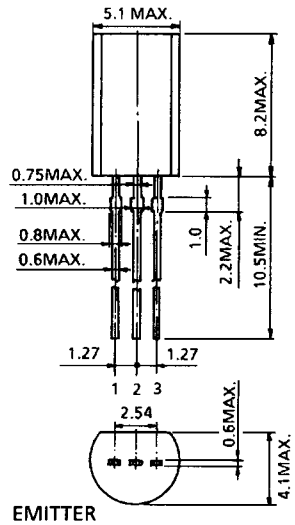
TOSHIBA Transistor Silicon NPN Epitaxial Type (Darlington power transistor)

2SD2088

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 = 1 A, I_B = 1 mA)
- Zener diode included between collector and base.

Unit: mm



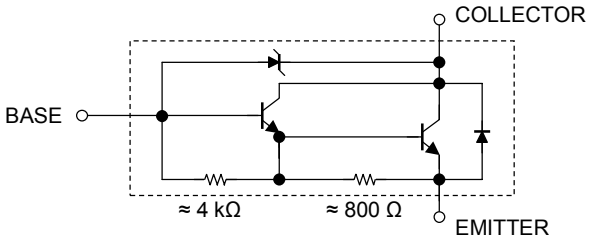
JEDEC	TO-92MOD
JEITA	—
TOSHIBA	2-5J1A

Weight: 0.36 g (typ.)

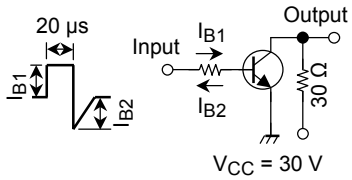
Maximum Ratings (Ta = 25°C)

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}	8	V
Collector current	I_C	2	A
Base current	I_B	0.5	A
Collector power dissipation	P_C	0.9	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

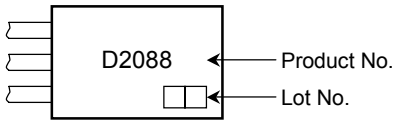
Equivalent Circuit



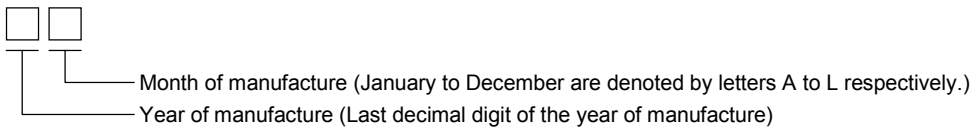
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 45 V, I_E = 0	—	—	10	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 8 V, I_C = 0	—	—	4	mA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	50	60	70	V
DC current gain		h_{FE}	V_{CE} = 2 V, I_C = 1 A	2000	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 1 A, I_B = 1 mA	—	—	1.5	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = 1 A, I_B = 1 mA	—	—	2.0	V
Transition frequency		f_T	V_{CE} = 2 V, I_C = 0.5 A	—	100	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	20	—	pF
Unclamped inductive load energy		$E_{S/B}$	L = 10 mH, I_C = 1.3 A, I_B = ±50 mA	8.4	—	—	mJ
Switching time	Turn-on time	t_{on}		—	0.4	—	μs
	Storage time	t_{stg}		—	4.0	—	
	Fall time	t_f	$I_{B1} = -I_{B2}$ = 1 mA, duty cycle ≤ 1%	—	0.6	—	

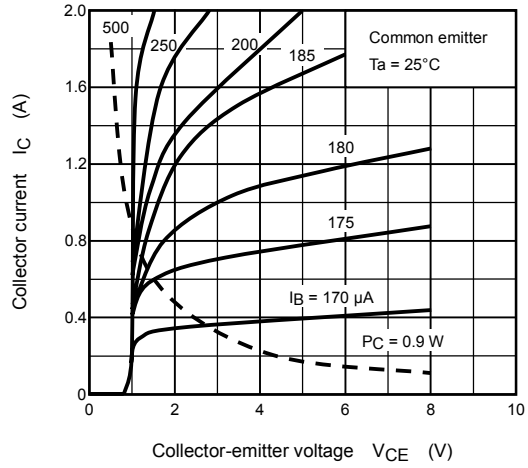
Marking



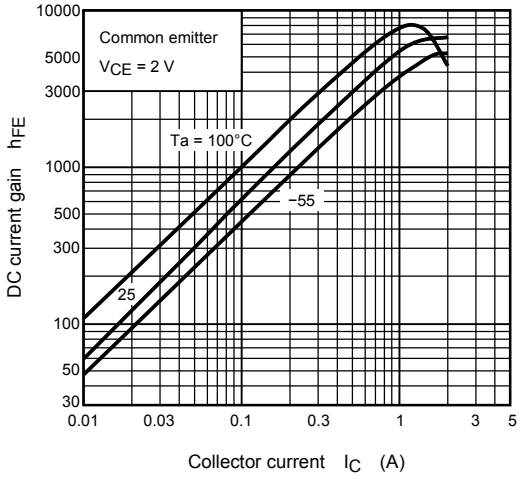
Explanation of Lot No.



