

TOSHIBA Transistor Silicon NPN Triple Diffused Type (Darlington)

2SD1415A

High-Power Switching Applications

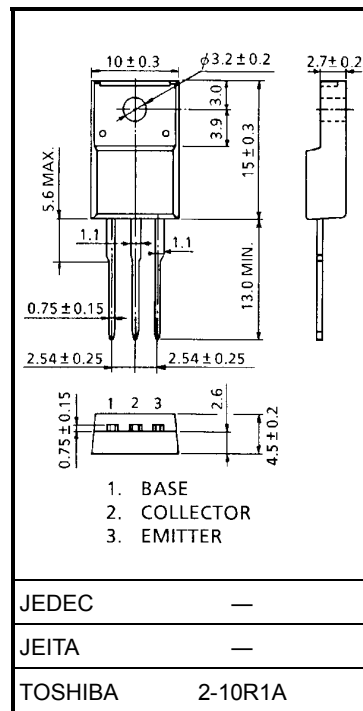
Hammer Drive, Pulse Motor Drive Applications

Unit: mm

- High DC current gain: $h_{FE} = 2000$ (min) ($V_{CE} = 3$ V, $I_C = 3$ A)
- Low saturation voltage: $V_{CE(sat)} = 1.5$ V (max) ($I_C = 3$ A)

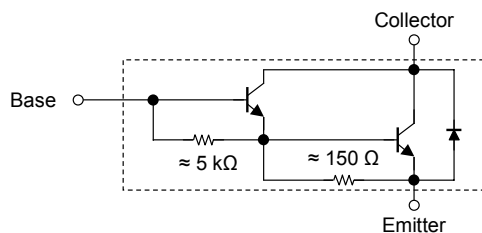
Maximum Ratings ($T_c = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	120	V
Collector-emitter voltage		V_{CEO}	100	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	7	A
	Pulse	I_{CP}	10	
Base current		I_B	0.7	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	P_C	2.0	W
	$T_c = 25^\circ\text{C}$		25	
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$

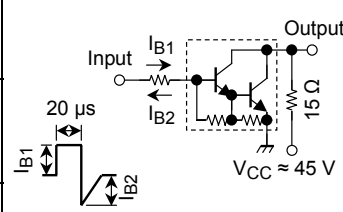


Weight: 1.7 g (typ.)

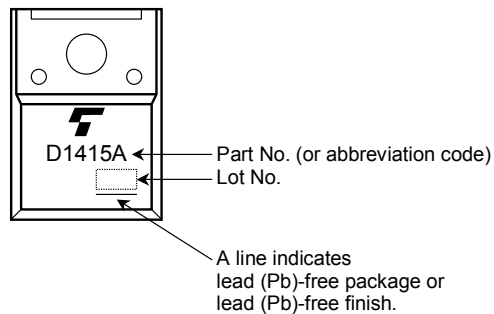
Equivalent Circuit

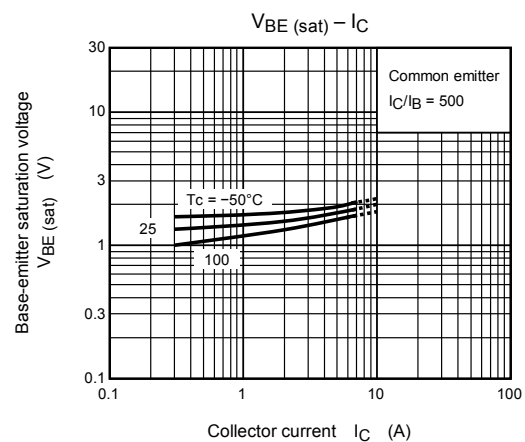
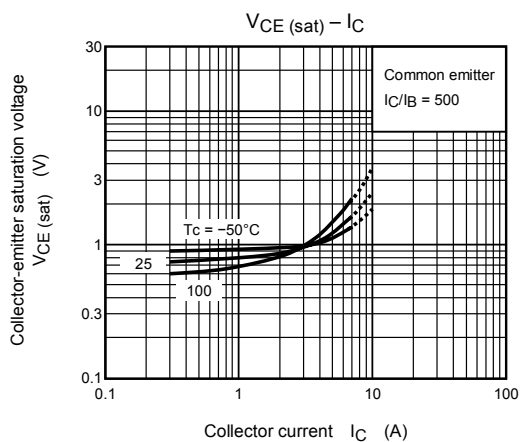
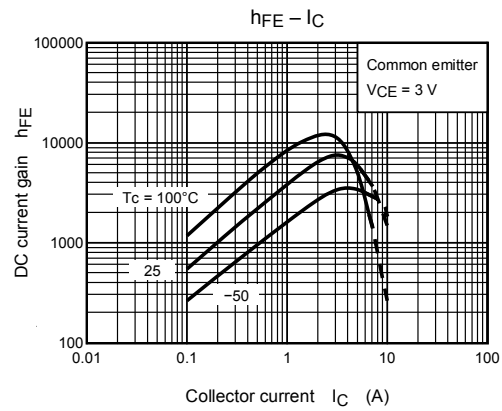
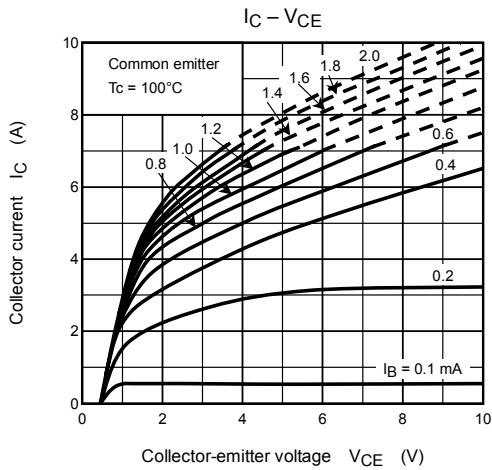
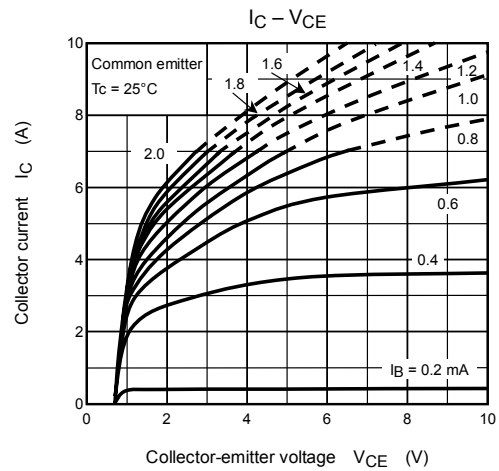
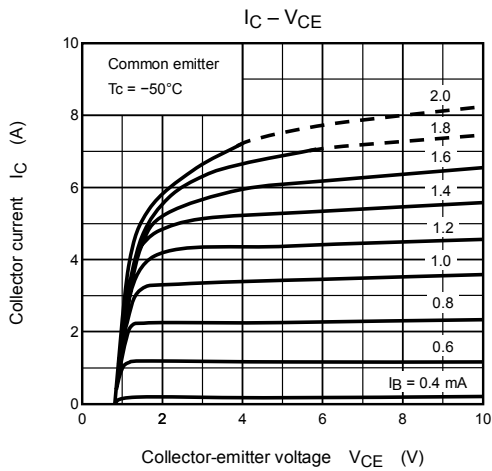


