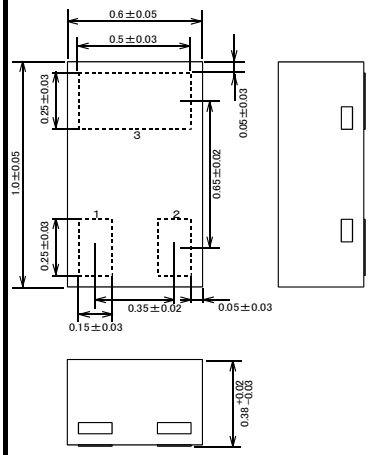
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN2110ACT,RN2111ACT

Switching Applications
Inverter Circuit Applications
Interface Circuit Applications
Driver Circuit Applications

- Extra small package (CST3) is applicable for extra high density fabrication.
- 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.
- Complementary to RN1110ACT, RN1111ACT

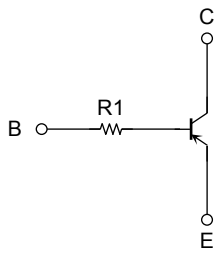
Unit: mm



CST3	1.BASE 2.EMITTER 3.COLLECOTR
JEDEC	—
JEITA	—
TOSHIBA	2-1J1A

Weight: 0.75 mg (typ.)

Equivalent Circuit



Absolute Maximum Ratings (Ta = 25°C)

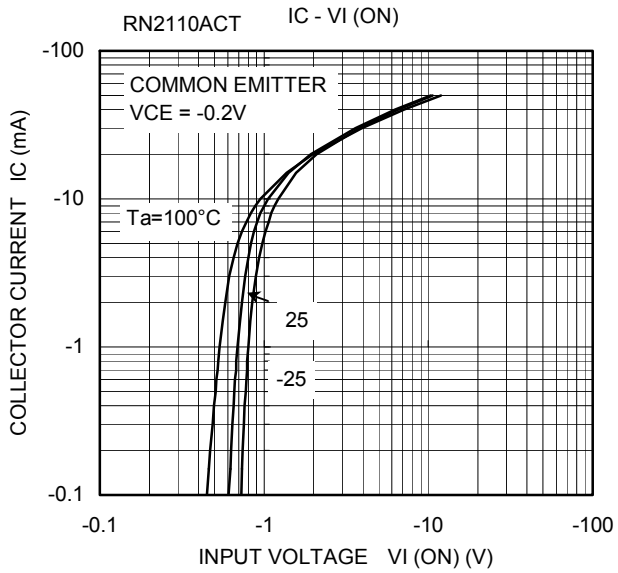
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	−50	V
Collector-emitter voltage	V_{CEO}	−50	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−80	mA
Collector power dissipation	P_C (Note)	100	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

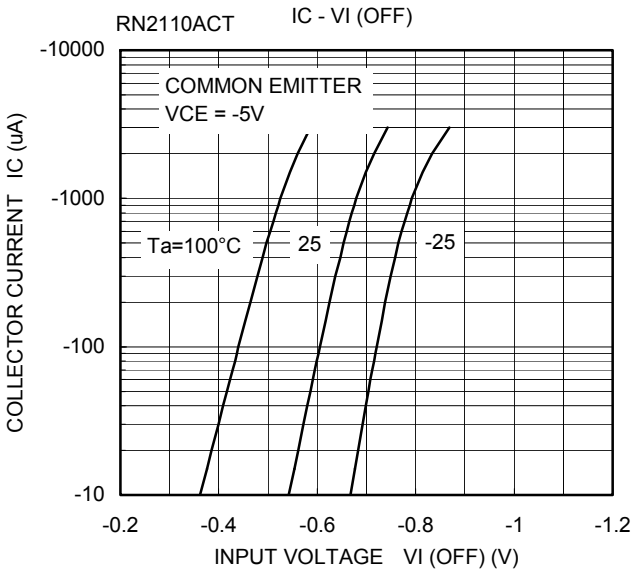
Note: Mounted on FR4 board (10 mm × 10 mm × 1 mmt)

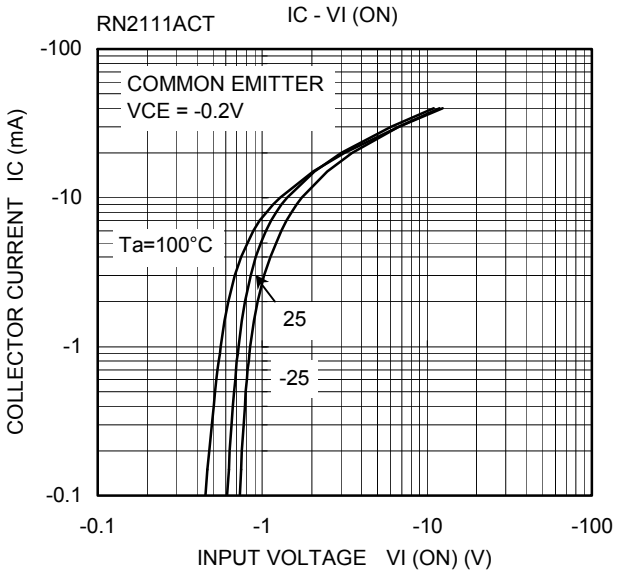
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e.operatingtemperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

