

TOSHIBA

MP4101

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

MP4101

HIGH POWER SWITCHING APPLICATIONS.

HAMMER DRIVE, PULSE MOTOR DRIVE.

INDUCTIVE LOAD SWITCHING.

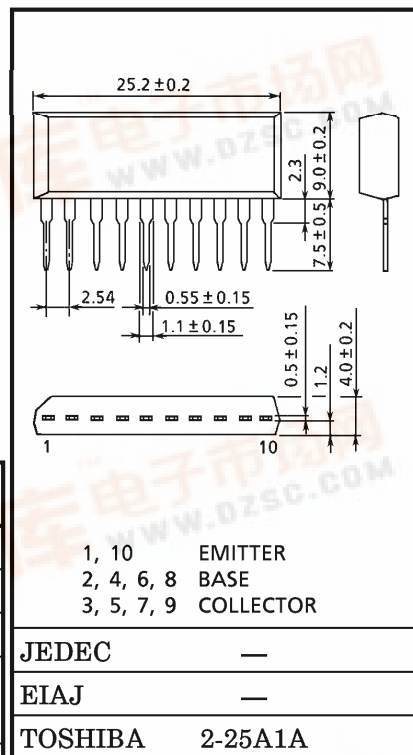
INDUSTRIAL APPLICATIONS

Unit in mm

- 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 : $I_C (DC) = 4A$ (Max.)
- High DC Current Gain : $h_{FE} = 2000$ (Min.) ($V_{CE} = 2V$, $I_C = 1A$)
- Zener Diode Included Between Collector and Base.

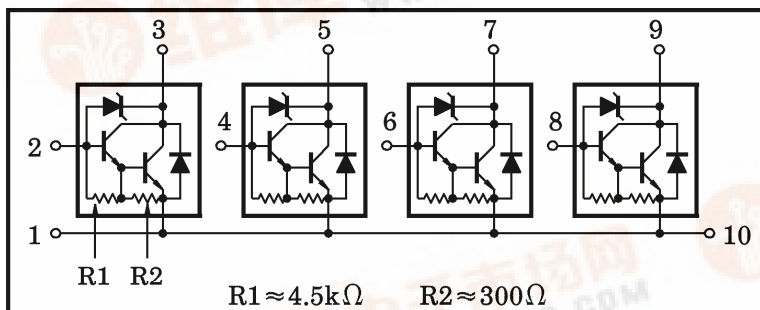
MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	60 ± 10	V
Collector-Emitter Voltage		V_{CEO}	60 ± 10	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	4	A
	Pulse	I_{CP}	6	
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	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^{\circ}\text{C}$



Weight : 2.1g

ARRAY CONFIGURATION



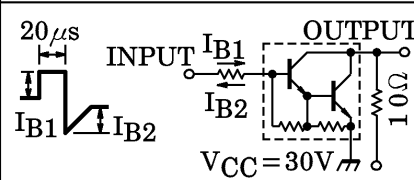
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THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Junction to Ambient (4 Devices Operation, $T_a = 25^\circ\text{C}$)	$\Sigma R_{th(j-a)}$	31.3	$^\circ\text{C} / \text{W}$
Maximum Lead Temperature for Soldering Purposes (3.2mm from Case for 10s)	T_L	260	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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}	$V_{EB}=6V, I_C=0$	0.6	—	20	mA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C=10mA, I_E=0$	50	60	70	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	50	60	70	V
DC Current Gain		$h_{FE(1)}$	$V_{CE}=2V, I_C=1A$	2000	—	15000	
		$h_{FE(2)}$	$V_{CE}=2V, I_C=3A$	1000	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE(sat)}$	$I_C=3A, I_B=10mA$	—	—	1.5	V
	Base-Emitter	$V_{BE(sat)}$	$I_C=3A, I_B=10mA$	—	—	2.0	
Transition Frequency		f_T	$V_{CE}=2V, I_C=0.5A$	—	60	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB}=10V, I_E=0A, f=1MHz$	—	30	—	pF
Switching Time	Turn-on Time	t_{on}		—	0.2	—	μs
	Storage Time	t_{stg}		—	3.0	—	
	Fall Time	t_f		$I_{B1} = -I_{B2} = 10mA,$ $DUTY\ CYCLE \leq 1\%$	—	0.5	

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