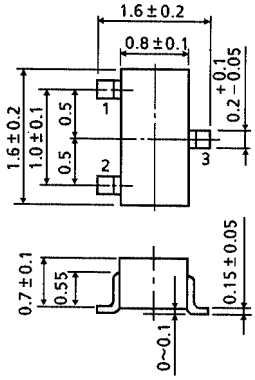
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN1114,RN1115,RN1116,RN1117,RN1118

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

Unit in mm

- With built-in bias resistors.
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Complementary to RN2114~2118



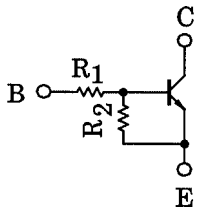
1. BASE
2. EMITTER
3. COLLECTOR

SSM

JEDEC	—
EIAJ	—
TOSHIBA	2-2H1A

Weight: 2.4mg

Equivalent Circuit and Bias Resistor Values



Type No.	R_1 (kΩ)	R_2 (kΩ)
RN1114	1	10
RN1115	2.2	10
RN1116	4.7	10
RN1117	10	4.7
RN1118	47	10

Maximum Ratings (Ta = 25°C)

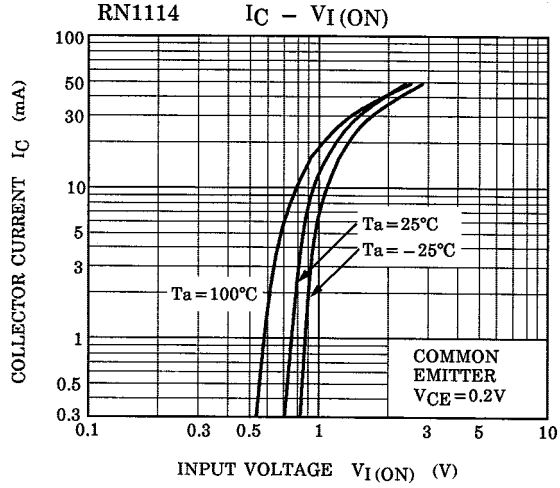
Characteristic		Symbol	Rating	Unit
Collector-base voltage	RN1114~1118	V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage	RN1114	V_{EBO}	5	V
	RN1115		6	
	RN1116		7	
	RN1117		15	
	RN1118		25	
Collector current	RN1114~1118	I_C	100	mA
Collector power dissipation		P_C	100	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

