NEC

SILICON TRANSISTOR ARRAY

μPA1436A

NPN SILICON POWER TRANSISTOR ARRAY
HIGH SPEED SWITCHING USE (DARLINGTON TRANSISTOR)
INDUSTRIAL USE

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DESCRIPTION

The μPA1436A is NPN silicon epitaxial Darlington Power Transistor Array that built in 4 circuits designed for driving solenoid, relay, lamp and so on.

FEATURES

- Easy mount by 0.1 inch of terminal interval.
- High h_{FE} for Darlington Transistor.
- C-E Reverce Diode built in.
- High Speed Switching.

ORDERING INFORMATION

Part Number	Package	Quality Grade
μPA1436AH	10 Pin SIP	Standard

Please refer to "Quality grade on NEC Semiconductor Device" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

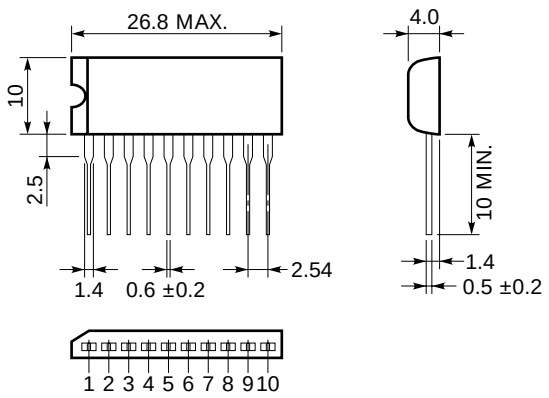
ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Collector to Base Voltage	V_{CBO}	150	V
Collector to Emitter Voltage	V_{CEO}	100	V
Emitter to Base Voltage	V_{EBO}	8	V
Collector Current (DC)	$I_{C(DC)}$	±3	A/unit
Collector Current (pulse)	$I_{C(pulse)}$*	±5	A/unit
Base Current (DC)	$I_{B(DC)}$	0.3	A/unit
Total Power Dissipation (T_a = 25 °C)	P_{T1}**	3.5	W
Total Power Dissipation (T_c = 25 °C)	P_{T2}**	28	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

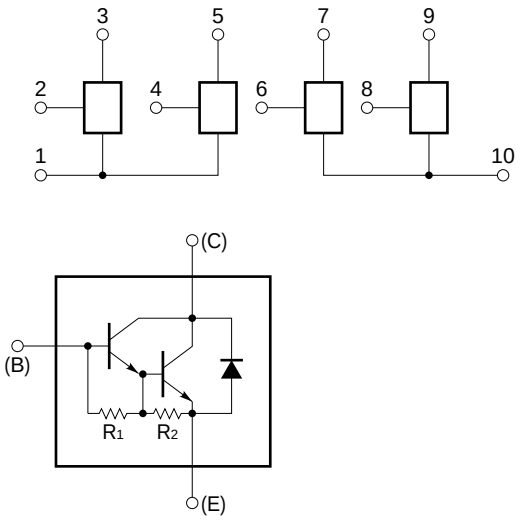
* PW ≤ 350 μs, Duty Cycle ≤ 2 %

** 4 Circuits

PACKAGE DIMENSION
(in millimeters)



CONNECTION DIAGRAM



PIN NO.

2, 4, 6, 8: Base (B)
3, 5, 7, 9: Collector (C)
1, 10: Emitter (E)
R_1 ≒ 5 kΩ
R_2 ≒ 1.3 kΩ

The information in this document is subject to change without notice.

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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Leakage Current	I_{CBO}			1	μA	V_{CB} = 100 V, I_E = 0
Emitter Leakage Current	I_{EBO}			5	mA	V_{EB} = 5 V, I_C = 0
DC Current Gain	h_{FE1} *	2000		20000	—	V_{CE} = 2 V, I_C = 1.5 A
DC Current Gain	h_{FE2} *	1000			—	V_{CE} = 2 V, I_C = 3 A
Collector Saturation Voltage	$V_{CE(sat)}$ *		1	1.5	V	I_C = 1.5 A, I_B = 1.5 mA
Base Saturation Voltage	$V_{BE(sat)}$ *		1.8	2	V	I_C = 1.5 A, I_B = 1.5 mA
Turn On Time	t_{on}		0.3		μs	I_C = 1.5 A I_{B1} = –I_{B2} = 3 mA V_{CC} ≒ 50 V, R_L = 33 Ω See test circuit
Storage Time	t_{stg}		1.5		μs	
Fall Time	t_f		0.4		μs	

