

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

# 2SD1525

## High Current Switching Applications

- High collector current:  $I_C = 30\text{ A}$
- High DC current gain:  $h_{FE} = 1000\text{ (min)}$  ( $V_{CE} = 5\text{ V}$ ,  $I_C = 20\text{ A}$ )
- Monolithic construction with built-in base-emitter shunt resistor.

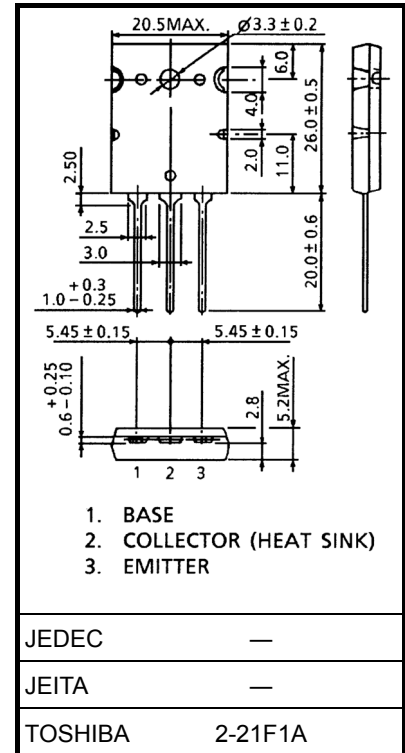
## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	100	V
Collector-emitter voltage	$V_{CEO}$	100	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	30	A
Base current	$I_B$	5	A
Collector power dissipation ( $T_c = 25^\circ\text{C}$ )	$P_C$	150	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to 150	$^\circ\text{C}$

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.

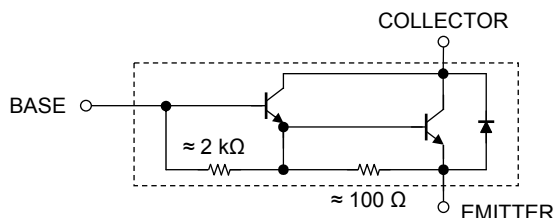
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Unit: mm



Weight: 9.75 g (typ.)

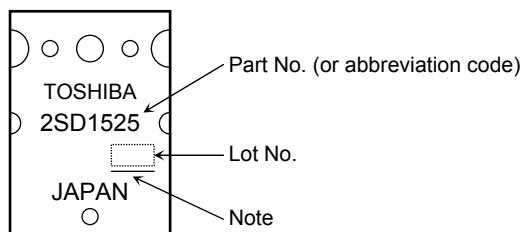
## Equivalent Circuit



## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 100\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	10	$\text{mA}$
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 50\text{ mA}, I_B = 0$	100	—	—	$\text{V}$
DC current gain		$h_{FE(1)}$	$V_{CE} = 5\text{ V}, I_C = 20\text{ A}$	1000	—	—	
		$h_{FE(2)}$	$V_{CE} = 5\text{ V}, I_C = 30\text{ A}$	200	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 20\text{ A}, I_B = 0.2\text{ A}$	—	—	1.5	$\text{V}$
Base-emitter saturation voltage		$V_{BE(sat)}$		—	—	2.5	$\text{V}$
Emitter-collector forward voltage		$V_{ECF}$	$I_E = 10\text{ A}, I_B = 0$	—	—	3	$\text{V}$
Transition frequency		$f_T$	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	—	10	—	$\text{MHz}$
Collector output capacitance		$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	500	—	$\text{pF}$
Switching time	Turn-on time	$t_{on}$	<p><math>V_{CC} = 50\text{ V}</math>  <math>R = 10\ \Omega</math>            Input <math>I_{B1}</math>  <math>I_{B2}</math>            Output</p> <p><math>I_{B1} = 0.01\text{ A}</math>  <math>I_{B2} = 0.01\text{ A}</math>            duty cycle <math>\leq 1\%</math></p>	—	1.5	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	10	—	
	Fall time	$t_f$		—	1.5	—	

