

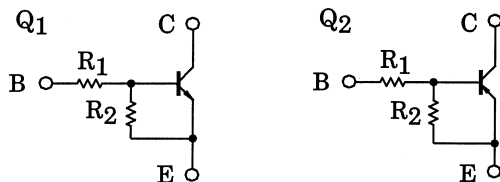
TOSHIBA Transistor
Silicon NPN Epitaxial Type (PCT Process) Silicon PNP Epitaxial Type (PCT Process)

RN49A5

Switching, Inverter Circuit, Interface Circuit and Driver Circuit Applications

- Two devices are incorporated into an Ultra-Super-Mini (6-pin) package
- Incorporating a bias resistor into a transistor reduces the parts count. Reducing the parts count enables the manufacture of ever more compact equipment and lowers assembly cost.
- Diverse resistance values are available suited to a range of different circuit designs.

Equivalent Circuit and Bias Resistor Values



Q1

R1 : 10 kΩ, R2 : 10 kΩ

Q2

R1: 2.2 kΩ, R2: 10 kΩ

Q1 : RN1107F Equivalent

Q2 : RN2327A Equivalent

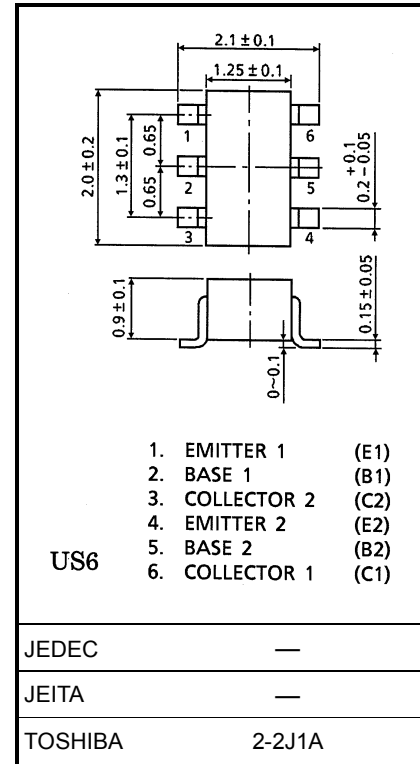
Q1 Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	50	V
Collector-emitter voltage	V _{CEO}	50	V
Emitter-base voltage	V _{EBO}	6	V
Collector current	I _C	100	mA

Q2 Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	-15	V
Collector-emitter voltage	V _{CEO}	-12	V
Emitter-base voltage	V _{EBO}	-6	V
Collector current	I _C	-500	mA

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-2J1A

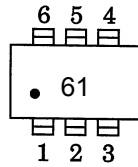
Weight: 6.8mg(typ.)

Q1, Q2 Common Maximum Ratings (Ta = 25°C)

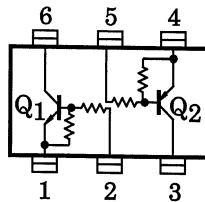
Characteristic	Symbol	Rating	Unit
Collector power dissipation	P_C^*	200	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55~150	°C

* : Total rating

Marking



Equivalent Circuit (Top View)



