

TOSHIBA Power Transistor Module Silicon NPN Epitaxial Type
(darlington power transistor 4 in 1)

MP4025

High Power Switching Applications
Hammer Drive, Pulse Motor Drive and Inductive
Load Switching

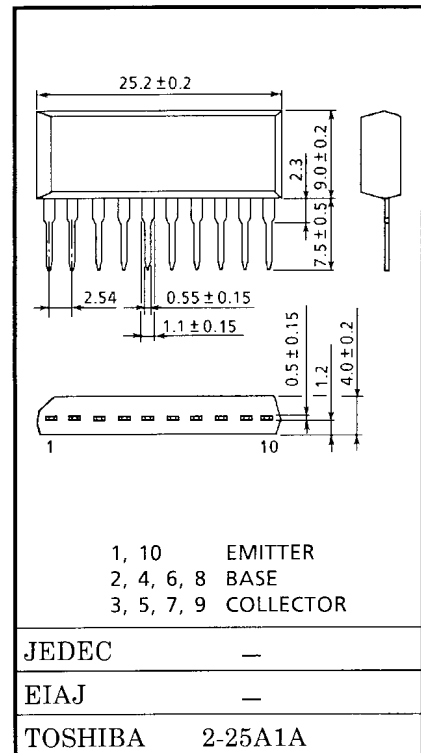
- Small package by full molding (SIP 10 pin)
- Built-in resistance (R_B).
- Surge voltage is clamped by zener diode (C-B).
- Low $V_{CE(sat)}$: $V_{CE(sat)} = 1.2\text{ V (max)}$ ($I_C = 0.5\text{ A}$, $V_{BH} = 4.2\text{ V}$)
- High DC current gain: $h_{FE} = 2000\text{ (min)}$ ($V_{CE} = 2\text{ V}$, $I_C = 0.7\text{ A}$)

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

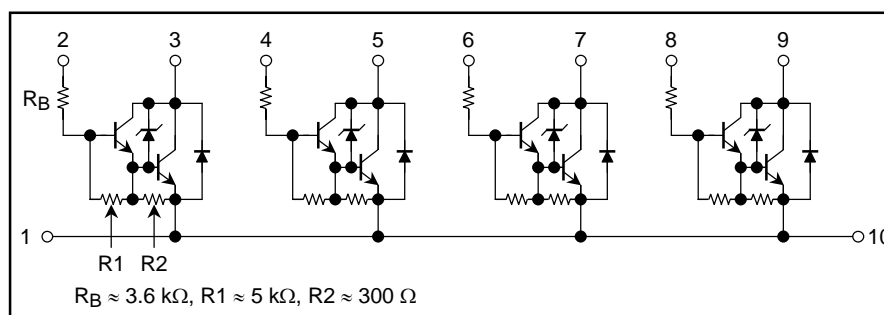
Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	50	V
Collector-emitter voltage	V_{CEO}	60 ± 10	V
Emitter-base voltage	V_{EBO}	6	V
Input voltage	V_B	20	V
Collector current	DC	I_C	1.5
	Pulse	I_{CP}	2.0
Collector power dissipation (1 device operation)	P_C	2.0	W
Collector power dissipation (4 devices operation)	P_T	4.0	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~150	$^\circ\text{C}$

INDUSTRIAL APPLICATIONS

Unit in mm



Array Configuration



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Thermal Characteristics

Characteristic	Symbol	Max	Unit
Thermal resistance of junction to ambient (4 devices operation, Ta = 25°C)	$\Sigma R_{th(j-a)}$	31.3	°C/W
Maximum lead temperature for soldering purposes (3.2 mm from case for 10 s)	T _L	260	°C

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I _{CBO}	V _{CB} = 45 V, I _E = 0	—	—	10	μA
Collector cut-off current		I _{CEO}	V _{CE} = 45 V, I _B = 0	—	—	10	μA
Emitter cut-off current		I _{EBO}	V _{EB} = 6 V, I _C = 0	0.46	—	1.25	mA
Collector-emitter breakdown voltage		V _{(BR)CEO}	I _C = 10 mA, I _B = 0	50	60	70	V
Resistance		R _B	—	2.5	3.6	4.7	kΩ
DC current gain		h _{FE}	V _{CE} = 2 V, I _C = 0.7 A	2000	—	—	—
Collector-emitter saturation voltage		V _{CE(sat) (1)}	I _C = 0.5 A, V _{BH} = 4.2 V	—	—	1.2	V
		V _{CE(sat) (2)}	I _C = 0.7 A, V _{BH} = 9 V	—	—	1.5	
Input voltage (low)		V _{BL}	V _{CE} = 30 V, I _C = 100 μA	—	—	0.7	V
Switching time	Turn-on time	t _{on}	<p>Input $20 \mu\text{s}$ $V_{BH} = 5 \text{ V}$ $V_{CC} \approx 24 \text{ V}$ Duty cycle $\leq 1\%$</p>	—	0.3	—	μs
	Storage time	t _{stg}		—	4.0	—	
	Fall time	t _f		—	0.6	—	

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