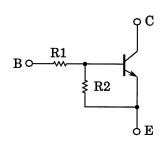
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1114MFV,RN1115MFV,RN11116MFV,RN11117MFV,RN11118MFV

Switching Applications
Inverter Circuit Applications
Interface Circuit Applications
Driver Circuit Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2114MFV to RN2118MFV

Equivalent Circuit and Bias Resister Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN1114MFV	1	10
RN1115MFV	2.2	10
RN1116MFV	4.7	10
RN1117MFV	10	4.7
RN1118MFV	47	10

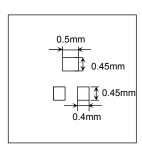
Unit: mm 1.2 ± 0.05 0.80 ± 0.05 0.80 ± 0.05 0.80 ± 0.05 0.80 ± 0.05 1.8ASE VESM 1.BASE 2.EMITTER 3.COLLECTOR JEDEC JEITA TOSHIBA 2-1L1A

Weight: 1.5 mg (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit	
Collector-base voltage	RN1114MFV	V _{CBO}	50	V	
Collector-emitter voltage	to 1118MFV	V _{CEO}	50	V	
	RN1114MFV		5		
	RN1115MFV		6	ı	
Emitter-base voltage	RN1116MFV	V _{EBO}	7	V	
	RN1117MFV		15		
	RN1118MFV		25		
Collector current		IC	100	mA	
Collector power dissipation	RN1114MFV	P _C (Note 1)	150	mW	
Junction temperature	to 111M8FV	Tj	150	°C	
Storage temperature range		T _{stg}	-55 to 150	°C	

Land Pattern Example



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).

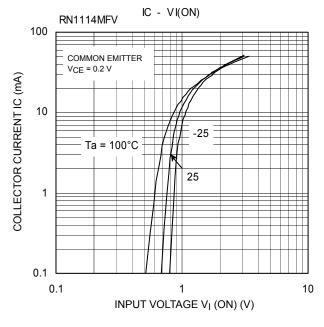
Note 1: Mounted on FR4 board (25.4 mm × 25.4 mm × 1.6 mm)

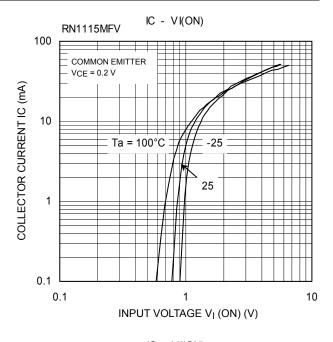


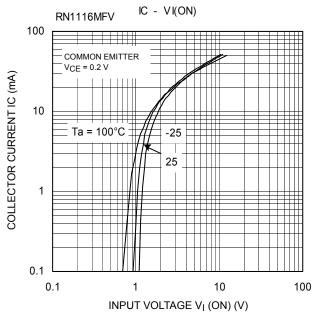
Electrical Characteristics (Ta = 25°C)

