

TOSHIBA Transistor

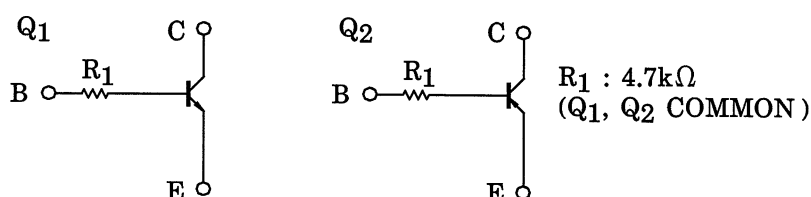
Silicon NPN Epitaxial Type (PCT Process)	Silicon PNP Epitaxial Type (PCT Process)
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2SA100A	2SA100A
2SA100B	2SA100B
2SA100C	2SA100C
2SA100D	2SA100D
2SA100E	2SA100E
2SA100F	2SA100F
2SA100G	2SA100G
2SA100H	2SA100H
2SA100I	2SA100I
2SA100J	2SA100J
2SA100K	2SA100K
2SA100L	2SA100L
2SA100M	2SA100M
2SA100N	2SA100N
2SA100O	2SA100O
2SA100P	2SA100P
2SA100Q	2SA100Q
2SA100R	2SA100R
2SA100S	2SA100S
2SA100T	2SA100T
2SA100U	2SA100U
2SA100V	2SA100V
2SA100W	2SA100W
2SA100X	2SA100X
2SA100Y	2SA100Y
2SA100Z	2SA100Z

RN4990

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



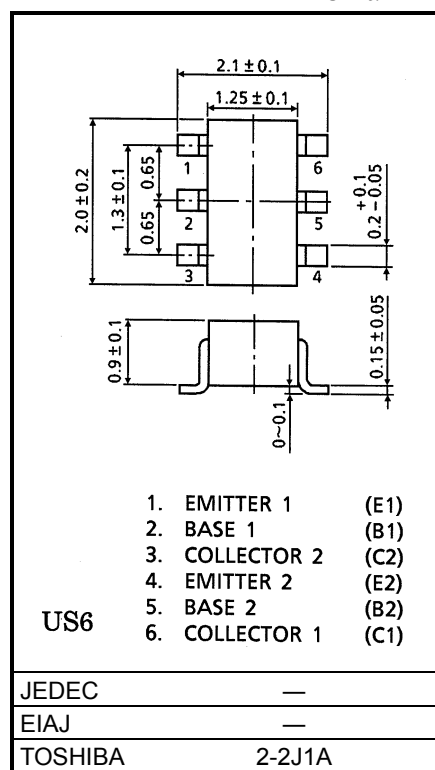
Q1 Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	100	mA

Q2 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}	-5	V
Collector current	I_C	-100	mA

Unit: mm



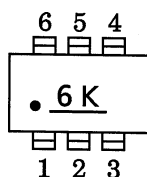
Weight: 6.8mg

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

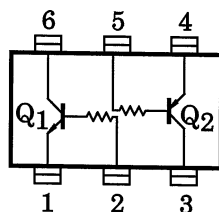
Characteristic	Symbol	Rating	Unit
Collector power dissipation	P_C *	200	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55~150	°C

* : 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	mA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = 10V, I_C = 0$	—	—	100	mA
DC current gain	h_{FE}	—	$V_{CE} = 5V, I_C = 1mA$	120	—	700	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = 5mA, I_B = 0.25mA$	—	0.1	0.3	V
Transition frequency	f_T	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	3	6	pF

