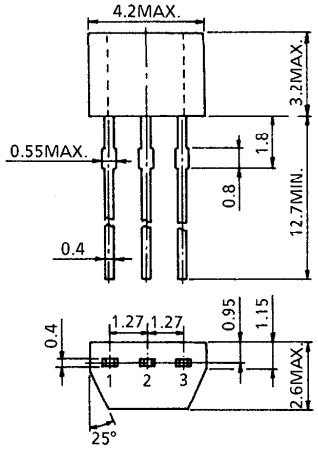
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

RN1221, RN1222, RN1223, RN1224 RN1225, RN1226, RN1227

SWITCHING, INVERTER CIRCUIT, INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATIONS

- High Current Type ($I_{C\ (MAX)}$ = 800mA)
- With Built-in Bias Resistors
- Simplify Circuit Design
- Reduce a Quantity of Parts Manufacturing Process
- Low $V_{CE\ (sat)}$
- Complementary to RN2221~2227

Unit in mm

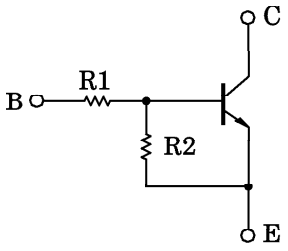


1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	—
EIAJ	—
TOSHIBA	2-4E1A

Weight : 0.13g

EQUIVALENT CIRCUIT



TYPE No.	R1 (kΩ)	R2 (kΩ)
RN1221	1	1
RN1222	2.2	2.2
RN1223	4.7	4.7
RN1224	10	10
RN1225	0.47	10
RN1226	1	10
RN1227	2.2	10

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage	RN1221~1227	V_{CBO}	50	V
Collector-Emitter Voltage		V_{CEO}	50	V
Emitter-Base Voltage	RN1221~1224	V_{EBO}	10	V
	RN1225, 1226		5	
	RN1227		6	
Collector Current	RN1221~1227	I_C	800	mA
Collector Power Dissipation		P_C	300	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

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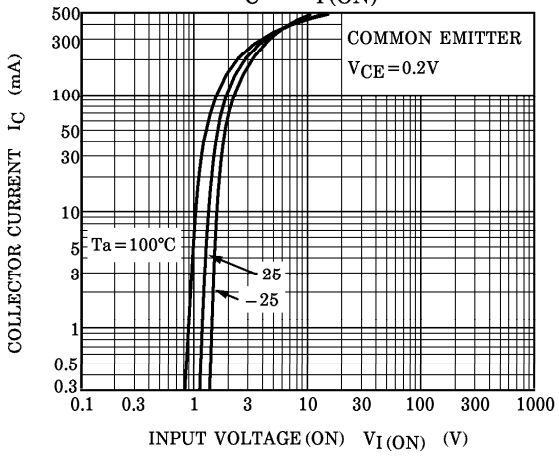
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	RN1221~1227	I_{CBO}	V_{CB}=50V, I_E=0	—	—	100	nA
		I_{CEO}	V_{CE}=50V, I_B=0	—	—	500	
Emitter Cut-off Current	RN1221	I_{EBO}	V_{EB}=10V, I_C=0	3.85	—	7.14	mA
	RN1222			1.75	—	3.25	
	RN1223			0.82	—	1.52	
	RN1224			0.38	—	0.71	
	RN1225		V_{EB}=5V, I_C=0	0.365	—	0.682	
	RN1226			0.35	—	0.65	
	RN1227		V_{EB}=6V, I_C=0	0.378	—	0.703	
DC Current Gain	RN1221	h_{FE}	V_{CE}=1V, I_C=100mA	60	—	—	—
	RN1222			65	—	—	
	RN1223			70	—	—	
	RN1224			90	—	—	
	RN1225			90	—	—	
	RN1226			90	—	—	
	RN1227			90	—	—	
Collector-Emitter Saturation Voltage	RN1221	$V_{CE\ (sat)}$	I_C=50mA, I_B=2mA	—	—	0.25	V
	RN1222~1227		I_C=50mA, I_B=1mA				
Input Voltage (ON)	RN1221	$V_{I\ (ON)}$	V_{CE}=0.2V, I_C=100mA	1.0	—	3.5	V
	RN1222			1.4	—	4.5	
	RN1223			2.0	—	6.5	
	RN1224			3.0	—	12.0	
	RN1225			0.6	—	2.0	
	RN1226			0.7	—	2.5	
	RN1227			1.0	—	3.0	
Input Voltage (OFF)	RN1221~1224	$V_{I\ (OFF)}$	V_{CE}=5V, I_C=0.1mA	0.8	—	1.3	V
	RN1225, 1226			0.4	—	0.8	
	RN1227			0.5	—	1.0	
Transition Frequency	RN1221~1227	f_T	V_{CE}=5V, I_C=20mA	—	300	—	MHz
Collector Output Capacitance	RN1221~1227	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	—	7	—	pF

