

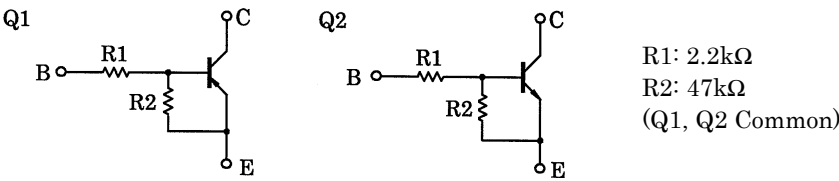
TOSHIBA Transistor
Silicon PNP Epitaxial Type (PCT Process) Silicon NPN Epitaxial Type (PCT Process)

RN4605

Switching, Inverter Circuit, Interface Circuit
And Driver Circuit Applications

- Including two devices in SM6 (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



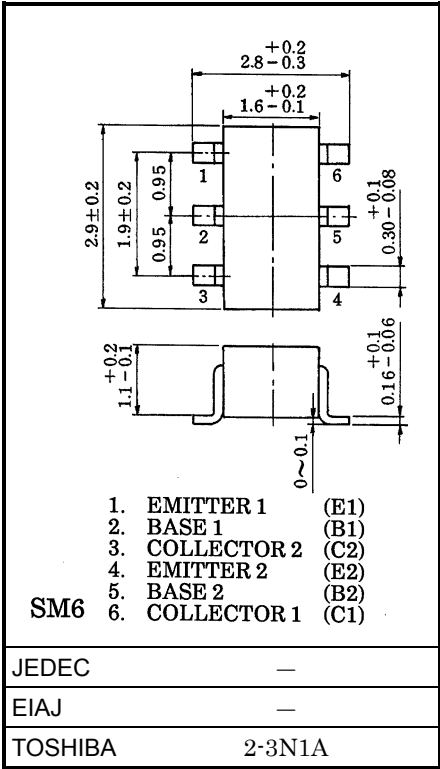
Q1 Maximum Ratings (Ta = 25°C)

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 in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-3N1A

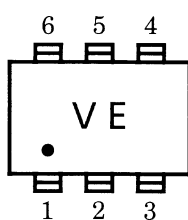
Weight: 0.015g

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

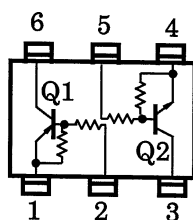
Characteristic	Symbol	Rating	Unit
Collector power dissipation	P_C *	300	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55~150	°C

* Total rating

Marking



Equivalent Circuit (Top View)



Q1 Electrical Characteristics (Ta = 25°C)