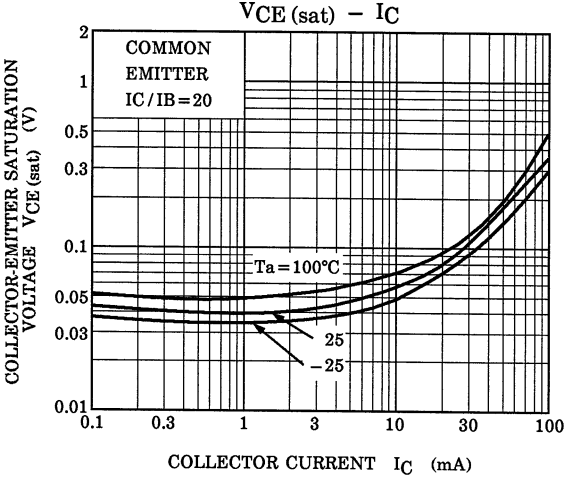
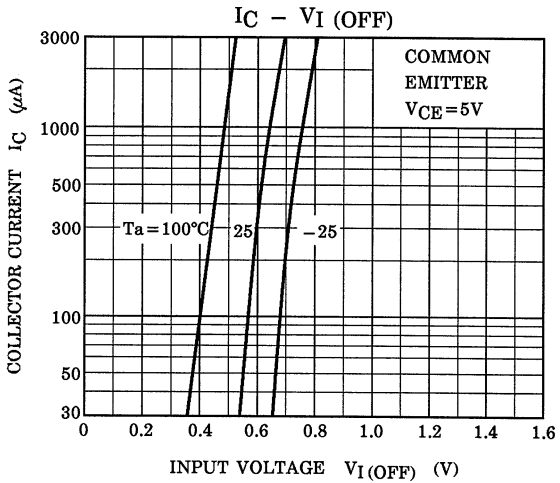
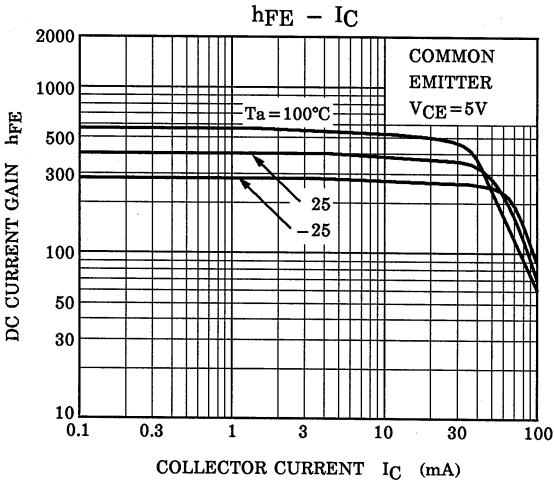
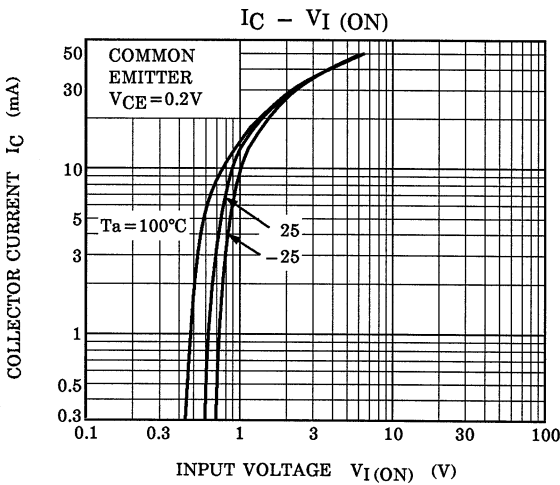
Q2 Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	mA
Emitter cut-off current	I_{EBO}	—	$V_{EB} = -5V, I_C = 0$	—	—	-100	mA
DC current gain	h_{FE}	—	$V_{CE} = -5V, I_C = -1mA$	120	—	400	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = -5mA, I_B = -0.25mA$	—	-0.1	-0.3	V
Transition frequency	f_T	—	$V_{CE} = -10V, I_C = -5mA$	—	200	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = -10V, I_E = 0, f = 1MHz$	—	3	6	pF