961001EAA2

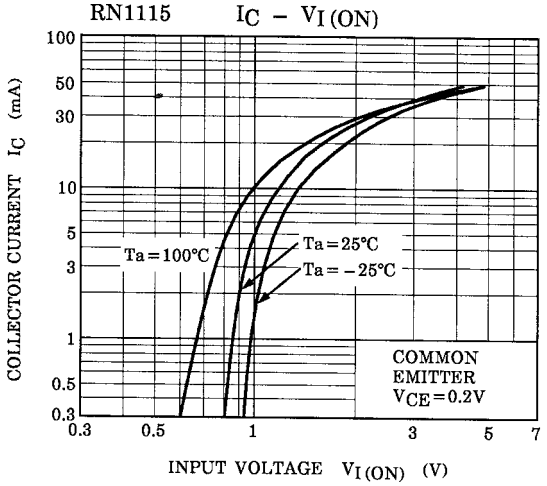
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1114~1118	I_{CBO}	—	V_{CB} = 50V, I_E = 0	—	—	100	nA
	RN1114~1118	I_{CEO}	—	V_{CE} = 50V, I_B = 0	—	—	500	nA
Emitter cut-off current	RN1114	I_{EBO}	—	V_{EB} = 5V, I_C = 0	0.35	—	0.65	mA
	RN1115		—	V_{EB} = 6V, I_C = 0	0.37	—	0.71	
	RN1116		—	V_{EB} = 7V, I_C = 0	0.36	—	0.68	
	RN1117		—	V_{EB} = 15V, I_C = 0	0.78	—	1.46	
	RN1118		—	V_{EB} = 25V, I_C = 0	0.33	—	0.63	
DC current gain	RN1114~16, 18	h_{FE}	—	V_{CE} = 5V, I_C = 10mA	50	—	—	—
	RN1117		—		30	—	—	
Collector-emitter saturation voltage	RN1114~1118	$V_{CE\ (sat)}$	—	I_C = 5mA, I_B = 0.25mA	—	0.1	0.3	V
Input voltage (ON)	RN1114	$V_{I\ (ON)}$	—	V_{CE} = 0.2V, I_C = 5mA	0.6	—	2.0	V
	RN1115		—		0.7	—	2.5	
	RN1116		—		0.8	—	2.5	
	RN1117		—		1.5	—	3.5	
	RN1118		—		2.5	—	10.0	
Input voltage (OFF)	RN1114	$V_{I\ (OFF)}$	—	V_{CE} = 5V, I_C = 0.1mA	0.3	—	0.9	V
	RN1115		—		0.3	—	1.0	
	RN1116		—		0.3	—	1.1	
	RN1117		—		0.3	—	2.3	
	RN1118		—		0.5	—	5.7	
Translation Frequency	RN1114~1118	f_T	—	V_{CE} = 10V, I_C = 5mA	—	250	—	MHz
Collector output capacitance	RN1114~1118	C_{ob}	—	V_{CB} = 10V, I_E = 0, f = 1MHz	—	3.0	6.0	pF
Input Resistor	RN1114	R_1	—	—	0.7	1.0	1.3	kΩ
	RN1115		—		1.54	2.2	2.86	
	RN1116		—		3.29	4.7	6.11	
	RN1117		—		7.0	10.0	13.0	
	RN1118		—		32.9	47.0	61.1	
Resistor Ratio	RN1114	R_1/R_2	—	—	—	0.1	—	—
	RN1115		—		—	0.22	—	
	RN1116		—		—	0.47	—	
	RN1117		—		—	2.13	—	
	RN1118		—		—	4.7	—	

