

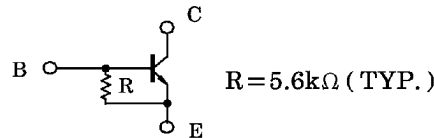
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

# 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
- $P_C=1\sim 2W$  (Mounted on Ceramic substrate)
- Complementary to RN6002

**EQUIVALENT CIRCUIT**



**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CB0}$	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	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C

\* : Mounted on ceramic substrate (250mm<sup>2</sup>×0.8t)

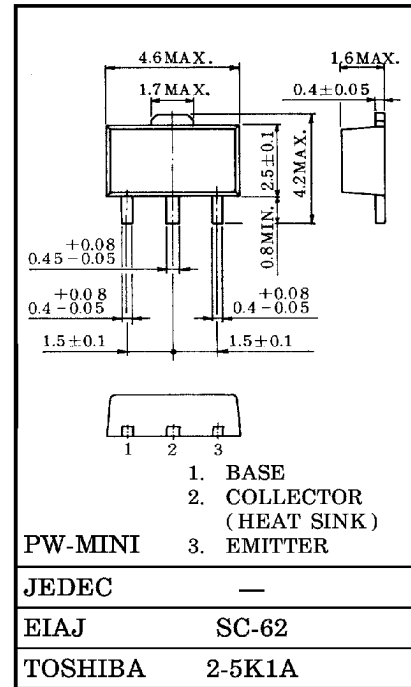
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	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	$I_{EBO}$	$V_{EB}=5V, I_C=0$	0.68	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	
	$h_{FE(2)}$	$V_{CE}=2V, I_C=2.0A$	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	$C_{ob}$	$V_{CB}=10V, I_E=0, f=1MHz$	—	40	—	pF
Resistor	R	—	3.9	5.6	7.3	kΩ

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● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

Unit in mm



Weight : 0.05g

**MARKING**

