

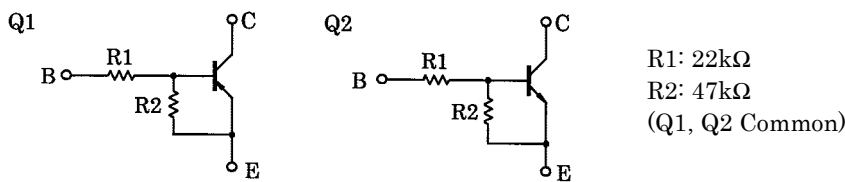
TOSHIBA Transistor  
Silicon PNP Epitaxial Type (PCT Process) Silicon NPN Epitaxial Type (PCT Process)

## RN4608

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



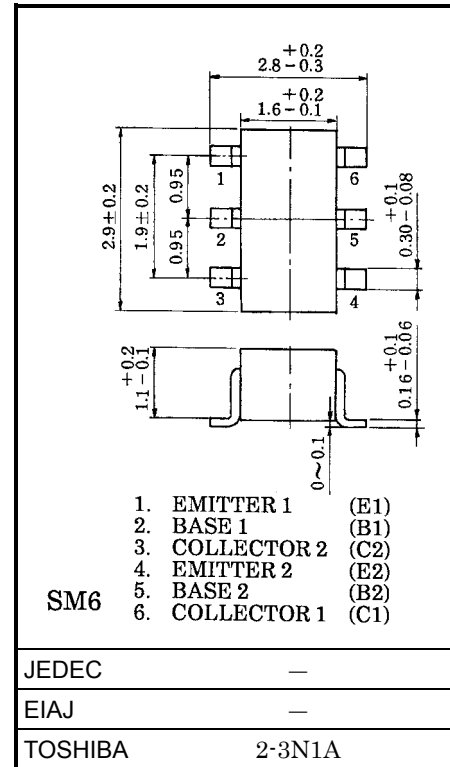
### Q1 Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	$V_{EBO}$	-7	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	$V_{EBO}$	7	V
Collector current	$I_C$	100	mA

Unit in mm



SM6

JEDEC

EIAJ

TOSHIBA

2-3N1A

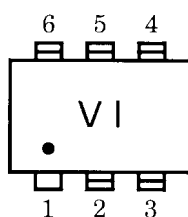
Weight: 0.015g

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

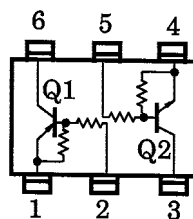
Characteristic	Symbol	Rating	Unit
Collector power dissipation	$P_C$ *	300	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

