

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

MP4304

HIGH POWER SWITCHING APPLICATIONS.

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE LOAD SWITCHING.

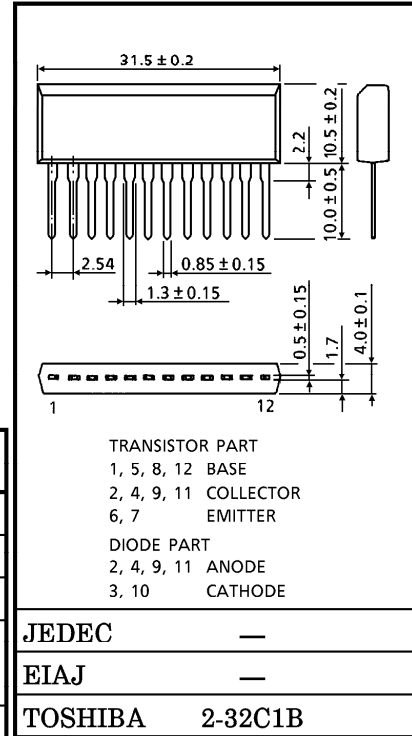
INDUSTRIAL APPLICATIONS

Unit in mm

- Small Package by Full Molding (SIP 12 Pin)
- High Collector Power Dissipation (4 Devices Operation)
: $P_T = 4.4W$ ($T_a = 25^\circ C$)
- High Collector Current : I_C (DC) = 3A (Max.)
- High DC Current Gain : $h_{FE} = 600$ (Min.) ($V_{CE} = 2V$, $I_C = 1A$)

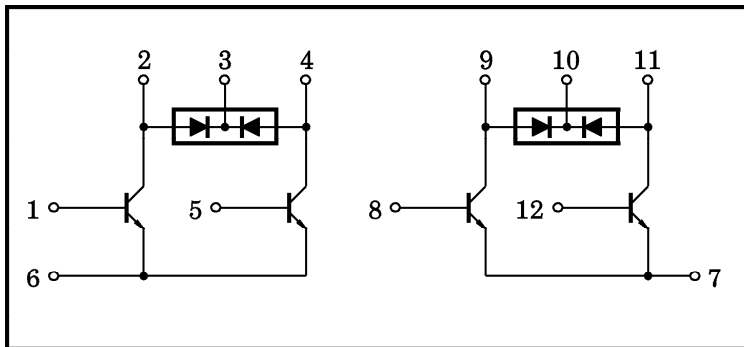
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	80	V
Collector-Emitter Voltage		V_{CEO}	80	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	3	A
	Pulse	I_{CP}	5	
Continuous Base Current		I_B	0.5	A
Collector Power Dissipation (1 Device Operation)		P_C	2.2	W
Collector Power Dissipation (4 Devices Operation)		P_T	4.4	W
Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55~150	$^\circ C$



Weight : 3.9g

ARRAY CONFIGURATION



961001EAA2

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THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Junction to Ambient (4 Devices Operation, Ta=25°C)	$\Sigma R_{th(j-a)}$	28.4	°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	
Emitter Cut-off Current	I _{EBO}	V _{EB} = 7V, I _C = 0	—	—	10	μA	
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 1mA, I _E = 0	80	—	—	V	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 10mA, I _B = 0	80	—	—	V	
DC Current Gain	h _{FE} (1)	V _{CE} = 2V, I _C = 1A	600	—	—		
	h _{FE} (2)	V _{CE} = 2V, I _C = 2A	150	—	—		
Saturation Voltage	Collector-Emitter	V _{CE(sat)}	I _C = 1.5A, I _B = 15mA	—	0.25	0.5	V
	Base-Emitter	V _{BE(sat)}	I _C = 1.5A, I _B = 15mA	—	—	1.2	
Transition Frequency	f _T	V _{CE} = 2V, I _C = 0.1A	—	85	—	MHz	
Collector Output Capacitance	C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz	—	50	—	pF	
Switching Time	Turn-on Time	t _{on}		—	0.4	—	μs
	Storage Time	t _{stg}		—	2.6	—	
	Fall Time	t _f		IB1 = -IB2 = 15mA, DUTY CYCLE ≤ 1%	—	1.3	

FLYBACK-DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Maximum Forward Current	I _{FM}	—	—	—	3	A
Reverse Current	I _R	V _R = 80V	—	—	0.4	μA
Reverse Voltage	V _R	I _R = 100μA	80	—	—	V
Forward Voltage	V _F	I _F = 1A	—	—	1.5	V