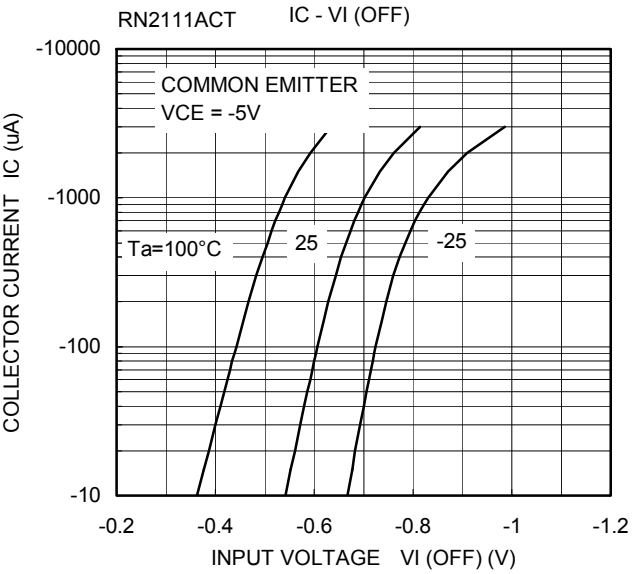
Electrical Characteristics (Ta = 25°C)

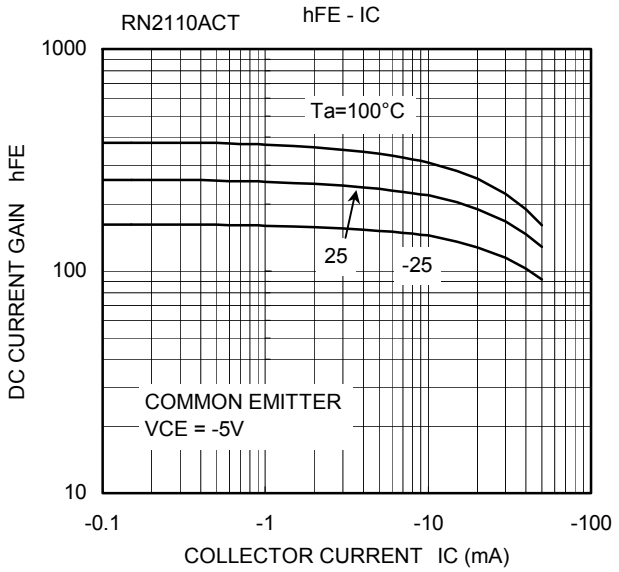
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = −50 V, I_E = 0	—	—	−100	nA
Emitter cut-off current		I_{EBO}	V_{EB} = −5 V, I_C = 0	—	—	−100	nA
DC current gain		h_{FE}	V_{CE} = −5 V, I_C = −1 mA	120	—	400	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = −5 mA, I_B = −0.25 mA	—		−0.15	V
Collector output capacitance		C_{ob}	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	0.9	—	pF
Input resistor	RN2110ACT	R1	—	3.76	4.7	5.64	kΩ
	RN2111ACT			8	10	12	

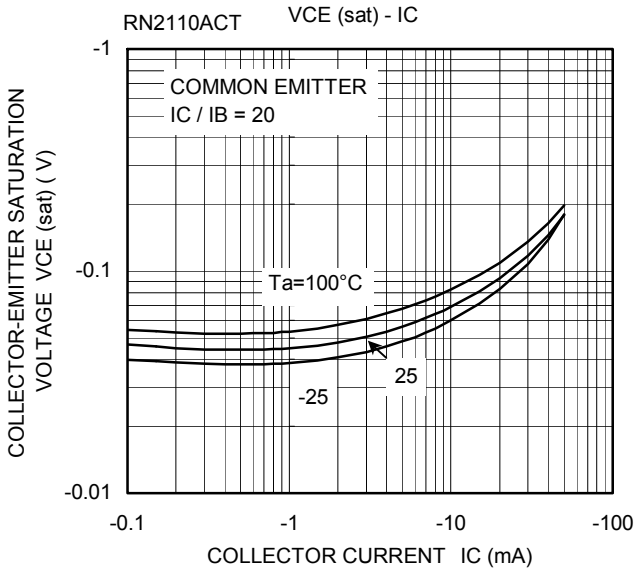

RN2110ACT
IC - VI (ON)
COMMON EMITTER
VCE = -0.2V
Ta=100°C
25
-25
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
-100
-10
-1
-0.1
-0.1
-1
-10
-100