\* Total rating

## Marking



## Equivalent Circuit (Top View)



## Q1 Electrical Characteristics (Ta = 25°C)

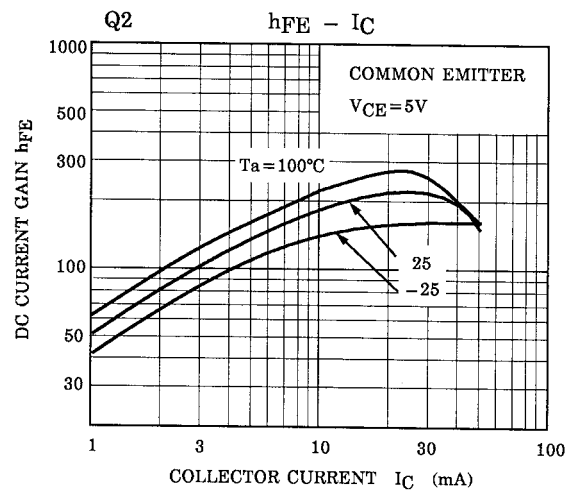
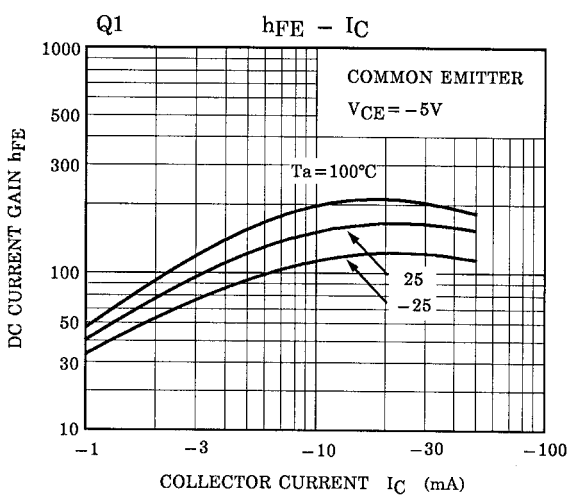
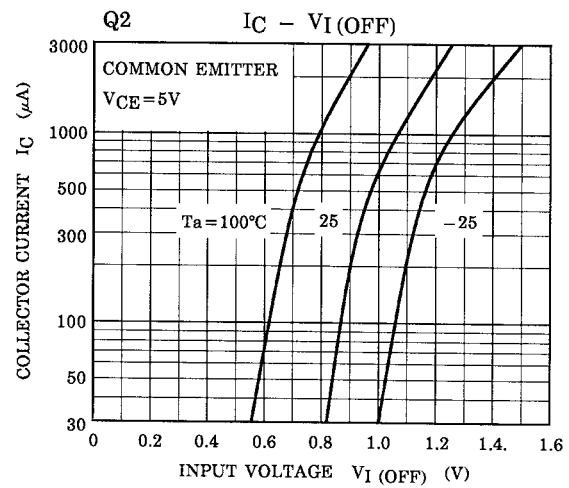
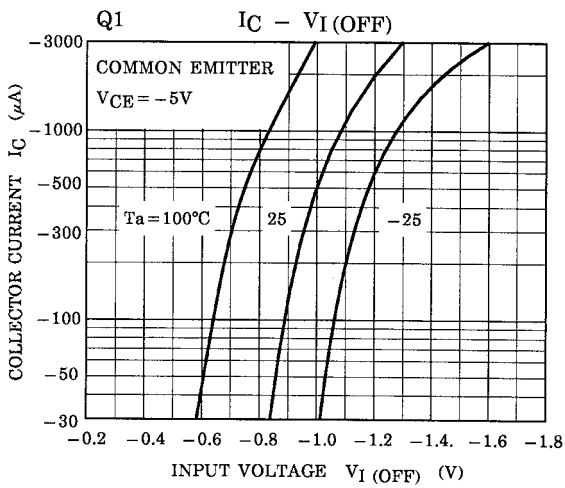
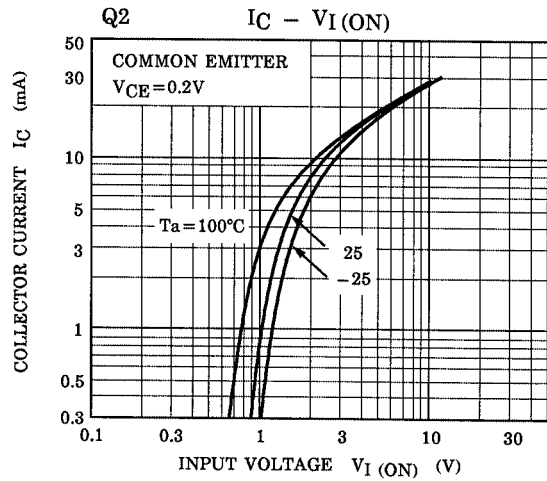
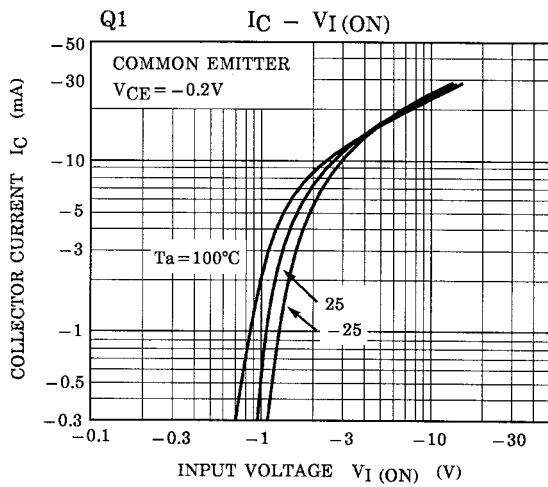
Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	—	$V_{CB} = -50V, I_E = 0$	—	—	-100	nA
	$I_{CEO}$	—	$V_{CE} = -50V, I_B = 0$	—	—	-500	
Emitter cut-off current	$I_{EBO}$	—	$V_{EB} = -7V, I_C = 0$	-0.078	—	-0.145	mA
DC current gain	$h_{FE}$	—	$V_{CE} = -5V, I_C = -10mA$	80	—	—	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	$I_C = -5mA, I_B = -0.25mA$	—	-0.1	-0.3	V
Input voltage (ON)	$V_I(ON)$	—	$V_{CE} = -0.2V, I_C = -5mA$	-1.0	—	-2.6	V
Input voltage (OFF)	$V_I(OFF)$	—	$V_{CE} = -5V, I_C = -0.1mA$	-0.6	—	-1.16	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	$I_{EBO}$	—	$V_{EB} = 7V, I_C = 0$	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)	$V_I(ON)$	—	$V_{CE} = 0.2V, I_C = 5mA$	1.0	—	2.6	V
Input voltage (OFF)	$V_I(OFF)$	—	$V_{CE} = 5V, I_C = 0.1mA$	0.6	—	11.6	V
Transition frequency	$f_T$	—	$V_{CE} = 10V, I_C = 5mA$	—	250	—	MHz
Collector output capacitance	$C_{ob}$	—	$V_{CB} = 10V, I_E = 0, f = 1 MHz$	—	3	6	pF

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

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Input resistor	R1	—	—	15.4	22	28.6	kΩ
Resistor ratio	R1/R2	—	—	0.421	0.468	0.515	—



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