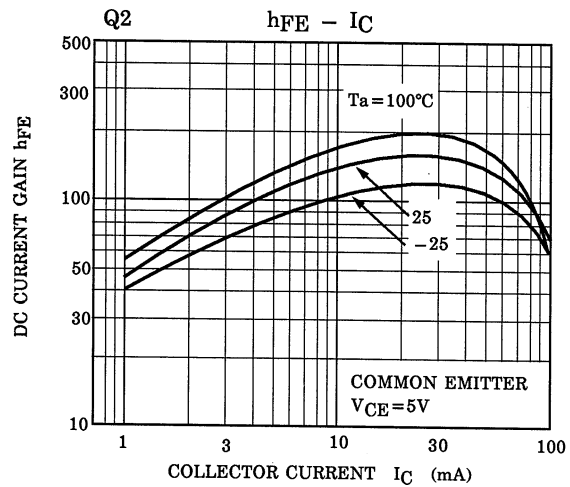
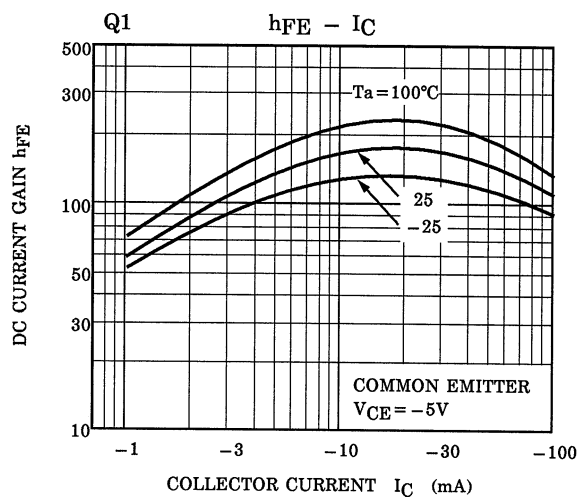
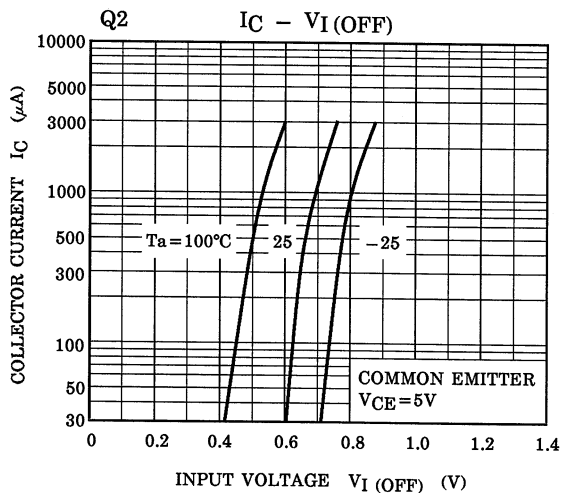
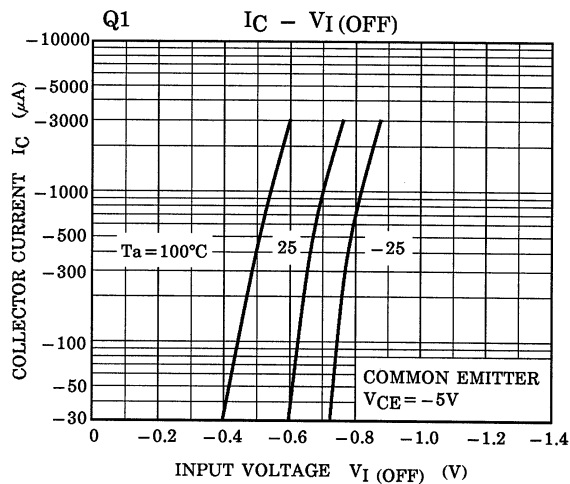
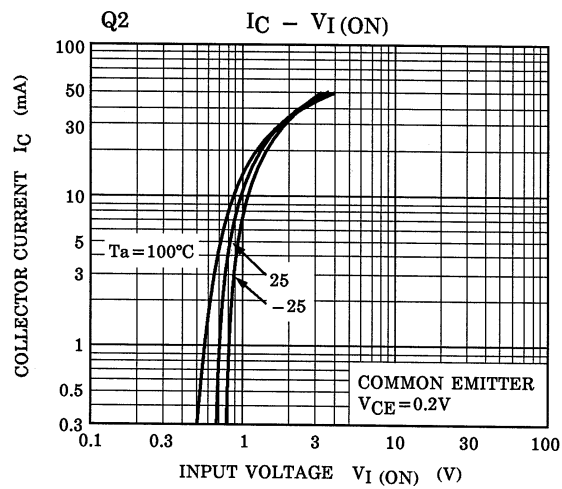
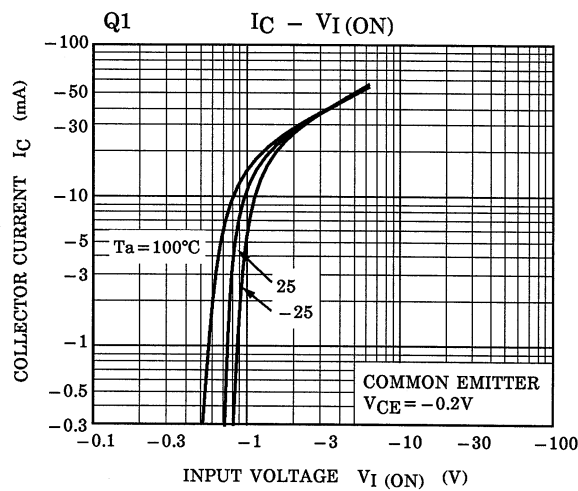
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	nA
	I_{CEO}	—	$V_{CE} = -50V, I_B = 0$	—	—	-500	
Emitter cut-off current	I_{EBO}	—	$V_{EB} = -5V, I_C = 0$	-0.078	—	-0.145	mA
DC current gain	h_{FE}	—	$V_{CE} = -5V, I_C = -10mA$	80	—	—	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = -5mA, I_B = -0.25mA$	—	-0.1	-0.3	V
Input voltage (ON)	$V_I(ON)$	—	$V_{CE} = -0.2V, I_C = -5mA$	-0.6	—	-1.1	V
Input voltage (OFF)	$V_I(OFF)$	—	$V_{CE} = -5V, I_C = -0.1mA$	-0.5	—	-0.8	V
Transition frequency	f_T	—	$V_{CE} = -10V, I_C = -5mA$	—	200	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = -10V, I_E = 0$	—	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	nA
	I_{CEO}	—	$V_{CE} = 50V, I_B = 0$	—	—	500	
Emitter cut-off current	I_{EBO}	—	$V_{EB} = 5V, I_C = 0$	0.078	—	0.145	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)	$V_I(ON)$	—	$V_{CE} = 0.2V, I_C = 5mA$	0.6	—	1.1	V
Input voltage (OFF)	$V_I(OFF)$	—	$V_{CE} = 5V, I_C = 0.1mA$	0.5	—	0.8	V
Transition frequency	f_T	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	C_{ob}	—	$V_{CB} = 10V, I_E = 0, f = 1\text{ MHz}$	—	3	6	pF

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

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input resistor	R1	—	—	1.54	2.2	2.86	kΩ
Resistor ratio	R1/R2	—	—	0.0421	0.0468	0.0515	—



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