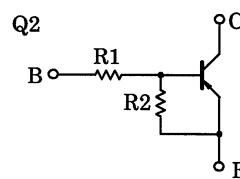
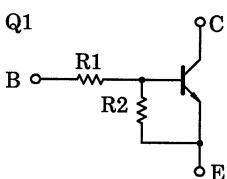
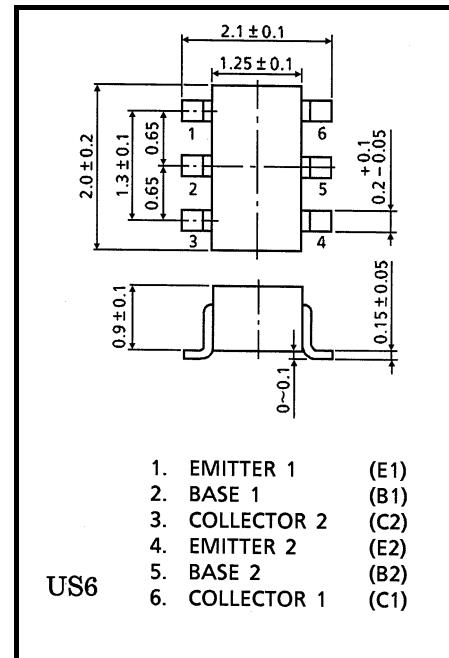


TOSHIBA Transistor  
Silicon NPN/PNP Epitaxial Type (PCT Process) (Transistor with Built-in Bias Resistor)

# RN4983

Switching, Inverter Circuit, Interface Circuit  
and Driver Circuit Applications

Unit: mm



R1: 22kΩ  
R2: 22kΩ  
(Q1, Q2 Common)

## Q1 Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CBO</sub>	50	V
Collector-emitter voltage	V <sub>CEO</sub>	50	V
Emitter-base voltage	V <sub>EBO</sub>	10	V
Collector current	I <sub>C</sub>	100	mA

JEDEC	—
JEITA	—
TOSHIBA	2-2J1A

Weight: 6.8mg (typ.)

## Q2 Absolute Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V <sub>CBO</sub>	-50	V
Collector-emitter voltage	V <sub>CEO</sub>	-50	V
Emitter-base voltage	V <sub>EBO</sub>	-10	V
Collector current	I <sub>C</sub>	-100	mA

Start of commercial production  
1992-10

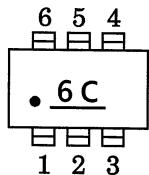
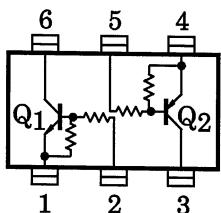
**Q1, Q2 Common Absolute Maximum Ratings (Ta = 25°C)**

Characteristic	Symbol	Rating	Unit
Collector power dissipation	P <sub>C</sub> *	200	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55 to 150	°C

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.).

\* 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 <sub>CBO</sub>	—	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0	—	—	100	nA
	I <sub>CEO</sub>	—	V <sub>CE</sub> = 50V, I <sub>B</sub> = 0	—	—	500	
Emitter cut-off current	I <sub>EBO</sub>	—	V <sub>EB</sub> = 10V, I <sub>C</sub> = 0	0.17	—	0.33	mA
DC current gain	h <sub>FE</sub>	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA	70	—	—	—
Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	—	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0.25mA	—	0.1	0.3	V
Input voltage (ON)	V <sub>I</sub> (ON)	—	V <sub>CE</sub> = 0.2V, I <sub>C</sub> = 5mA	1.3	—	3.0	V
Input voltage (OFF)	V <sub>I</sub> (OFF)	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 0.1mA	1.0	—	1.5	V
Transition frequency	f <sub>T</sub>	—	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	—	250	—	MHz
Collector output capacitance	C <sub>ob</sub>	—	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0, f = 1 MHz	—	3	6	pF

