

TOSHIBA Transistor Silicon NPN Epitaxial Type (Darlington power transistor)

2SD2130

Micro Motor Drive, Hammer Drive Applications

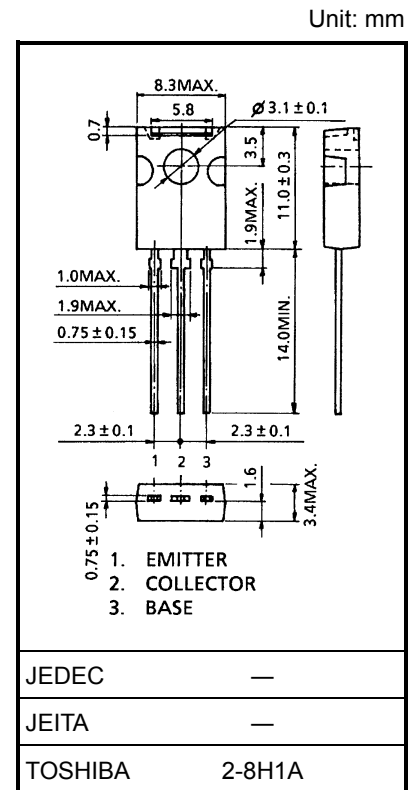
Switching Applications

Power Amplifier Applications

- High DC current gain: $h_{FE} = 2000$ (min) ($V_{CE} = 2$ V, $I_C = 1$ A)
- Low saturation voltage: $V_{CE(sat)} = 1.5$ V (max) ($I_C = 3$ A, $I_B = 10$ mA)
- Zener diode included between collector and base.

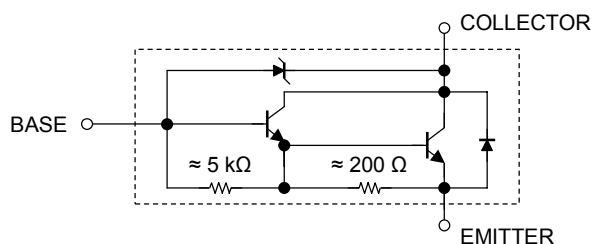
Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	60 ± 10	V
Collector-emitter voltage		V_{CEO}	60 ± 10	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	± 4	A
	Pulse	I_{CP}	± 6	
Base current		I_B	0.5	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	P_C	1.5	W
	$T_c = 25^\circ\text{C}$		10	
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$

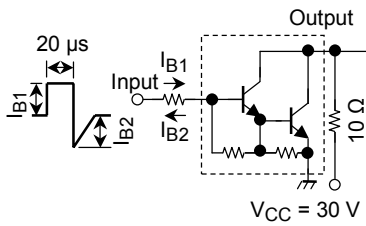


Weight: 0.82 g (typ.)

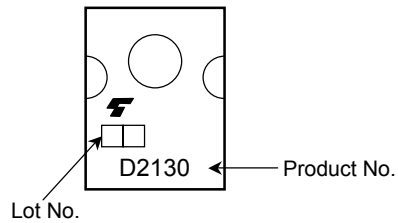
Equivalent Circuit



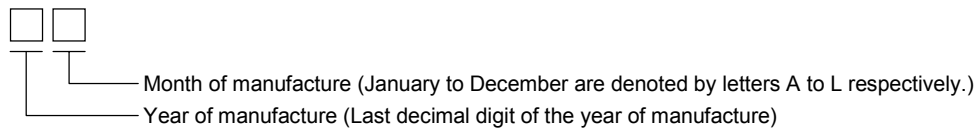
Electrical Characteristics (Ta = 25°C)

