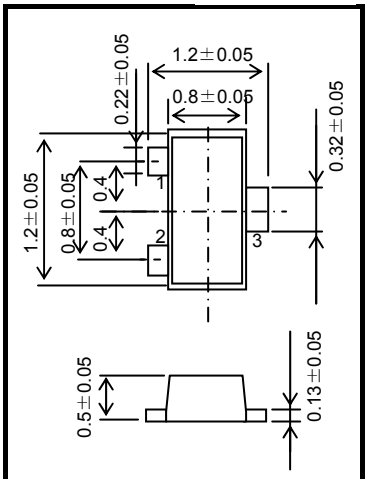
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

RN2107MFV,RN2108MFV,RN2109MFV

Switching, Inverter Circuit, Interface Circuit
and Driver Circuit Applications

- Ultra-small package, suited to very high density mounting
- Incorporating a bias resistor into the transistor reduces the number of parts, so enabling the manufacture of ever more compact equipment and lowering assembly cost.
- A wide range of resistor values is available for use in various circuits.
- Complementary to the RN1107MFV~RN1109MFV

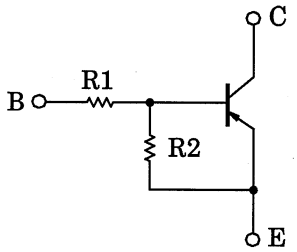
Unit: mm



JEDEC	―
JEITA	―
TOSHIBA	2-1L1A

Weight: 0.0015 g (typ.)

Equivalent Circuit and Bias Resistor Values



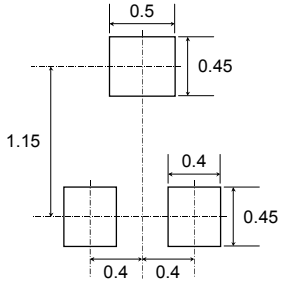
Type No.	R1 (kΩ)	R2 (kΩ)
RN2107MFV	10	47
RN2108MFV	22	47
RN2109MFV	47	22

Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN2107MFV ~RN2109MFV	V_{CBO}	−50	V
Collector-emitter voltage		V_{CEO}	−50	V
Emitter-base voltage	RN2107MFV	V_{EBO}	−6	V
	RN2108MFV		−7	
	RN2109MFV		−15	
Collector current	RN2107MFV ~RN2109MFV	I_C	−100	mA
Collector power dissipation		P_C(Note 1)	150	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

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).

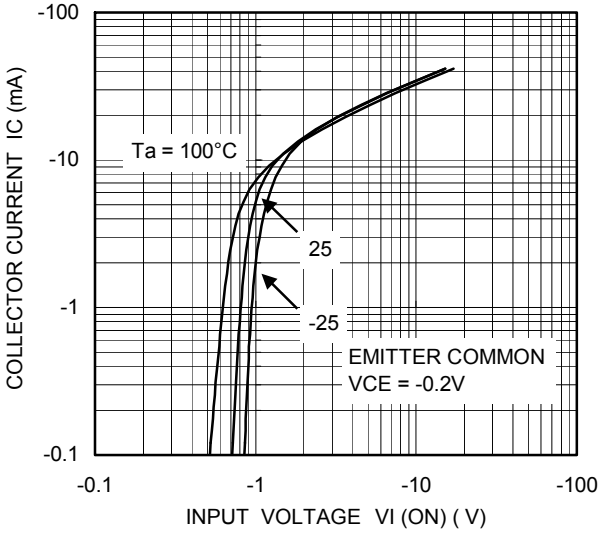
Note 1: Mounted on an FR4 board (25.4 mm × 25.4 mm × 1.6 mmt)



