Unit: mm

TOSHIBA Transistor Silicon NPN Epitaxial Type (Darlington Power Transistor)

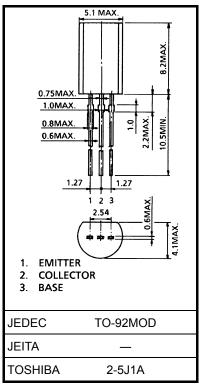
2SD2088

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

Absolute 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	IC	2	Α
Base current	ΙΒ	0.5	Α
Collector power dissipation	PC	0.9	W
Junction temperature	Tj	150	°C
Storage temperature range	T _{stg}	−55 to 150	°C



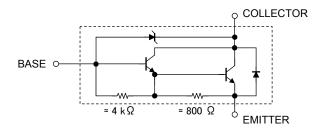
Weight: 0.36 g (typ.)

Note1: 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



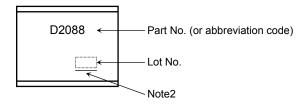
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Electrical Characteristics (Ta = 25°C)

Chara	octeristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off c	urrent	I _{CBO}	V _{CB} = 45 V, I _E = 0	_	_	10	μΑ
Emitter cut-off cur	rent	I _{EBO}	V _{EB} = 8 V, I _C = 0	_	_	4	mA
Collector-emitter I	oreakdown 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(pulse)	2000	_	_	
Collector-emitter	saturation voltage	V _{CE} (sat)	I _C = 1 A, I _B = 1 mA (pulse)	_	_	1.5	V
Base-emitter satu	ration voltage	V _{BE (sat)}	I _C = 1 A, I _B = 1 mA (pulse)	_	_	2.0	V
Transition frequer	псу	f _T	V _{CE} = 2 V, I _C = 0.5 A (pulse)	_	100	_	MHz
Collector output c	apacitance	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 S	Turn-on time	t _{on}	20 μ s Input $\stackrel{ B }{\longrightarrow}$ $$	_	0.4	_	
	Storage time	t _{stg}		1	4.0	_	μs
	Fall time	t _f			0.6	_	

Marking



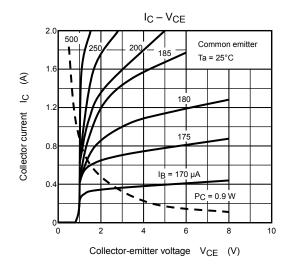
Note2: A line under a Lot No. identifies the indication of product Labels.

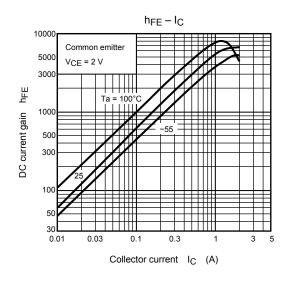
Not underlined: [[Pb]]/INCLUDES > MCV

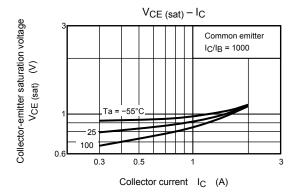
Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

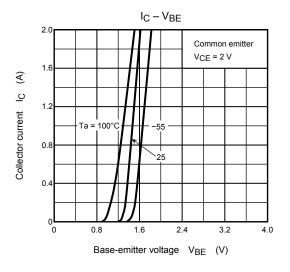
Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

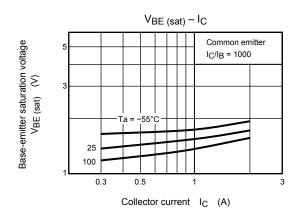
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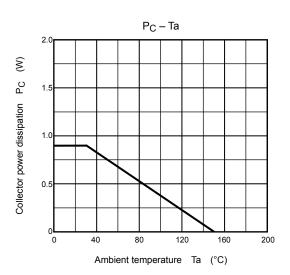


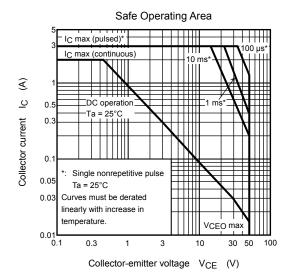












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