

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

MP4504

HIGH POWER SWITCHING APPLICATIONS.

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE

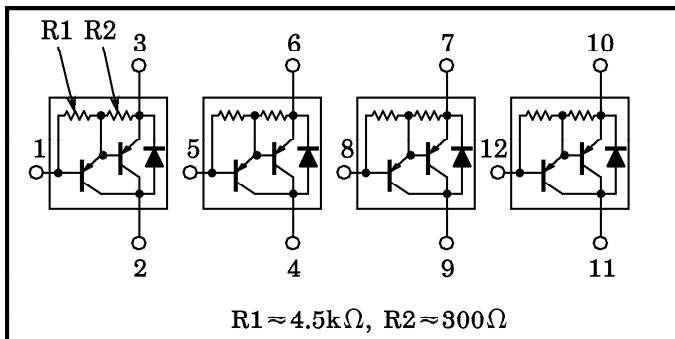
LOAD SWITCHING.

- 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 : $h_{FE} = 2000$ (Min.)
($V_{CE} = -5V, I_C = -3A$)

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

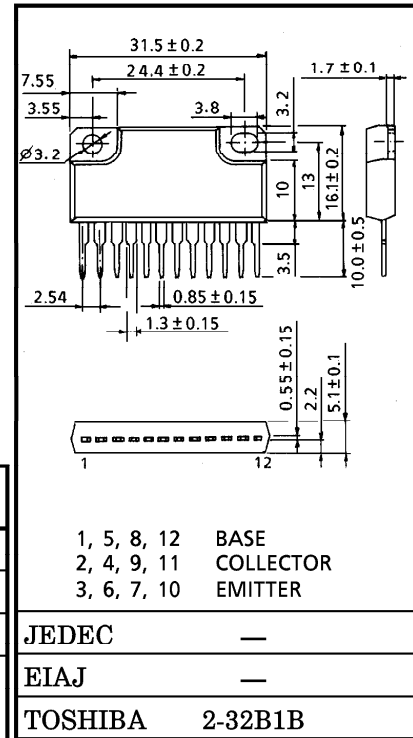
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	-100	V
Collector-Emitter Voltage		V_{CEO}	-100	V
Emitter-Base Voltage		V_{EBO}	-6	V
Collector Current	DC	I_C	-5	A
	Pulse	I_{CP}	-8	
Continuous Base Current		I_B	-0.5	A
Collector Power Dissipation (1 Device Operation)		P_C	3.0	W
Collector 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	$^\circ C$

ARRAY CONFIGURATION



INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 6.0g

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THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Junction to Ambient (4 Devices Operation, Ta=25°C)	$\Sigma R_{th(j-a)}$	25	°C / W
Thermal Resistance of Junction to Case (4 Devices Operation, Tc=25°C)	$\Sigma R_{th(j-e)}$	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	μA	
Collector Cut-off Current	I _{CEO}	V _{CE} = -100V, I _B = 0	—	—	-10	μA	
Emitter Cut-off Current	I _{EBO}	V _{EB} = -6V, I _C = 0	-0.6	—	-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 = -10mA, I _B = 0	-100	—	—	V	
DC Current Gain	h _{FE} (1)	V _{CE} = -5V, I _C = -3A	2000	—	15000		
	h _{FE} (2)	V _{CE} = -5V, I _C = -5A	1000	—	—		
Saturation Voltage	Collector-Emitter	V _{CE(sat)}	I _C = -3A, I _B = -6mA	—	—	-1.5	V
	Base-Emitter	V _{BE(sat)}	I _C = -3A, I _B = -6mA	—	—	-2.0	
Transition Frequency	f _T	V _{CE} = -2V, I _C = -0.5A	—	40	—	MHz	
Collector Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = 0, f = 1MHz	—	55	—	pF	
Switching Time	Turn-on Time	t _{on}		—	0.3	—	μs
	Storage Time	t _{stg}		—	2.0	—	
	Fall Time	t _f		-I _{B1} = I _{B2} = 6mA, DUTY CYCLE ≤ 1%	—	0.4	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Current	I_{FM}	—	—	—	3	A
Surge Current	I_{FSM}	t = 1s, 1 shot	—	—	6	A
Forward Voltage	V_F	$I_F = 1A, I_B = 0$	—	—	2.0	V
Reverse Recovery Time	t_{rr}	$I_F = 3A, V_{BE} = 3V,$	—	1.0	—	μs
Reverse Recovery Charge	Q_{rr}	$dI_F / dt = -50A / \mu s$	—	8	—	μC

