

TOSHIBA

MP4024

TOSHIBA POWER TRANSISTOR MODULE SILICON NPN EPITAXIAL TYPE (DARLINGTON POWER TRANSISTOR 4 IN 1)

MP4024

HIGH POWER SWITCHING APPLICATIONS.

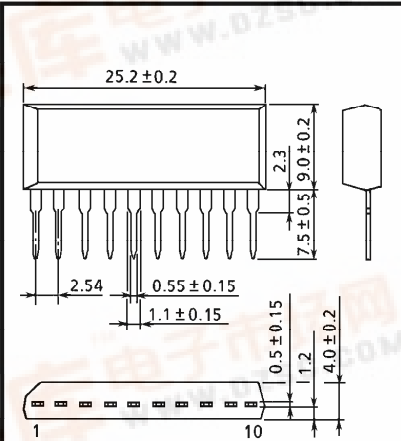
HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE

LOAD SWITCHING.

INDUSTRIAL APPLICATIONS

Unit in mm

- Small Package by Full Molding (SIP 10 Pin)
- Built-in Resistance (R_B).
- Surge Voltage is clamped by Zener Diode (C-B).
- Low $V_{CE(sat)}$: $V_{CE(sat)} = 1.5V$ (Max.) ($I_C = 1A$, $V_{BH} = 4.2V$)
- High DC Current Gain : $h_{FE} = 2000$ (Min.) ($V_{CE} = 2V$, $I_C = 1A$)



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

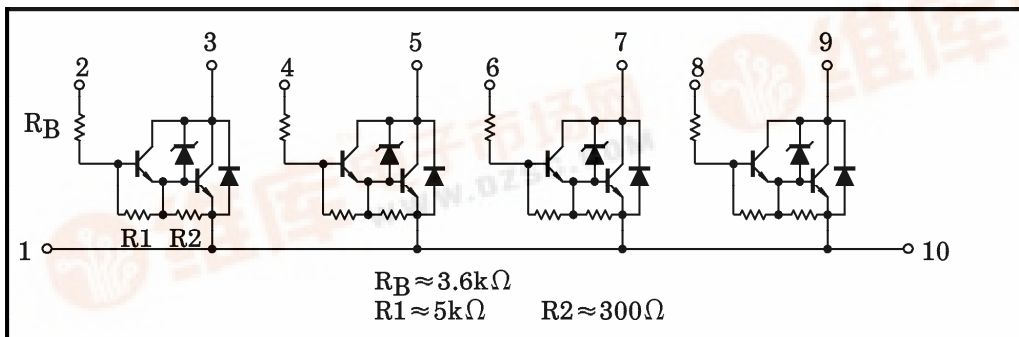
JEDEC	—
EIAJ	—
TOSHIBA	2-25A1A

Weight : 2.1g

MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	85	V
Collector-Emitter Voltage		V_{CEO}	100 ± 15	V
Emitter-Base Voltage		V_{EBO}	6	V
Input Voltage		V_B	20	V
Collector Current	DC	I_C	3	A
	Pulse	I_{CP}	4	
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	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$

ARRAY CONFIGURATION



961001FAA2

TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

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 (3.2mm from Case for 10s)	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} = 80V, I _E = 0	—	—	10	μA
Collector Cut-off Current	I _{CEO}	V _{CE} = 80V, I _B = 0	—	—	10	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 6V, I _C = 0	0.3	—	1.5	mA
Collector-Emitter Breakdown Voltage	V (BR) CEO	I _C = 10mA, I _B = 0	85	100	115	V
Resistance	R _B	—	2.5	3.6	4.7	kΩ
DC Current Gain	h _{FE} (1)	V _{CE} = 2V, I _C = 1A	2000	—	—	
	h _{FE} (2)	V _{CE} = 2V, I _C = 2A	1000	—	—	
Collector-Emitter Saturation Voltage	V _{CE (sat)} (1)	I _C = 1A, V _{BH} = 4.2V	—	—	1.5	V
	V _{CE (sat)} (2)	I _C = 1.5A, V _{BH} = 9V	—	—	1.5	
Input Voltage (Low)	V _{BL}	V _{CE} = 50V, I _C = 100μA	—	—	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	

