NEC
ELECTRON DEVICE

POWER TRANSISTOR ARRAY

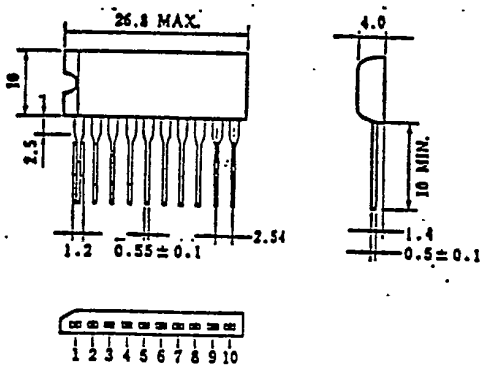
μPA1428H

NPN SILICON EPITAXIAL POWER TRANSISTOR ARRAY
LOW SPEED SWITCHING (DARLINGTON)

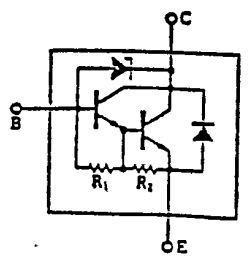
DESCRIPTION

The μPA1428H 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 actuaters such as solenoids, motors, relays and lamps.

PACKAGE DIMENSIONS(Unit:mm) AND INTERNAL CONNECTIONS



EQUIVALENT CIRCUIT(1 Unit)



2, 4, 6, 8; Base (B)
3, 5, 7, 9; Collector (C)
1, 10; Emitter (E)
R_1 = 10 kΩ
R_2 = 500 Ω

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(Ta=25℃)

Collector to Base Voltage	VCBO	60±10V
Collector to Emitter Voltage	VCEO	60±10V
Emitter to Base Voltage	VEBO	7.0V
Sustaining Energy	ECEO(SUS)	30mJ/unit
Collector Current(DC)	IC(DC)	±2.0A/unit
Collector Current(pulse)	IC(pulse)*	±4.0A/unit
Base Current(DC)	IB(DC)	0.2A/unit
Total Power Dissipation	PT**	3.5W
Total Power Dissipation	PT***	28W
Junction Temperature	Tj	150 ℃
Storage Temperature	Tstg	-55 to +150 ℃

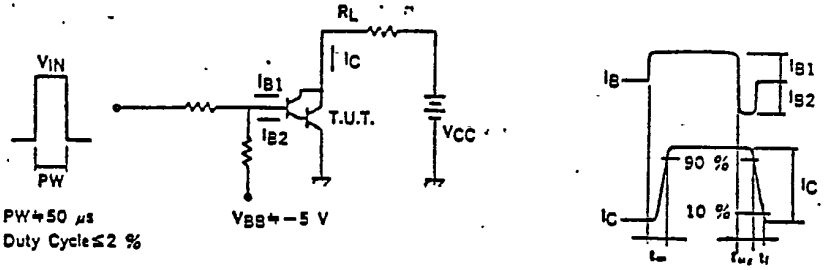
* PW≦300 μs, Duty Cycle≦10%
** When all units are used, Ta=25 ℃
*** When all units are used, Tc=25 ℃

ELECTRICAL CHARACTERISTICS(Ta=25℃)

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	ICBO			10	μA	VCB=40V, IE=0
Collector to Emitter Sustaining Voltage	VCEO(SUS)	50	60	70	V	IC=1A, L=1mH
Emitter Cutoff Current	IEBO			1	mA	VEB=5.0V, IC=0
DC Current Gain	hFE1*	1000			-	VCE=2.0V, IC=0.5A
DC Current Gain	hFE2*	2000		30000	-	VCE=2.0V, IC=1.0A
Collector to Emitter Saturation Voltage	VCE(sat)*			1.5	V	IC=1.0A, IB=1.0mA
Base to Emitter Saturation Voltage	VBE(sat)*			2.0	V	IC=1.0A, IB=1.0mA
Turn-On Time	ton		0.5		μs	IC=1.0A
Storage Time	tstg		3.0		μs	IB1=-IB2=1.0mA
Fall Time	tf		1.0		μs	RL=40 Ω, VCC≒40V See Test Circuit.