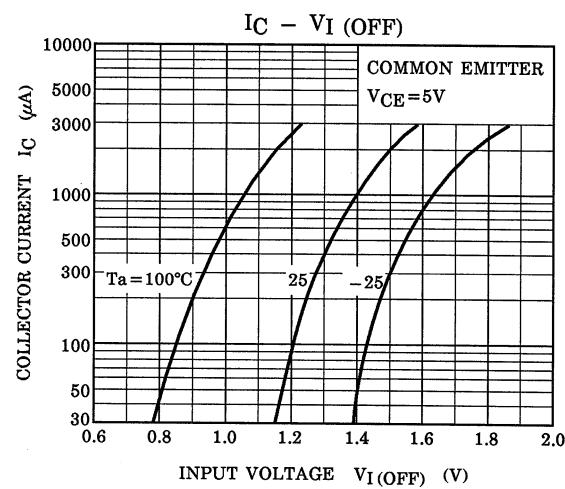
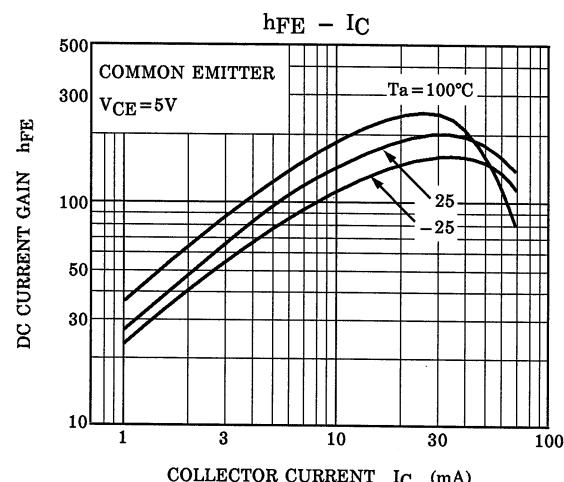
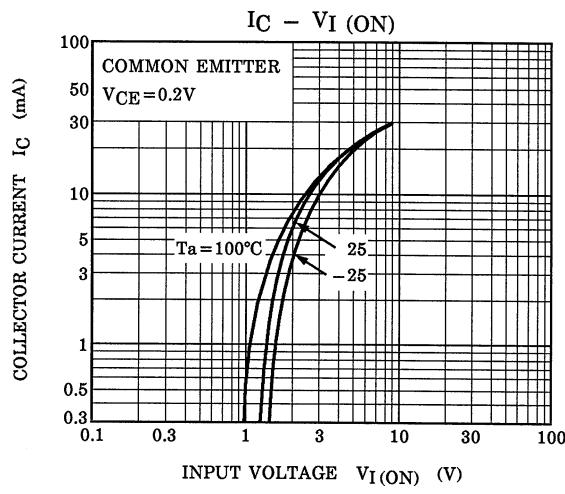
## Q2 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	—	V <sub>CB</sub> = -50V, I <sub>E</sub> = 0	—	—	-100	nA
	I <sub>CEO</sub>	—	V <sub>CE</sub> = -50V, I <sub>B</sub> = 0	—	—	-500	
Emitter cut-off current	I <sub>EBO</sub>	—	V <sub>EB</sub> = -10V, I <sub>C</sub> = 0	-0.17	—	-0.33	mA
DC current gain	h <sub>FE</sub>	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -10mA	70	—	—	—
Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	—	I <sub>C</sub> = -5mA, I <sub>B</sub> = -0.25mA	—	-0.1	-0.3	V
Input voltage (ON)	V <sub>I</sub> (ON)	—	V <sub>CE</sub> = -0.2V, I <sub>C</sub> = -5mA	-1.3	—	-3.0	V
Input voltage (OFF)	V <sub>I</sub> (OFF)	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -0.1mA	-1.0	—	-1.5	V
Transition frequency	f <sub>T</sub>	—	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA	—	200	—	MHz
Collector output capacitance	C <sub>ob</sub>	—	V <sub>CB</sub> = -10V, I <sub>E</sub> = 0, f = 1MHz	—	3	6	pF

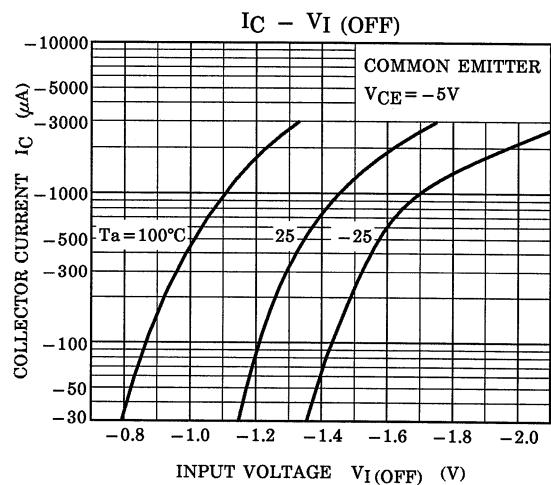
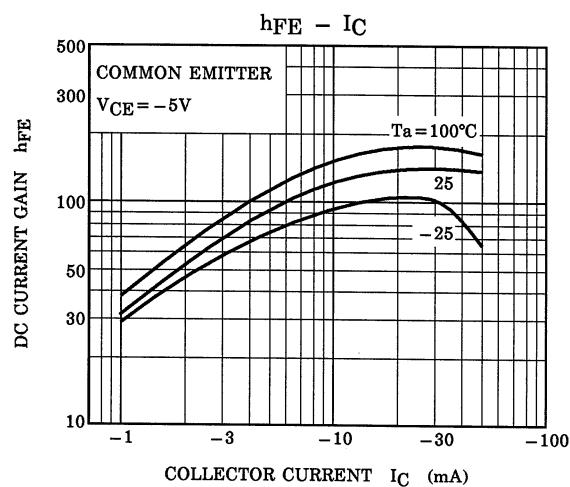
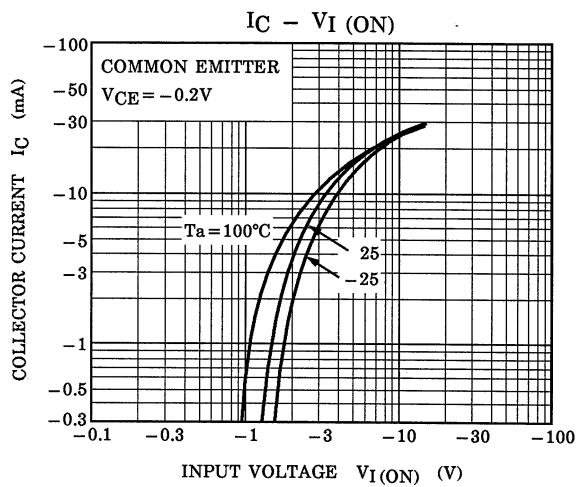
## Q1, Q2 Common Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input resistor	R <sub>1</sub>	—	—	15.4	22	28.6	kΩ
Resistor ratio	R <sub>1</sub> /R <sub>2</sub>	—	—	0.9	1.0	1.1	—

Q1



Q2



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