

TOSHIBA Transistor Silicon NPN Triple Diffused Type (Darlington Power Transistor)

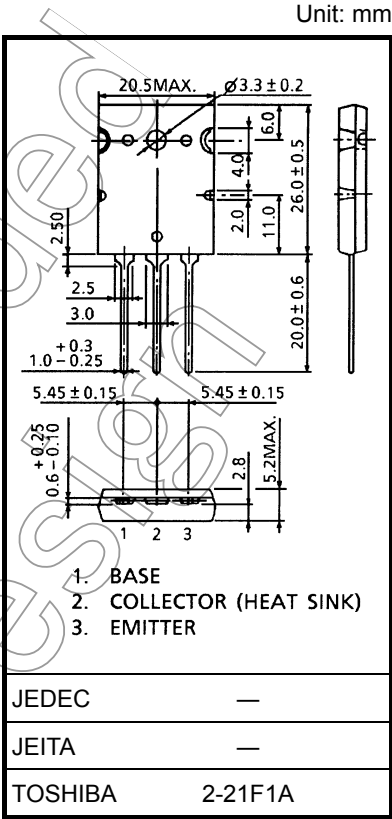
2SD1314

High Power Switching Applications
Motor Control Applications

- High DC current gain: $h_{FE} = 100$ (min) ($V_{CE} = 5\text{ V}$, $I_C = 15\text{ A}$)
- Low saturation voltage: $V_{CE(sat)} = 2\text{ V}$ (max) ($I_C = 15\text{ A}$, $I_B = 0.4\text{ A}$)
- High speed: $t_f = 3\text{ }\mu\text{s}$ (max) ($I_C = 15\text{ A}$)

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

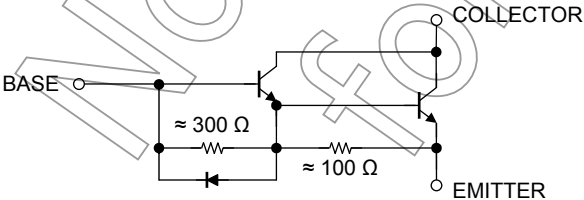
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	600	V
Collector-emitter voltage		V_{CEO}	450	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	15	A
	Pulse	I_{CP}	30	
Base current		I_B	1.0	A
Collector power dissipation		P_C	150	W
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$



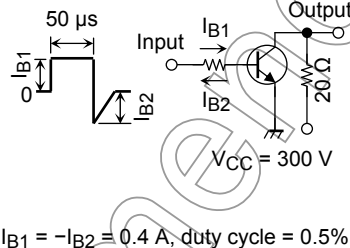
Weight: 9.75 g (typ.)

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).

