

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN5003

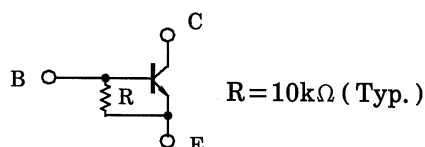
Motor Drive Circuit Applications

Power Amplifier Applications

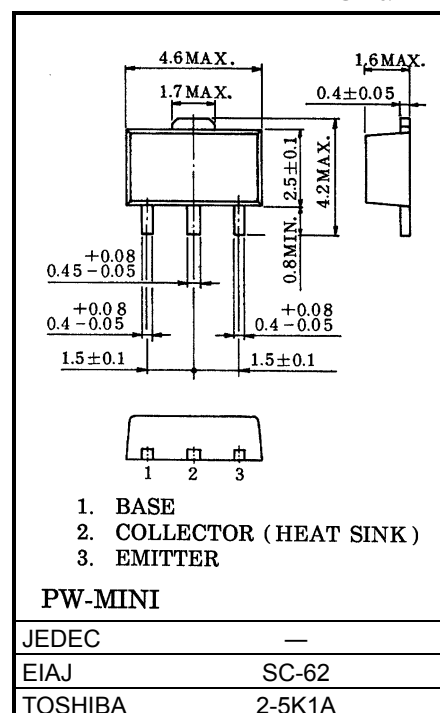
Power Switching Applications

- 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 RN6003

Equivalent Circuit



Unit: mm



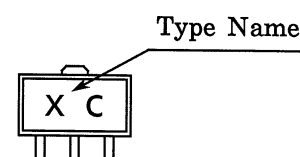
Weight: 0.05g

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

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	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	$^\circ C$

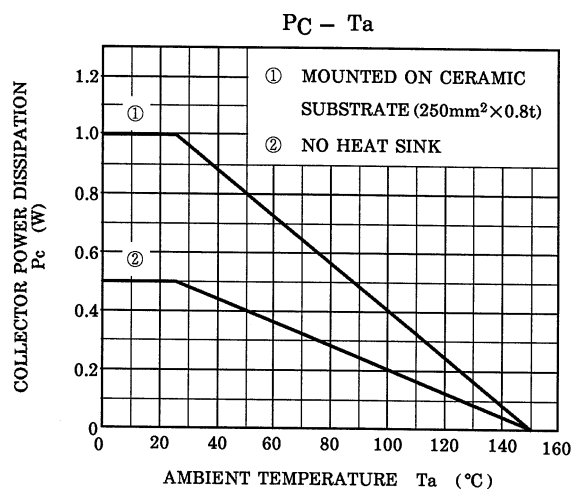
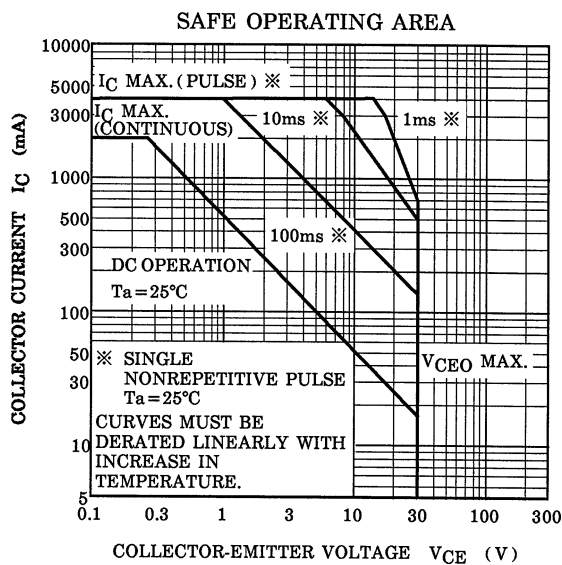
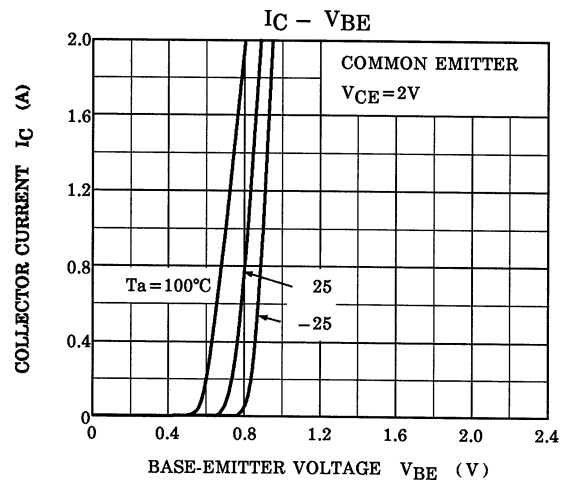
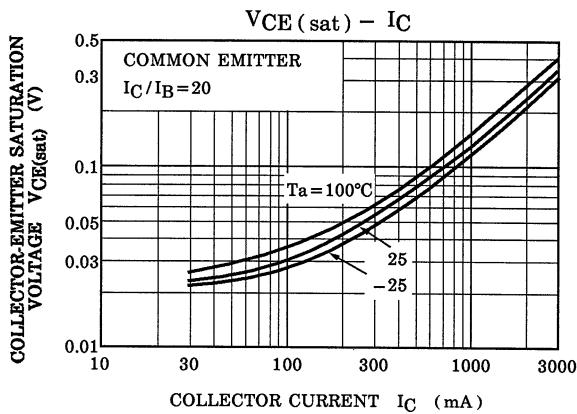
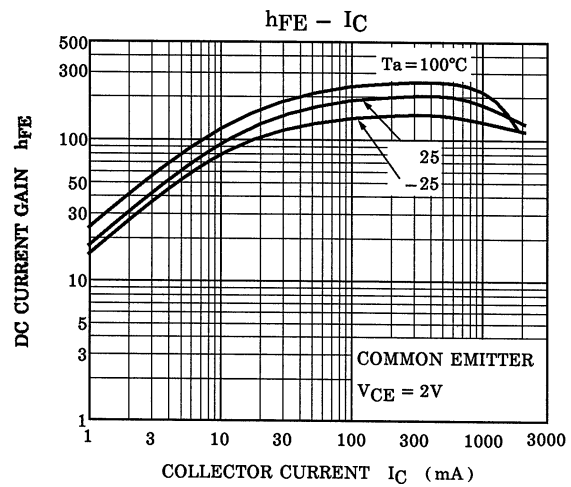
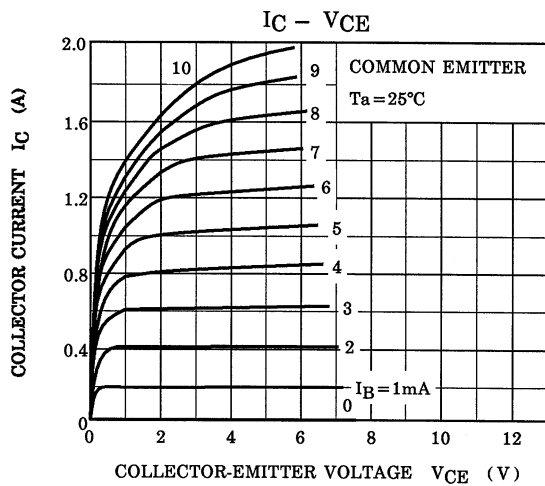
* : Mounted on ceramic substrate ($250mm^2 \times 0.8t$)

Marking



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	μA
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 Ω



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