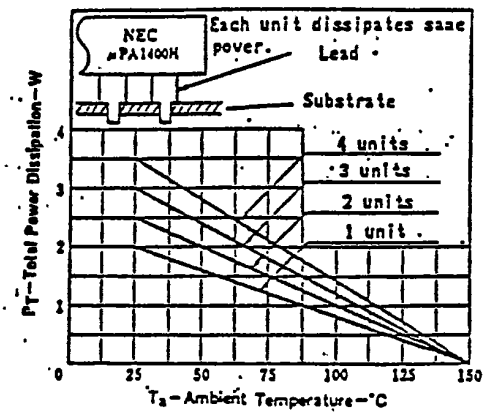
*Pulsed/PW≦350 μs, Duty Cycle≦2%

SWITCHING TIME (t_{on}, t_{stg}, t_f) TEST CIRCUIT

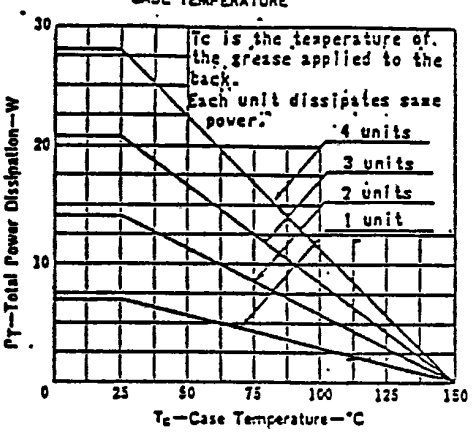


TYPICAL CHARACTERISTICS (T_a = 25 °C)

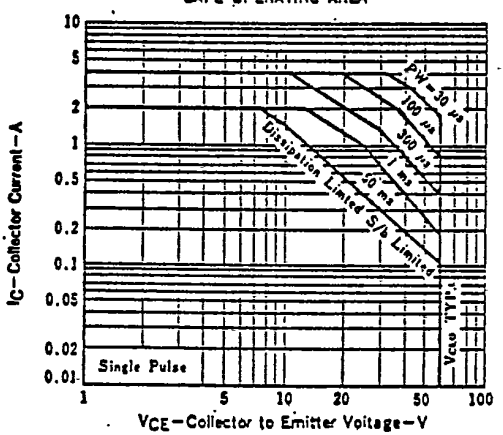
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



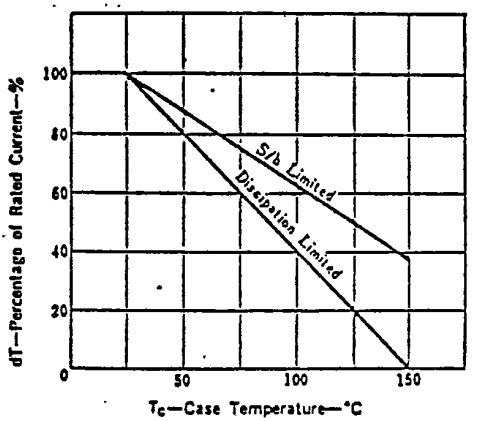
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



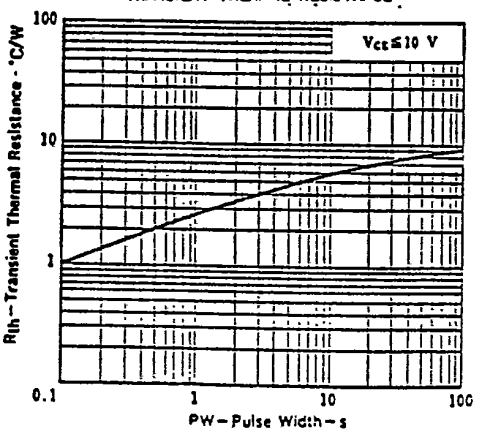
SAFE OPERATING AREA



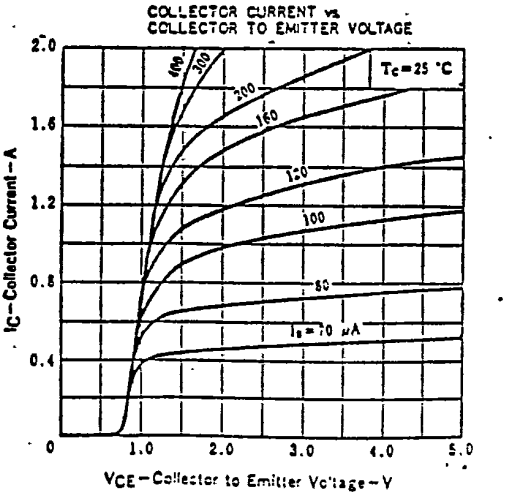
DERATING CURVE OF SAFE OPERATING AREA



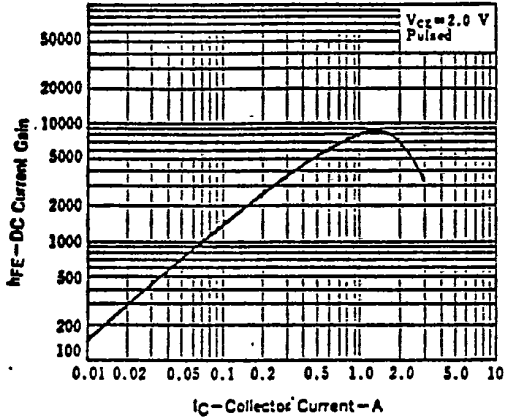
TRANSIENT THERMAL RESISTANCE



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN vs COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs COLLECTOR CURRENT