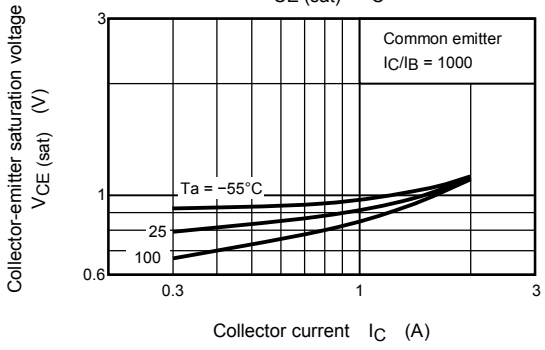
$I_C - V_{CE}$



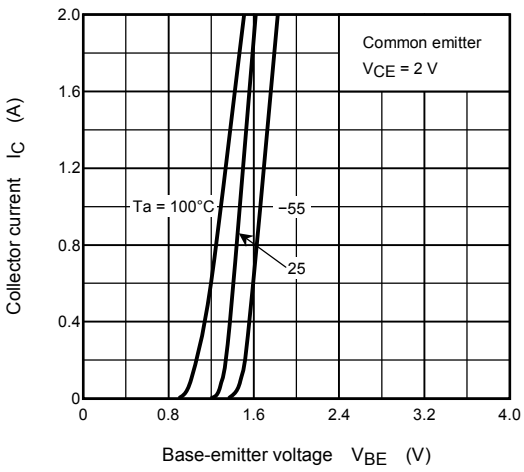
$h_{FE} - I_C$



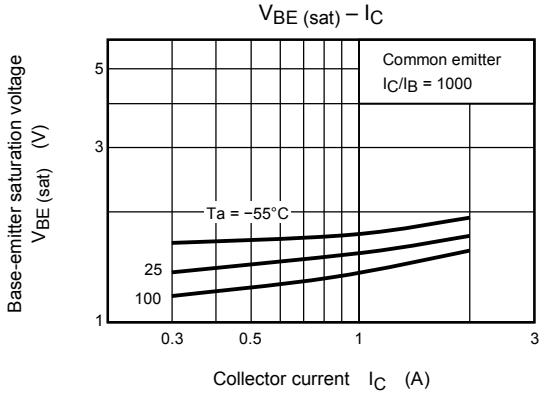
$V_{CE\ (sat)} - I_C$



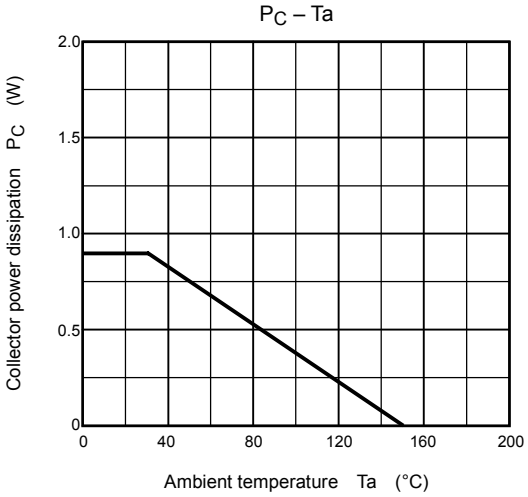
$I_C - V_{BE}$



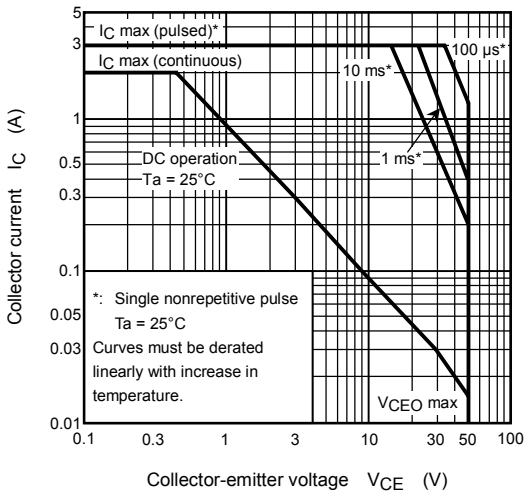
$V_{BE\ (sat)} - I_C$



$P_C - Ta$



Safe Operating Area



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