# RT2N09M

Composite Transistor With Resistor
For Switching Application
Silicon NPN Epitaxial Type

## DESCRIPTION

RT2N09M is composite transistor with built-in bias resistor.

## FEATURE

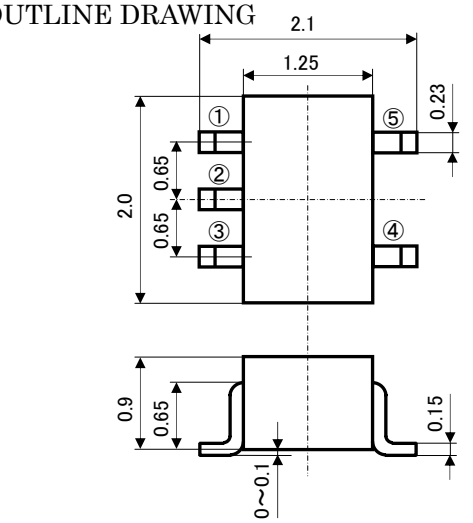
Built-in bias resistor (R1=2.2kΩ, R2=47kΩ)
Mini package for easy mounting

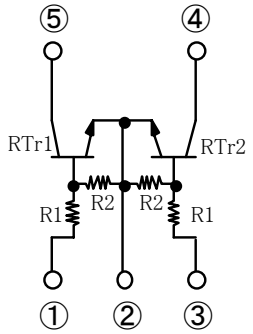
## APPLICATION

Inverted circuit, Switching circuit,
Interface circuit, Driver circuit

## OUTLINE DRAWING

Unit:mm



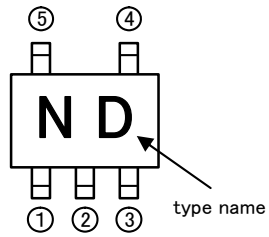

TERMINAL CONNECTOR
①:BASE1
②:EMITTER(COMMON)
③:BASE2
④:COLLECTOR2
⑤:COLLECTOR1

JEITA:SC-88A
JEDEC:−

## MAXIMUM RATING(Ta=25℃)(RTr1, RTr2 COMMON)

| SYMBOL | PARAMETER | RATING | UNIT |
|---|---|---|---|
| $V_{CBO}$ | Collector to Base voltage | 50 | V |
| $V_{EBO}$ | Emitter to Base voltage | 6 | 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 | ℃ |

## MARKING



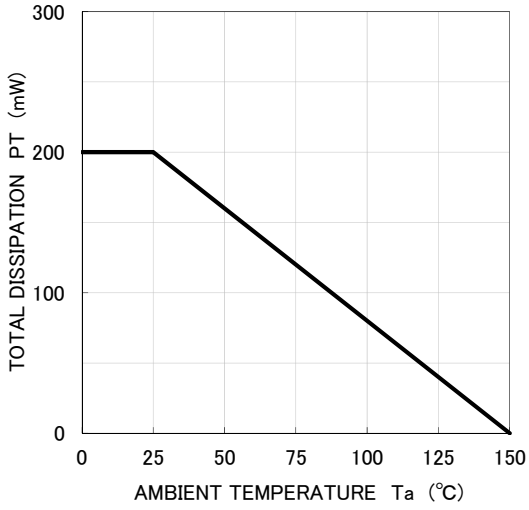

## ELECTRICAL CHARACTERISTICS(Ta=25℃)(RTr1, RTr2 COMMON)

| 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 | 76 | 102 | 147 | μA |
| $h_{FE}$ | DC forward current gain | $V_{CE}$=5V, $I_C$=10mA | 80 | − | − | − |
| $V_{CE(sat)}$ | 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 | − | 0.7 | 1.1 | V |
| $V_{I(OFF)}$ | Input off voltage | $V_{CE}$=5V, $I_C$=100μA | 0.5 | 0.6 | − | V |
| $R_1$ | Input resistor | − | 1.5 | 2.2 | 2.9 | kΩ |
| $R_2/R_1$ | Resistor ratio | − | 17 | 22 | 26 | − |
| $f_T$ | Gain band width product | $V_{CE}$=6V, $I_E$=-10mA | − | 200 | − | MHz |

