RT3TBBM

Composite Transistor With Resistor
For Switching Application
Silicon Epitaxial Type

DESCRIPTION

RT3TBBM is composite transistor built with RT1N231 chip and RT1P231 chip in SC-88 package.

FEATURE

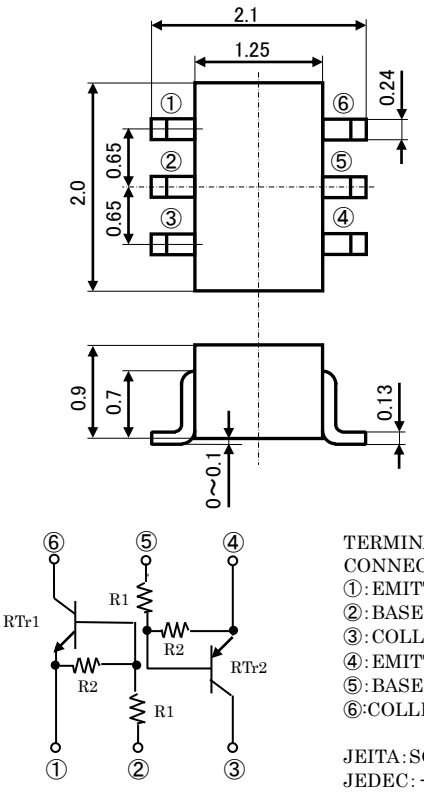
Built-in bias resistor (R1=2.2kΩ, R2=2.2kΩ)
Mini package for easy mounting

APPLICATION

Inverted circuit, Switching circuit,
Interface circuit, Driver circuit

OUTLINE DRAWING

Unit:mm



TERMINAL
CONNECTOR
①:EMITTER1
②:BASE1
③:COLLECTOR2
④:EMITTER2
⑤:BASE2
⑥:COLLECTOR1

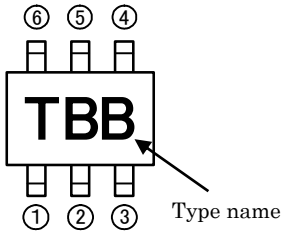
JEITA:SC-88
JEDEC:－

MAXIMUM RATING (Ta=25℃) (RTr1_NPN, RTr2_PNP)

SYMBOL	PARAMETER	RATING	UNIT
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_T	Total dissipation	200	mW
T_j	Junction temperature	+150	℃
T_{stg}	Storage temperature	-55～+150	℃

※PNP built in transistor of"－"sign is abbreviation.

MARKING



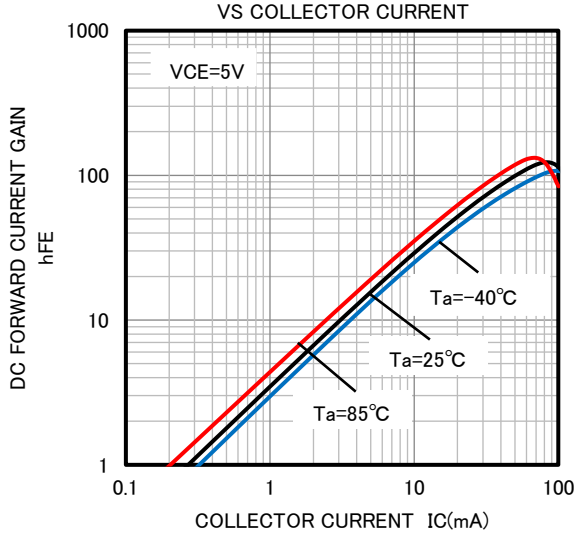
ELECTRICAL CHARACTERISTICS (Ta=25℃) (RTr1_NPN, RTr2_PNP)

Symbol	Parameter	Test conditions		Limits			Unit
				Min	Typ	Max	
$V_{(BR)CEO}$	Collector to Emitter breakdown 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	－	－	－
$V_{CE(sat)}$	Collector to Emitter 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	RTr1	－	200	－	MHz
			RTr2	－	150	－	

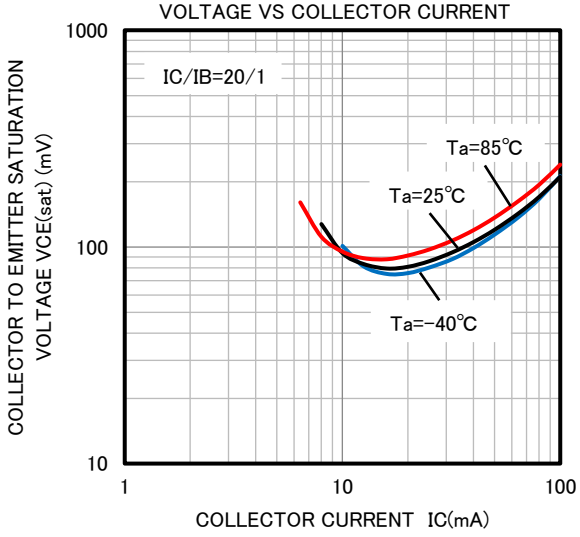
※PNP built in transistor of"－"sign is abbreviation.

