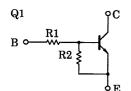
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process) Silicon PNP Epitaxial Type (PCT Process)

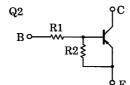
# **RN4983**

# Switching, Inverter Circuit, Interface Circuit And Driver Circuit Applications

- Includeing 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**





R1: 22kΩ R2: 22kΩ (Q1, Q2 Common)

1

#### 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>	10	V
Collector current	IC	100	mA

#### Unit: mm 2.1 ± 0.1 1.25 ± 0.1 1. EMITTER 1 (E1) (B1) BASE 1 **COLLECTOR 2** (C2) EMITTER 2 (E2) BASE 2 (B2) US<sub>6</sub> **COLLECTOR 1** (C1) JEDEC EIAJ TOSHIBA 2-2J1A

Weight: 6.8mg

#### Q2 Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	V <sub>CEO</sub>	-50	V
Emitter-base voltage	V <sub>EBO</sub>	-10	V
Collector current	Ic	-100	mA

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

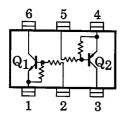
Characteristic	Symbol	Rating	Unit
Collector power dissipation	P <sub>C</sub> *	200	mW
Junction temperature	Tj	150	°C
Storage temperature range	T <sub>stg</sub>	-55~150	°C

<sup>\*</sup> Total rating

### Marking



# **Equivalent Circuit (Top View)**



2

# Q1 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	_	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0	_	_	100	nA
Collector cut-on current	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 (ON)</sub>	_	V <sub>CE</sub> = 0.2V, I <sub>C</sub> = 5mA	1.3	_	3.0	V
Input voltage (OFF)	V <sub>I (OFF)</sub>	_	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

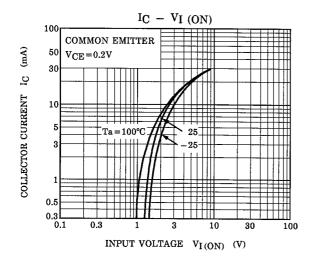
# Q2 Electrical Characteristics (Ta = 25°C)

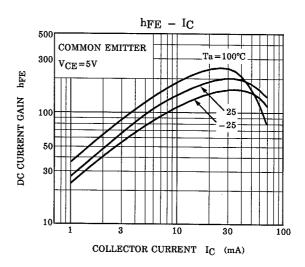
Characteristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	_	$V_{CB} = -50V, I_E = 0$	_	_	-100	nA
Collector cut-on current	I <sub>CEO</sub>	_	$V_{CE} = -50V, I_B = 0$	_	-	-500	
Emitter cut-off current	I <sub>EBO</sub>	_	$V_{EB} = -10V, I_C = 0$	-0.17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

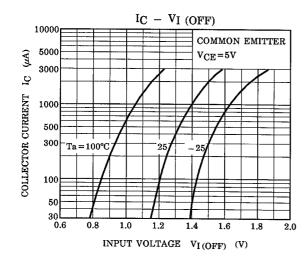
### Q1, Q2 Common Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Input resistor	R1	_	_	15.4	22	28.6	kΩ
Resistor ratio	R1/R2	_		0.9	1.0	1.1	_

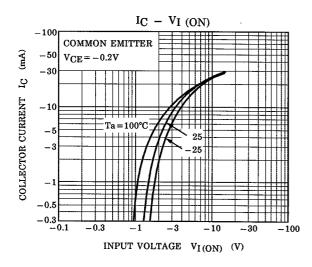
Q1

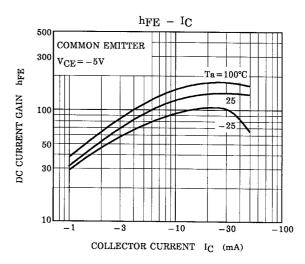


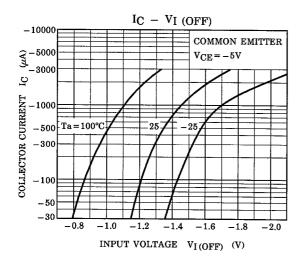




Q2







5

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