

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

MP4506

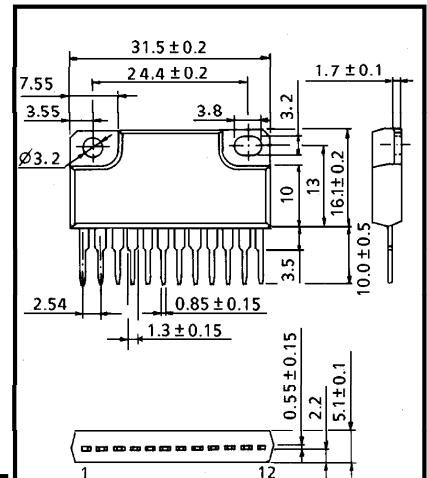
HIGH POWER SWITCHING APPLICATIONS.

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE LOAD SWITCHING.

INDUSTRIAL APPLICATIONS

Unit in mm

- Package with Heat Sink Isolated to Lead (SIP 12 Pin)
- High Collector Power Dissipation (4 Devices Operation)
: $P_T = 5W$ ($T_a = 25^\circ C$)
- High Collector Current : $I_C (DC) = 5A$ (Max.)
- High DC Current Gain : $h_{FE} = 1000$ (Min.) ($V_{CE} = 3V$, $I_C = 3A$)



- 1, 5, 8, 12 BASE
- 2, 4, 9, 11 COLLECTOR
- 3, 6, 7, 10 EMITTER

JEDEC	—
EIAJ	—
TOSHIBA	2-32B1B

Weight : 6.0g

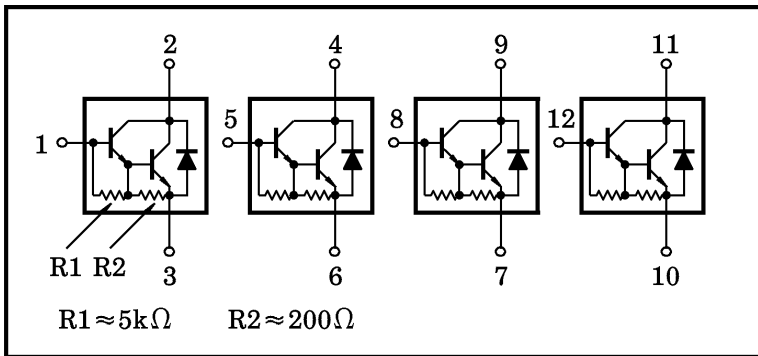
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	100	V
Collector-Emitter Voltage		V_{CEO}	100	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	5	A
	Pulse	I_{CP}	8	
Continuous Base Current		I_B	0.1	A
Collector Power Dissipation (1 Device Operation)		P_C	3.0	W
Collector Power Dissipation (4 Devices Operation)	$T_a = 25^\circ C$	P_T	5.0	W
	$T_c = 25^\circ C$		25	
Isolation Voltage		V_{Isol}	1000	V
Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	-55~150	$^\circ C$

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ARRAY CONFIGURATION



THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Junction to Ambient (4 Devices Operation, Ta=25°C)	$\Sigma R_{th(j-a)}$	25	°C / W
Thermal Resistance of Junction to Case (4 Devices Operation, Tc=25°C)	$\Sigma R_{th(j-c)}$	5.0	°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} = 100V, I _E = 0	—	—	10	μ A		
Collector Cut-off Current	I _{CEO}	V _{CE} = 100V, I _B = 0	—	—	10	μ A		
Emitter Cut-off Current	I _{EBO}	V _{EB} = 5V, I _C = 0	0.3	—	2.0	mA		
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 1mA, I _E = 0	100	—	—	V		
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 30mA, I _B = 0	100	—	—	V		
DC Current Gain	h _{FE} (1)	V _{CE} = 3V, I _C = 0.5A	1000	—	—			
	h _{FE} (2)	V _{CE} = 3V, I _C = 3A	1000	—	—			
Saturation Voltage	Collector-Emitter	V _{CE(sat)}	I _C = 3A, I _B = 12mA	—	—	V		
	Base-Emitter	V _{BE(sat)}	I _C = 3A, I _B = 12mA	—	—			
Transition Frequency	f _T	V _{CE} = 3V, I _C = 0.5A	3	—	—	MHz		
Collector Output Capacitance	C _{ob}	V _{CB} = 10V, I _E = 0, f = 1MHz	—	40	—	pF		
Switching Time	Turn-on Time	t _{on}				—	0.5	—
	Storage Time	t _{stg}				—	3.0	—
	Fall Time	t _f				—	2.0	—

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Maximum Forward Current	I_{FM}	—	—	—	5	A
Surge Current	I_{FSM}	t = 1s, 1 shot	—	—	8	A
Forward Voltage	V_F	$I_F = 1A, I_B = 0$	—	1.2	1.8	V
Reverse Recovery Time	t_{rr}	$I_F = 3A, V_{BE} = -3V,$	—	1.0	—	μs
Reverse Recovery Charge	Q_{rr}	$dI_F / dt = -50A / \mu s$	—	5	—	μC