TYPICAL CHARACTERISTICS (RTr1_NPN)

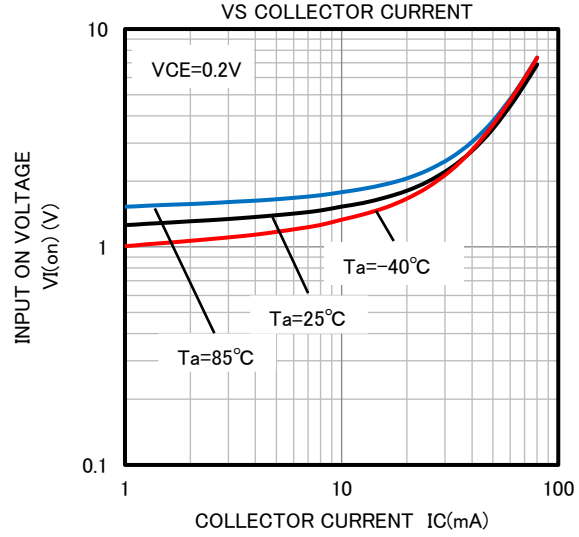
DC FORWARD CURRENT GAIN VS COLLECTOR CURRENT



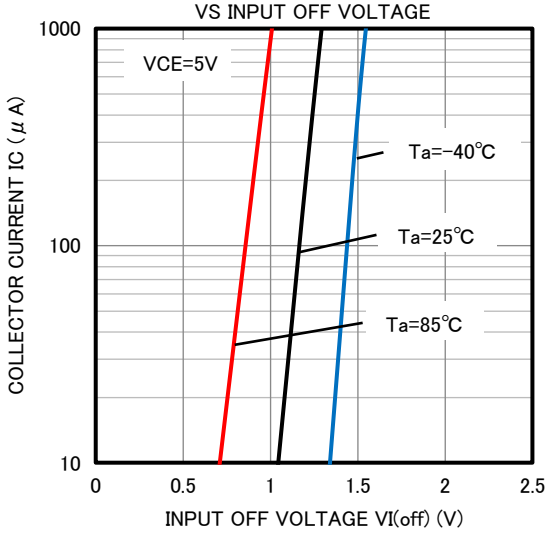
COLLECTOR TO EMITTER SATURATION VOLTAGE VS COLLECTOR CURRENT