## Marking

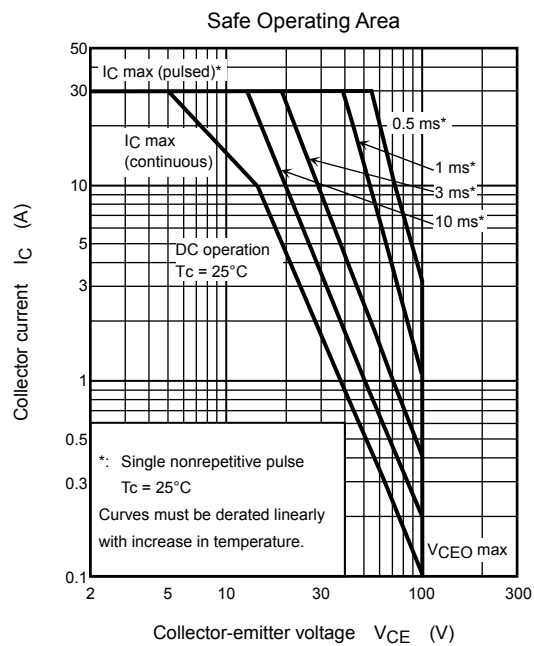
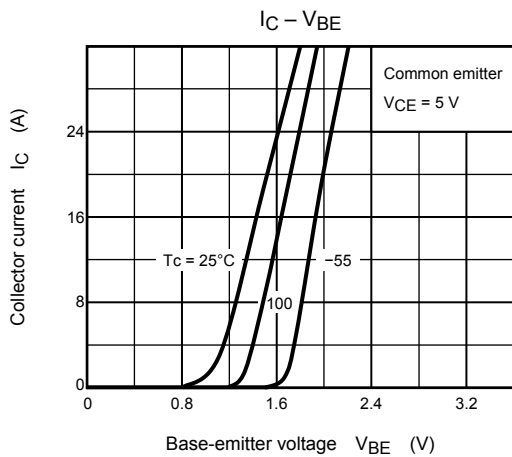
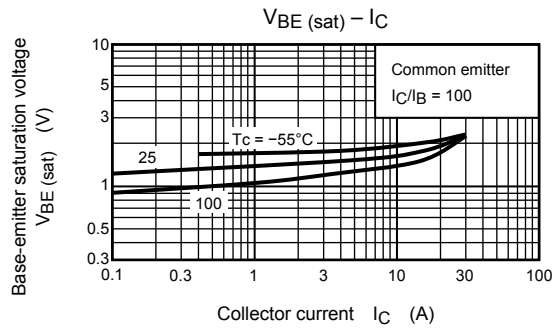
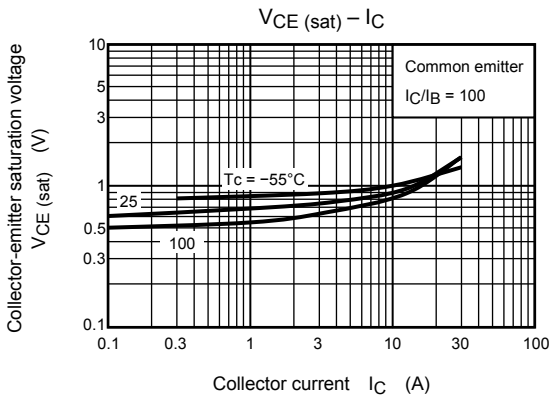
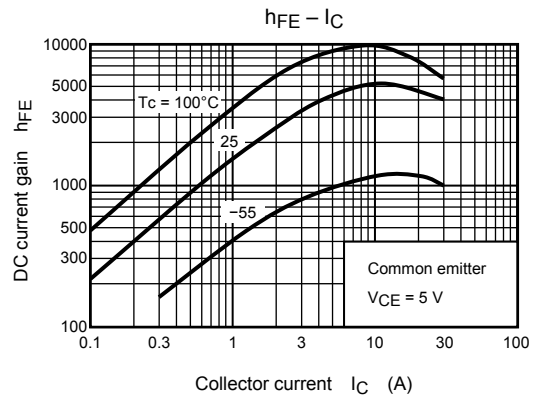
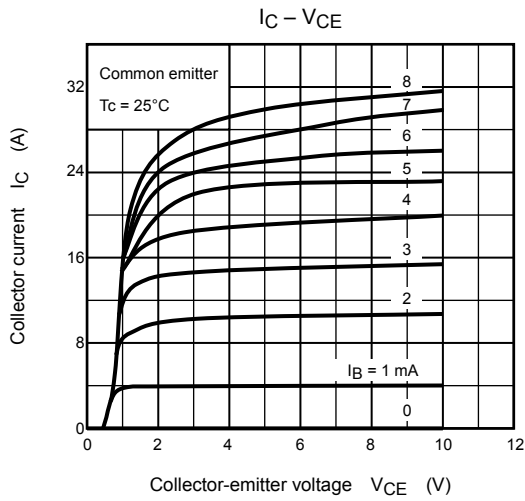


Note: A line under a Lot No. identifies the indication of product Labels.

Not underlined:  $[[\text{Pb}]]/\text{INCLUDES} > \text{MCV}$

Underlined:  $[[\text{G}]]/\text{RoHS COMPATIBLE}$  or  $[[\text{G}]]/\text{RoHS} [[\text{Pb}]]$

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



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