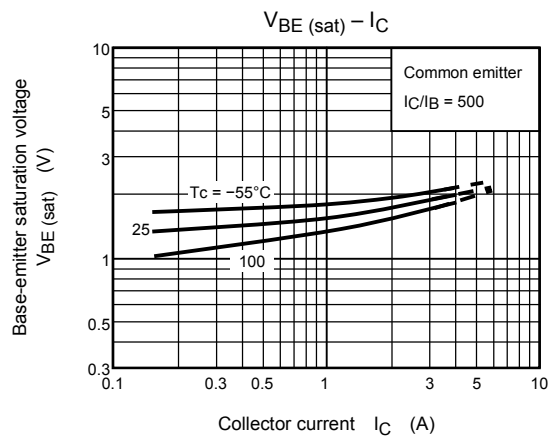
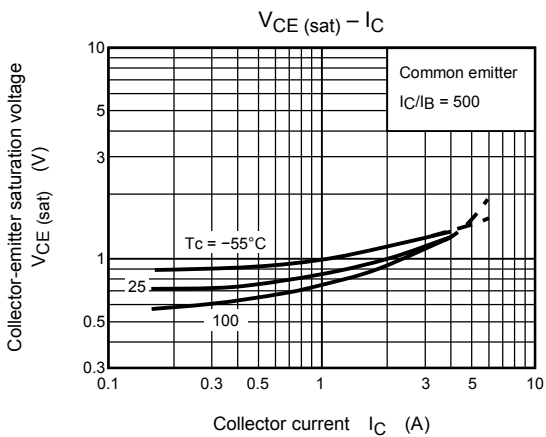
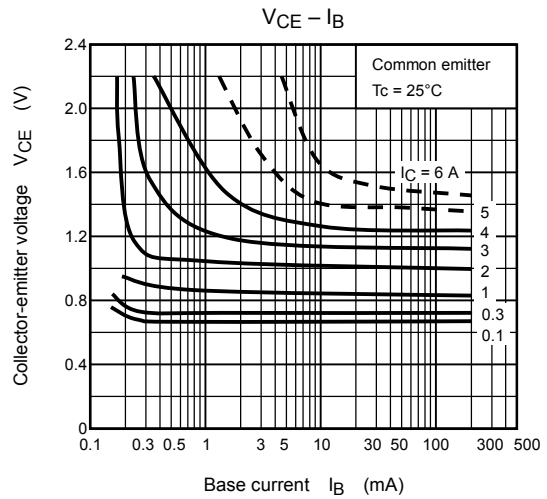
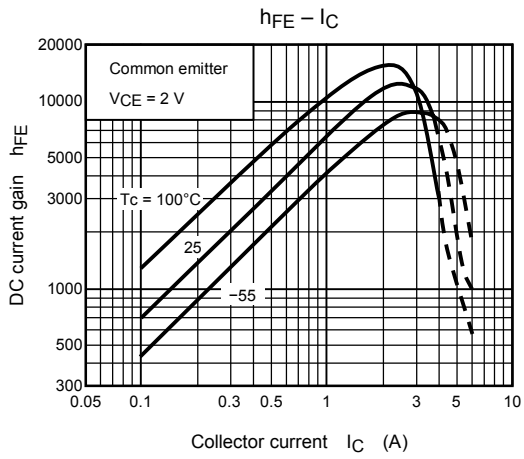
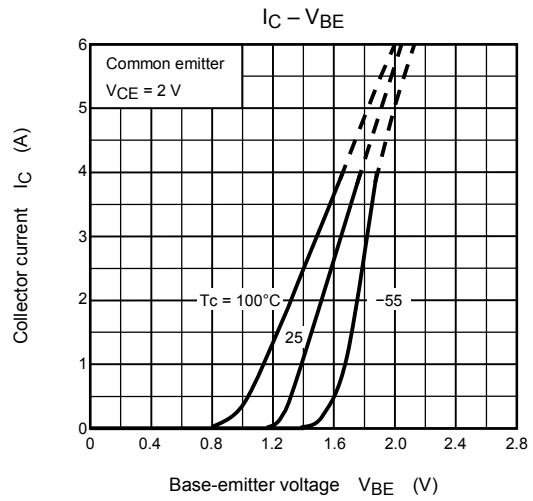
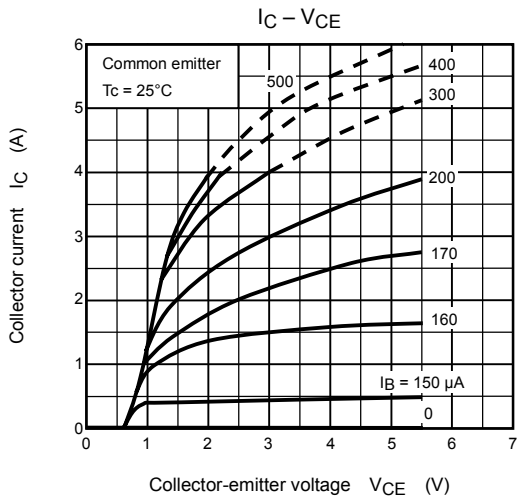
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 45\text{ V}, I_E = 0$	—	—	10	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 6\text{ V}, I_C = 0$	0.6	—	2.0	mA
Collector-base breakdown voltage		$V_{(BR)CBO}$	$I_C = 10\text{ mA}, I_E = 0$	50	60	70	V
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	50	60	70	V
Emitter-base breakdown voltage		$V_{(BR)EBO}$	$I_E = 10\text{ mA}, I_C = 0$	6	—	—	V
DC current gain		$h_{FE(1)}$	$V_{CE} = 2\text{ V}, I_C = 1\text{ A}$	2000	—	15000	
		$h_{FE(2)}$	$V_{CE} = 2\text{ V}, I_C = 3\text{ A}$	1000	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 3\text{ A}, I_B = 10\text{ mA}$	—	—	1.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 3\text{ A}, I_B = 10\text{ mA}$	—	—	2.0	V
Transition frequency		f_T	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	—	60	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	30	—	pF
Switching time	Turn-on time	t_{on}		—	0.2	—	μs
	Storage time	t_{stg}		—	3.0	—	
	Fall time	t_f		—	—	0.5	
			$I_{B1} = -I_{B2} = 10\text{ mA}, \text{duty cycle} \leq 1\%$				

