

TOSHIBA Transistor Silicon NPN Triple Diffused Type (Darlington)

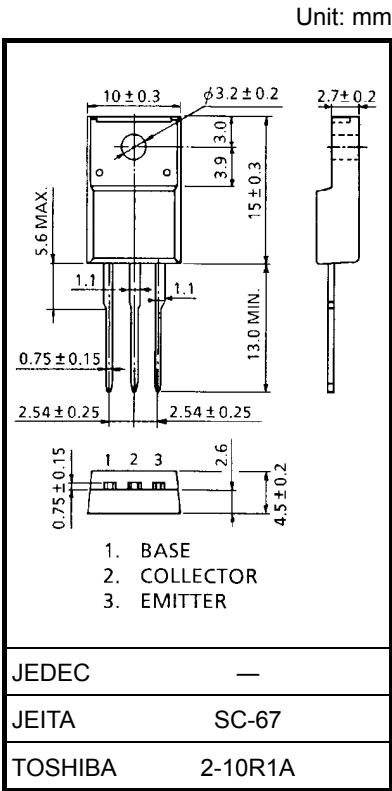
2SD2129

High-Power Switching Applications  
Hammer Drive, Pulse Motor Drive Applications

- High DC current gain:  $h_{FE} = 2000$  (min)
- Low saturation voltage:  $V_{CE(sat)} = 1.5$  V (max)

Absolute Maximum Ratings (Tc = 25°C)

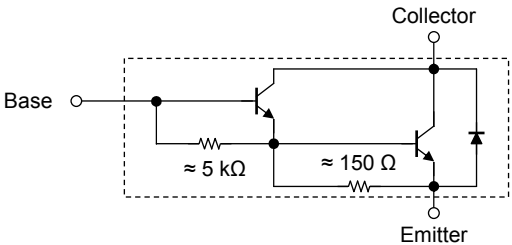
Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	100	V
Collector-emitter voltage		$V_{CEO}$	100	V
Emitter-base voltage		$V_{EBO}$	7	V
Collector current	DC	$I_C$	3	A
	Pulse	$I_{CP}$	5	
Base current		$I_B$	0.5	A
Collector power dissipation	Ta = 25°C	$P_C$	2.0	W
	Tc = 25°C		20	
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	-55 to 150	°C



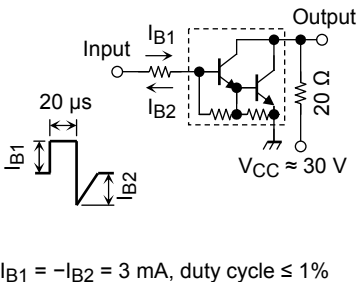
Weight: 1.7 g (typ.)

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).

