RT1N231X SERIES

〈Transistor〉

Transistor With Resistor

For Switching Application

Silicon NPN Epitaxial Type

DESCRIPTION

RT1N231X is a one chip transistor
with built-in bias resistor,PNP type is RT1P231X.

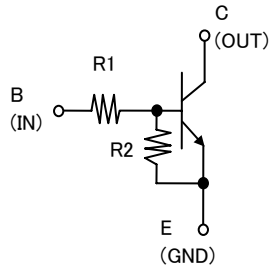
FEATURE

・Built-in bias resistor (R1=2.2kΩ,R2=2.2kΩ).

APPLICATION

Inverted circuit,switching circuit,interface circuit,driver circuit.

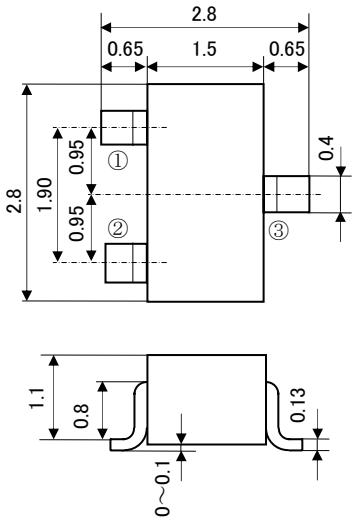
Equivalent circuit



OUTLINE DRAWING

UNIT : mm

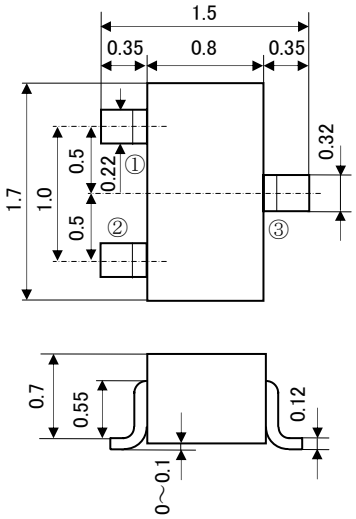
RT1N231C



JEITA : SC-59
JEDEC : Similar to TO-236

Terminal Connector
①:Base
②:Emitter
③:Collector

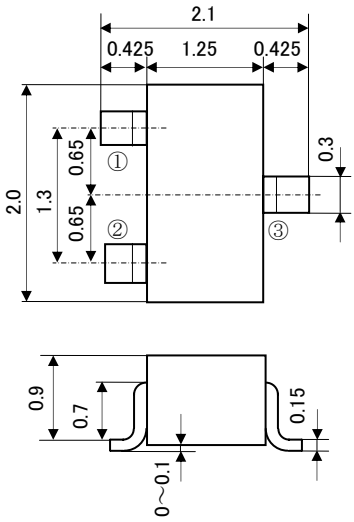
RT1N231U



JEITA : SC-75A
JEDEC : —

Terminal Connector
①:Base
②:Emitter
③:Collector

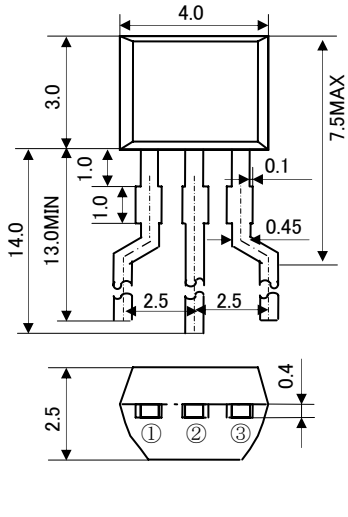
RT1N231M



JEITA : SC-70
JEDEC : —

Terminal Connector
①:Base
②:Emitter
③:Collector

RT1N231S



JEITA : —
JEDEC : —

Terminal Connector
①:Emitter
②:Collector
③:Base

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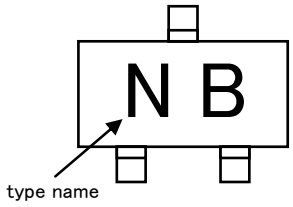
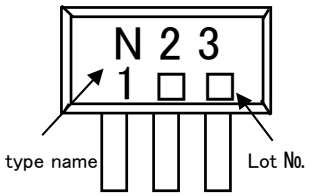
MARKING