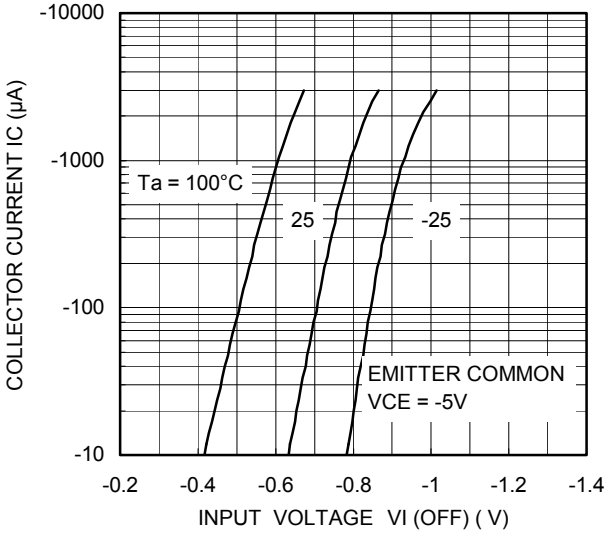
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cutoff current	RN2107MFV~ 2109MFV	I_{CBO}	—	V_{CB} = −50 V, I_E = 0	—	—	−100	nA
		I_{CEO}		V_{CE} = −50 V, I_B = 0	—	—	−500	nA
Emitter cutoff current	RN2107MFV	I_{EBO}	—	V_{EB} = −6 V, I_C = 0	−0.081	—	−0.15	mA
	RN2108MFV			V_{EB} = −7 V, I_C = 0	−0.078	—	−0.145	
	RN2109MFV			V_{EB} = −15 V, I_C = 0	−0.167	—	−0.311	
DC current gain	RN2107MFV	h_{FE}	—	V_{CE} = −5 V, I_C = −10 mA	80	—	—	—
	RN2108MFV				80	—	—	
	RN2109MFV				70	—	—	
Collector-emitter saturation voltage	RN2107MFV~ 2109MFV	$V_{CE\ (sat)}$	—	I_C = −5 mA, I_B = −0.25 mA	—	−0.1	−0.3	V
Input voltage (ON)	RN2107MFV	$V_{I\ (ON)}$	—	V_{CE} = −0.2 V, I_C = −5 mA	−0.7	—	−1.8	V
	RN2108MFV				−1.0	—	−2.6	
	RN2109MFV				−2.2	—	−5.8	
Input voltage (OFF)	RN2107MFV	$V_{I\ (OFF)}$	—	V_{CE} = −5 V, I_C = −0.1 mA	−0.5	—	−1.0	V
	RN2108MFV				−0.6	—	−1.16	
	RN2109MFV				−1.5	—	−2.6	
Collector output capacitance	RN2107MFV~ 2109MFV	C_{ob}	—	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	0.9	—	pF
Input resistor	RN2107MFV	R1	—	—	7	10	13	kΩ
	RN2108MFV				15.4	22	28.6	
	RN2109MFV				32.9	47	61.1	
Resistor ratio	RN2107MFV	R1/R2	—	—	0.17	0.213	0.255	—
	RN2108MFV				0.374	0.468	0.562	
	RN2109MFV				1.71	2.14	2.56	

RN2107MFV IC - VI (ON)



RN2107MFV IC - VI (OFF)



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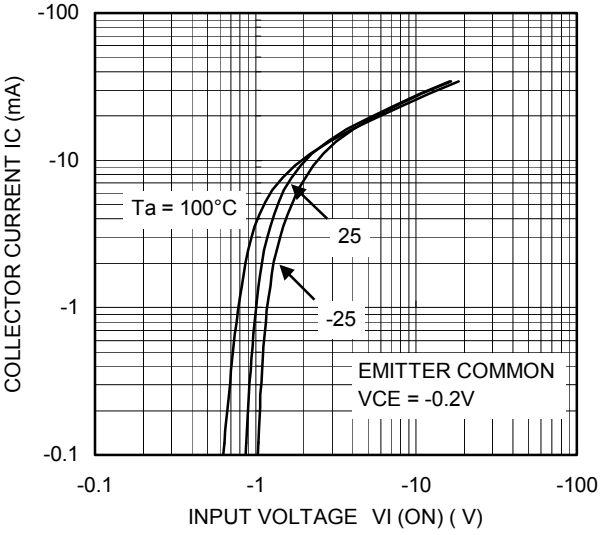
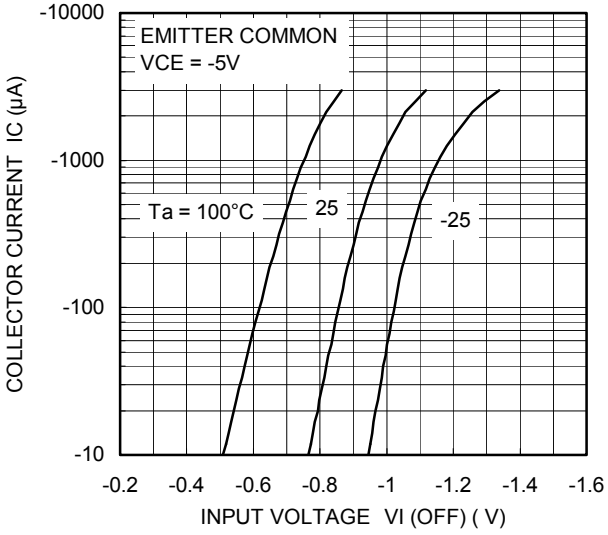
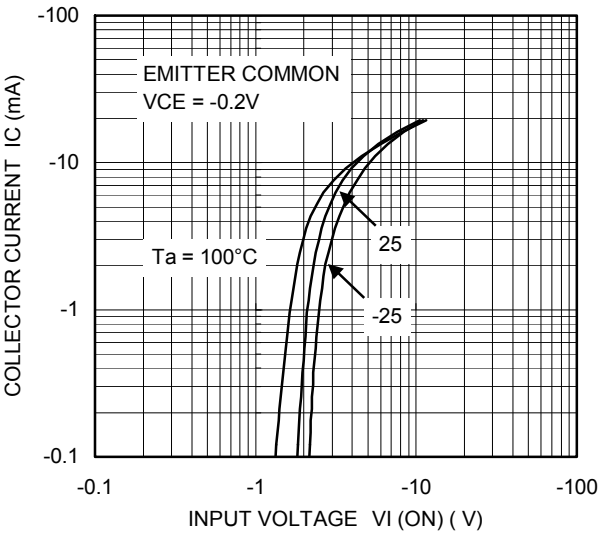


