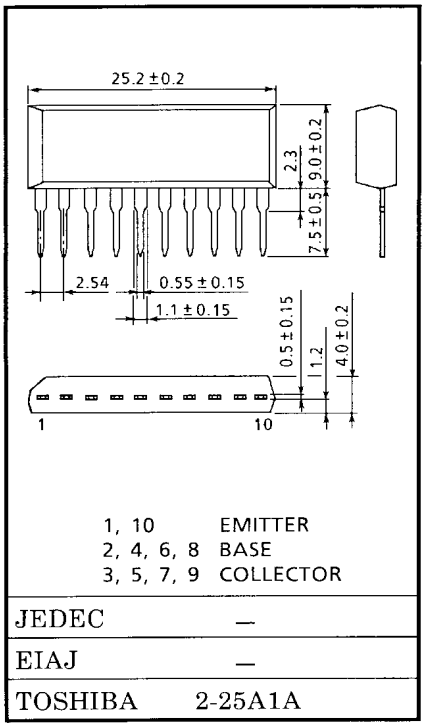
TOSHIBA Power Transistor Module Silicon NPN Epitaxial Type
(darlington power transistor 4 in 1)

M P 4 0 2 5

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

INDUSTRIAL APPLICATIONS

Unit in mm



1, 10 EMITTER
2, 4, 6, 8 BASE
3, 5, 7, 9 COLLECTOR

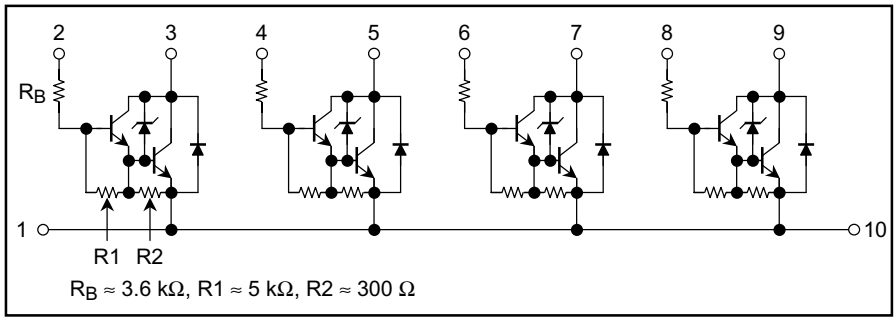
JEDEC	—
EIAJ	—
TOSHIBA	2-25A1A

- 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 V (max) (I_C = 0.5 A, V_{BH} = 4.2 V)
- High DC current gain: h_{FE} = 2000 (min) (V_{CE} = 2 V, I_C = 0.7 A)

Maximum Ratings (Ta = 25°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	A
	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	°C
Storage temperature range		T_{stg}	–55~150	°C

Array Configuration



$R_B \approx 3.6\ k\Omega$, $R1 \approx 5\ k\Omega$, $R2 \approx 300\ \Omega$

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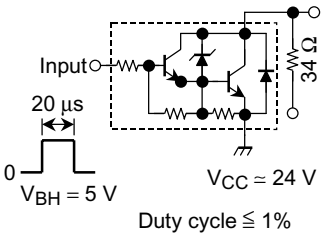
Thermal Characteristics

Characteristic	Symbol	Max	Unit
Thermal resistance of junction to ambient (4 devices operation, Ta = 25°C)	$\Sigma R_{th\ (j\text{-}a)}$	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}		—	0.3	—	μs
	Storage time	t_{stg}		—	4.0	—	
	Fall time	t_f		—	0.6	—	

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