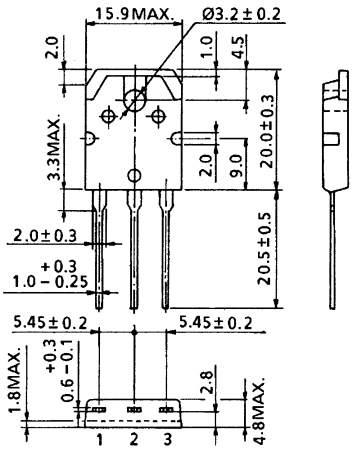
TOSHIBA Transistor Silicon NPN Triple Diffused Type (Darlington Power Transistor)

2SD1662

High Current Switching Applications

Unit: mm



1. BASE
2. COLLECTOR (HEAT SINK)
3. EMITTER

JEDEC	—
JEITA	—
TOSHIBA	2-16C1A

Weight: 4.7 g (typ.)

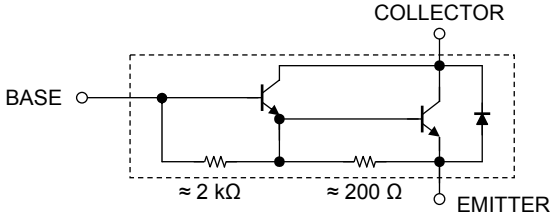
- High DC current gain: h_{FE} = 1000 (min) (V_{CE} = 3 V, I_C = 15 A)
- Low collector saturation voltage: $V_{CE\ (sat)}$ = 1.5 V (max) (I_C = 15 A)
- Monolithic construction with built-in base-emitter shunt resistor

Absolute Maximum Ratings (Ta = 25°C)

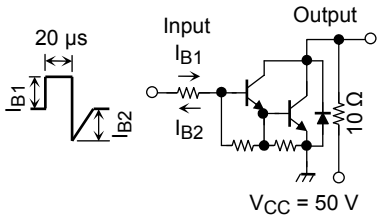
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	100	V
Collector-emitter voltage	V_{CEO}	100	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	15	A
Base current	I_B	1	A
Collector power dissipation (Tc = 25°C)	P_C	100	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°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).

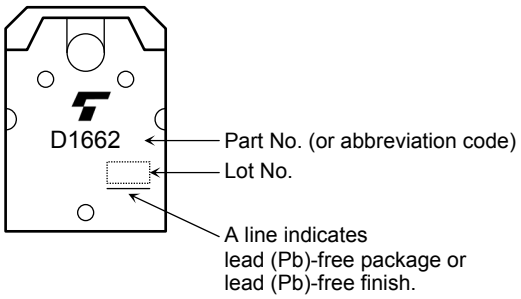
Equivalent Circuit



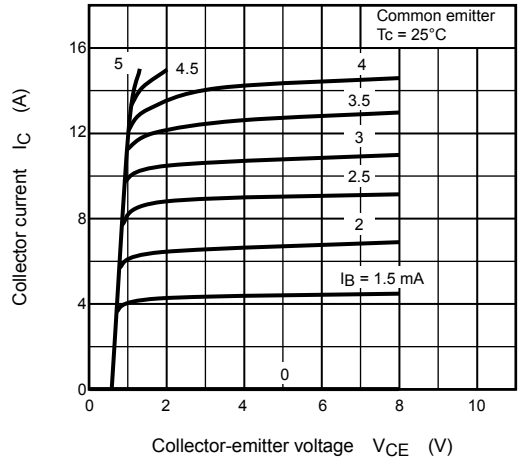
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 100 V, I_E = 0	—	—	100	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	10	mA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 50 mA, I_B = 0	100	—	—	V
DC current gain		h_{FE}	V_{CE} = 3 V, I_C = 15 A	1000	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 15 A, I_B = 0.025 A	—	—	1.5	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$		—	—	2.2	V
Emitter-collector forward voltage		V_{ECF}	I_E = 10 A, I_B = 0	—	—	3	V
Transition frequency		f_T	V_{CE} = 5 V, I_C = 1 A	—	14	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	280	—	pF
Switching time	Turn-on time	t_{on}		—	1	—	μs
	Storage time	t_{stg}		—	2	—	
	Fall time	t_f	$I_{B1} = -I_{B2}$ = 0.01 A, duty cycle ≤ 1%	—	1.5	—	