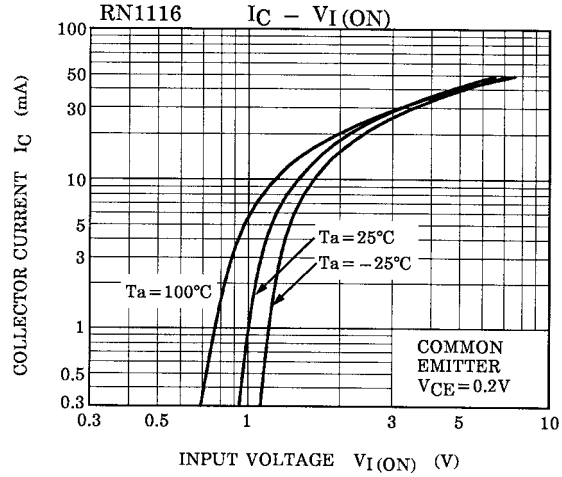
RN1114 $I_C - V_{I(ON)}$



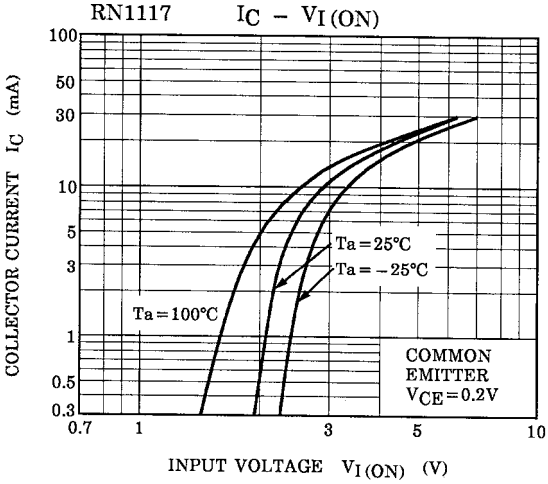
RN1115 $I_C - V_{I(ON)}$



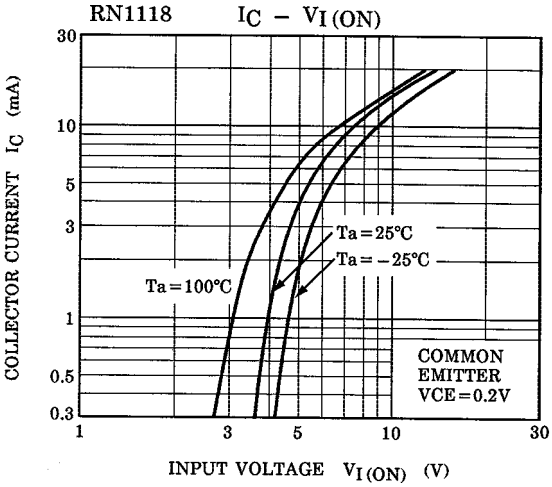
RN1116 $I_C - V_{I(ON)}$



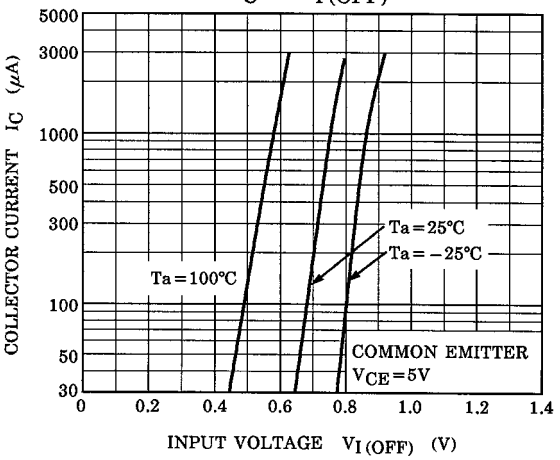
RN1117 $I_C - V_{I(ON)}$



RN1118 $I_C - V_{I(ON)}$



RN1114 $I_C - V_{I(OFF)}$



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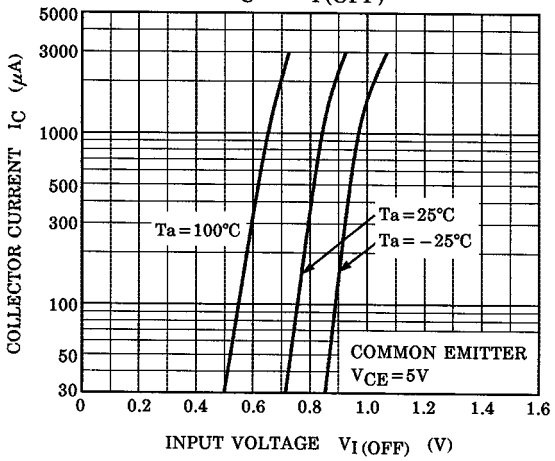
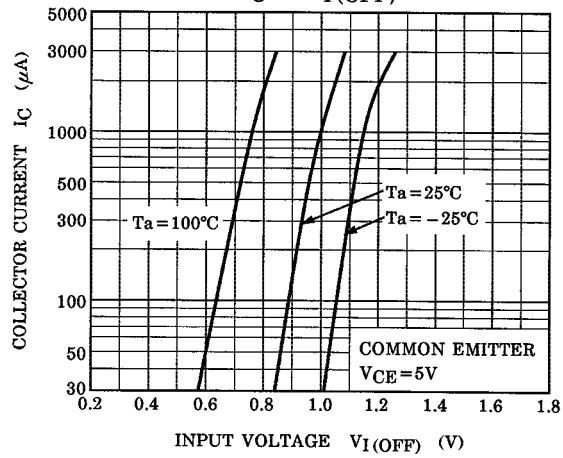
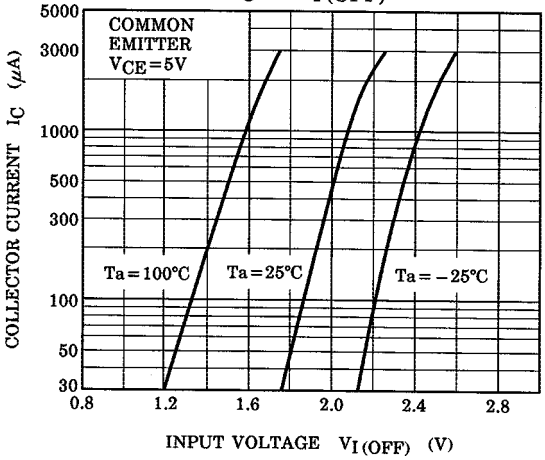


