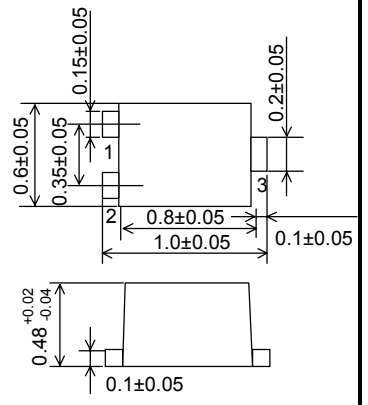
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process) (Bias Resistor built-in Transistor)

RN1101FS,RN1102FS,RN1103FS RN1104FS,RN1105FS,RN1106FS

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Incorporating a bias resistor into a transistor reduces parts count. Reducing the parts count enable the manufacture of ever more compact equipment and save assembly cost.
- Complementary to RN2101FS~RN2106FS

Unit: mm



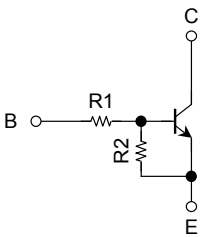
fSM

1.BASE
2.EMITTER
3.COLLECOTR

JEDEC	—
JEITA	—
TOSHIBA	2-1E1A

Weight: 0.0006g (typ.)

Equivalent Circuit and Bias Resistor Values



Type No.	R1 (kΩ)	R2 (kΩ)
RN1101FS	4.7	4.7
RN1102FS	10	10
RN1103FS	22	22
RN1104FS	47	47
RN1105FS	2.2	47
RN1106FS	4.7	47

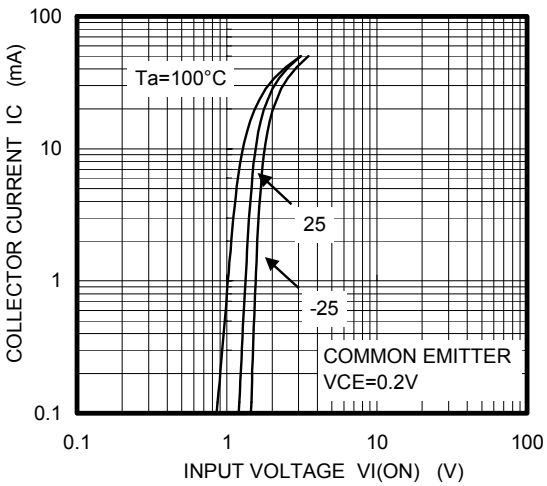
Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN1101FS~1106FS	V_{CBO}	20	V
Collector-emitter voltage		V_{CEO}	20	V
Emitter-base voltage	RN1101FS~1104FS	V_{EBO}	10	V
	RN1105FS, 1106FS		5	
Collector current	RN1101FS~RN1106FS	I_C	50	mA
Collector power dissipation		P_C	50	mW
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55~150	°C

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1101FS~1106FS	I_{CBO}	V_{CB} = 20 V, I_E = 0	—	—	100	nA
		I_{CEO}	V_{CE} = 20 V, I_B = 0	—	—	500	
Emitter cut-off current	RN1101FS	I_{EBO}	V_{EB} = 10 V, I_C = 0	0.89	—	1.33	mA
	RN1102FS			0.41	—	0.63	
	RN1103FS			0.18	—	0.29	
	RN1104FS			0.088	—	0.133	
	RN1105FS		V_{EB} = 5 V, I_C = 0	0.085	—	0.127	
	RN1106FS			0.08	—	0.121	
DC current gain	RN1101FS	h_{FE}	V_{CE} = 5 V, I_C = 10 mA	30	—	—	
	RN1102FS			60	—	—	
	RN1103FS			100	—	—	
	RN1104FS			120	—	—	
	RN1105FS			120	—	—	
	RN1106FS			120	—	—	
Collector-emitter saturation voltage	RN1101FS~1106FS	$V_{CE\ (sat)}$	I_C = 5 mA, I_B = 0.25 mA	—	—	0.15	V
Input voltage (ON)	RN1101FS	$V_{I\ (ON)}$	V_{CE} = 0.2 V, I_C = 5 mA	1.0	—	2.0	V
	RN1102FS			1.0	—	2.2	
	RN1103FS			1.1	—	2.7	
	RN1104FS			1.2	—	3.6	
	RN1105FS			0.6	—	1.1	
	RN1106FS			0.6	—	1.2	
Input voltage (OFF)	RN1101FS~1104FS	$V_{I\ (OFF)}$	V_{CE} = 5 V, I_C = 0.1 mA	0.8	—	1.5	V
	RN1105FS, 1106FS			0.4	—	0.8	
Collector output capacitance	RN1101FS~1106FS	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	1.2	—	pF
Input resistor	RN1101FS	R1	—	3.76	4.7	5.64	kΩ
	RN1102FS			8	10	12	
	RN1103FS			17.6	22	26.4	
	RN1104FS			37.6	47	56.4	
	RN1105FS			1.76	2.2	2.64	
	RN1106FE			3.76	4.7	5.64	
Resistor ratio	RN1101FS~1104FS	R1/R2	—	0.8	1.0	1.2	
	RN1105FS			0.0376	0.0468	0.0562	
	RN1106FS			0.08	0.1	0.12	

