

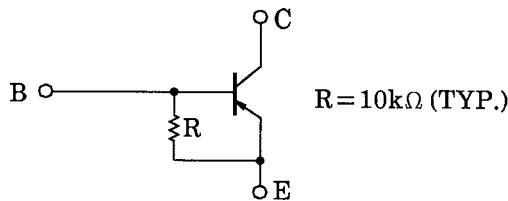
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

## RN6003

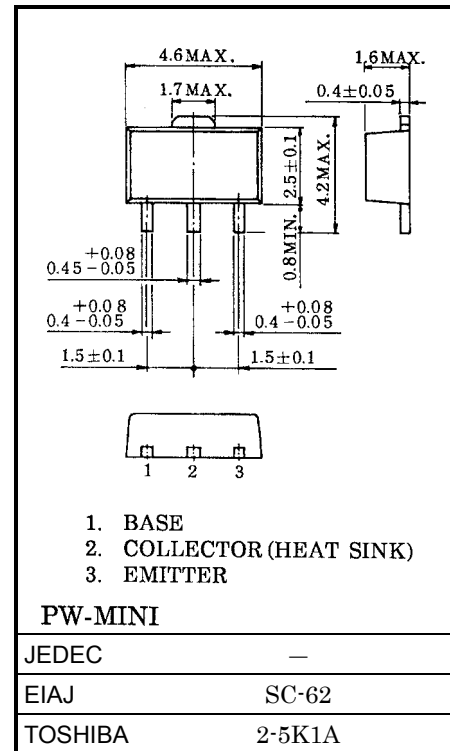
Motor Drive Circuit Applications  
Power Amplifier Applications  
Power Switching Applications

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process
- Small flat package
- $P_C = 1\sim 2W$  (mounted on ceramic substrate)
- Complementary to RN5003

### Equivalent Circuit



Unit in mm



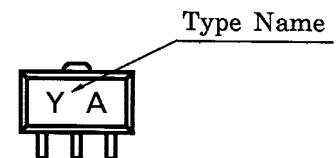
Weight: 0.05g

### Maximum Ratings ( $T_a = 25^\circ C$ )

Characteristic	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-30	V
Collector-emitter voltage	$V_{CES}$	-30	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-2	A
Base current	$I_B$	-0.4	A
Collector power dissipation	$P_C$	500	mW
Collector power dissipation	$P_C^*$	1000	mW
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature range	$T_{stg}$	-55~150	$^\circ C$

\* : Mounted on ceramic substrate ( $250mm^2 \times 0.8t$ )

### Marking



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## Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	—	$V_{CB} = -30V, I_E = 0$	—	—	-0.1	$\mu A$
Emitter cut-off current	$I_{EBO}$	—	$V_{EB} = -5V, I_C = 0$	-0.385	-0.50	-0.714	mA
Collector-emitter breakdown voltage	$V_{(BR)CES}$	—	$I_C = -10mA$	-30	—	—	V
DC current gain	$h_{FE} (1)$	—	$V_{CE} = -2V, I_C = -0.5A$	100	—	400	—
	$h_{FE} (2)$	—	$V_{CE} = -2V, I_C = -2.0A$	30	—	—	
Collector-emitter saturation voltage	$V_{CE (sat)}$	—	$I_C = -1A, I_B = -0.05A$	—	—	-0.5	V
Base-emitter saturation voltage	$V_{BE (sat)}$	—	$I_C = -1A, I_B = -0.05A$	—	—	-1.2	V
Transition frequency	$f_T$	—	$V_{CE} = -2V, I_C = -0.5A$	—	120	—	MHz
Collector output capacitance	$C_{ob}$	—	$V_{CB} = -10V, I_E = 0,$ $f = 1 MHz$	—	40	—	pF
Resistor	R	—	—	7	10	13	k $\Omega$