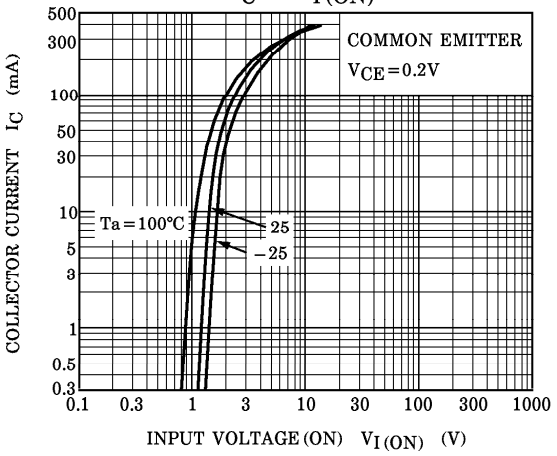
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Resistor	RN1221	R1	—	0.7	1.0	1.3	kΩ
	RN1222			1.54	2.2	2.86	
	RN1223			3.29	4.7	6.11	
	RN1224			7	10	13	
	RN1225			0.329	0.47	0.61	
	RN1226			0.7	1.0	1.3	
	RN1227			1.54	2.2	2.86	
Resistor Ratio	RN1221~1224	R1 / R2	—	0.9	1.0	1.1	—
	RN1225			0.0423	0.047	0.0517	
	RN1226			0.09	0.1	0.11	
	RN1227			0.2	0.22	0.24	

