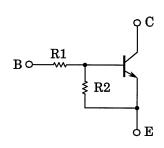
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1101MFV,RN1102MFV,RN1103MFV RN1104MFV,RN1105MFV,RN1106MFV

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 RN2101MFV to RN2106MFV

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN1101MFV	4.7	4.7
RN1102MFV	10	10
RN1103MFV	22	22
RN1104MFV	47	47
RN1105MFV	2.2	47
RN1106MFV	4.7	47

1. BASE 2. EMITTER 3. COLLECTOR JEDEC JEITA TOSHIBA 1.0.05 0.80 ± 0.05 0.80 ±

Weight: 1.5 mg (typ.)

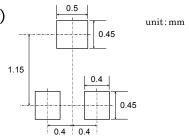
Absolute Maximum Ratings (Ta = 25°C)

Characte	Symbol	Rating	Unit		
Collector-base voltage	RN1101MFV to 1106MFV	V_{CBO}	50	V	
Collector-emitter voltage	TRIVITOTIVII V TO TTOOIVII V	V_{CEO}	50	V	
Emitter-base voltage	RN1101MFV to 1104MFV	Vene	10	V	
Emiller-base vollage	RN1105MFV, 1106MFV	V _{EBO}	5		
Collector current		Ic	100	mA	
Collector power dissipation	RN1101MFV to 1106MFV	P _C (Note 1)	150	mW	
Junction temperature	KINTTOTIVITY TO TTOOIVITY	Tj	150	°C	
Storage temperature range		T _{stg}	-55 to 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 \times 25.4 mm \times 1.6 mm)

Pad Dimension (Reference)

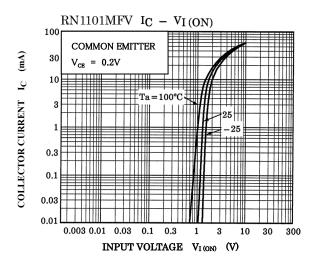


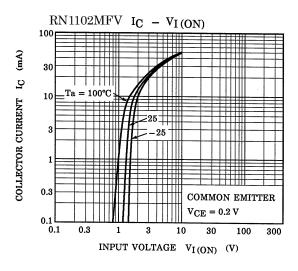


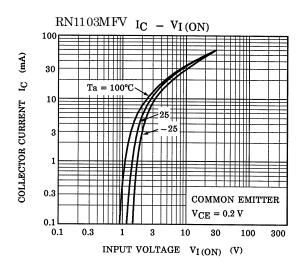
Electrical Characteristics (Ta = 25°C)