RT1N231C RT1N231M RT1N231U	RT1N231S
	

MAXIMUM RATING (Ta=25℃)

SYMBOL	PARAMETER	RATING				UNIT
		RT1N231U	RT1N231M	RT1N231C	RT1N231S	
V_{CBO}	Collector to Base voltage	50				V
V_{EBO}	Emitter to Base voltage	10				V
V_{CEO}	Collector to Emitter voltage	50				V
V_{IN}	Input voltage	12				V
I_C	Collector current	100				mA
I_{CM}	Peak Collector current	200				mA
P_C	Collector dissipation(Ta=25℃)	150	200		450	mW
Tj	Junction temperature	+150				℃
Tstg	Storage temperature	−55～+150				℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

SYMBOL	PARAMETER	TEST CONDITION	LIMIT			UNIT
			MIN	TYP	MAX	
$V_{(BR)CEO}$	C to E break down voltage	I_C=100μA, R_{BE}=∞	50	—	—	V
I_{CBO}	Collector cut off current	V_{CB}=50V, I_E=0	—	—	0.1	μA
I_{EBO}	Emitter cut off current	V_{EB}=5V, I_C=0	850	1140	1650	μA
h_{FE}	DC forward current gain	V_{CE}=5V, I_C=20mA	20	—	—	—
$V_{CE(sat)}$	C to E saturation voltage	I_C=10mA, I_B=0.5mA	—	—	0.3	V
$V_{I(ON)}$	Input on voltage	V_{CE}=0.2V, I_C=5mA	—	1.3	2.2	V
$V_{I(OFF)}$	Input off voltage	V_{CE}=5V, I_C=100μA	0.7	1.1	—	V
R_1	Input resistor	—	1.5	2.2	2.9	kΩ
R_2/R_1	Resistor ratio	—	0.8	1.0	1.2	—
f_T	Gain band width product	V_{CE}=6V, I_E=−10mA	—	200	—	MHz

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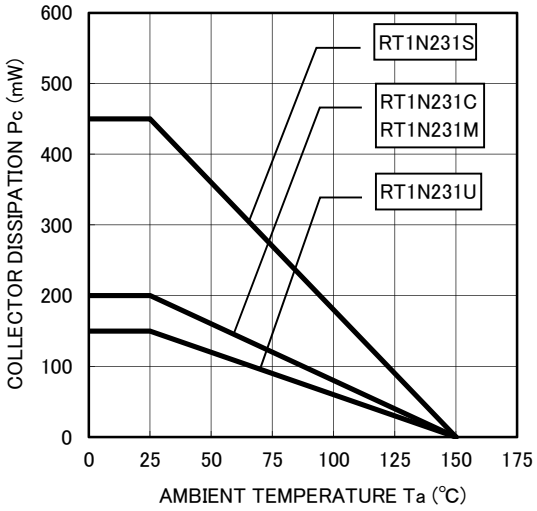
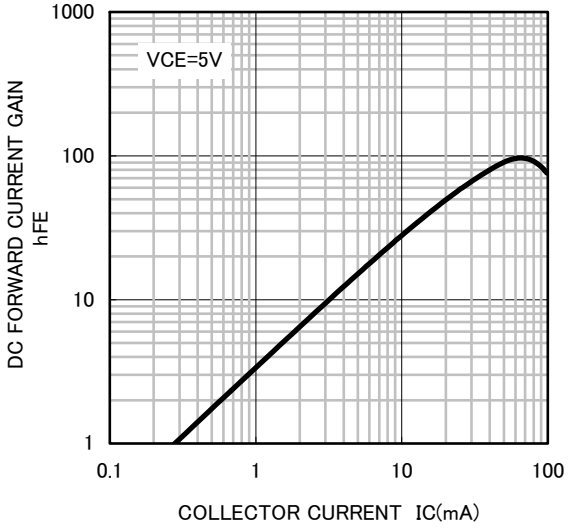
TYPICAL CHARACTERISTICS (Ta=25℃)