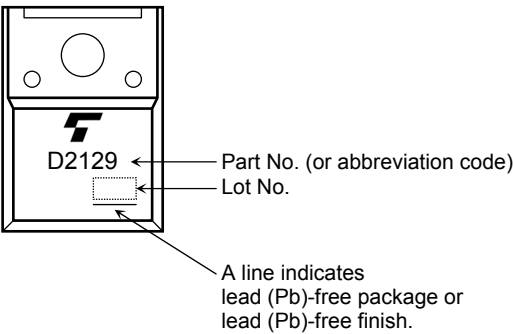
Equivalent Circuit

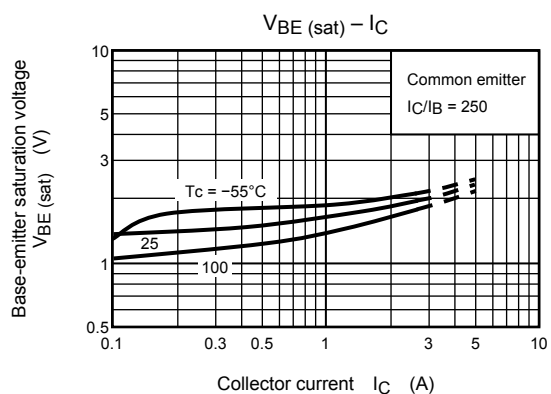
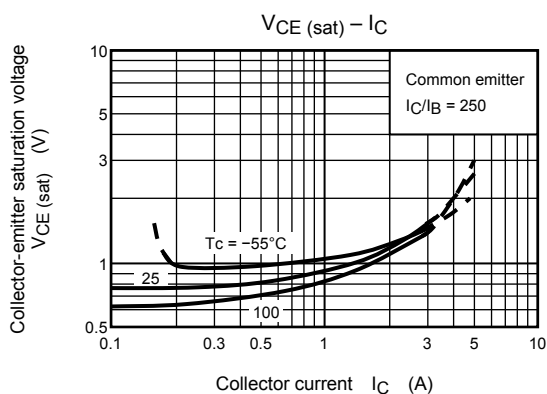
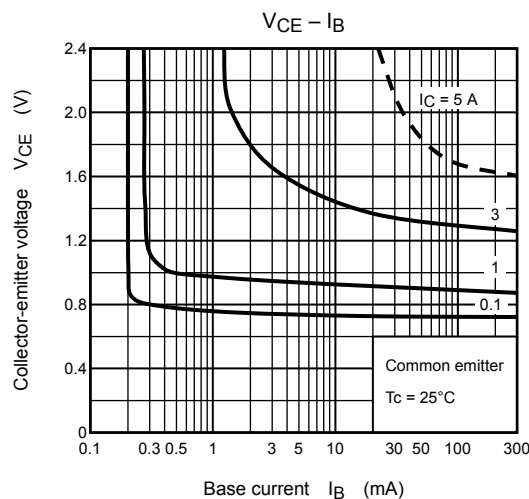
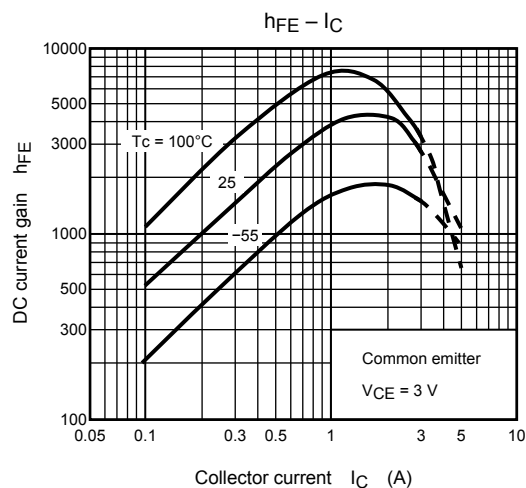
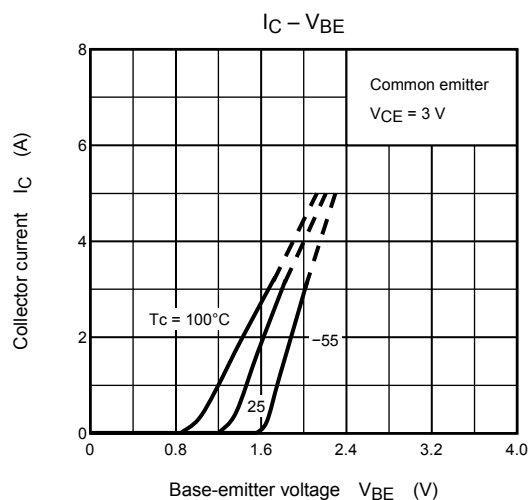
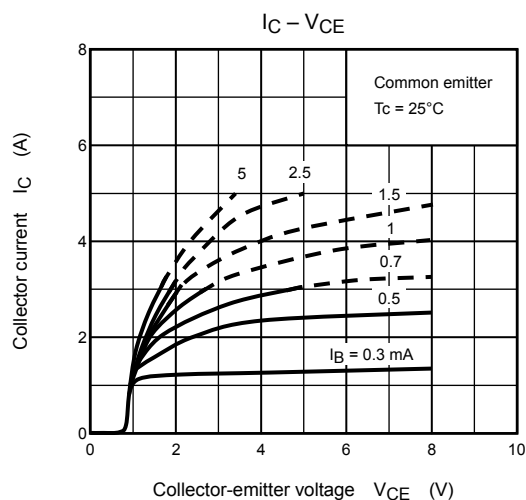