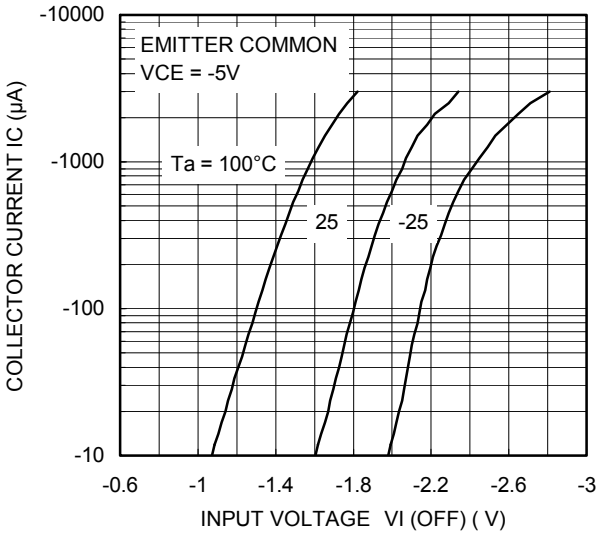
RN2108MFV IC - VI (OFF)



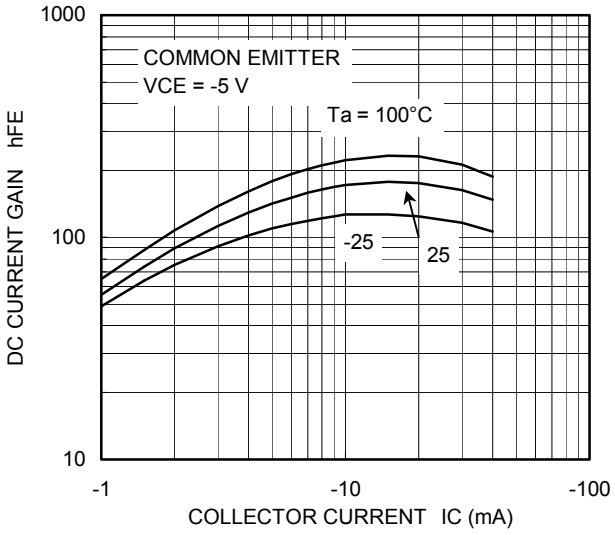
RN219MFV IC - VI (ON)



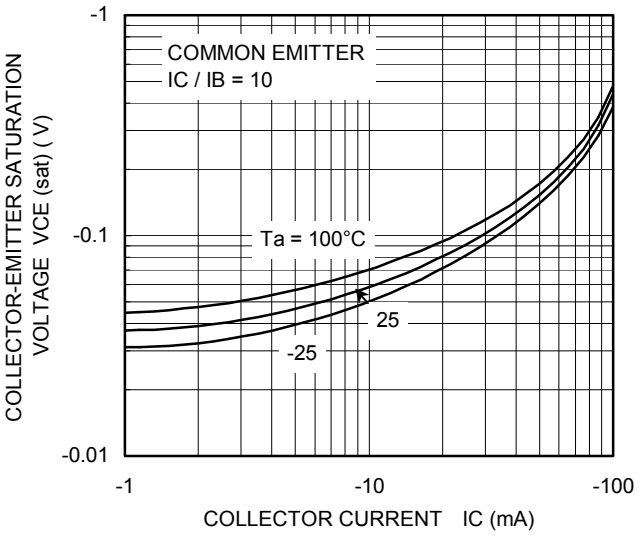
RN2109MFV IC - VI (OFF)



