

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

2SD2271

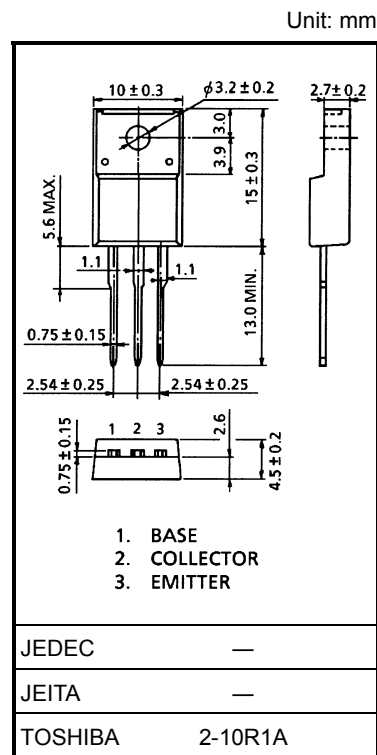
Motor Drive Applications

High-Current Switching Applications

- High DC current gain: $h_{FE} = 500$ (min) ($V_{CE} = 2$ V, $I_C = 5$ A)
- High breakdown voltage: V_{CEO} (SUS) = 200 V (min)

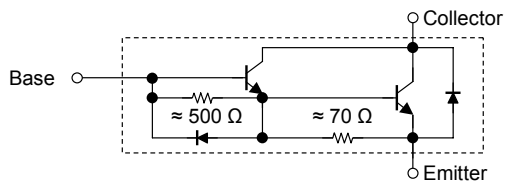
Maximum Ratings ($T_c = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	300	V
Collector-emitter voltage		V_{CEO}	200	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	± 12	A
	Pulse	I_{CP}	± 18	
Base current		I_B	1	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	P_C	2.0	W
	$T_c = 25^\circ\text{C}$		30	
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$

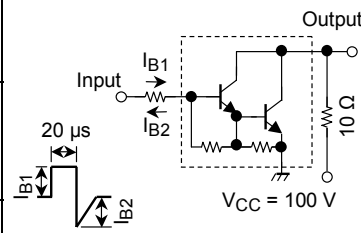


Weight: 1.7 g (typ.)

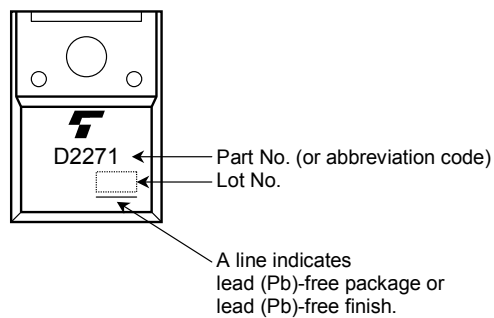
Equivalent Circuit

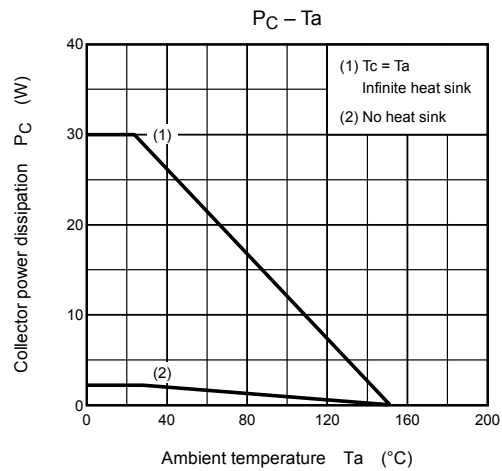
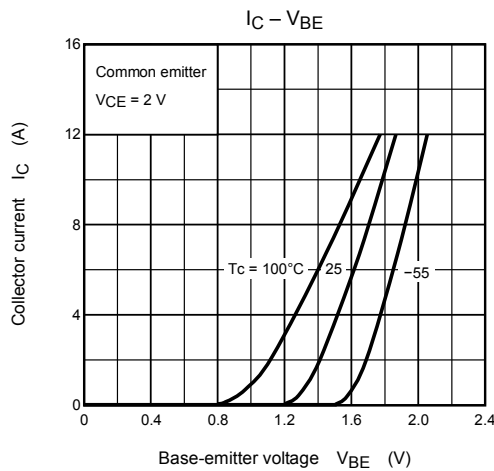
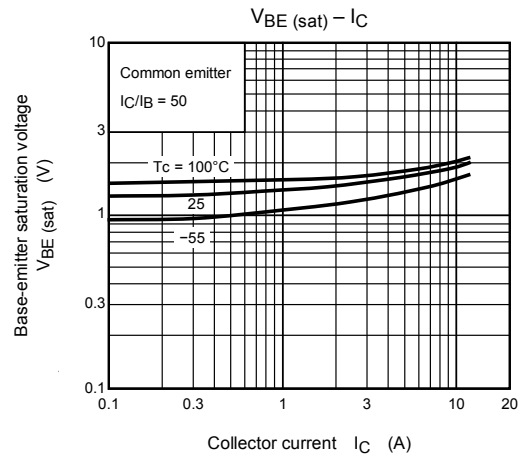
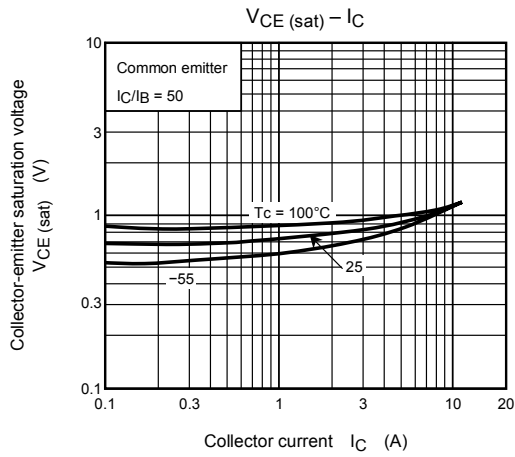
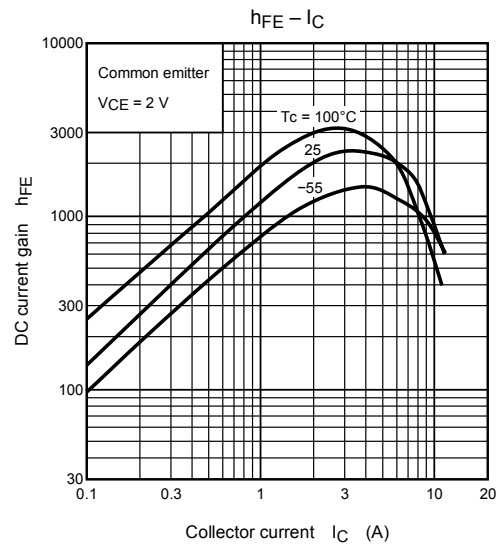
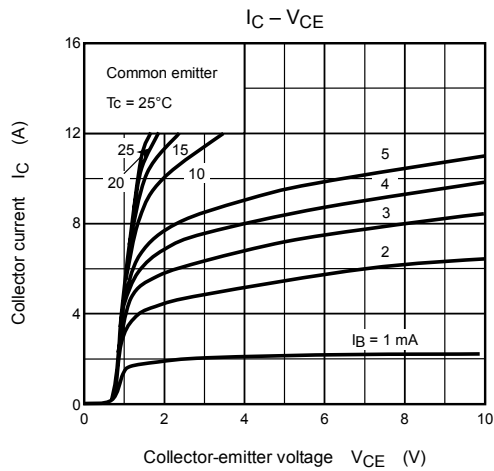


