

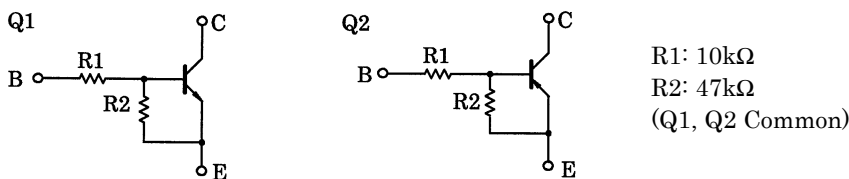
TOSHIBA Transistor  
Silicon NPN Epitaxial Type (PCT Process) Silicon PNP Epitaxial Type (PCT Process)

## RN4987

Switching, Inverter Circuit, Interface Circuit  
And Driver Circuit Applications

- Including two devices in US6 (Ultra super mini type with 6 leads)
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

### Equivalent Circuit and Bias Resister Values



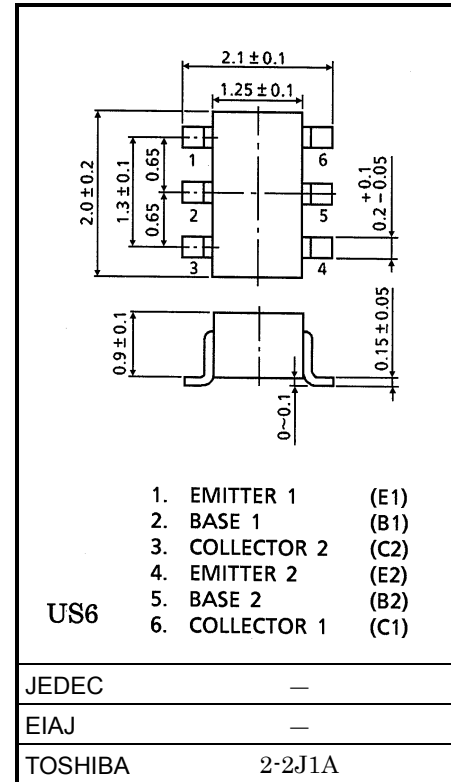
### Q1 Maximum Ratings (Ta = 25°C)

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>	6	V
Collector current	I <sub>C</sub>	100	mA

### Q2 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>	-6	V
Collector current	I <sub>C</sub>	-100	mA

Unit in mm



Weight: 6.8mg

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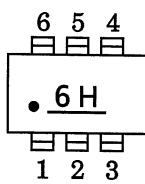
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## Q1, Q2 Common Maximum Ratings (Ta = 25°C)

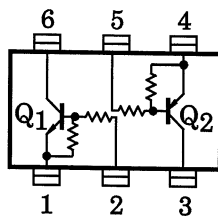
Characteristic	Symbol	Rating	Unit
Collector power dissipation	$P_C$ *	200	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

\* : Total rating

## Marking



## Equivalent Circuit (Top View)



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**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> = 6V, I <sub>C</sub> = 0	0.081	—	0.15	mA
DC current gain	h <sub>FE</sub>	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 10mA	80	—	—	—
Collector-emitter saturation voltage	V <sub>CE (sat)</sub>	—	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0.25mA	—	0.1	0.3	V
Input voltage (ON)	V <sub>I (ON)</sub>	—	V <sub>CE</sub> = 0.2V, I <sub>C</sub> = 5mA	0.7	—	1.8	V
Input voltage (OFF)	V <sub>I (OFF)</sub>	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 0.1mA	0.5	—	1.0	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

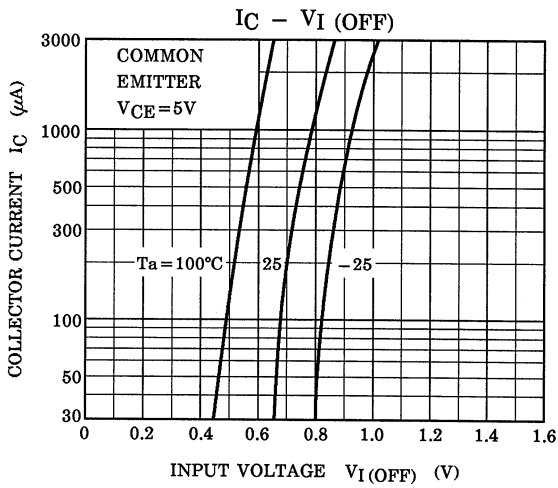
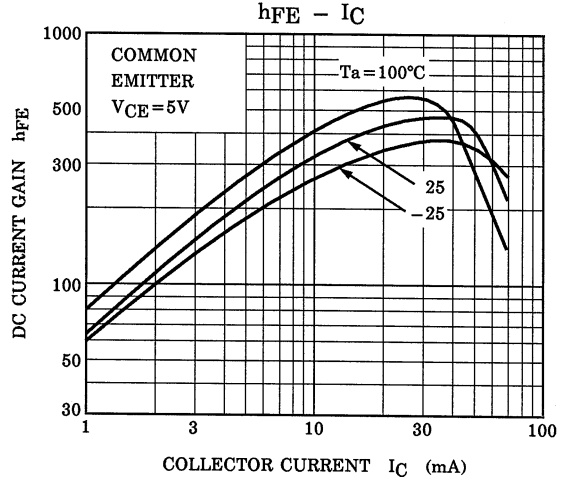
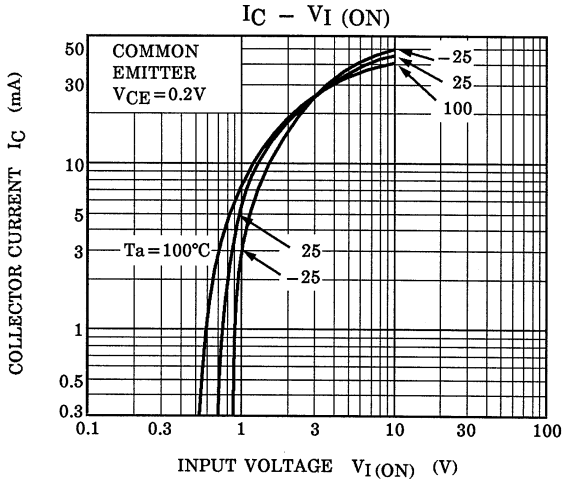
**Q2 Electrical Characteristics (Ta = 25°C)**

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> = -6V, I <sub>C</sub> = 0	-0.081	—	-0.15	mA
DC current gain	h <sub>FE</sub>	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -10mA	80	—	—	—
Collector-emitter saturation voltage	V <sub>CE (sat)</sub>	—	I <sub>C</sub> = -5mA, I <sub>B</sub> = -0.25mA	—	-0.1	-0.3	V
Input voltage (ON)	V <sub>I (ON)</sub>	—	V <sub>CE</sub> = -0.2V, I <sub>C</sub> = -5mA	-0.7	—	-1.8	V
Input voltage (OFF)	V <sub>I (OFF)</sub>	—	V <sub>CE</sub> = -5V, I <sub>C</sub> = -0.1mA	-0.5	—	-1.0	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	—	3	6	pF

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

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input resistor	R1	—	—	7	10	13	kΩ
Resistor ratio	R1/R2	—	—	0.191	0.213	0.232	—

**Q1**



Q2