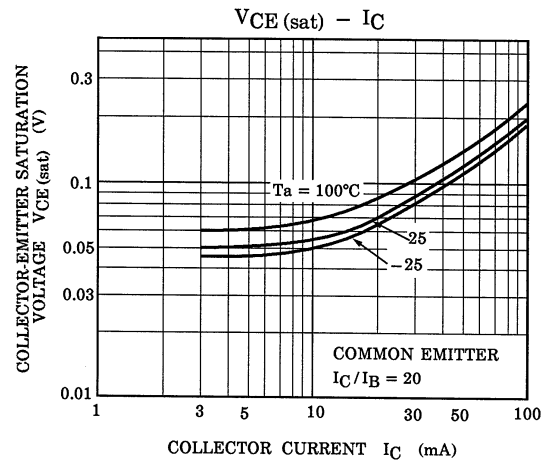
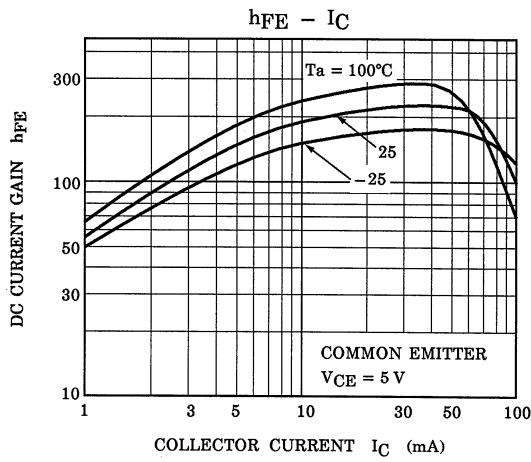
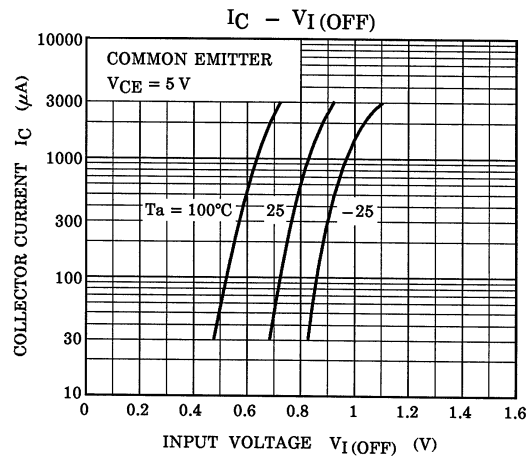
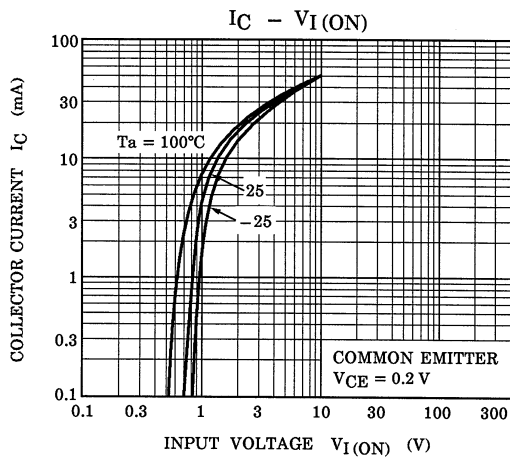
Q1 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = 50V, I_E = 0$	—	—	100	nA
	I_{CEO}	—	$V_{CE} = 50V, I_B = 0$	—	—	500	
Emitter cut-off current	I_{EBO}	—	$V_{EB} = 6V, I_C = 0$	0.081	—	0.15	mA
DC current gain	h_{FE}	—	$V_{CE} = 5V, I_C = 10mA$	80	—	—	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Input voltage (ON)	$V_{I(ON)}$	—	$V_{CE} = 0.2V, I_C = 5mA$	0.7	—	1.8	V
Input voltage (OFF)	$V_{I(OFF)}$	—	$V_{CE} = 5V, I_C = 0.1mA$	0.5	—	1.0	V
Transition frequency	f_T	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = 10V, I_E = 0, f = 1 MHz$	—	3	6	pF
Input resistor	R1	—	—	7	10	13	kΩ
Resistor ratio	R1/R2	—	—	0.191	0.213	0.232	—