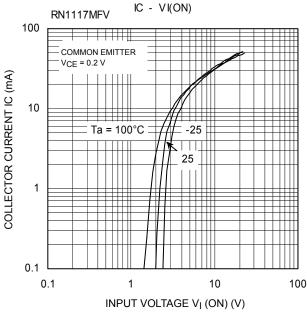
Charact	eristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	RN1114MFV	I _{CBO}		V _{CB} = 50V, I _E = 0	_	_	100	nΛ
	to 1118MFV	ICEO	_	V _{CE} = 50V, I _B = 0	_	_	500	nA
	RN1114MFV			V _{EB} = 5V, I _C = 0	0.35	_	0.65	
	RN1115MFV			V _{EB} = 6V, I _C = 0	0.37	_	0.71	
Emitter cut-off current	RN1116MFV	I _{EBO}	_	V _{EB} = 7V, I _C = 0	0.36	_	0.68	mA
	RN1117MFV			V _{EB} = 15V, I _C = 0	0.78	_	1.46	
	RN1118MFV			V _{EB} = 25V, I _C = 0	0.33	_	0.63	
	RN1114MFV		_	V _{CE} = 5V, I _C = 10mA	50			
DC current gain	to 16MFV, 18MFV	h _{FE}			50	_	_	_
	RN1117MFV				30	_	_	
Collector-emitter	RN1114MFV	V _{CE (sat)}		I _C = 5mA, I _B = 0.25mA	_	0.1	0.3	V
saturation voltage	to 1118MFV	· OL (Sat)		10 0, 10 0		-		,
	RN1114MFV				0.6	_	2.0	_
	RN1115MFV				0.7	_	2.5	
Input voltage (ON)	RN1116MFV	VI (ON)	_	V _{CE} = 0.2V, I _C = 5mA	8.0	_	2.5	V
	RN1117MFV				1.5	_	4.0	
	RN1118MFV				2.5	_	10	
	RN1114MFV	VI (OFF)	_	V _{CE} = 5V, I _C = 0.1mA	0.3	_	0.9	V
	RN1115MFV				0.3	_	1.0	
Input voltage (OFF)	RN1116MFV				0.3	_	1.1	
	RN1117MFV				0.3	_	2.3	
	RN1118MFV				0.5	_	5.7	
Transition frequency	RN1114MFV to 1118MFV	f _T	_	V _{CE} = 10V, I _C = 5mA	_	250	_	MHz
Collector Output capacitance	RN1114MFV to 1118MFV	C _{ob}	_	V _{CB} = 10V, I _E = 0, f = 1MHz	_	3	_	pF
	RN1114MFV	R1	_	_	0.7	1.0	1.3	
Input resistor	RN1115MFV				1.54	2.2	2.86	kΩ
	RN1116MFV				3.29	4.7	6.11	
	RN1117MFV				7	10	13	
	RN1118MFV				32.9	47	61.1	
Resistor ratio	RN1114MFV		_	_	_	0.1	_	
	RN1115MFV				_	0.22	_	
	RN1116MFV	R1/R2			_	0.47	_	
	RN1117MFV				_	2.13	_	
	RN1118MFV				_	4.7	_	

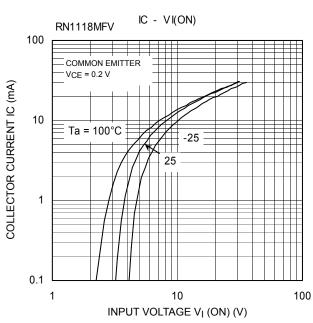
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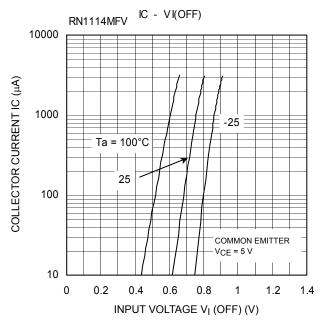


