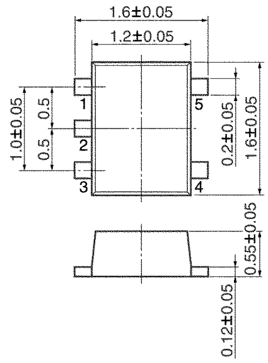
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN1710JE,RN1711JE

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Two devices are incorporated into an Extreme-Super-Mini (5 pin) package.
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Wide range of resistor values are available to use in various circuit designs.
- Complementary to RN2710JE~RN2711JE

Unit: mm



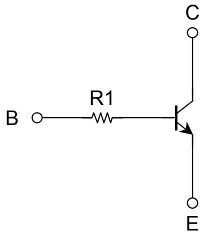
1.BASE1 (B1)
2.EMITTER (E)
3.BASE2 (B2)
4.COLLECTOR2 (C2)
5.COLLECTOR1 (C1)

ESV

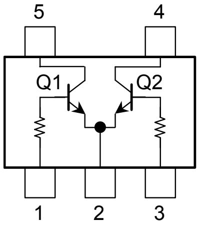
JEDEC	―
JEITA	―
TOSHIBA	―

Weight: 0.003 g (typ.)

Equivalent Circuit and Bias Resistor Values



Equivalent Circuit (top view)



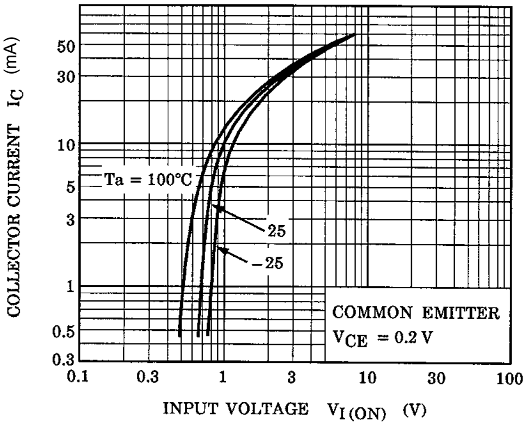
Maximum Ratings (Ta = 25°C) (Q1, Q2 common)

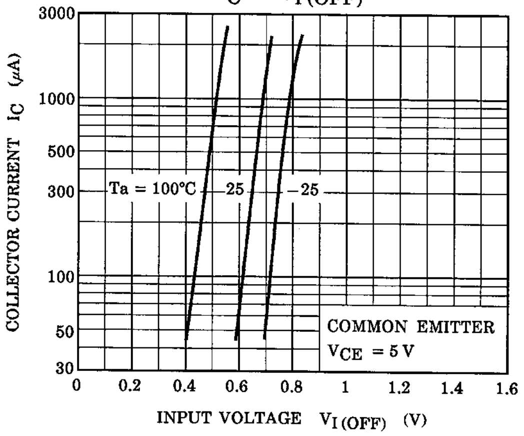
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA
Collector power dissipation	P_C (Note)	100	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55~150	°C

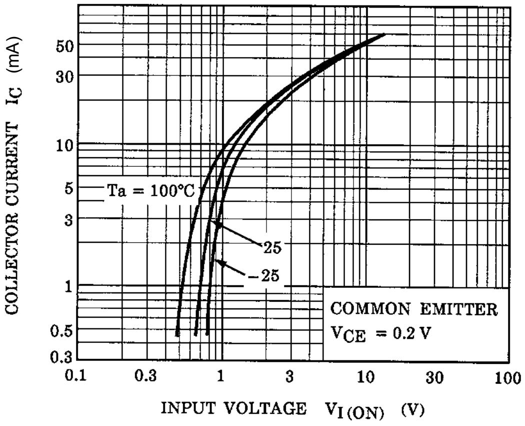
Note: Total rating

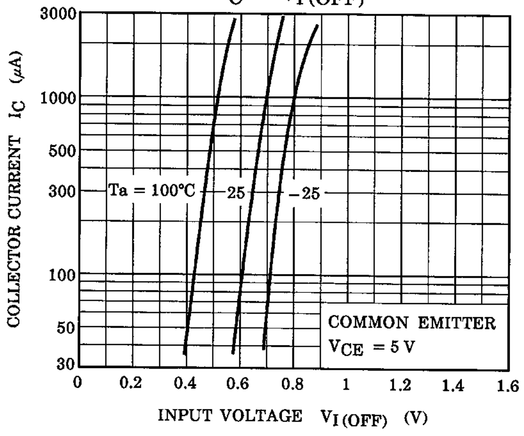
Electrical Characteristics (Ta = 25°C) (Q1, Q2 common)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 50$ V, $I_E = 0$	—	—	100	nA
Emitter cut-off current		I_{EBO}	$V_{EB} = 5$ V, $I_C = 0$	—	—	100	nA
DC current gain		h_{FE}	$V_{CE} = 5$ V, $I_C = 1$ mA	120	—	700	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	$I_C = 5$ mA, $I_B = 0.25$ mA	—	0.1	0.3	V
Transition frequency		f_T	$V_{CE} = 10$ V, $I_C = 5$ mA	—	250	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10$ V, $I_E = 0$, f = 1 MHz	—	3	6	pF
Input resistor	RN1710JE	R1	—	3.29	4.7	6.11	kΩ
	RN1711JE			7	10	13	


RN1710JE $I_C - V_{I(ON)}$


RN1710JE $I_C - V_{I(OFF)}$


RN1711JE $I_C - V_{I(ON)}$


RN1711JE $I_C - V_{I(OFF)}$