

TOSHIBA Transistor Silicon PNP Epitaxial Type (Darlington)

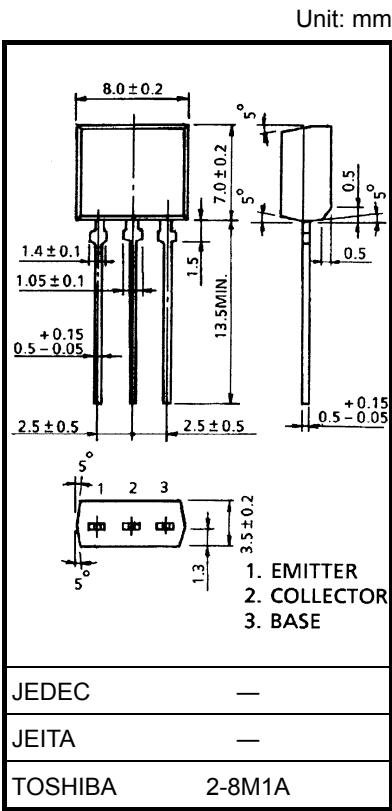
2SB1617

Micro Motor Drive, Hammer Drive Applications  
Power Switching Applications  
Power Amplifier Applications

- High DC current gain:  $h_{FE} = 2000$  (min) ( $V_{CE} = -2$  V,  $I_C = -1$  A)
- Low saturation voltage:  $V_{CE(sat)} = -1.5$  V (max)  
( $I_C = -1$  A,  $I_B = -1$  mA)

Absolute Maximum Ratings (Ta = 25°C)

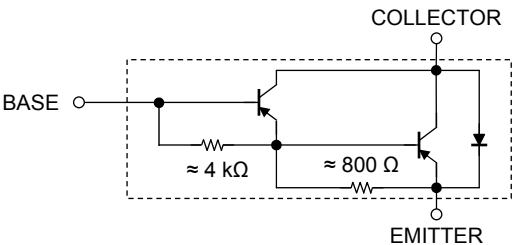
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-100	V
Collector-emitter voltage	$V_{CEO}$	-100	V
Emitter-base voltage	$V_{EBO}$	-8	V
Collector current	$I_C$ (DC)	-2	A
Collector current	$I_C$ (Pulse)	-3	A
Base current	$I_B$	-0.5	A
Collector power dissipation	$P_C$	1.3	W
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	-55 to 150	°C



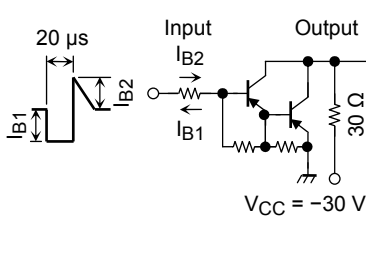
Weight: 0.55 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.  
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