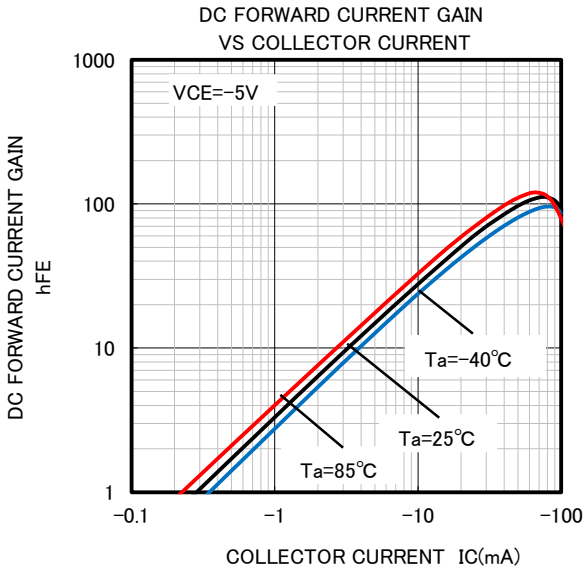
INPUT ON VOLTAGE VS COLLECTOR CURRENT

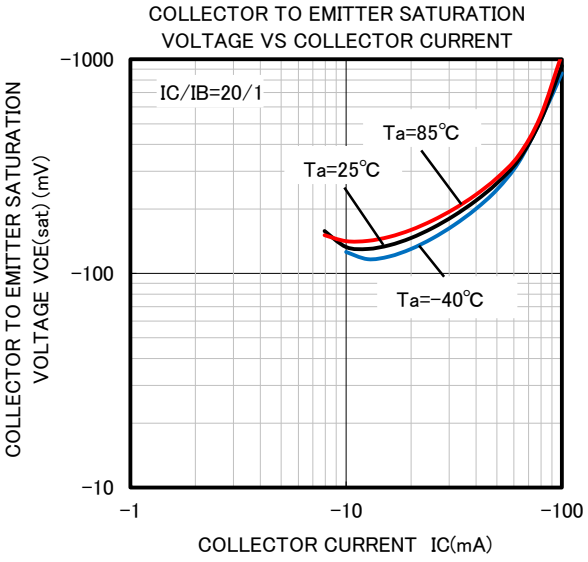


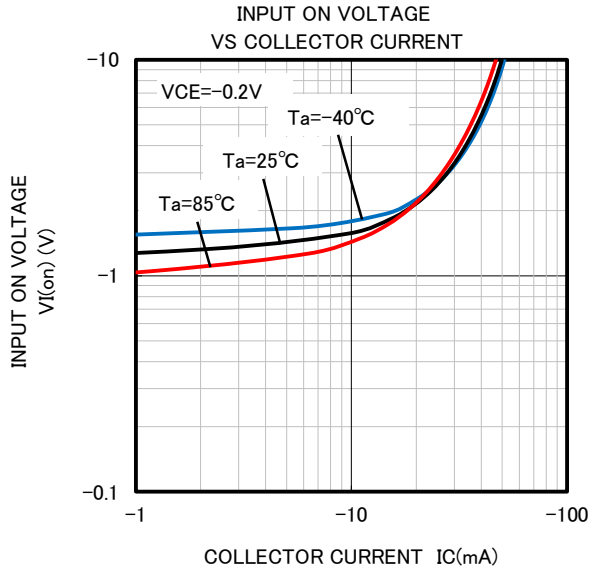
COLLECTOR CURRENT VS INPUT OFF VOLTAGE

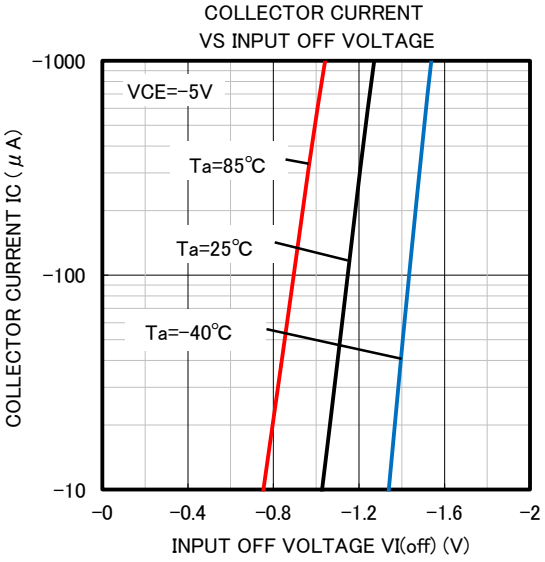


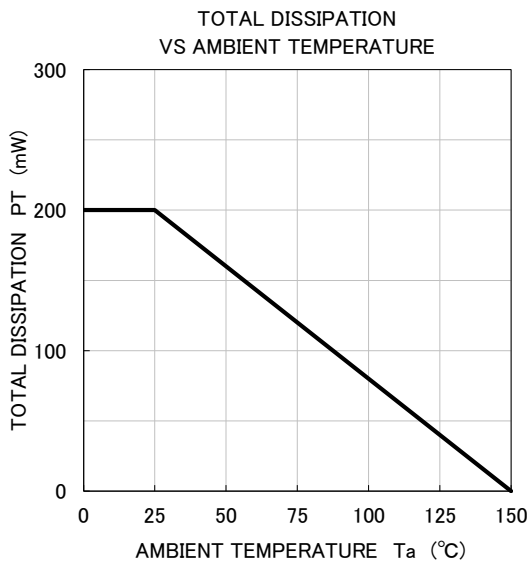
TYPICAL CHARACTERISTICS (RTr 2_PNP)











Keep safety first in your circuit designs!

·ISAHAYA Electronics Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1) placement of substitutive, auxiliary, (2) use of non-farmable material or (3) prevention against any malfunction or mishap.

Notes regarding these materials

·These materials are intended as a reference to our customers in the selection of the ISAHAYA products best suited to the customer's application; they don't convey any license under any intellectual property rights, or any other rights, belonging ISAHAYA or third party.

·ISAHAYA Electronics Corporation assumes no responsibility for any damage, or infringement of any third party's rights, originating in the use of any product data, diagrams, charts or circuit application examples contained in these materials.

·All information contained in these materials, including product data, diagrams and charts, represent information on products at the time of publication of these materials, and are subject to change by ISAHAYA Electronics Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact ISAHAYA Electronics Corporation or an authorized ISAHAYA products distributor for the latest product information before purchasing product listed herein.

·ISAHAYA Electronics Corporation products are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact ISAHAYA Electronics Corporation or an authorized ISAHAYA products distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.

·The prior written approval of ISAHAYA Electronics Corporation is necessary to reprint or reproduce in whole or in part these materials.

·If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination. Any diversion or re-export contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.

·Please contact ISAHAYA Electronics Corporation or authorized ISAHAYA products distributor for further details on these materials or the products contained therein.