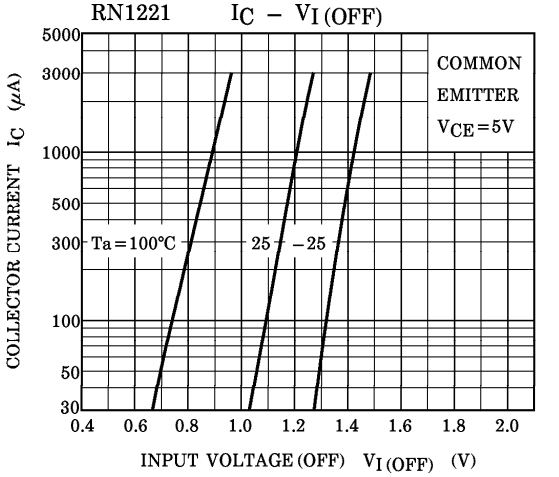
RN1221 I_C – $V_{I(ON)}$



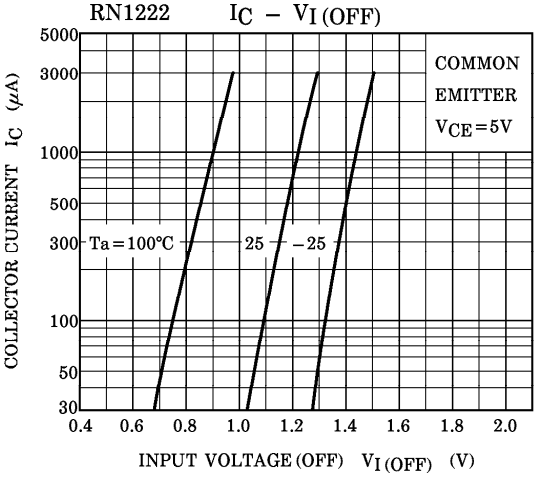
RN1222 I_C – $V_{I(ON)}$



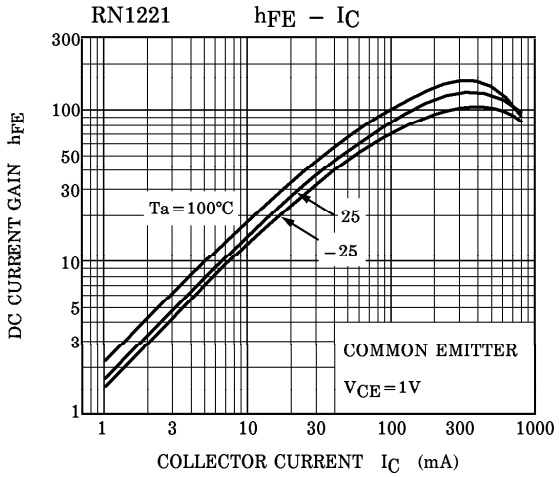
RN1221 I_C – $V_{I(OFF)}$



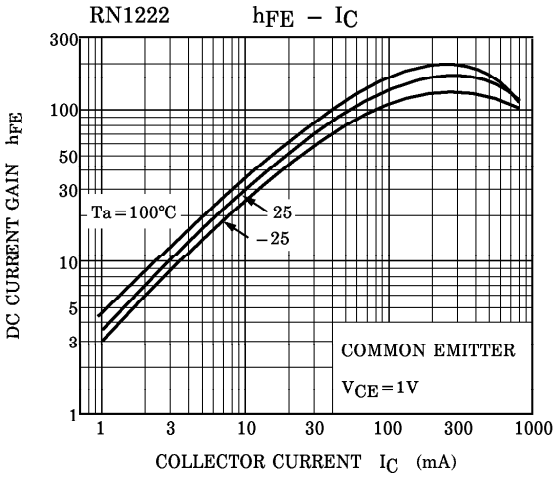
RN1222 I_C – $V_{I(OFF)}$



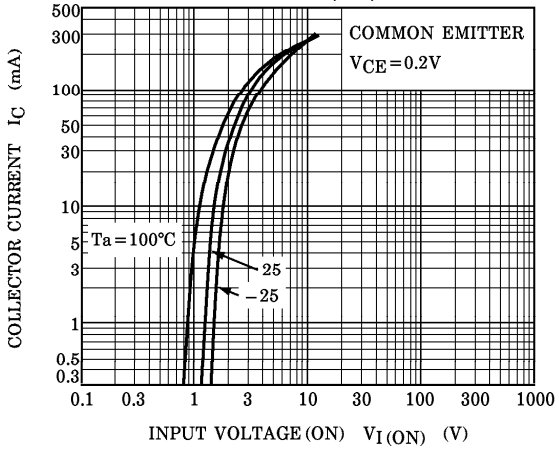
