

Bipolar Transistors Silicon PNP Epitaxial Type (PCT Process)(Bias Resistor built-in Transistor)

RN2410,RN2411

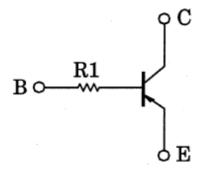
1. Applications

- · Switching
- · Inverter Circuits
- · Interfacing
- · Driver Circuits

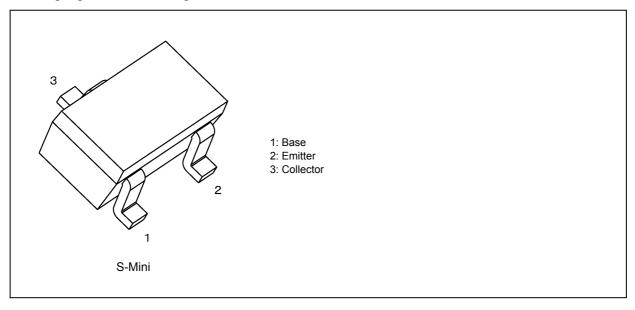
2. Features

- (1) AEC-Q101 qualified (Please see the orderable part number list)
- (2) The integrated bias resistor reduces the number of external parts required, making it possible to reduce system size and assembly time.
- (3) Toshiba offers transistors with a wide range of resistance to accommodate various circuit designs.
- (4) Complementary to RN1410,RN1411

3. Equivalent Circuit



4. Packaging and Pin Assignment



Start of commercial production

Rev.1.0



5. Orderable part number

Orderable part number		AEC-Q101	Note	Note	
RN2410	RN2410,LF	_		General Use	
	RN2410,LXGF	YES	(Note 1)	Unintended Use	(Note 1)
	RN2410,LXHF	YES		Automotive Use	
RN2411	RN2411,LF	_		General Use	
	RN2411,LXGF	YES	(Note 1)	Unintended Use	(Note 1)
	RN2411,LXHF	YES		Automotive Use	

Note 1: For more information, please contact our sales or use the inquiry form on our website.

6. Absolute Maximum Ratings (Note) (Unless otherwise specified, T_a = 25 °C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	-50	V
Collector-emitter voltage	V _{CEO}	-50	
Emitter-base voltage	V _{EBO}	-5	
Collector current	Ic	-100	mA
Collector power dissipation	P _C	200	mW
Junction temperature	Tj	150	°C
Storage temperature	T _{stg}	-55 to 150	

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).



7. Electrical Characteristics (Unless otherwise specified, Ta = 25 °C)

Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current		I _{CBO}	$V_{CB} = -50 \text{ V}, I_{E} = 0 \text{ mA}$	_	_	-100	nA
Emitter cut-off current		I _{EBO}	$V_{EB} = -5 \text{ V}, I_{C} = 0 \text{ mA}$	_	_	-100	
DC current gain		h _{FE}	$V_{CE} = -5 \text{ V, } I_{C} = -1 \text{ mA}$	120	_	400	_
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	_	200	_	MHz
Collector output capacitance		C _{ob}	$V_{CB} = -10 \text{ V}, I_{E} = 0 \text{ mA}, f = 1 \text{ MHz}$	_	3	6	pF
Input resistance	RN2410	R ₁	-	3.29	4.7	6.11	kΩ
	RN2411			7	10	13	

8. Marking

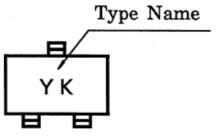


Fig. 8.1 Marking RN2410

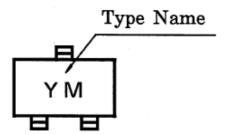
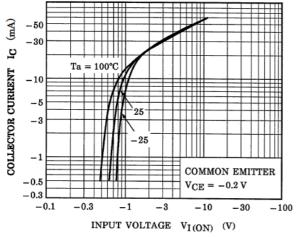
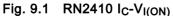


Fig. 8.2 Marking RN2411



9. Characteristics Curves (Note)





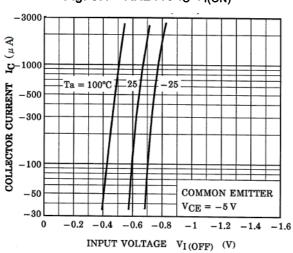


Fig. 9.3 RN2410 I_C-V_{I(OFF)}

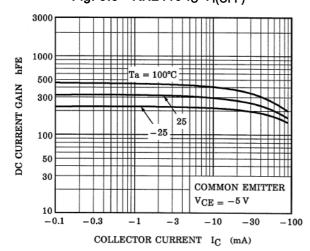


Fig. 9.5 RN2410 h_{FE}-I_C

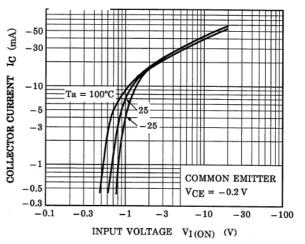


Fig. 9.2 RN2411 I_C-V_{I(ON)}

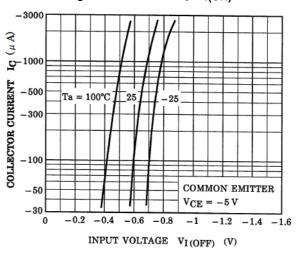


Fig. 9.4 RN2411 I_C-V_{I(OFF)}

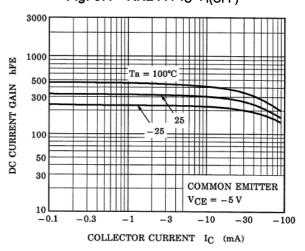
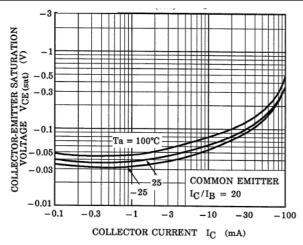


Fig. 9.6 RN2411 h_{FE}-I_C





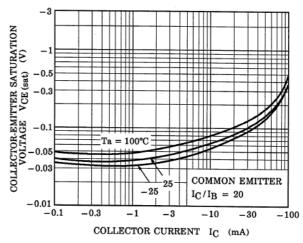


Fig. 9.7 RN2410 $V_{CE(sat)}$ - I_C

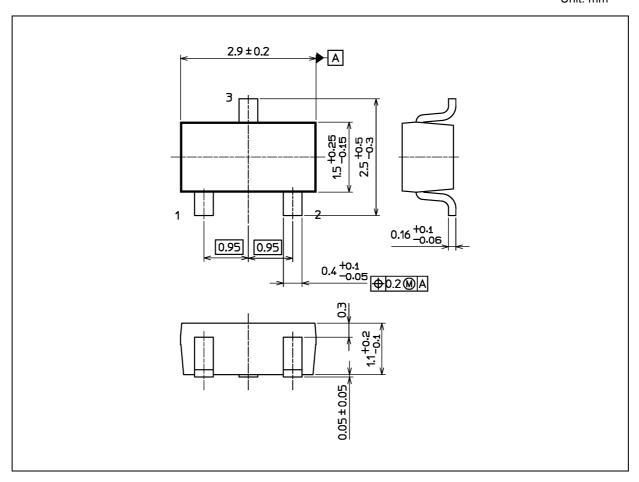
Fig. 9.8 RN2411 V_{CE(sat)}-I_C

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.



Package Dimensions

Unit: mm



Weight: 12 mg (typ.)

	Package Name(s)
TOSHIBA: 2-3F1S	
Nickname: S-Mini	



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