

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

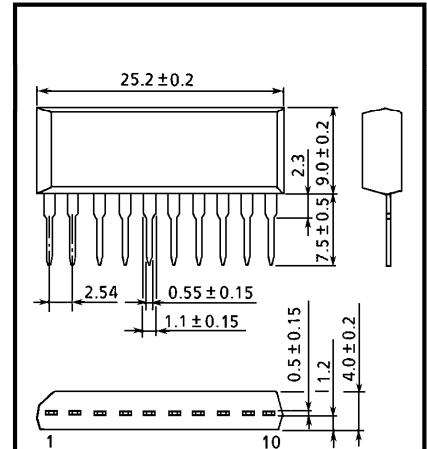
MP4009

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) = -5A (Max.)
- High DC Current Gain : $h_{FE} = 1000$ (Min.)
($V_{CE} = -3V, I_C = -3A$)
- Complementary to MP4003



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

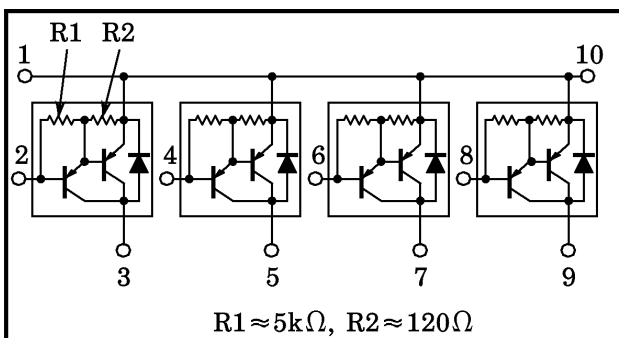
JEDEC	—
EIAJ	—
TOSHIBA	2-25A1A

Weight : 2.1g

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
	Pulse	I_{CP}	-8
Continuous Base Current	I_B	-0.1	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}	-55~150	$^\circ C$

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} = -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} = -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	—	—	-2.0	V
	Base-Emitter	V _{BE(sat)}	I _C = -3A, I _B = -12mA	—	—	-2.5	
Transition Frequency		f _T	V _{CE} = -3V, I _C = -0.5A	3	—	—	MHz
Collector Output Capacitance		C _{ob}	V _{CB} = 50V, I _E = 0A, f = 1MHz	—	40	—	pF
Switching Time	Turn-on Time	t _{on}		—	0.5	—	μs
	Storage Time	t _{stg}		—	3.0	—	
	Fall Time	t _f		-I _{B1} = I _{B2} = 12mA, DUTY CYCLE ≤ 1%	—	2.0	

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