RN1221 h_{FE} – I_C



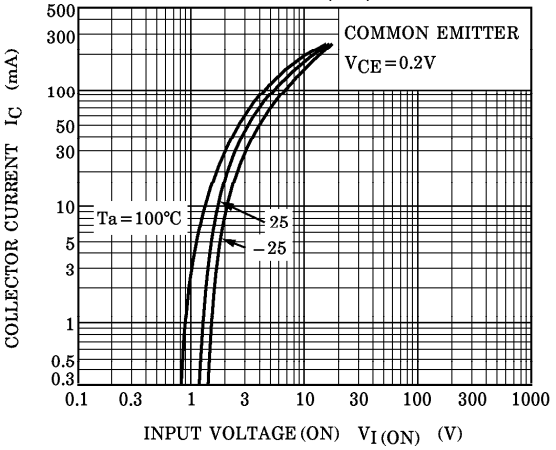
RN1222 h_{FE} – I_C



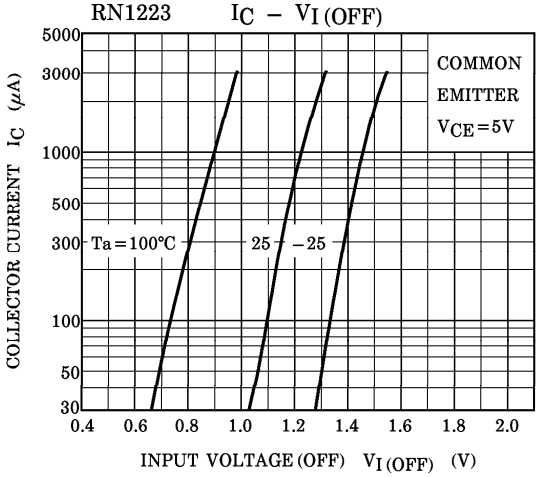
RN1223 I_C – $V_{I(ON)}$



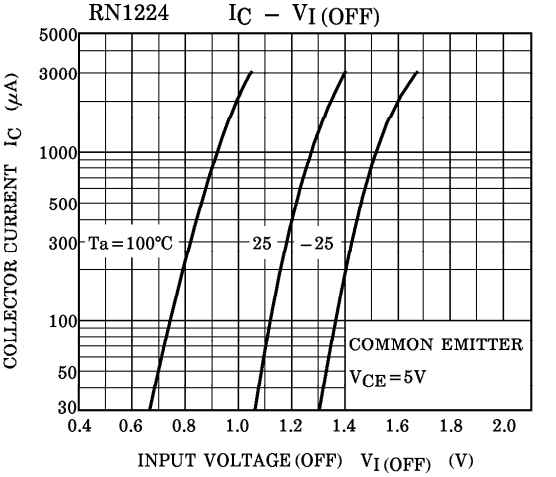
RN1224 I_C – $V_{I(ON)}$



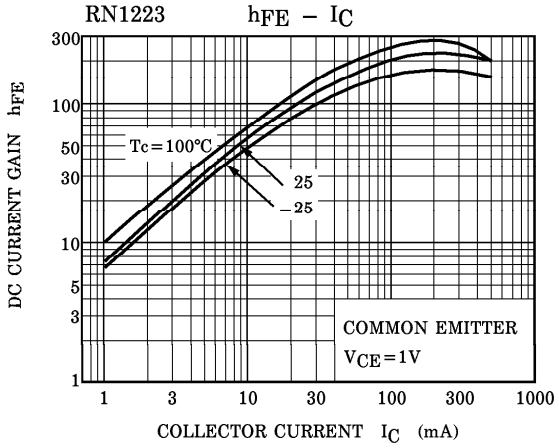
RN1223 I_C – $V_{I(OFF)}$



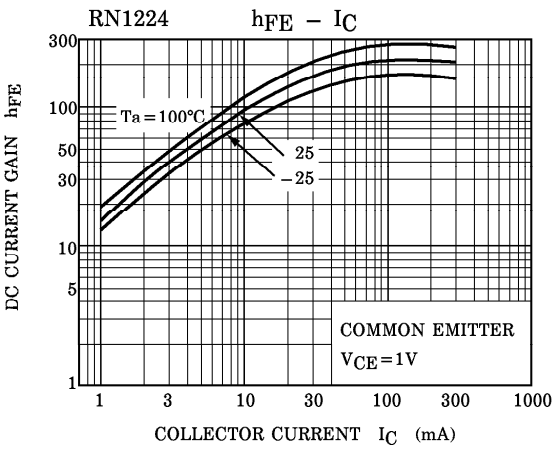