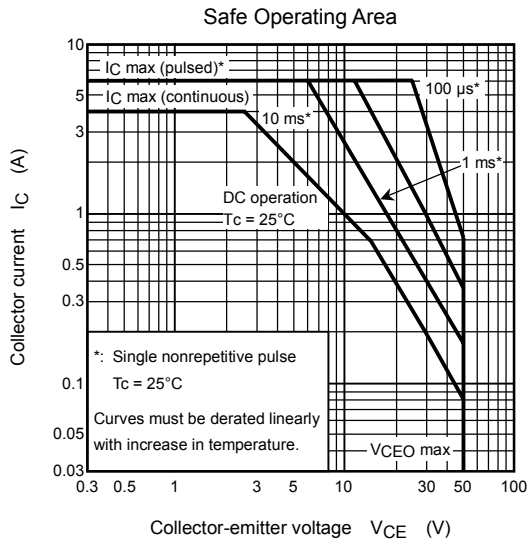
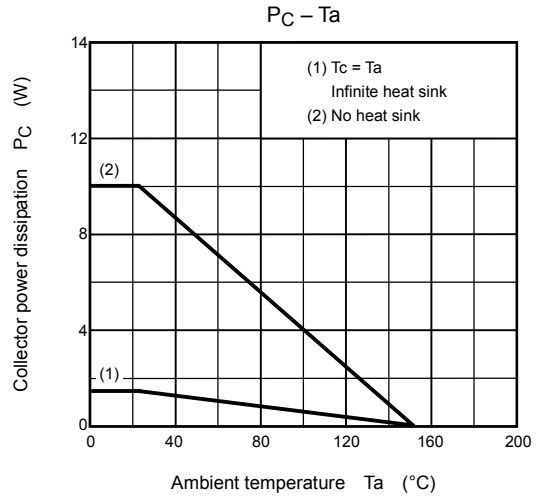
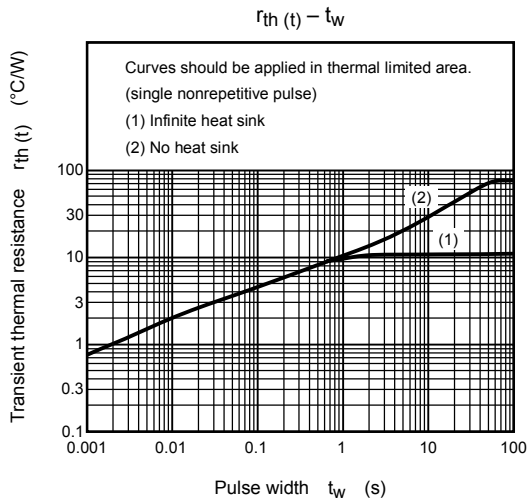
Marking



Explanation of Lot No.







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