RN1101FS IC - VI(ON)



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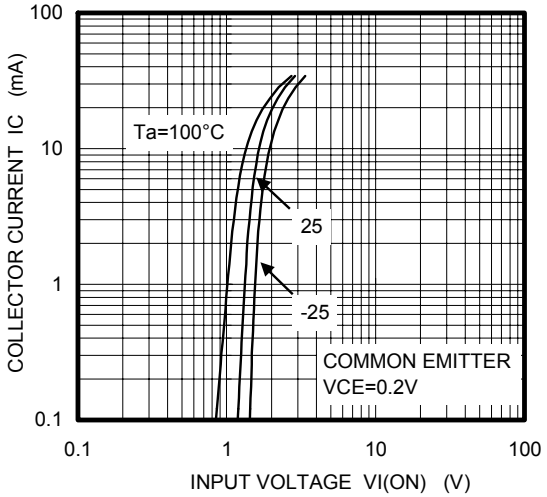
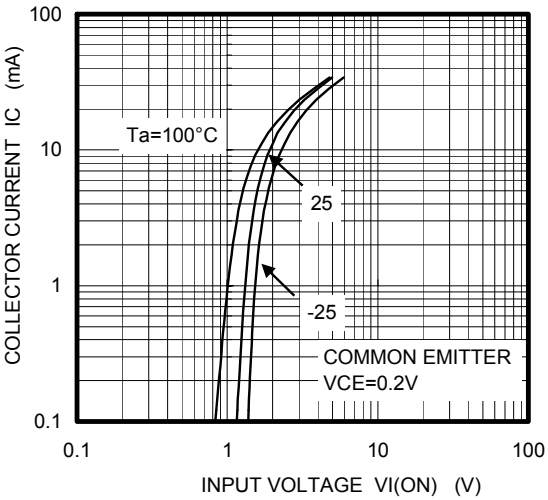


RN1103FS IC - VI(ON)



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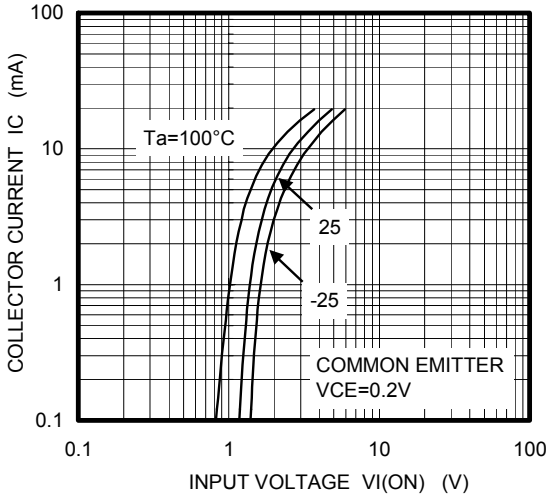

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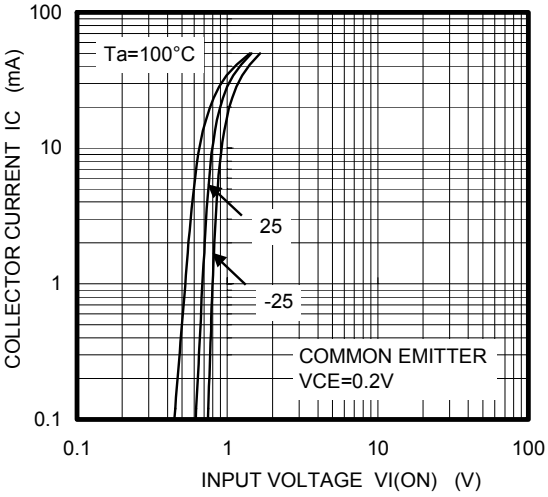

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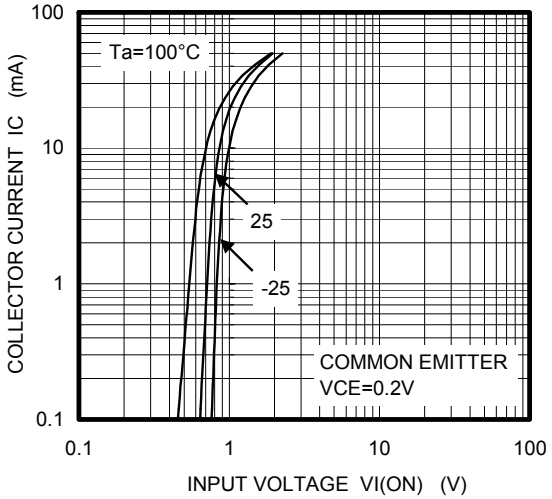