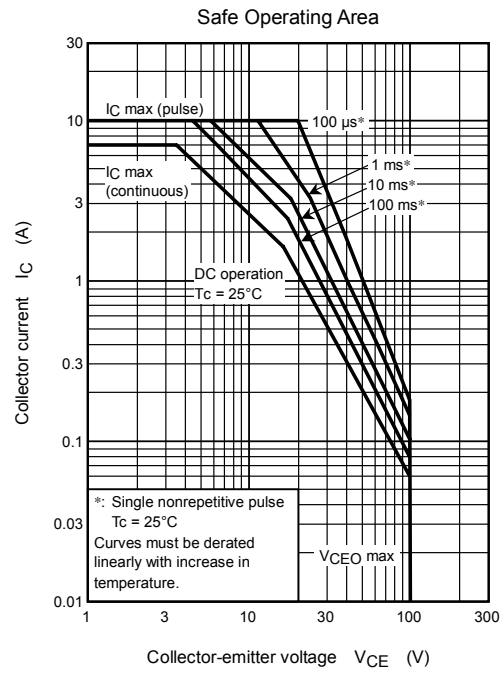
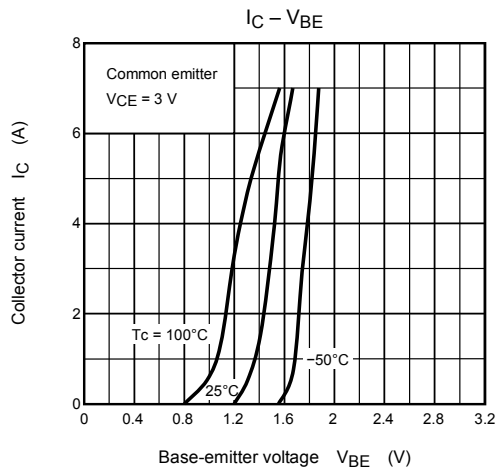
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 100 \text{ V}, I_E = 0$	—	—	100	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$	0.75	—	3.0	mA
Collector-emitter breakdown voltage		$V_{(BR) CEO}$	$I_C = 50 \text{ mA}, I_B = 0$	100	—	—	V
DC current gain	Turn-on	$h_{FE (1)}$	$V_{CE} = 3 \text{ V}, I_C = 3 \text{ A}$	2000	—	15000	
	Storage	$h_{FE (2)}$	$V_{CE} = 3 \text{ V}, I_C = 6 \text{ A}$	1000	—	—	
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 3 \text{ A}, I_B = 6 \text{ mA}$	—	0.9	1.5	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 3 \text{ A}, I_B = 6 \text{ mA}$	—	1.5	2.0	V
Switching time	Turn-on time	t_{on}	 <p>$I_{B1} = -I_{B2} = 6 \text{ mA}, \text{ duty cycle } \leq 1\%$</p>	—	0.3	—	μs
	Storage time	t_{stg}		—	5.1	—	
	Fall time	t_f		—	0.6	—	

Marking







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