RN1224 I_C – $V_{I(OFF)}$



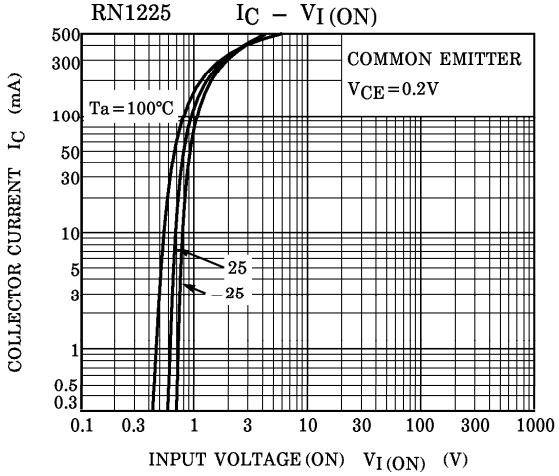
RN1223 h_{FE} – I_C



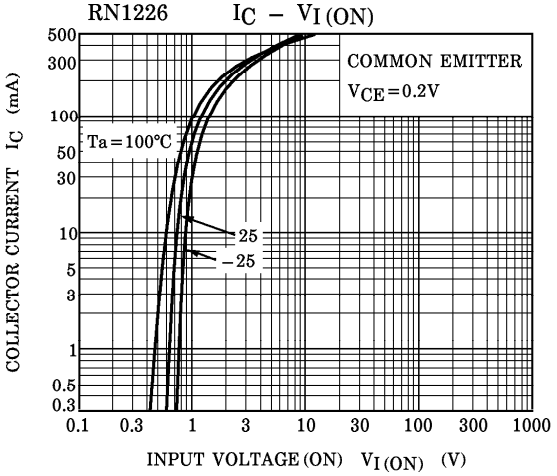
RN1224 h_{FE} – I_C



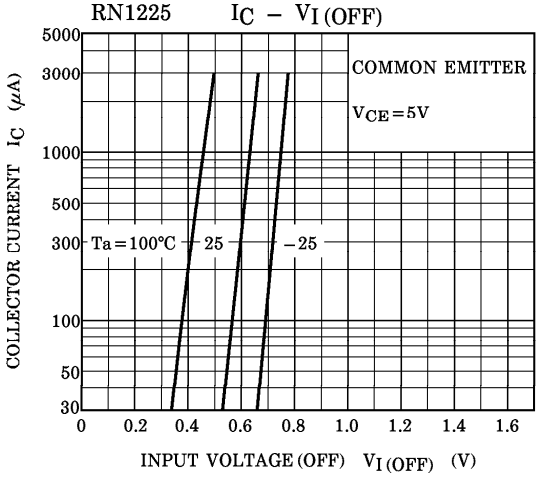
RN1225 I_C – $V_{I(ON)}$



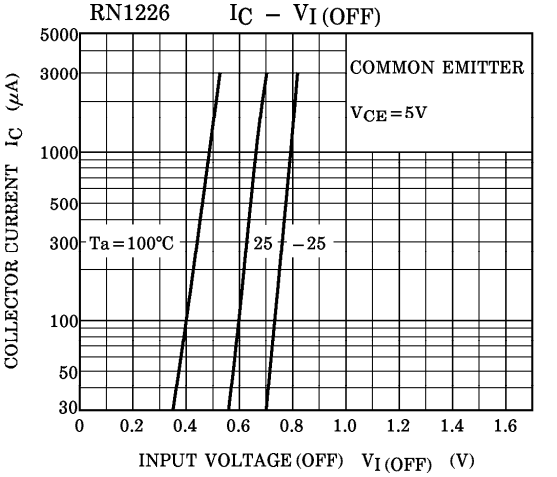
RN1226 I_C – $V_{I(ON)}$