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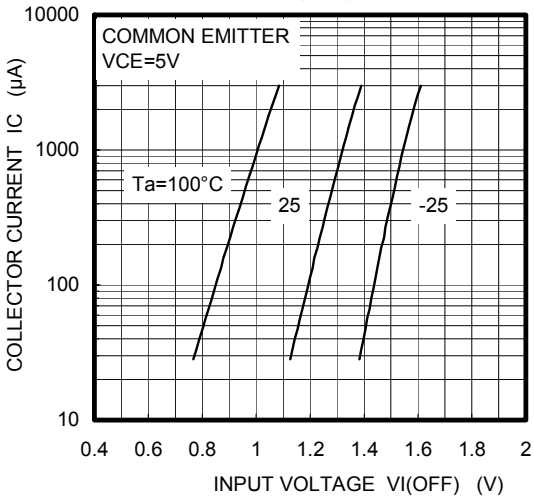

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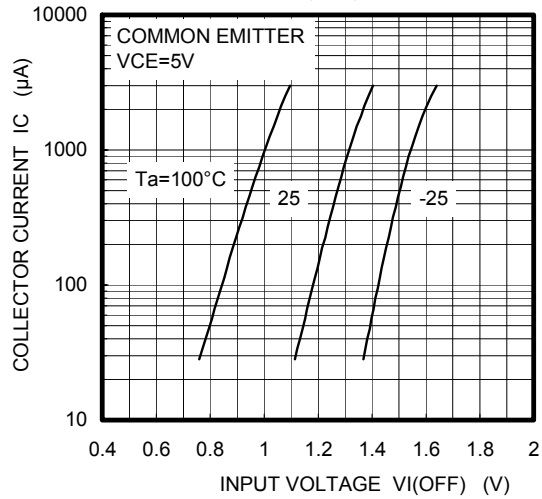

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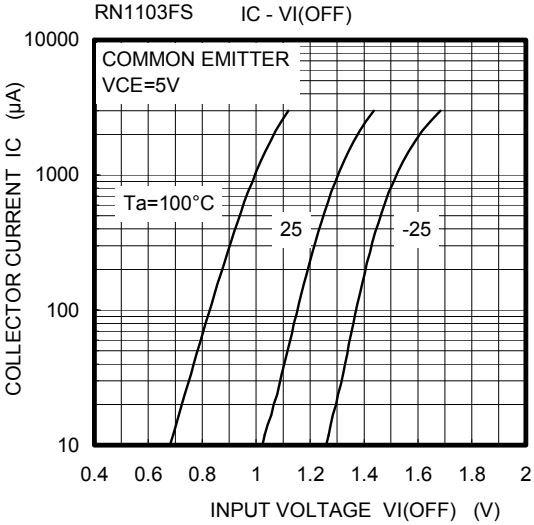

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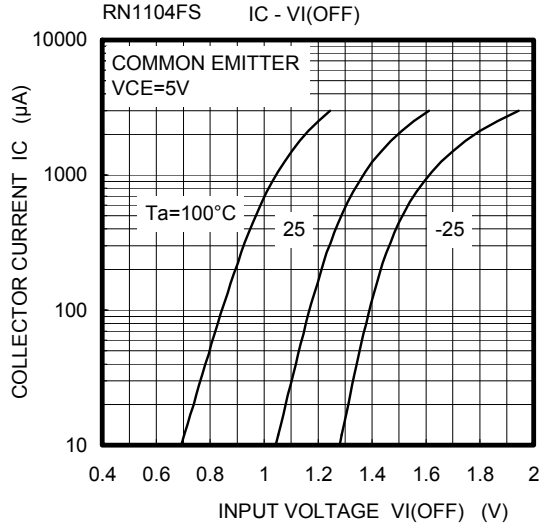

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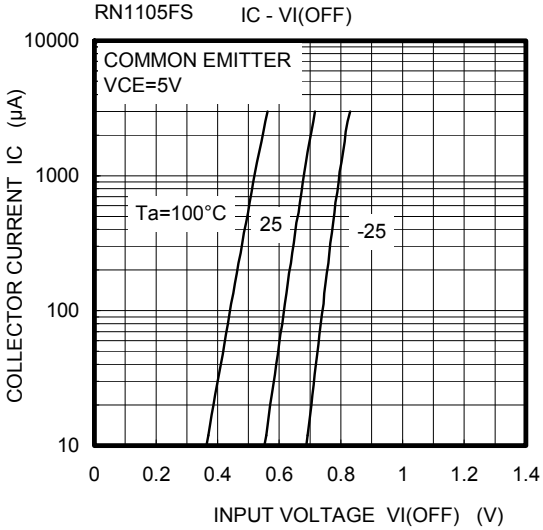

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