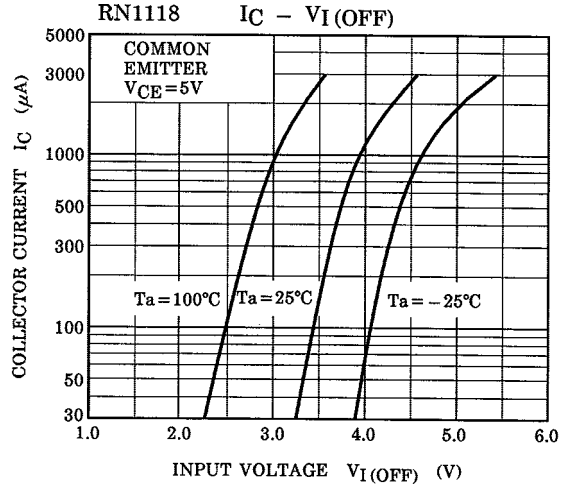
RN1116 $I_C - V_{I(OFF)}$



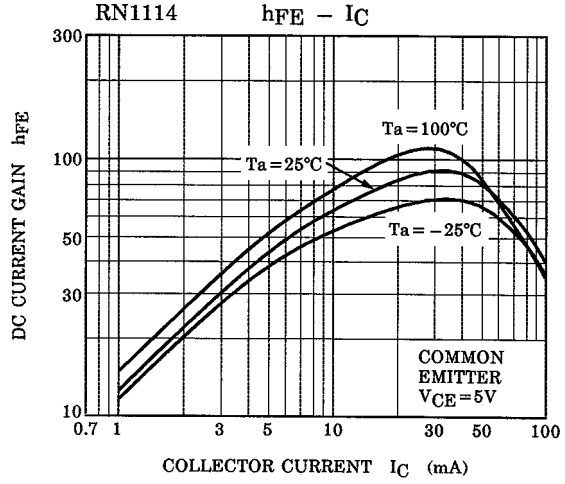
RN1117 $I_C - V_{I(OFF)}$



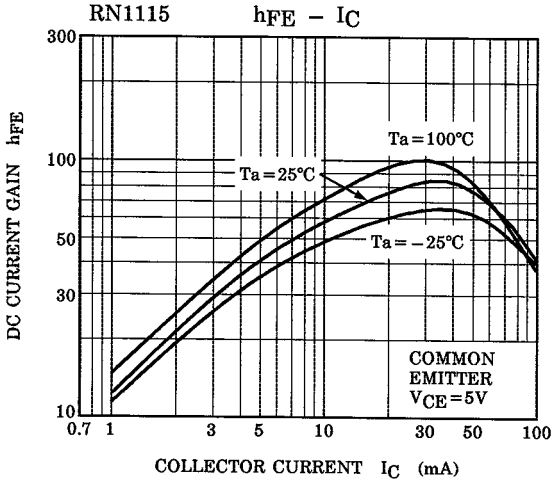
RN1118 $I_C - V_{I(OFF)}$



RN1114 h_{FE} – I_C



RN1115 h_{FE} – I_C



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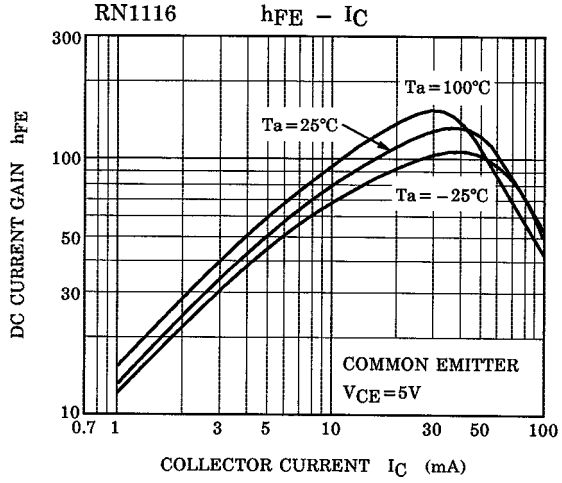

