

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

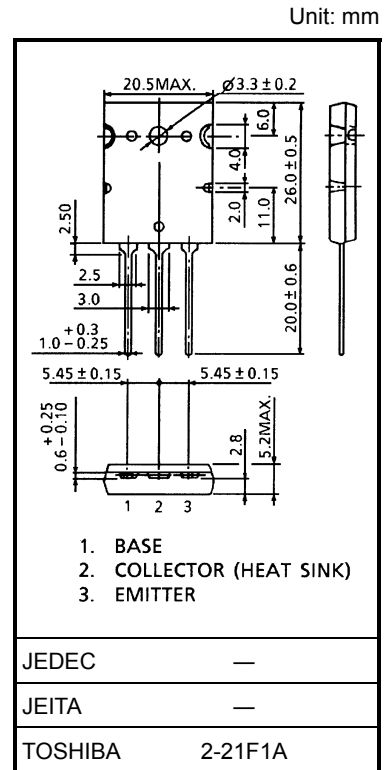
2SD1314

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

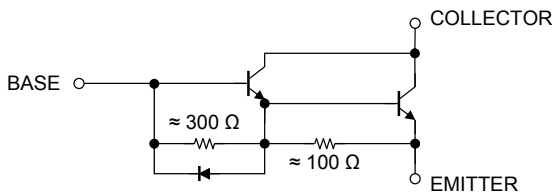
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	600	V
Collector-emitter voltage		V_{CEO}	450	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	15	A
	Pulse	I_{CP}	30	
Base current		I_B	1.0	A
Collector power dissipation		P_C	150	W
Junction temperature		T_j	150	$^\circ\text{C}$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



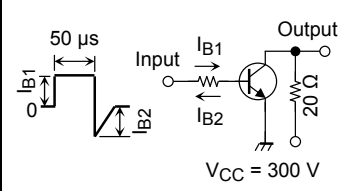
Weight: 9.75 g (typ.)

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).

