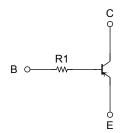
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process) (Bias Resistor Built-in Transistor)

RN2112FS, **RN2113FS**

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

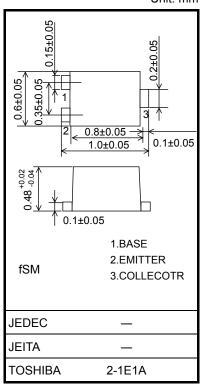
- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enables the manufacture of ever more compact equipment and lowers assembly cost.
- Complementary to RN1112FS, RN1113FS

Equivalent Circuit and Bias Resistor Values



Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit	
Collector-base voltage	V _{CBO}	-20	V	
Collector-emitter voltage	V _{CEO}	-20	V	
Emitter-base voltage	V _{EBO}	-5	V	
Collector current	IC	-50	mA	
Collector power dissipation	P _C	50	mW	
Junction temperature	Tj	150	°C	
Storage temperature range	T _{stg}	-55~150	°C	



Weight: 0.0006 g (typ.)

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. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

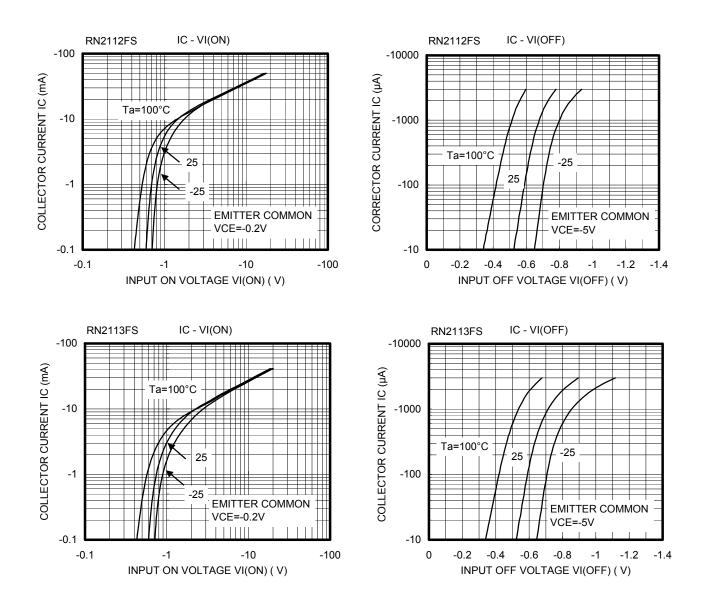
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical Characteristics (Ta = 25°C)

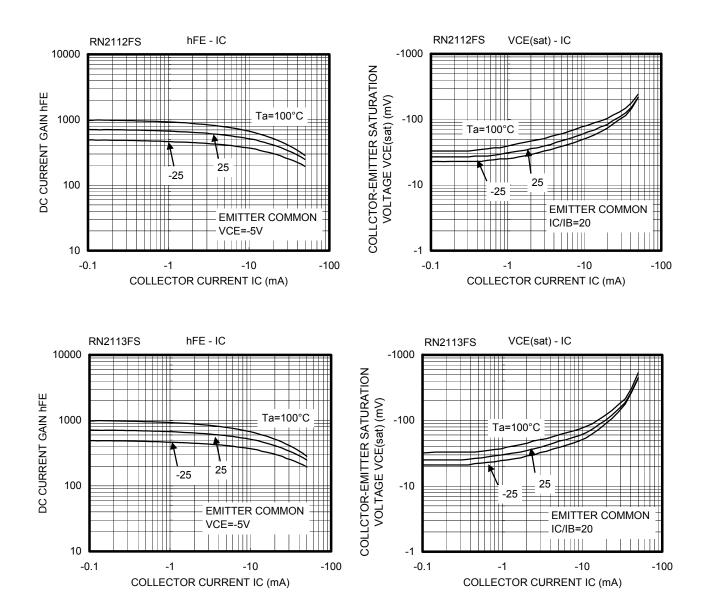
Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off curre	ent	I _{CBO}	$V_{CB}=-20~V,~I_{E}=0$	_	_	-100	nA
Emitter cut-off curren	t	I _{EBO}	$V_{EB} = -5 \text{ V}, \text{ I}_{C} = 0$	_	_	-100	nA
DC current gain		h _{FE}	$V_{CE} = -5 \text{ V}, \text{ I}_{C} = -1 \text{ mA}$	300	_	_	
Collector-emitter saturation voltage		V _{CE (sat)}	$I_C = -5 \text{ mA}, I_B = -0.25 \text{ mA}$	_		-0.15	V
Collector output capacitance		C _{ob}	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	_	1.2	_	pF
Input resistor	RN2112FS	- R1	_	17.6	22	26.4	kΩ
	RN2113FS			37.6	47	56.4	

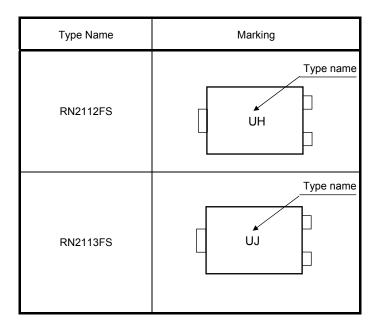
Unit: mm

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Handling Precaution

When handling individual devices (which are not yet mounted on a circuit board), be sure that the environment is protected against electrostatic discharge. Operators should wear anti-static clothing, and containers and other objects that come into direct contact with devices should be made of anti-static materials.

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