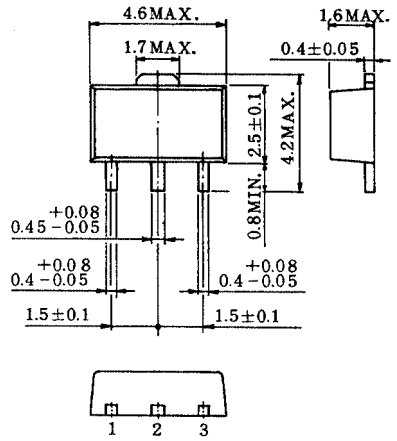
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

RN5002

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 = 1~2W (mounted on ceramic substrate)
- Complementary to RN6002

Unit: mm



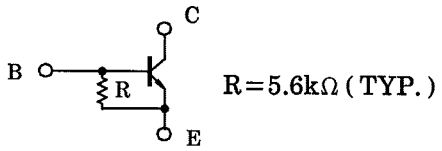
1. BASE
2. COLLECTOR (HEAT SINK)
3. EMITTER

PW-MINI

JEDEC	—
JEITA	SC-62
TOSHIBA	2-5K1A

Weight: 0.05g (typ.)

Equivalent Circuit

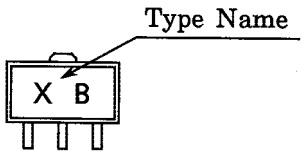


Maximum Ratings (Ta = 25°C)

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	°C
Storage temperature range	T_{stg}	−55~150	°C

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

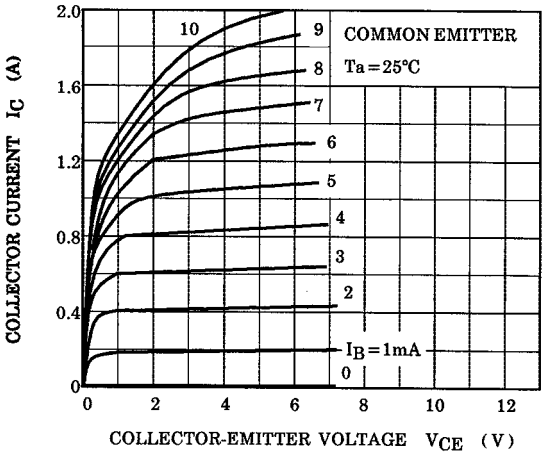
Marking



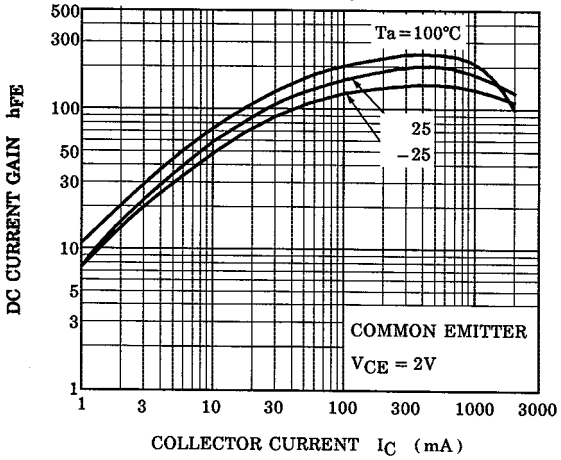
Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Collector cut-offcurrent	I_{CBO}	—	V_{CB} = 30V, I_E = 0	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	—	V_{EB} = 5V, I_C = 0	0.68	0.89	1.28	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	—	360	—
	$h_{FE\ (2)}$		V_{CE} = 2V, IC = 2.0A	50	—	—	
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	—	—	3.9	5.6	7.3	kΩ

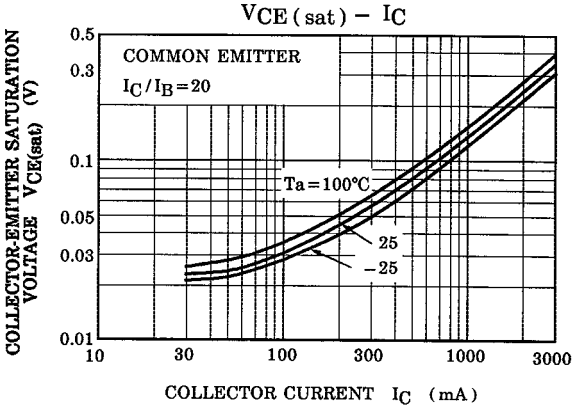
$I_C - V_{CE}$



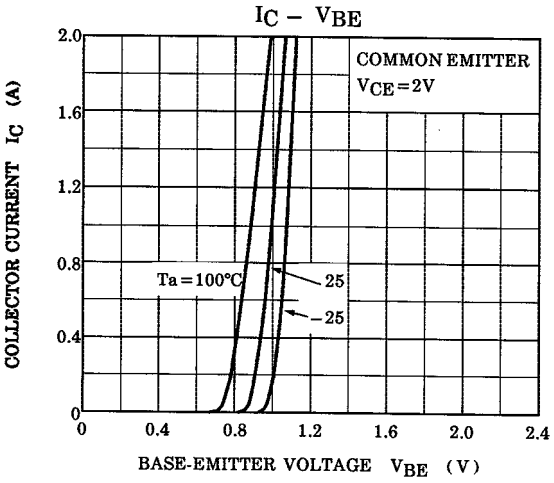
$h_{FE} - I_C$



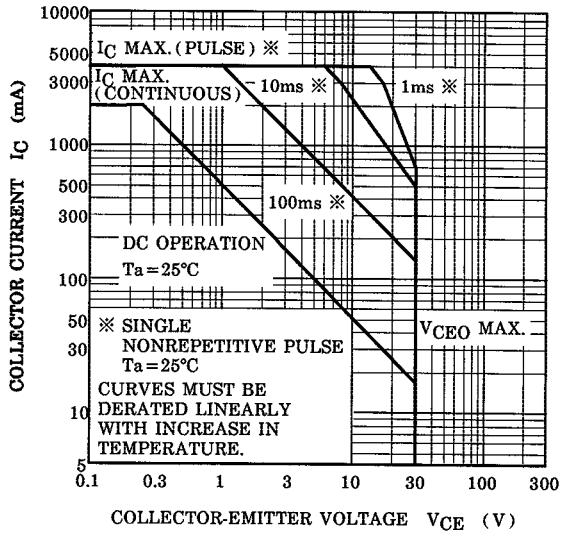
$V_{CE(sat)} - I_C$



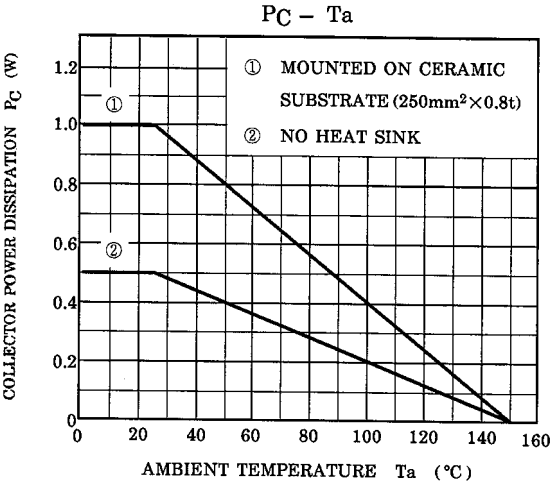
$I_C - V_{BE}$



SAFE OPERATING AREA



$P_C - Ta$



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