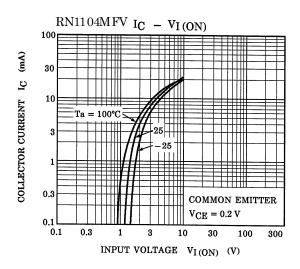
Characte	eristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cutoff current	RN1101MFV to	Ісво		V _{CB} = 50 V, I _E = 0	_	_	100	nA
Collector cuton current	1106MFV	I _{CEO}		V _{CE} = 50 V, I _B = 0	_	_	500	
Emitter cutoff current	RN1101MFV	I _{EBO}	_	V _{EB} = 10 V, I _C = 0	0.82	_	1.52	- mA
	RN1102MFV				0.38	_	0.71	
	RN1103MFV				0.17	_	0.33	
Emiliter Cuton Current	RN1104MFV				0.082	_	0.15	
	RN1105MFV			V _{EB} = 5 V, I _C = 0	0.078	_	0.145	
	RN1106MFV				0.074	_	0.138	
	RN1101MFV				30	_	_	
	RN1102MFV				50	_	_	
DC ourrent gain	RN1103MFV	h		\\\-= = \(\) \\ \ \ \ \ \ \ \ \ \ \ \ \	70	_	_	
DC current gain	RN1104MFV	h _{FE}	_	$V_{CE} = 5 \text{ V}, I_{C} = 10 \text{ mA}$	80	_	_	
	RN1105MFV				80	_	_	
	RN1106MFV				80	_	_	
Collector-emitter saturation voltage	RN1101MFV to 1106MFV	V _{CE} (sat)	_	I _C = 5 mA, I _B = 0.5 mA	_	0.1	0.3	٧
	RN1101MFV	Vi (ON)		V _{CE} = 0.2 V, I _C = 5	1.1	_	2.0	. v
	RN1102MFV		_		1.2	_	2.4	
	RN1103MFV				1.3	_	3.0	
Input voltage (ON)	RN1104MFV				1.5	_	5.0	
	RN1105MFV				0.6	_	1.1	
	RN1106MFV				0.7	_	1.3	
Input voltage (OFF)	RN1101MFV to 1104MFV	V _{I (OFF)}	_	V _{CE} = 5 V, I _C = 0.1	1.0	_	1.5	V
	RN1105MFV, 1106MFV				0.5	_	0.8	
Collector output capacitance	RN1101MFV to 1106MFV	C _{ob}	_	V _{CB} = 10 V, I _E = 0, f = 1 MH _z	_	0.7	_	pF
Input resistor	RN1101MFV	R1	_	_	3.29	4.7	6.11	kΩ
	RN1102MFV				7	10	13	
	RN1103MFV				15.4	22	28.6	
	RN1104MFV				32.9	47	61.1	
	RN1105MFV				1.54	2.2	2.86	
	RN1106MFV				3.29	4.7	6.11	
Resistor ratio	RN1101MFV to 1104MFV	R1/R2	_	_	0.8	1.0	1.2	
	RN1105MFV				0.0376	0.0468	0.0562	
	RN1106MFV				0.08	0.1	0.12	

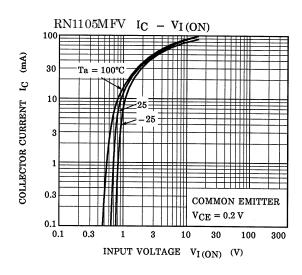
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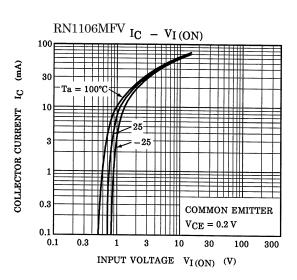