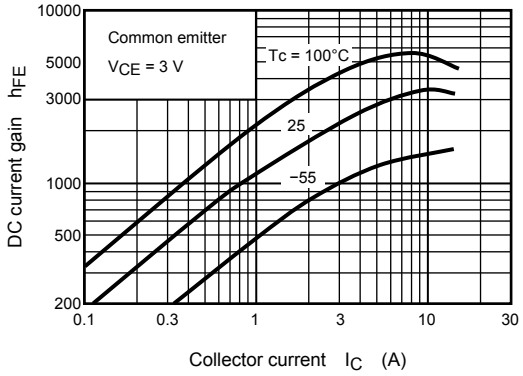
Marking



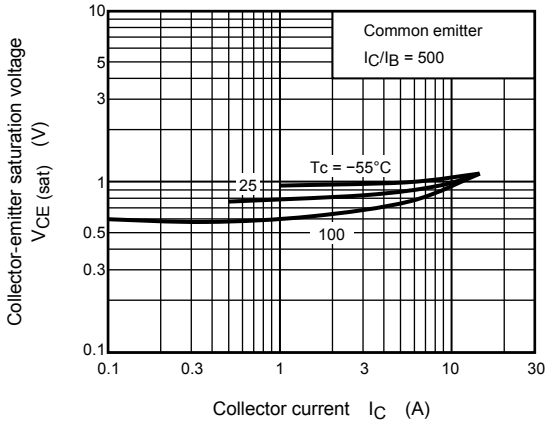
$I_C - V_{CE}$



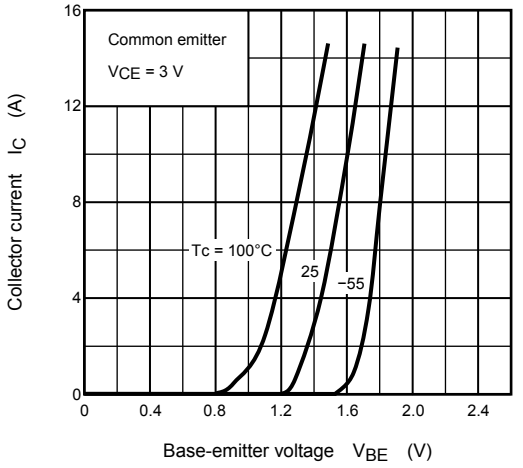
$h_{FE} - I_C$



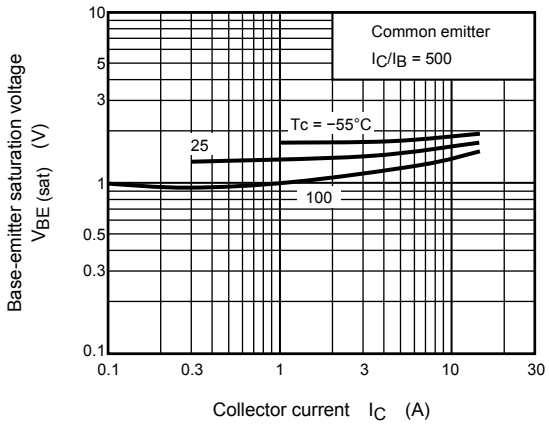
$V_{CE\ (sat)} - I_C$



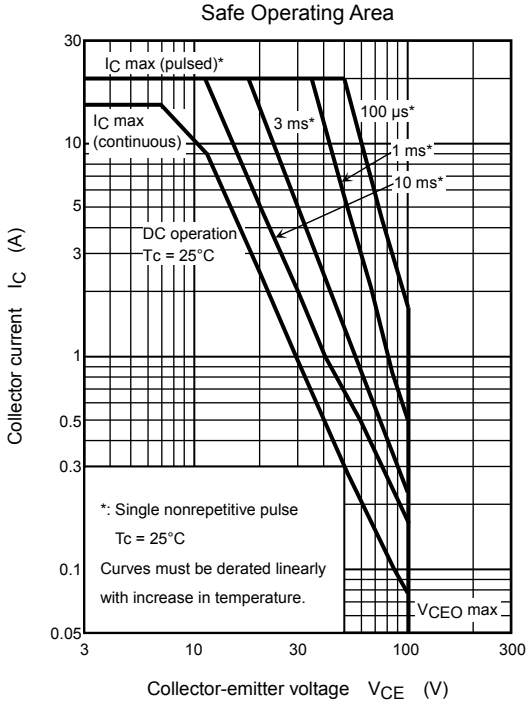
$I_C - V_{BE}$



$V_{BE\ (sat)} - I_C$



Safe Operating Area



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