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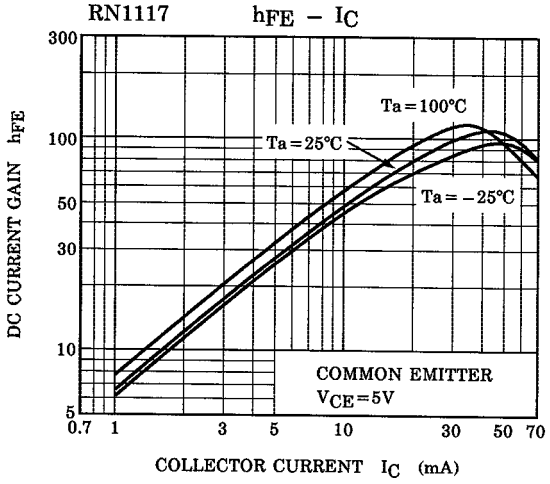
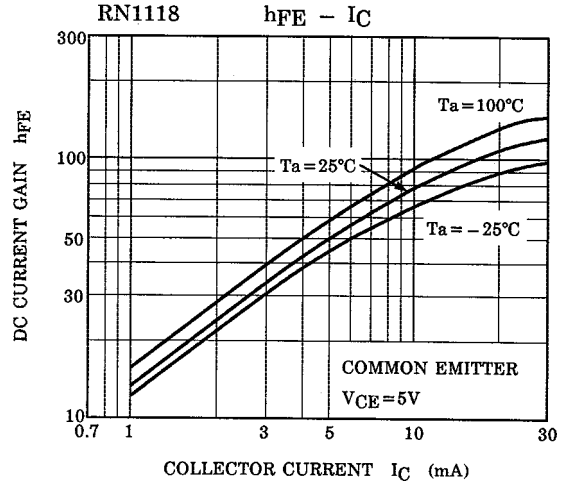
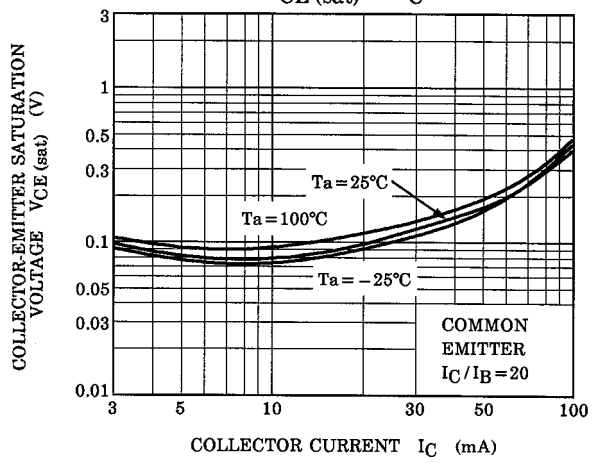