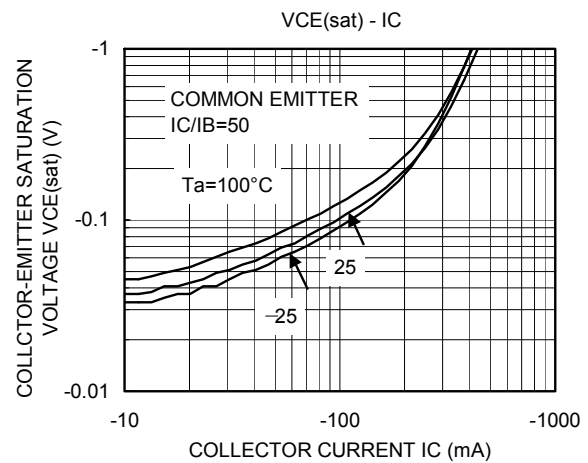
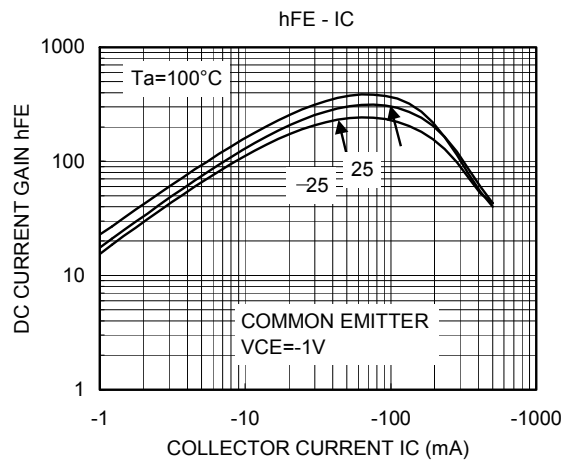
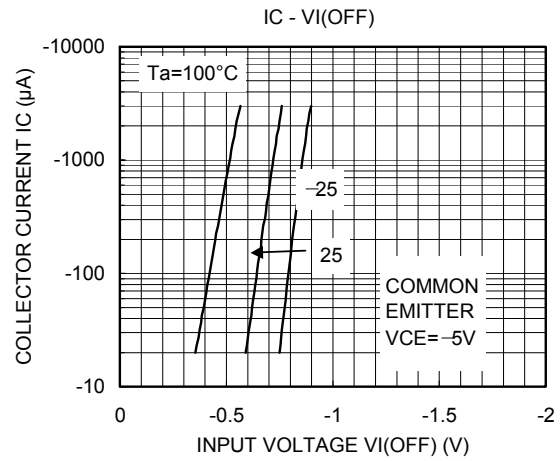
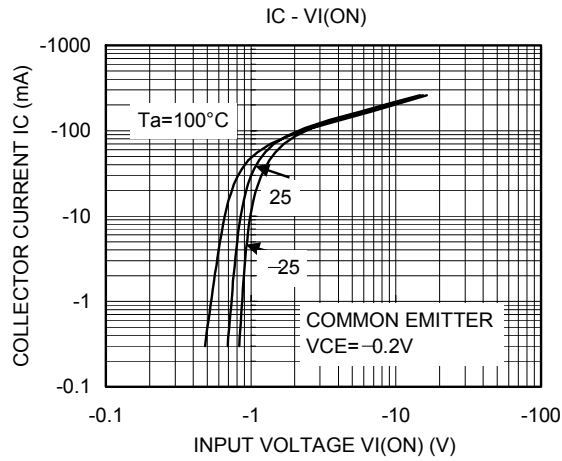
Q2 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = -15V, I_E = 0$	—	—	-100	nA
	I_{CEO}	—	$V_{CE} = -12V, I_B = 0$	—	—	-500	
Emitter cut-off current	I_{EBO}	—	$V_{EB} = -6V, I_C = 0$	-0.378	—	-0.703	mA
DC current gain	h_{FE}	—	$V_{CE} = -1V, I_C = -50mA$	140	—	—	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = -50mA, I_B = -1mA$	—	—	-0.25	V
Input voltage (ON)	$V_{I(ON)}$	—	$V_{CE} = -0.2V, I_C = 50mA$	-0.7	—	-1.9	V
Input voltage (OFF)	$V_{I(OFF)}$	—	$V_{CE} = -5V, I_C = -0.1mA$	-0.5	—	-1.0	V
Transition frequency	f_T	—	$V_{CE} = -5V, I_C = -20mA$	—	200	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = -10V, I_E = 0$	—	5	8	pF
Input resistor	R1	—	—	1.54	2.2	2.86	kΩ
Resistor ratio	R1/R2	—	—	0.187	0.22	0.253	—

Q1



Q2



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