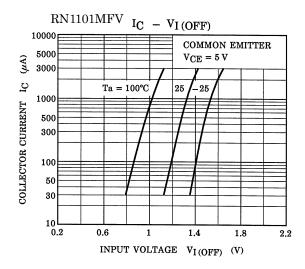


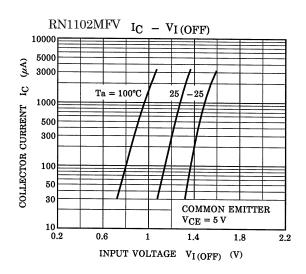


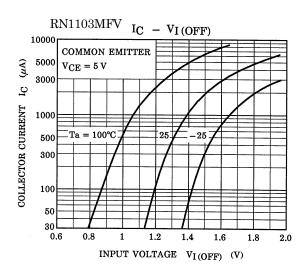


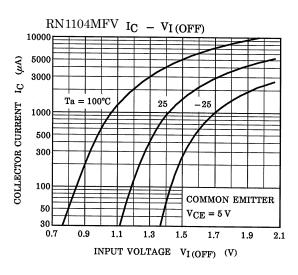


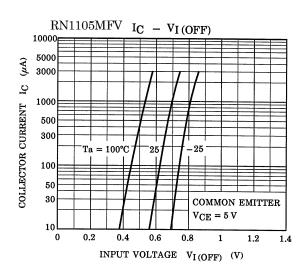


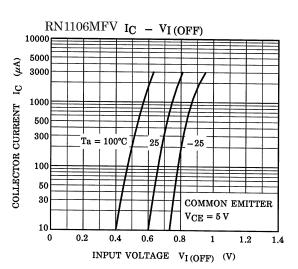


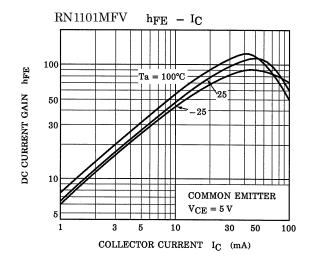


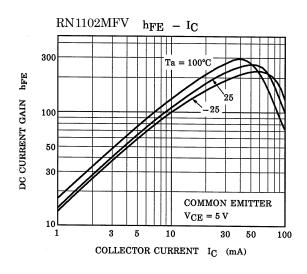


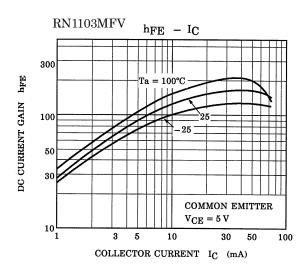


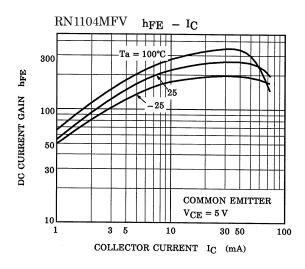


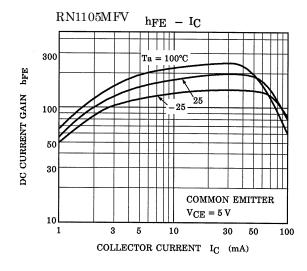


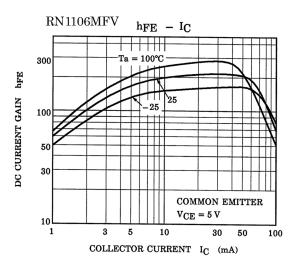


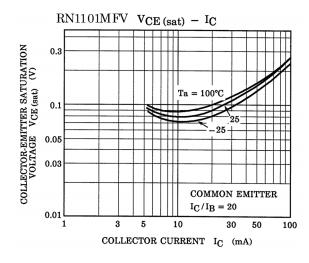


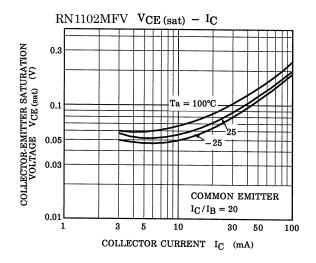


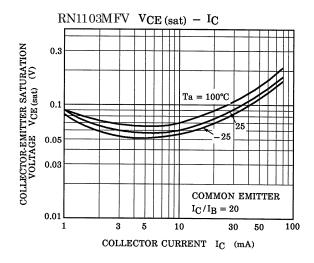


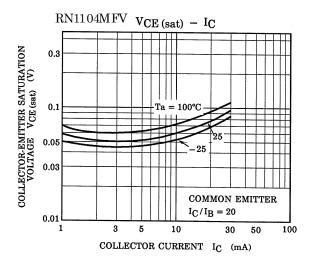


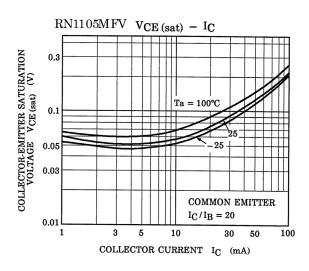


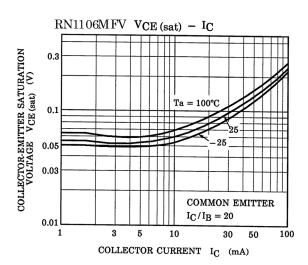












Type Name	Marking
RN1101MFV	Type Name
RN1102MFV	Type Name
RN1103MFV	Type Name
RN1104MFV	Type Name
RN1105MFV	Type Name XE
RN1106MFV	Type Name

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