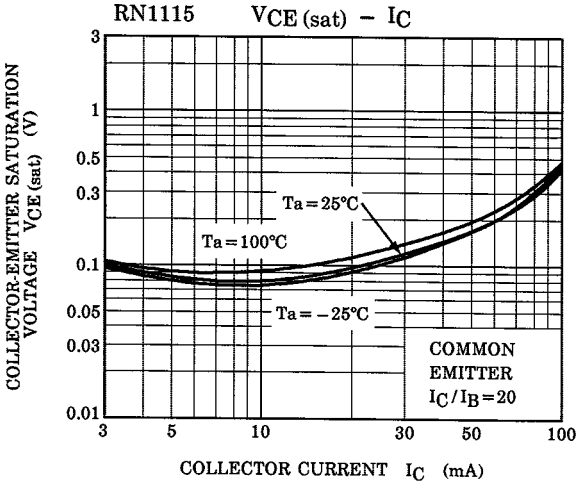
RN1118 h_{FE} – I_C



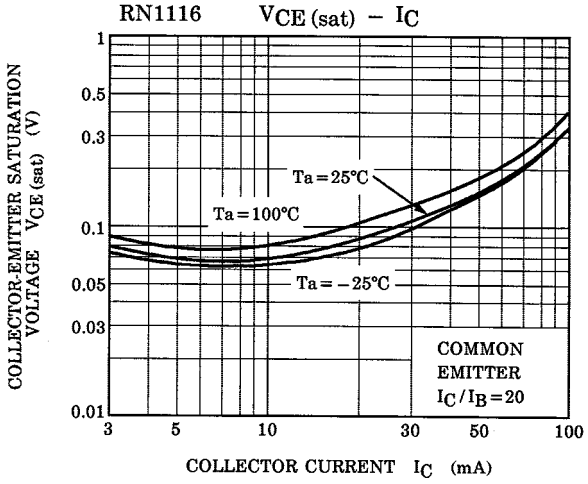
RN1114 $V_{CE\,(sat)}$ – I_C



RN1115 $V_{CE\,(sat)}$ – I_C



RN1116 $V_{CE\,(sat)}$ – I_C



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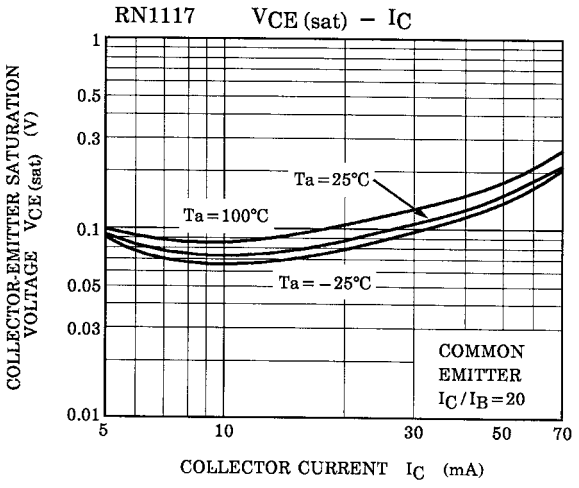
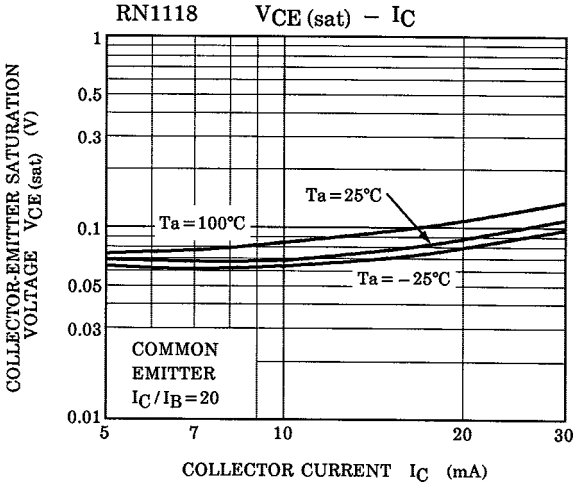


RN1118 $V_{CE\,(sat)}$ – I_C



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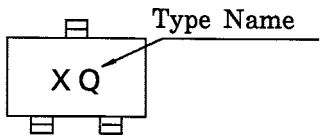
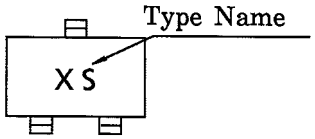
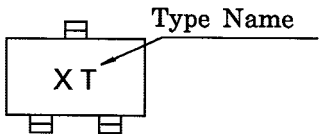
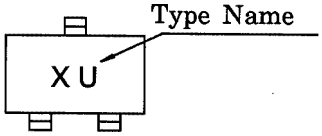
RN1114	
RN1115	
RN1116	
RN1117	
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