

**NEC**  
ELECTRON DEVICE

POWER TRANSISTOR ARRAY

**μPA1438H**

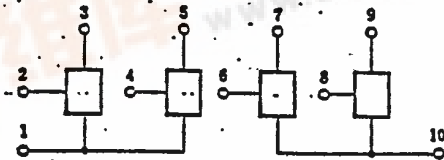
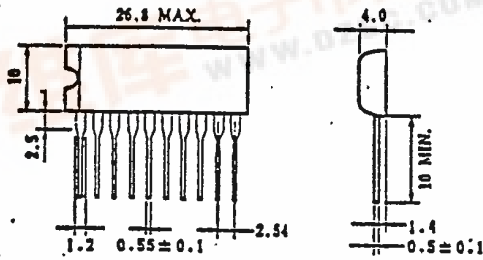
NPN SILICON EPITAXIAL POWER TRANSISTOR ARRAY

LOW SPEED SWITCHING (DARLINGTON)

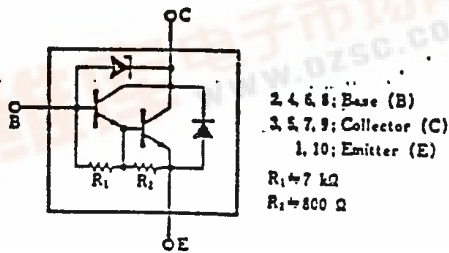
DESCRIPTION

The μPA1438H is an array of four darlington power transistors. It is especially designed for applications demand for high peak current capability. It is suitable for driving actuators such as solenoids, motors, relays and lamps.

PACKAGE DIMENSIONS (Unit: mm)  
AND INTERNAL CONNECTIONS



EQUIVALENT CIRCUIT (1 Unit)



FEATURES

- High hFE (Darlington)
- High peak current capability
- Easy to mount on plastic substrates
- Able to use with high-density mounting
- Built-in Zener Diode between Collector and Base

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Collector to Base Voltage	VCBO	60 ± 10V
Collector to Emitter Voltage	VCEO	60 ± 10V
Emitter to Base Voltage	VEBO	7.0V
Collector Current (DC)	IC (DC)	± 3.0A/unit
Collector Current (pulse)	IC (pulse)	± 6.0A/unit
Base Current (DC)	IB (DC)	0.3A/unit
Total Power Dissipation	PT**	3.5W
Total Power Dissipation	PT***	28W
Junction Temperature	TJ	150 °C
Storage Temperature	Tstg	-55 to +150 °C

\*  $PW \leq 300 \mu\text{s}$ , Duty Cycle  $\leq 10\%$

\*\* When all units are used,  $T_a = 25^\circ\text{C}$

\*\*\* When all units are used,  $T_c = 25^\circ\text{C}$

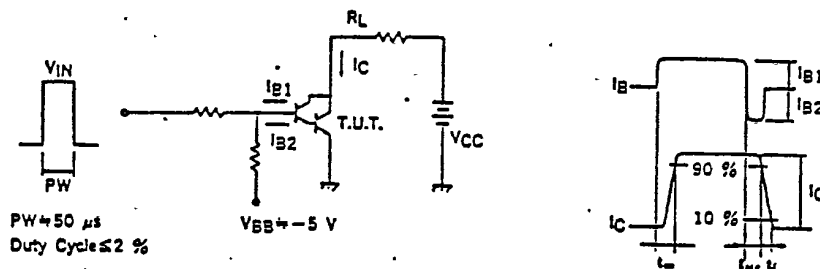


ELECTRICAL CHARACTERISTICS (Ta=25°C)

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector to Emitter Sustaining Voltage	VCE0(SUS)	50	60	70	V	IC=1.5A, IB=1.5mA L=1mH
Collector Cutoff Current	ICB0			10	μA	VCE=40V, IE=0
Emitter Cutoff Current	IEB0			1	mA	VEB=5.0V, IC=0
DC Current Gain	hFE1‡	1000			-	VCE=2.0V, IC=0.5A
DC Current Gain	hFE2‡	2000		20000	-	VCE=2.0V, IC=1.5A
Collector to Emitter Saturation Voltage	VCE(sat)‡		0.9	1.2	V	IC=1.5A, IB=1.5mA
Base to Emitter Saturation Voltage	VBE(sat)‡		1.5	2.0	V	IC=1.5A, IB=1.5mA
Turn-On Time	ton		1.0		μs	IC=1.5A
Storage Time	tstg		3.0		μs	IB1=-IB2=1.5mA
Fall Time	tf		1.0		μs	RL=27 Ω, VCC=40V See Test Circuit.