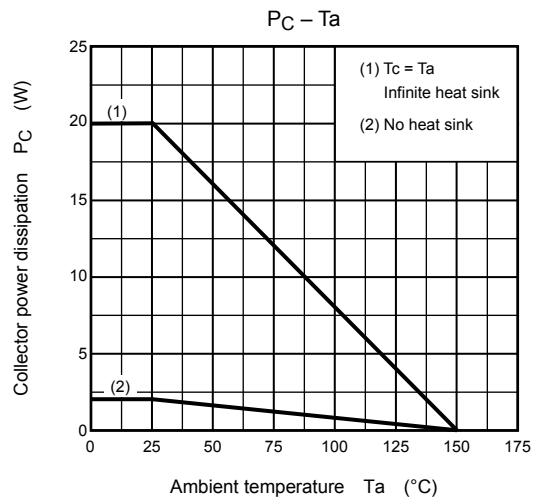
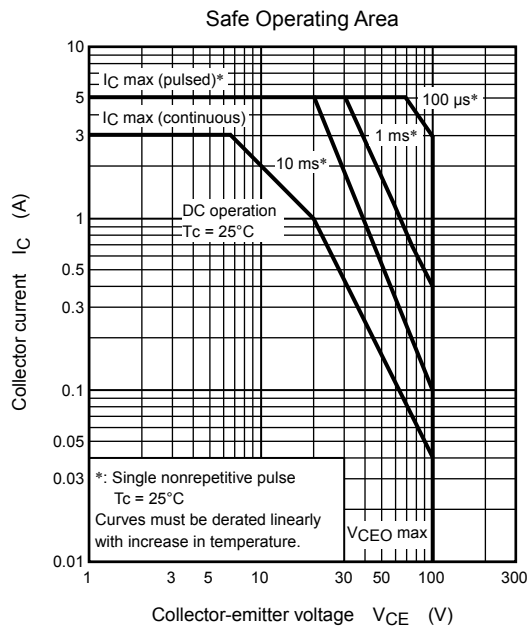
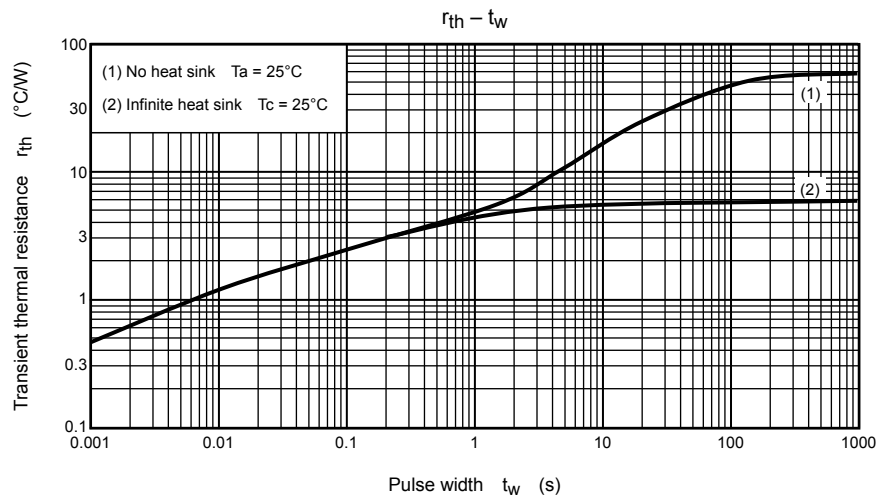
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0	—	—	100	μA
Emitter cut-off current		IEBO	V <sub>EB</sub> = 6 V, I <sub>C</sub> = 0	—	—	2.5	mA
Collector-emitter breakdown voltage		V (BR) CEO	I <sub>C</sub> = 30 mA, I <sub>B</sub> = 0	100	—	—	V
DC current gain	h <sub>FE</sub> (1)		V <sub>CE</sub> = 3 V, I <sub>C</sub> = 1.5 A	2000	—	15000	
	h <sub>FE</sub> (2)		V <sub>CE</sub> = 3 V, I <sub>C</sub> = 3 A	1000	—	—	
Collector-emitter saturation voltage	V <sub>CE</sub> (sat) (1)		I <sub>C</sub> = 1.5 A, I <sub>B</sub> = 3 mA	—	—	1.5	V
	V <sub>CE</sub> (sat) (2)		I <sub>C</sub> = 3 A, I <sub>B</sub> = 12 mA	—	—	2.0	
Base-emitter saturation voltage		V <sub>BE</sub> (sat)	I <sub>C</sub> = 1.5 A, I <sub>B</sub> = 3 mA	—	—	2.0	V
Switching time	Turn-on time	t <sub>on</sub>	 I <sub>B1</sub> = -I <sub>B2</sub> = 3 mA, duty cycle ≤ 1%	—	1.0	—	μs
	Storage time	t <sub>stg</sub>		—	5.0	—	
	Fall time	t <sub>f</sub>		—	2.0	—	

Marking







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