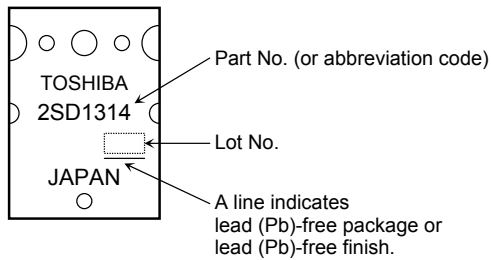
Equivalent Circuit

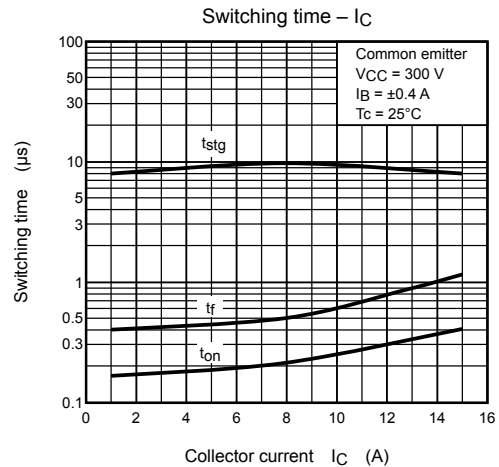
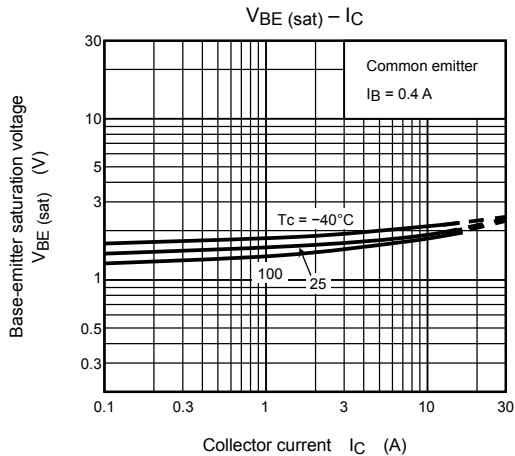
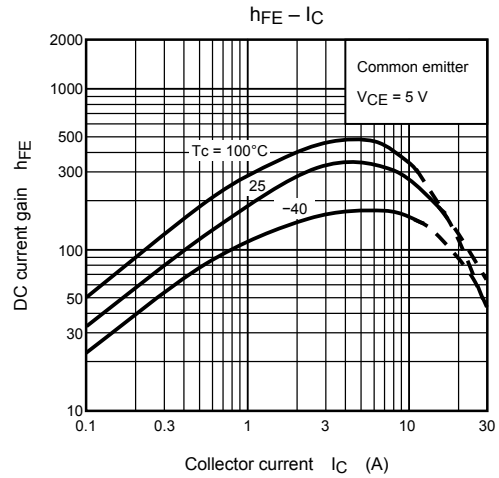
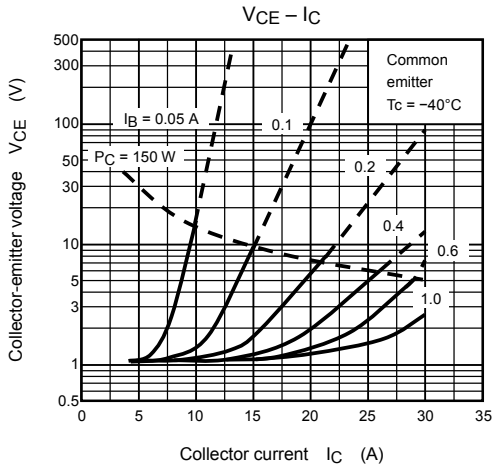
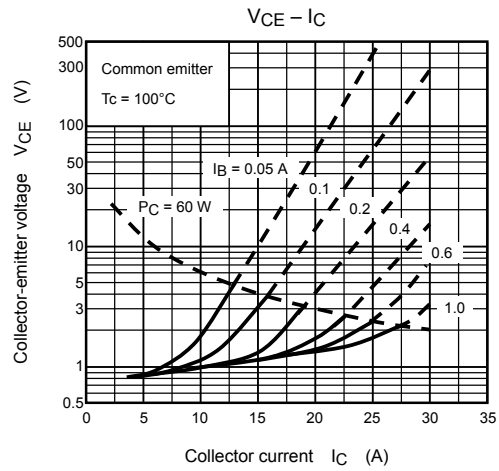
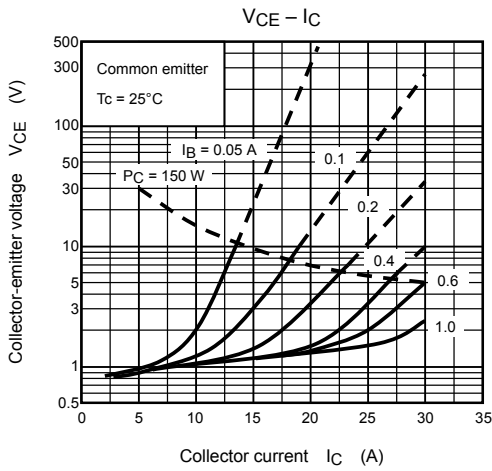


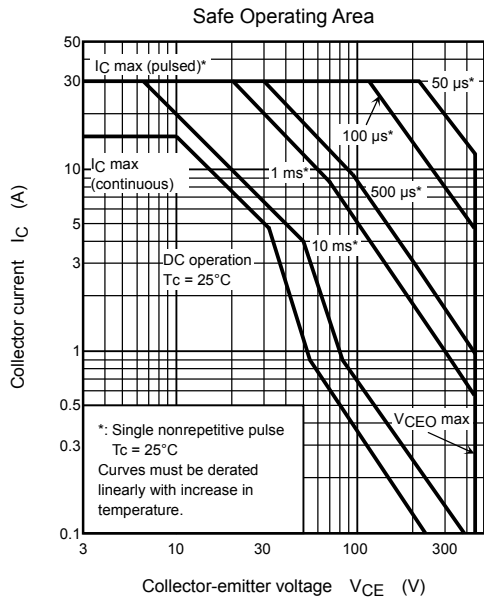
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 600\text{ V}, I_E = 0$	—	—	1.0	mA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	200	mA
Collector-emitter sustaining voltage		$V_{CEO(SUS)}$	$I_C = 0.5\text{ A}, L = 40\text{ mH}$	450	—	—	V
DC current gain		h_{FE}	$V_{CE} = 5\text{ V}, I_C = 15\text{ A}$	100	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 15\text{ A}, I_B = 0.4\text{ A}$	—	—	2.0	V
Base-emitter saturation voltage		$V_{BE(sat)}$		—	—	2.5	V
Collector output capacitance		C_{ob}	$V_{CB} = 50\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	150	—	pF
Switching time	Turn-on time	t_{on}	 <p>$I_{B1} = -I_{B2} = 0.4\text{ A}, \text{duty cycle} = 0.5\%$</p>	—	—	1.0	μs
	Storage time	t_{stg}		—	—	12	
	Fall time	t_f		—	—	3.0	

Marking







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