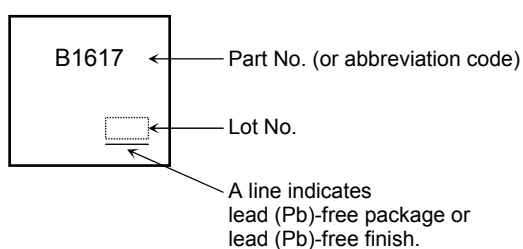
Equivalent Circuit

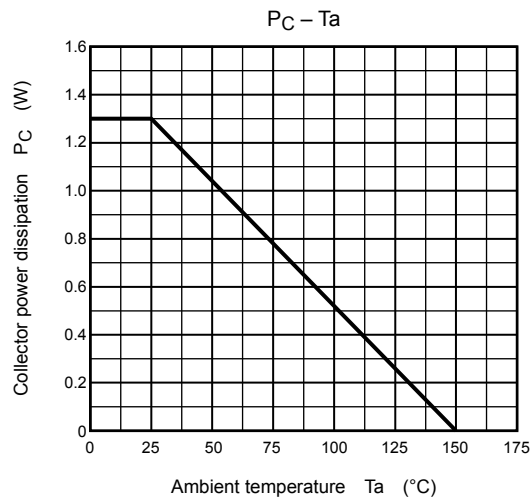
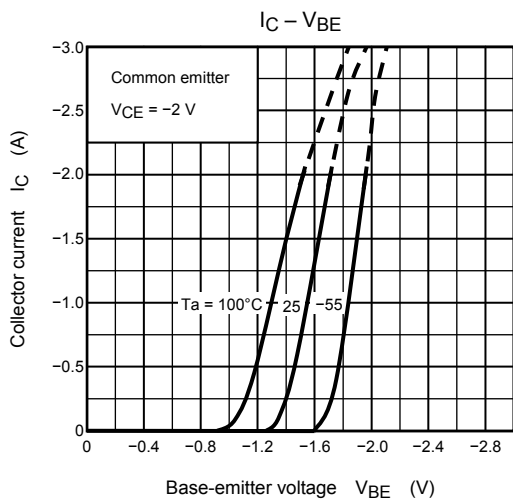
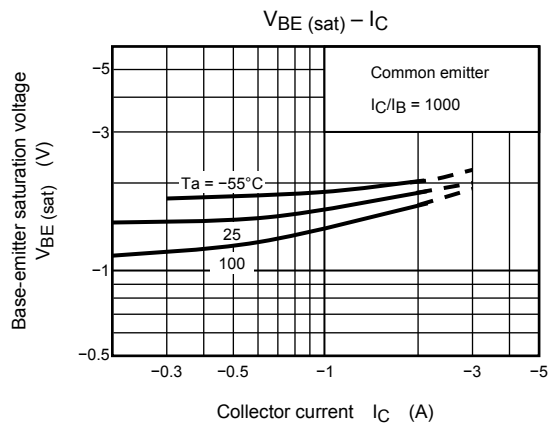
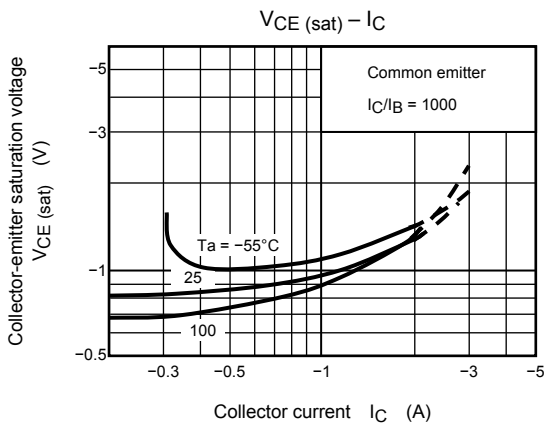
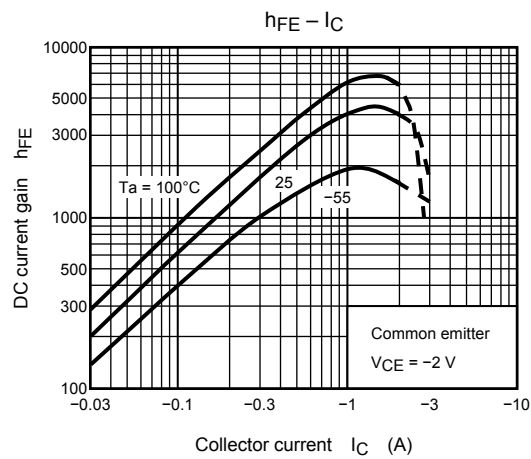
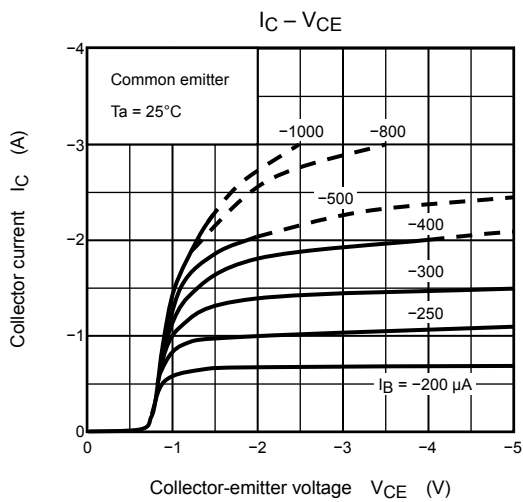