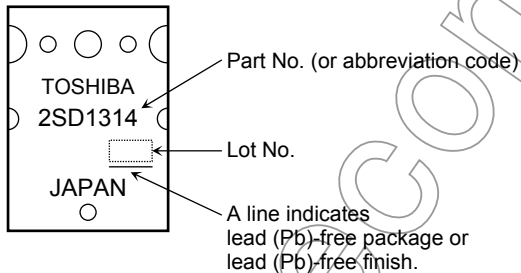
Equivalent Circuit

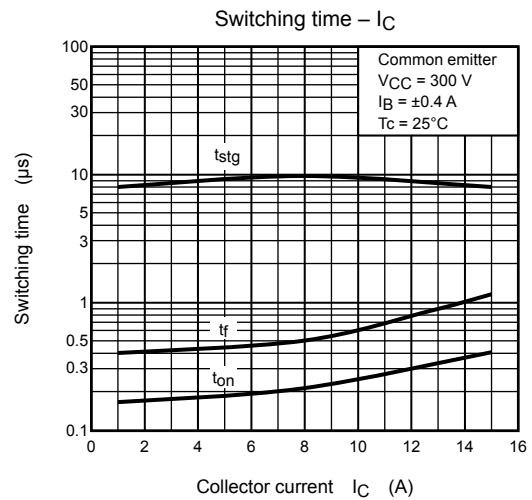
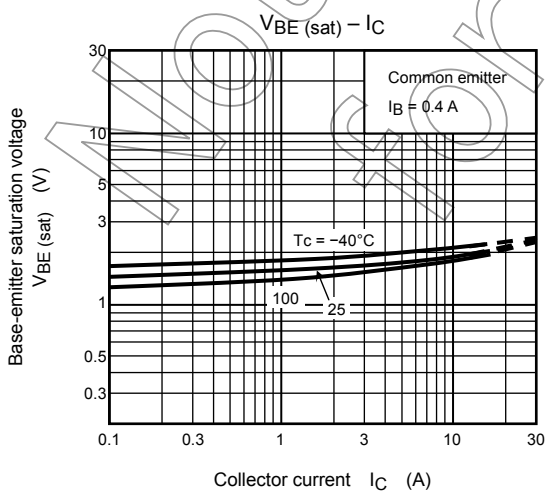
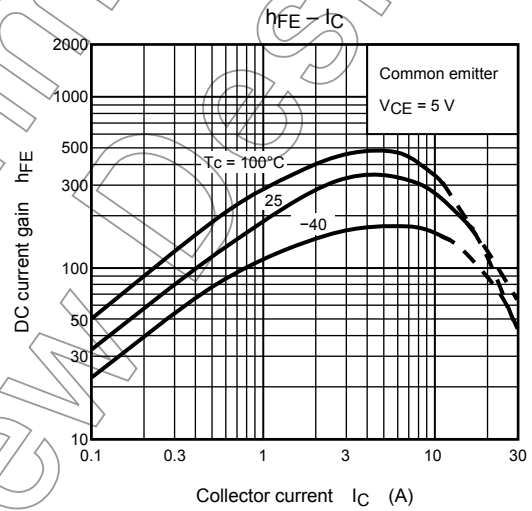
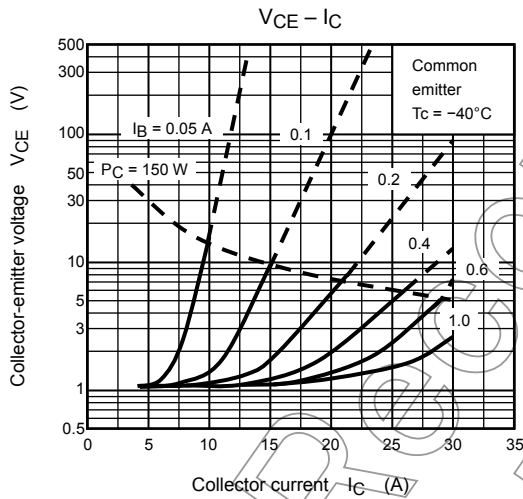
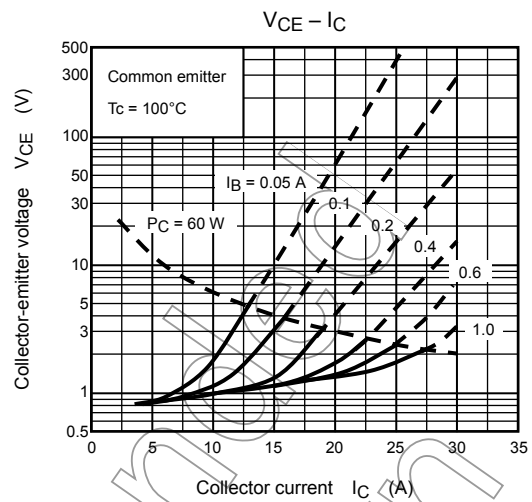
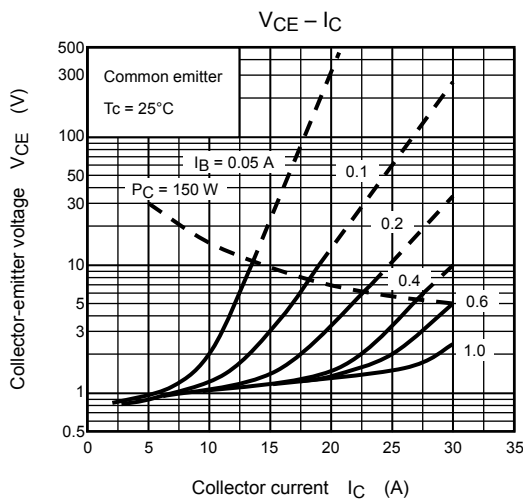


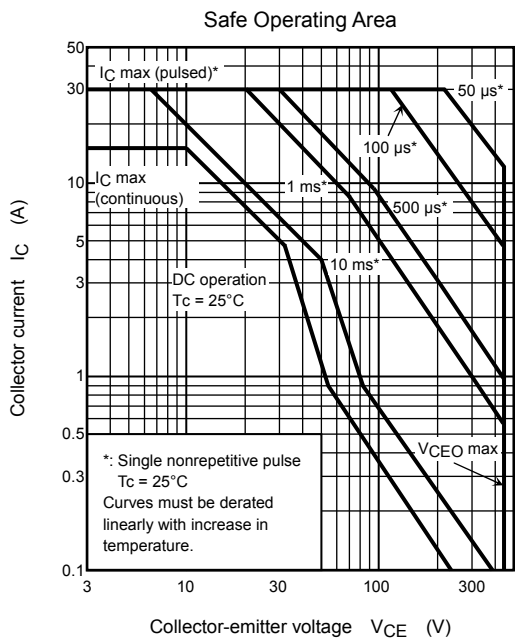
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	V _{CB} = 600 V, I _E = 0	—	—	1.0	mA
Emitter cut-off current		IEBO	V _{EB} = 6 V, I _C = 0	—	—	200	mA
Collector-emitter sustaining voltage		V _{CEO} (SUS)	I _C = 0.5 A, L = 40 mH	450	—	—	V
DC current gain		h _{FE}	V _{CE} = 5 V, I _C = 15 A	100	—	—	
Collector-emitter saturation voltage		V _{CE} (sat)	I _C = 15 A, I _B = 0.4 A	—	—	2.0	V
Base-emitter saturation voltage		V _{BE} (sat)		—	—	2.5	V
Collector output capacitance		C _{ob}	V _{CB} = 50 V, I _E = 0, f = 1 MHz	—	150	—	pF
Switching time	Turn-on time	t _{on}		—	—	1.0	μs
	Storage time	t _{stg}		—	—	12	
	Fall time	t _f		—	—	3.0	

Marking







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