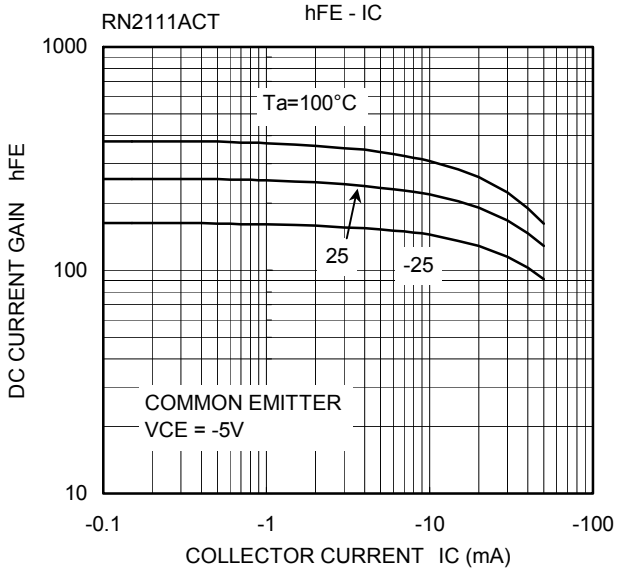

RN2110ACT
IC - VI (OFF)
COMMON EMITTER
VCE = -5V
Ta=100°C
25
-25
COLLECTOR CURRENT IC (uA)
INPUT VOLTAGE VI (OFF) (V)
-10000
-1000
-100
-10
-0.2
-0.4
-0.6
-0.8
-1
-1.2

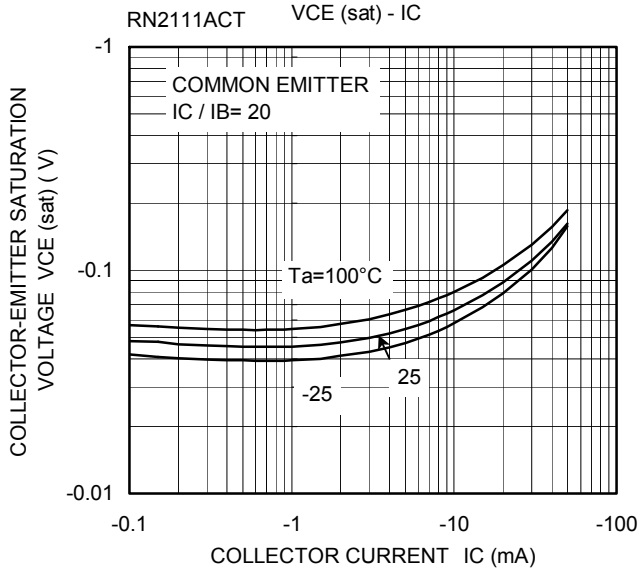

RN2111ACT
IC - VI (ON)
COMMON EMITTER
VCE = -0.2V
Ta=100°C
25
-25
COLLECTOR CURRENT IC (mA)
INPUT VOLTAGE VI (ON) (V)
-100
-10
-1
-0.1
-0.1
-1
-10
-100

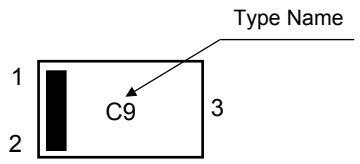
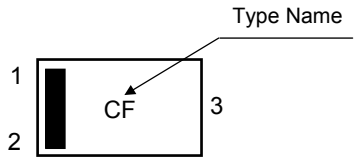

RN2111ACT
IC - VI (OFF)
COMMON EMITTER
VCE = -5V
Ta=100°C
25
-25
COLLECTOR CURRENT IC (uA)
INPUT VOLTAGE VI (OFF) (V)
-10000
-1000
-100
-10
-0.2
-0.4
-0.6
-0.8
-1
-1.2


RN2110ACT
hFE - IC
1000
100
10
DC CURRENT GAIN hFE
Ta=100°C
25
-25
COMMON EMITTER
VCE = -5V
-0.1
-1
-10
-100
COLLECTOR CURRENT IC (mA)


RN2110ACT
VCE (sat) - IC
-1
-0.1
-0.01
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COMMON EMITTER
IC / IB = 20
Ta=100°C
25
-25
-0.1
-1
-10
-100
COLLECTOR CURRENT IC (mA)


RN2111ACT
hFE - IC
1000
100
10
DC CURRENT GAIN hFE
Ta=100°C
25
-25
COMMON EMITTER
VCE = -5V
-0.1
-1
-10
-100
COLLECTOR CURRENT IC (mA)


RN2111ACT
VCE (sat) - IC
-1
-0.1
-0.01
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COMMON EMITTER
IC / IB= 20
Ta=100°C
25
-25
-0.1
-1
-10
-100
COLLECTOR CURRENT IC (mA)

Type Name	Marking
RN2110ACT	
RN2111ACT	

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