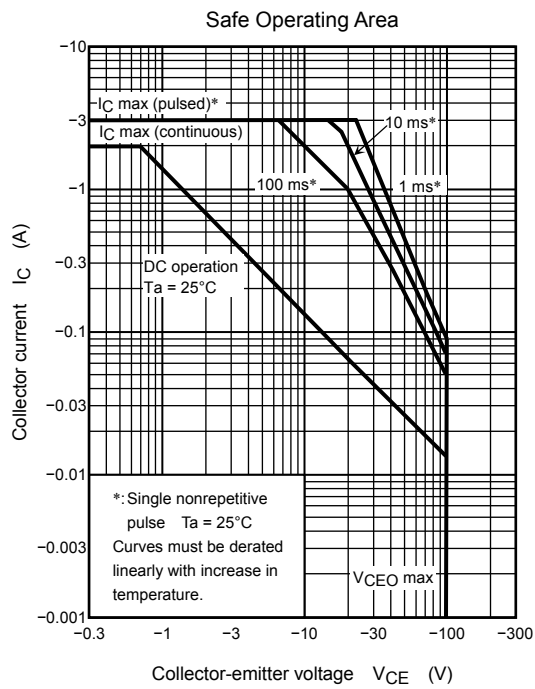
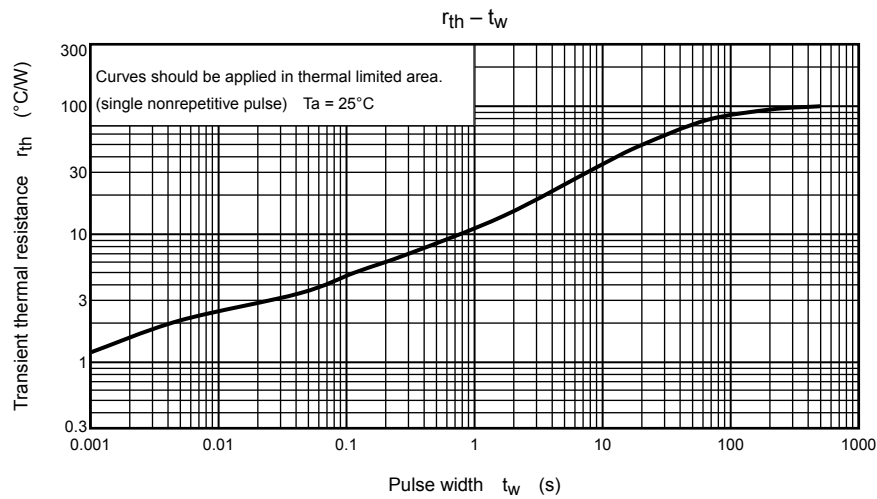
## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = -80\text{ V}, I_E = 0$	—	—	-10	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = -8\text{ V}, I_C = 0$	—	—	-4	$\text{mA}$
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-100	—	—	$\text{V}$
DC current gain		$h_{FE}$	$V_{CE} = -2\text{ V}, I_C = -1\text{ A}$	2000	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -1\text{ A}, I_B = -1\text{ mA}$	—	—	-1.5	$\text{V}$
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = -1\text{ A}, I_B = -1\text{ mA}$	—	—	-2.0	$\text{V}$
Transition frequency		$f_T$	$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	—	50	—	$\text{MHz}$
Collector output capacitance		$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	27	—	$\text{pF}$
Switching time	Turn-on time	$t_{on}$	 <p><math>-I_{B1} = I_{B2} = 1\text{ mA}, \text{duty cycle} \leq 1\%</math></p>	—	0.4	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	2.0	—	
	Fall time	$t_f$		—	0.4	—	

## Marking







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