

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE (PCT PROCESS)

2SC2715

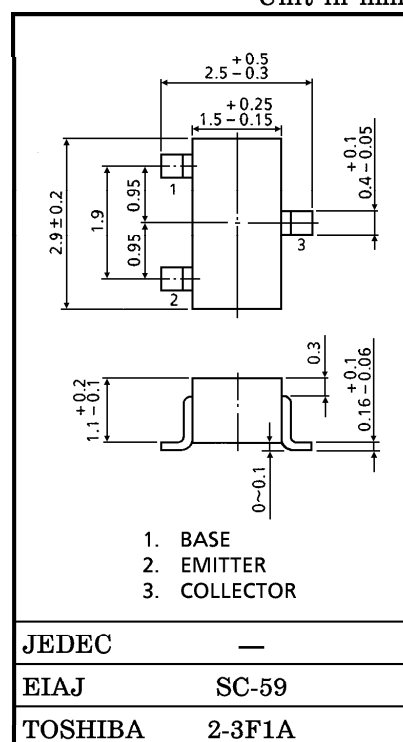
HIGH FREQUENCY AMPLIFIER APPLICATIONS

Unit in mm

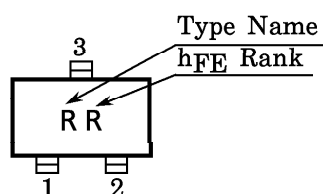
- High Power Gain : $G_{pe}=2\text{dB}$ (Typ.) ($f=10.7\text{MHz}$)
- Recommended for FM IF, OSC Stage and AM CONV. IF Stage.

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	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	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55\sim 125$	$^\circ\text{C}$



Marking



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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	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 4V, I_C = 0$	—	—	0.1	μA
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

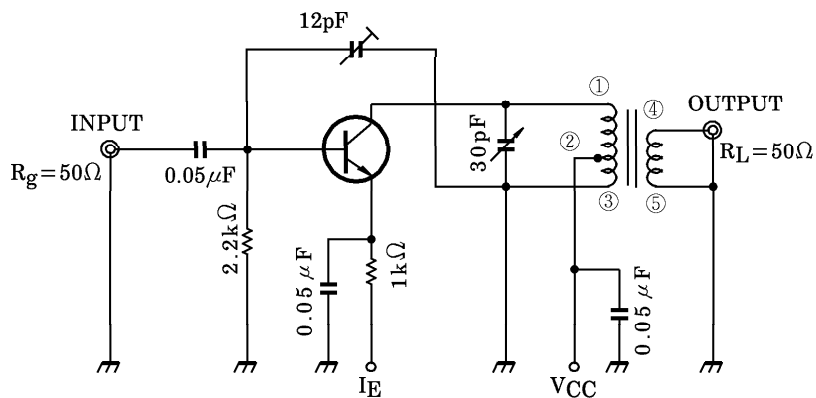
y PARAMETER (Typ.)

(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	μS
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	θ_{fe}	-0.79	-0.83	-0.92	°
Reverse Transfer Admittance	$ y_{re} $	5.7	5.7	6.2	μS
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	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	μS
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	θ_{fe}	-9.6	-10.4	-11.5	°
Reverse Transfer Admittance	$ y_{re} $	120	120	140	μS
Phase Angle of Reverse Transfer Admittance	θ_{re}	-90	-90	-90	°

Fig. NF, G_{pe} TEST CIRCUIT

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