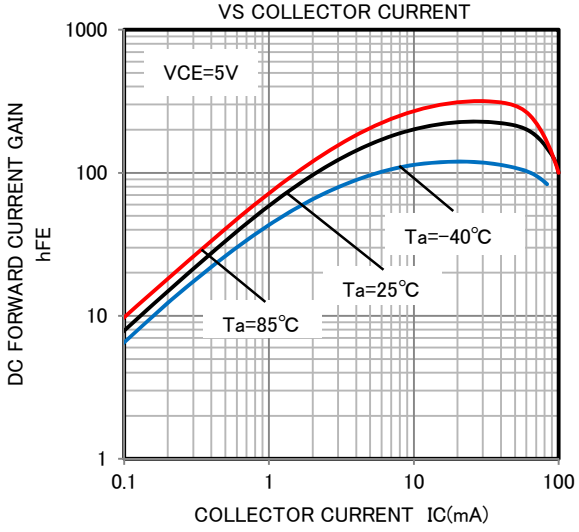
## TYPICAL CHARACTERISTICS

(RTr1,RTr2 COMMON)

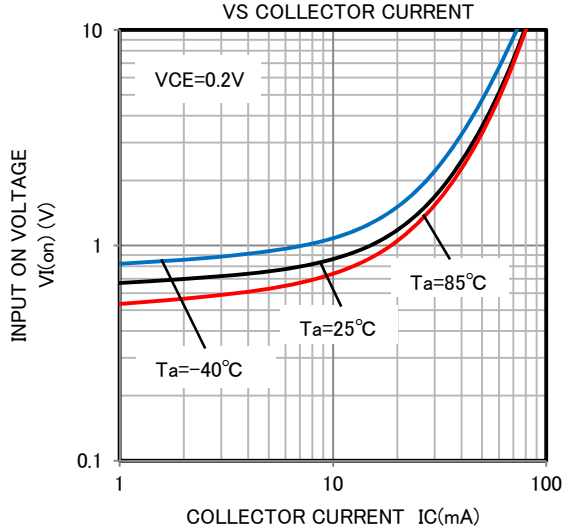
TOTAL DISSIPATION
VS AMBIENT TEMPERATURE



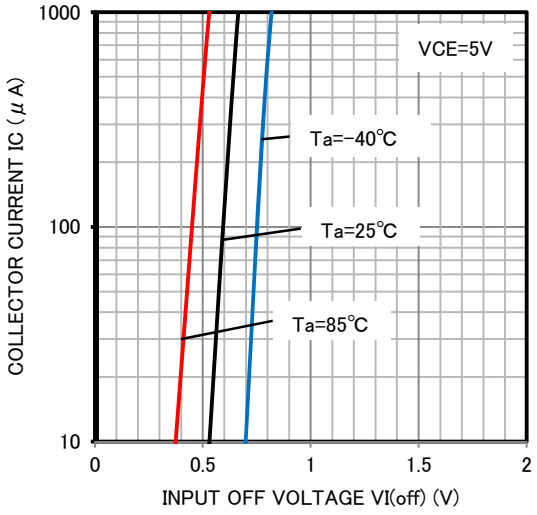

DC FORWARD CURRENT GAIN
VS COLLECTOR CURRENT



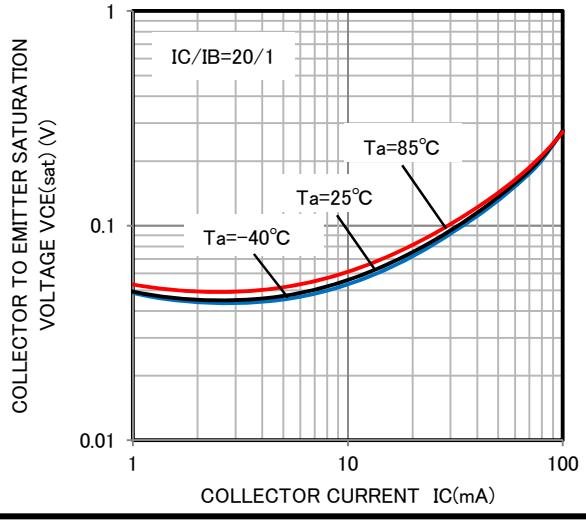

INPUT ON VOLTAGE
VS COLLECTOR CURRENT




COLLECTOR CURRENT
VS INPUT OFF VOLTAGE




COLLECTOR TO EMITTER SATURATION
VOLTAGE VS COLLECTOR CURRENT



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