

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

MP4020

HIGH POWER SWITCHING APPLICATIONS.

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE

LOAD SWITCHING.

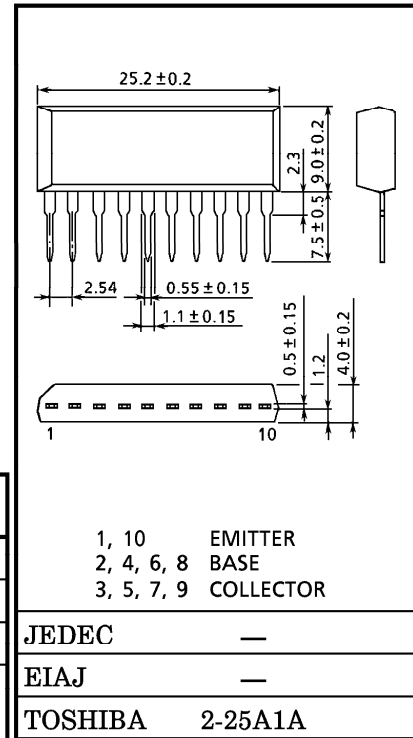
- Small Package by Full Molding (SIP 10 Pin)
- High Collector Power Dissipation (4 Devices Operation)
: $P_T = 4W$ ($T_a = 25^\circ C$)
- High Collector Current : $I_C (DC) = 2A$ (Max.)
- High DC Current Gain : $h_{FE} = 2000$ (Min.) ($V_{CE} = 2V, I_C = 1A$)
- Zener Diode Included Between Collector and Base.

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	50	V
Collector-Emitter Voltage		V_{CEO}	60 ± 10	V
Emitter-Base Voltage		V_{EBO}	8	V
Collector Current	DC	I_C	2	A
	Pulse	I_{CP}	3	
Continuous Base Current		I_B	0.5	A
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}	$-55 \sim 150$	$^\circ C$

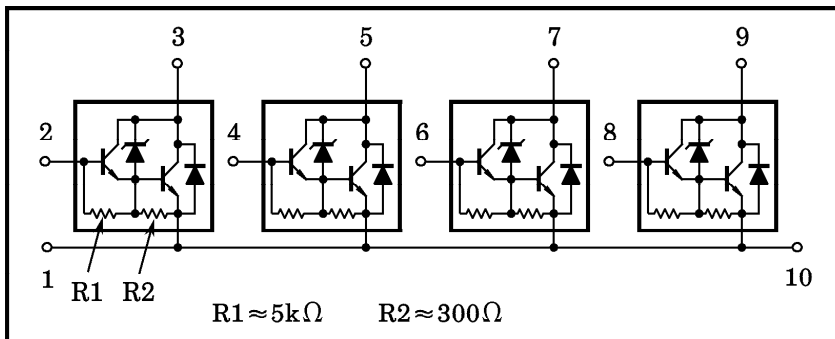
INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 2.1g

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 (3.2mm 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} = 45V, I _E = 0	—	—	10	μA				
Collector Cut-off Current	I _{CEO}	V _{CE} = 45V, I _B = 0	—	—	10	μA				
Emitter Cut-off Current	I _{EBO}	V _{EB} = 8V, I _C = 0	0.8	—	4.0	mA				
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 10mA, I _B = 0	50	60	70	V				
DC Current Gain	h _{FE}	V _{CE} = 2V, I _C = 1A	2000	—	—					
Saturation Voltage	Collector-Emitter	V _{CE(sat)}	I _C = 1A, I _B = 1mA	—	—	1.5	V			
	Base-Emitter	V _{BE(sat)}	I _C = 1A, I _B = 1mA	—	—	2.0				
Transition Frequency	f _T	V _{CE} = 2V, I _C = 0.5A	—	100	—	MHz				
Collector Output Capacitance	C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz	—	20	—	pF				
Switching Time	Turn-on Time	t _{on}					—	0.4	—	μs
	Storage Time	t _{stg}					—	4.0	—	
	Fall Time	t _f					—	0.6	—	

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