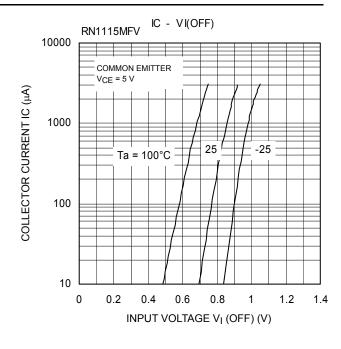


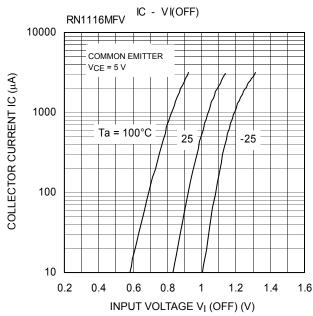


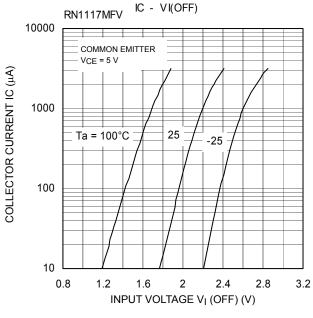


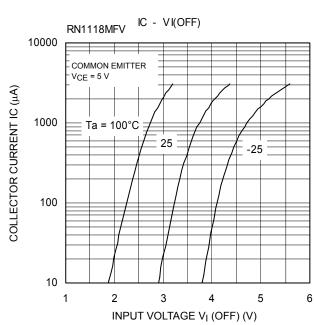


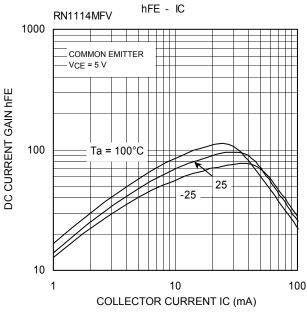


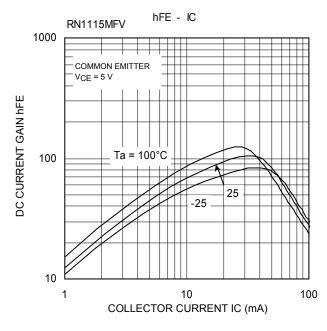


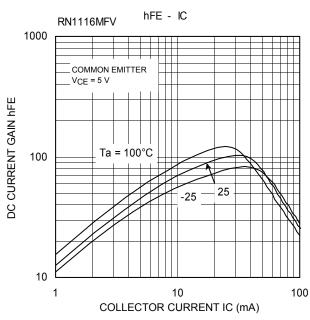


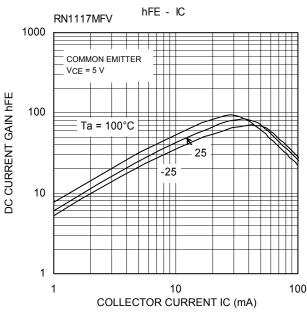


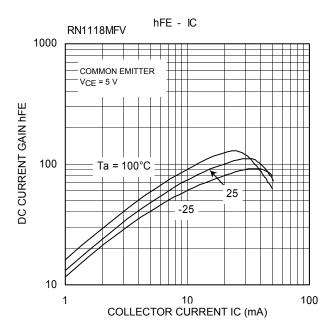




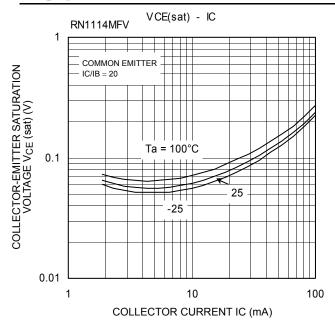


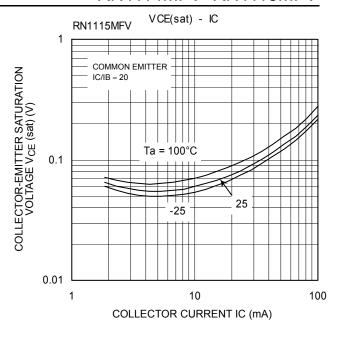


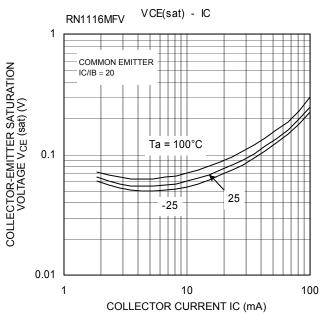


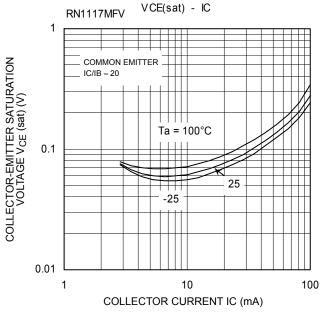


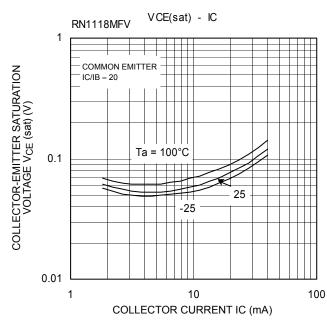
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Type Name	Marking
RN1114MFV	Type Name XQ
RN1115MFV	Type Name xs
RN1116MFV	Type Name
RN1117MFV	Type Name
RN1118MFV	Type Name

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