RN2107MFV hFE - IC



RN2107MFV VCE(sat) - IC



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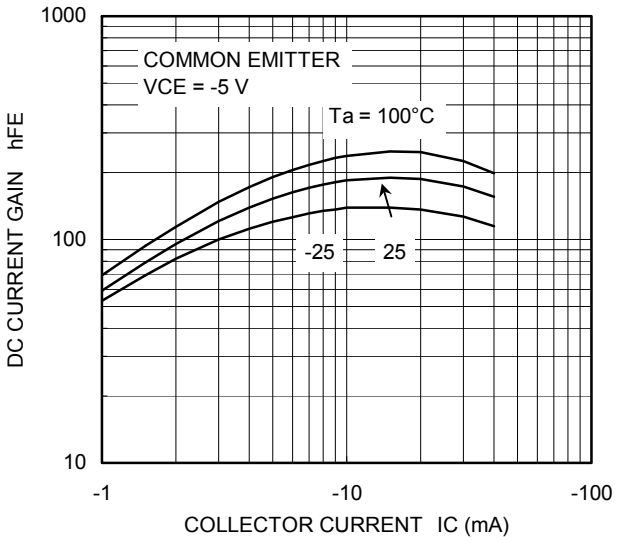

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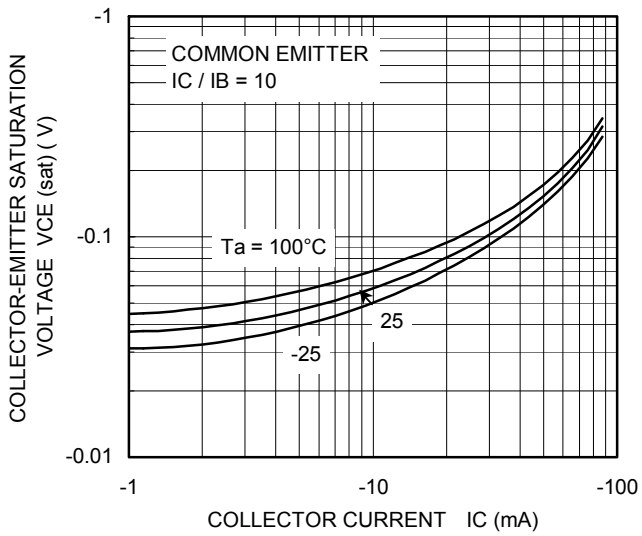
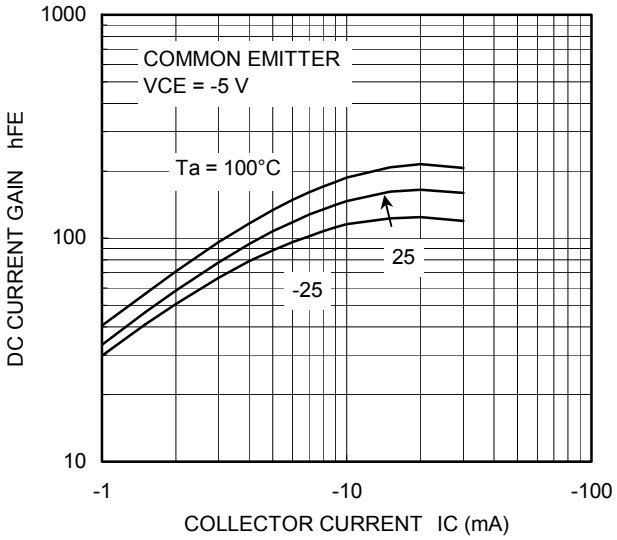
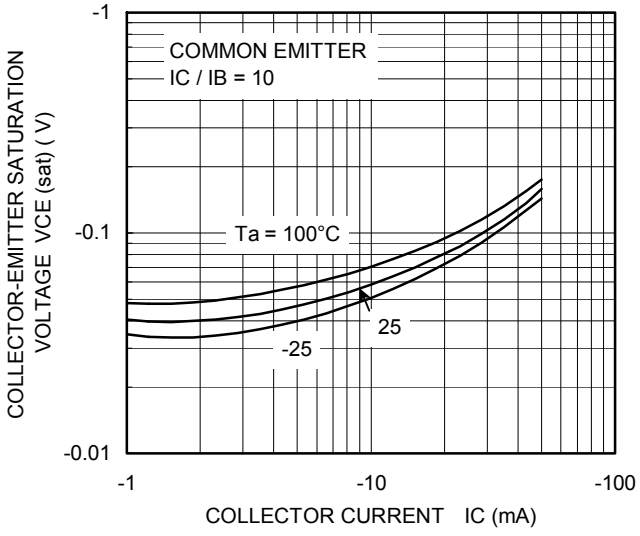
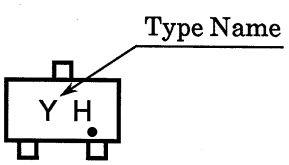
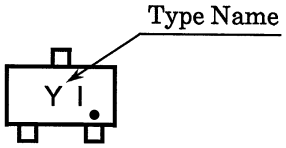
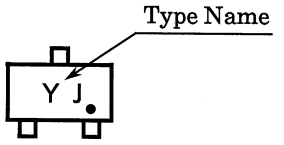


RN2109MFV hFE- IC



RN2109MFV VCE(sat) - IC



Type Name	Marking
RN2107MFV	
RN2108MFV	
RN2109MFV	

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