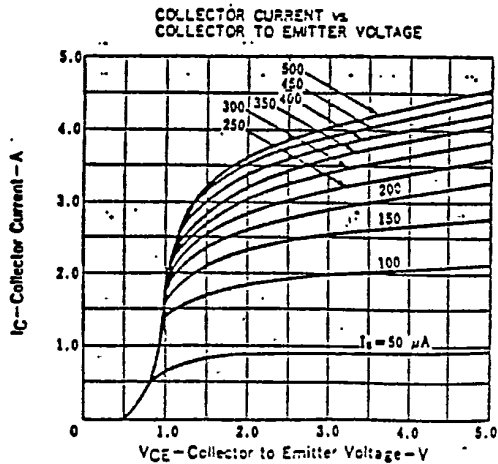
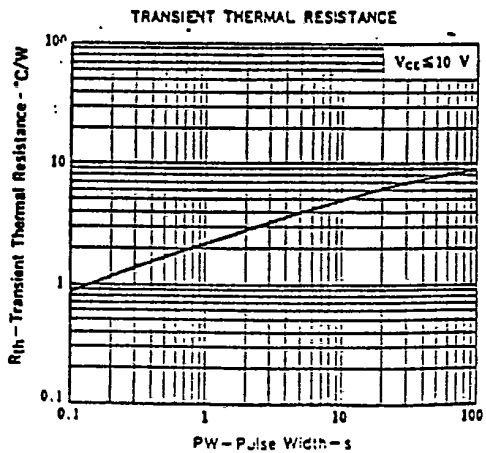
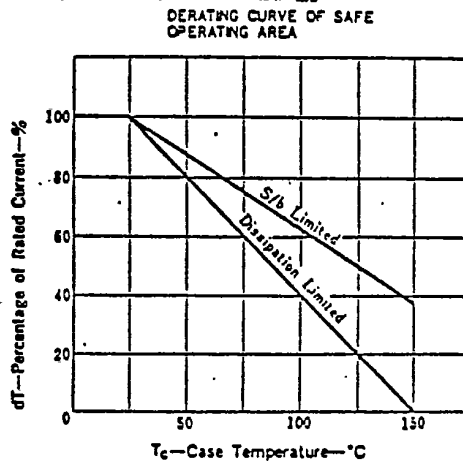
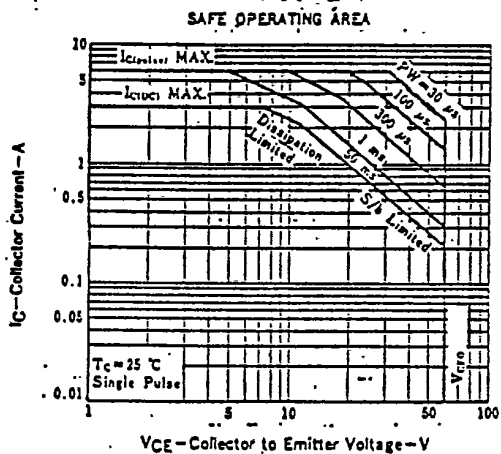
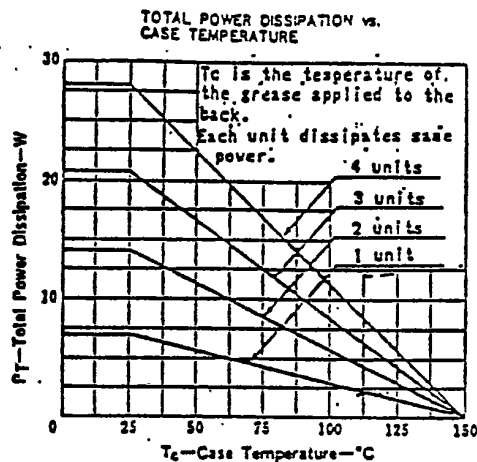
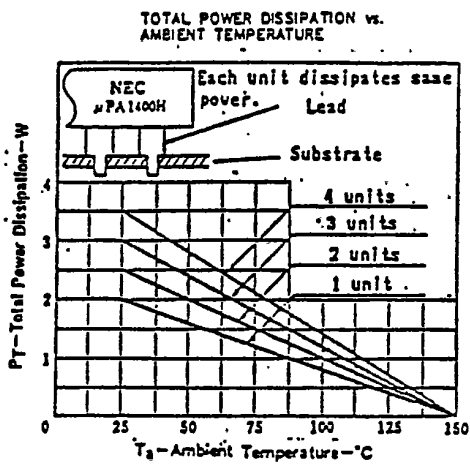
‡Pulsed/PW ≤ 350 μs, Duty Cycle ≤ 2%

SWITCHING TIME (ton, tstg, tf) TEST CIRCUIT



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



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