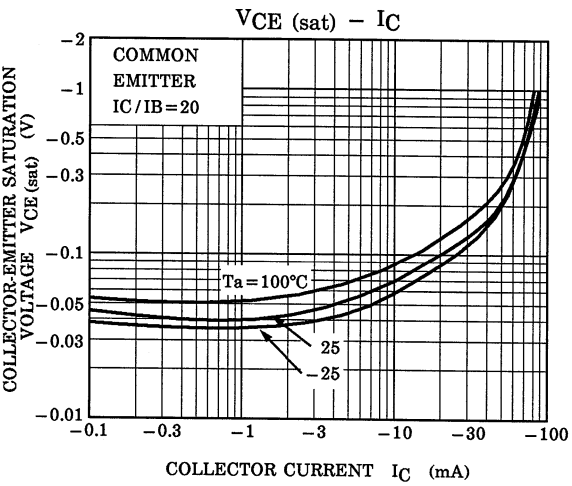
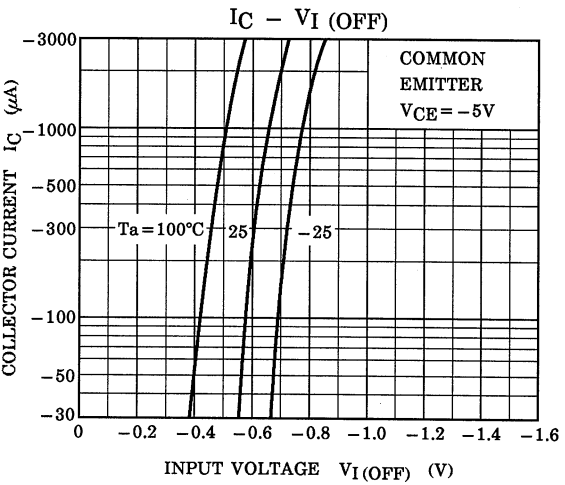
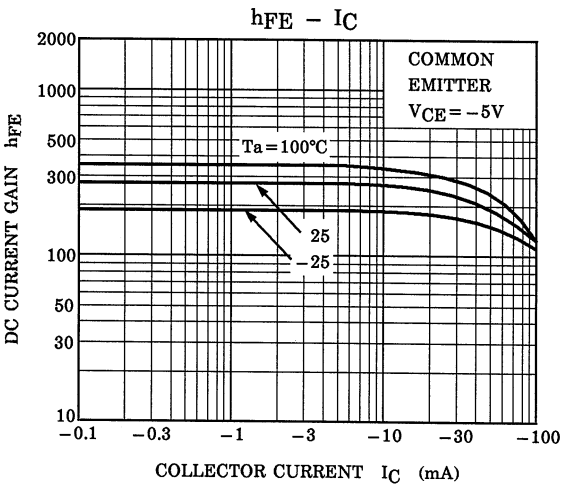
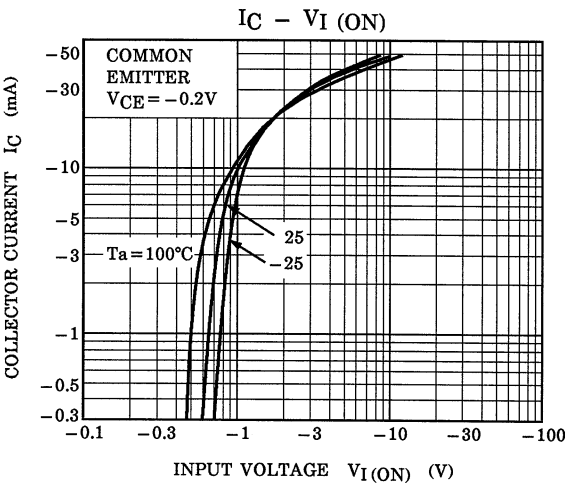
Q1, Q2 Common Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input resistor	R1	—	—	3.29	4.7	6.11	kΩ

Q1



Q2



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