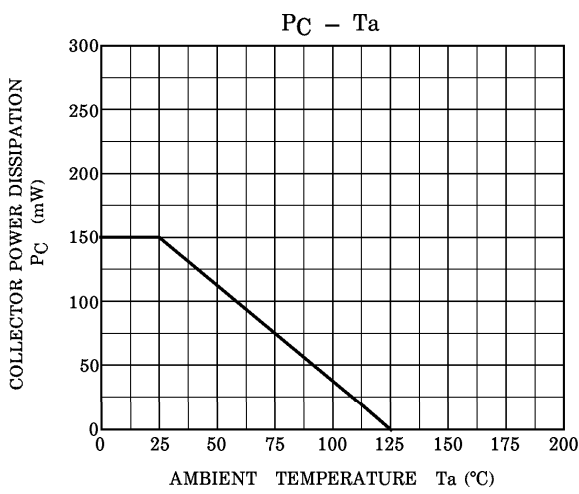


T : ① – ② 0.1mmϕ UEW 20T  
② – ③ 0.1mmϕ UEW 8T  
④ – ⑤ 0.1mmϕ UEW 2T









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