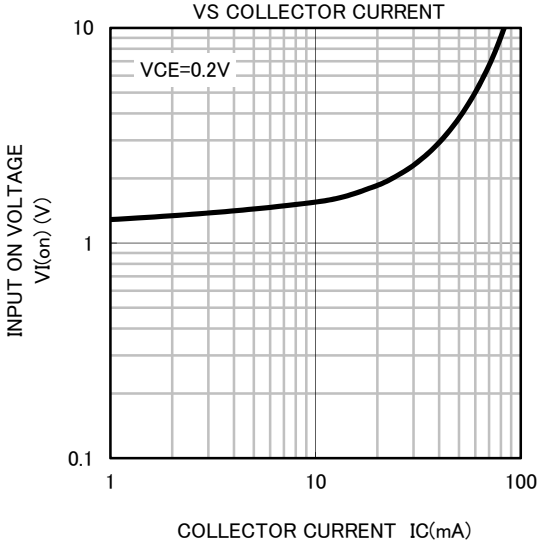
COLLECTOR DISSIPATION
VS AMBIENT TEMPERATURE



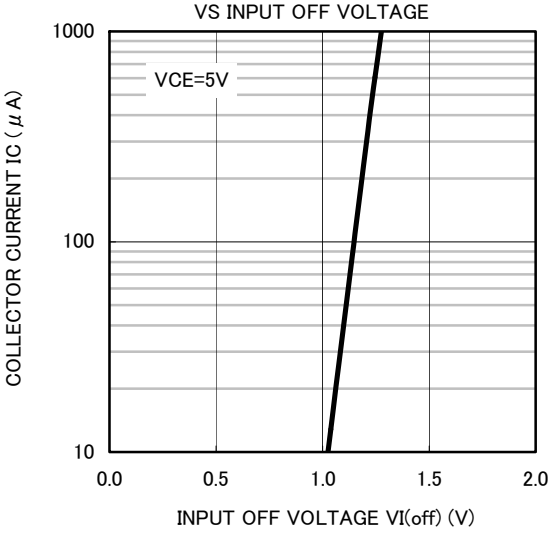
DC FORWARD CURRENT GAIN
VS COLLECTOR CURRENT



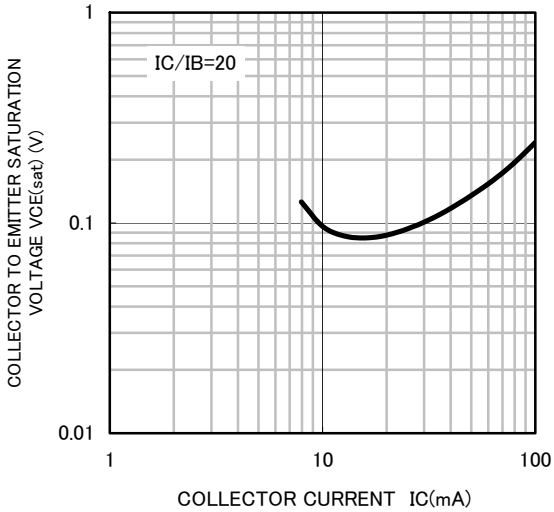
INPUT ON VOLTAGE
VS COLLECTOR CURRENT



COLLECTOR CURRENT
VS INPUT OFF VOLTAGE



COLLECTOR TO EMITTER SATURATION
VOLTAGE VS COLLECTOR CURRENT



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