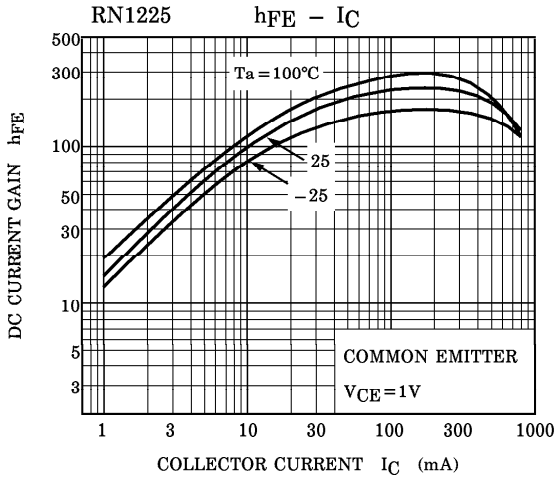
RN1225 I_C – $V_{I(OFF)}$



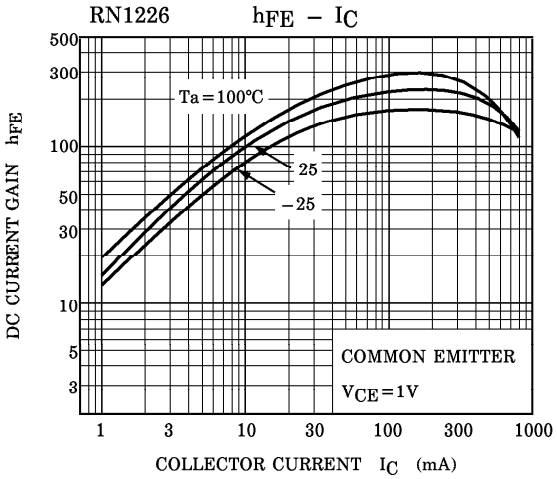
RN1226 I_C – $V_{I(OFF)}$



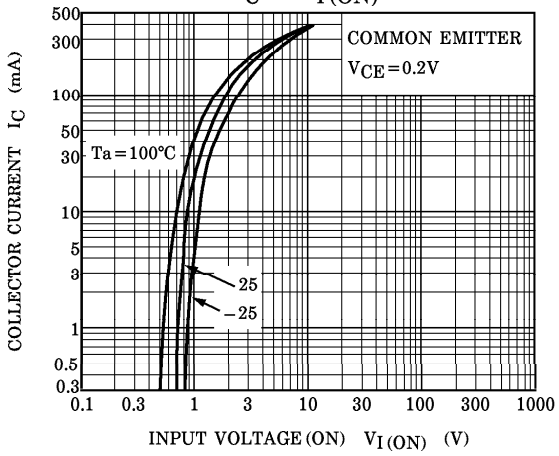
RN1225 h_{FE} – I_C



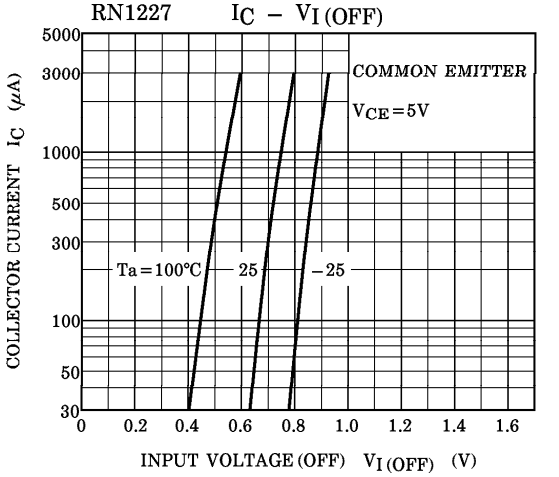
RN1226 h_{FE} – I_C



RN1227 I_C – $V_{I(ON)}$



RN1227 I_C – $V_{I(OFF)}$



RN1227 h_{FE} – I_C