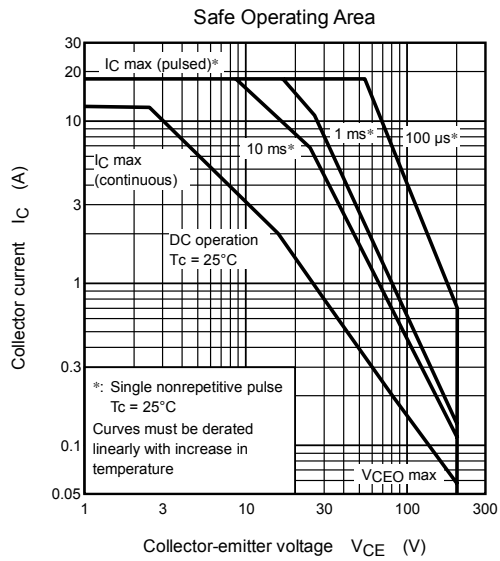
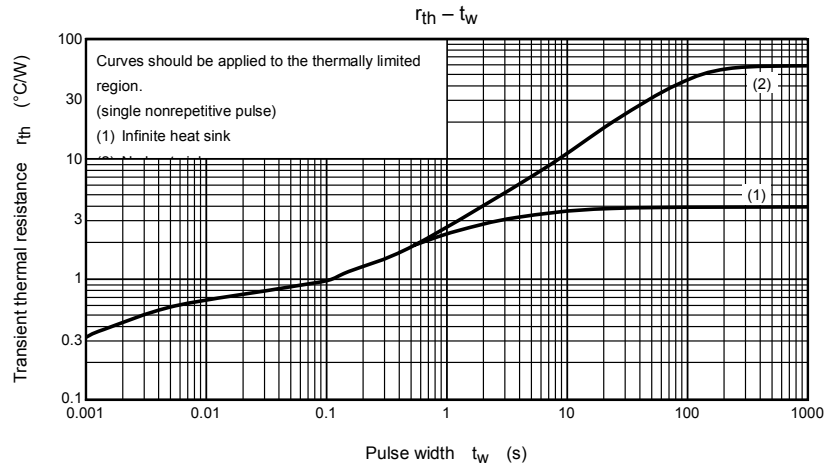
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 300 \text{ V}, I_E = 0$	—	—	100	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$	50	—	150	mA
Collector-base breakdown voltage		$V_{(BR) CBO}$	$I_C = 1 \text{ mA}, I_E = 0$	300	—	—	V
Collector-emitter sustaining voltage		$V_{CEO (SUS)}$	$I_C = 0.25 \text{ A}, L = 40 \text{ mH}$	200	—	—	V
DC current gain		$h_{FE (1)}$	$V_{CE} = 2 \text{ V}, I_C = 5 \text{ A}$	500	—	5000	
		$h_{FE (2)}$	$V_{CE} = 2 \text{ V}, I_C = 10 \text{ A}$	100	—	—	
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 10 \text{ A}, I_B = 0.1 \text{ A}$	—	—	2.0	V
Base-emitter saturation voltage		$V_{BE (sat)}$	$I_C = 10 \text{ A}, I_B = 0.1 \text{ A}$	—	—	2.3	V
Emitter-collector forward voltage		V_{ECF}	$I_E = 10 \text{ A}, I_B = 0$	—	1.5	2.0	V
Transition frequency		f_T	$V_{CE} = 2 \text{ V}, I_C = 1 \text{ A}$	—	40	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	—	200	—	pF
Switching time	Turn-on time	t_{on}	 <p>$I_{B1} = -I_{B2} = 0.1 \text{ A}, \text{ duty cycle } \leq 1\%$</p>	—	—	1.0	μs
	Storage time	t_{stg}		—	—	12	
	Fall time	t_f		—	—	2.0	

Marking







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