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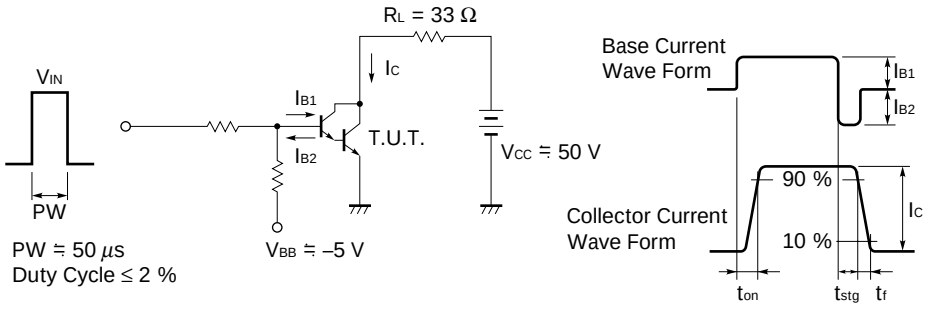
* PW ≤ 350 μs, Duty Cycle ≤ 2 % /pulsed

SWITCHING TIME TEST CIRCUIT



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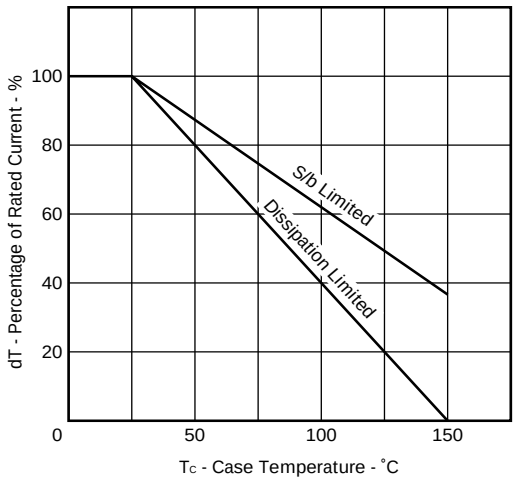
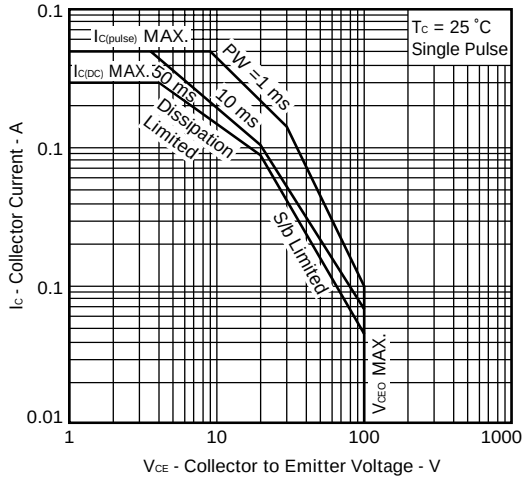
TYPICAL CHARACTERISTICS (T_a = 25 °C)

DERATING CURVE OF SAFE OPERATING AREA



SAFE OPERATING AREA



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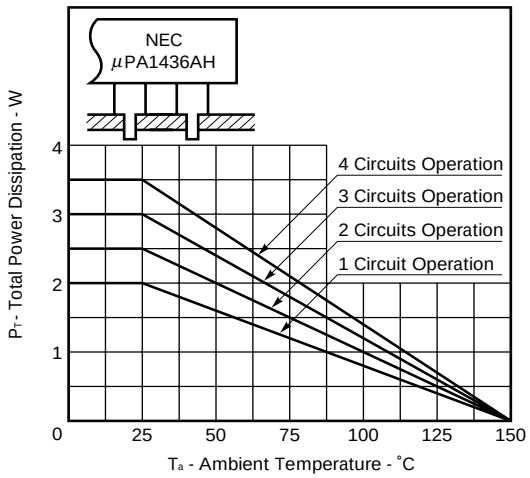
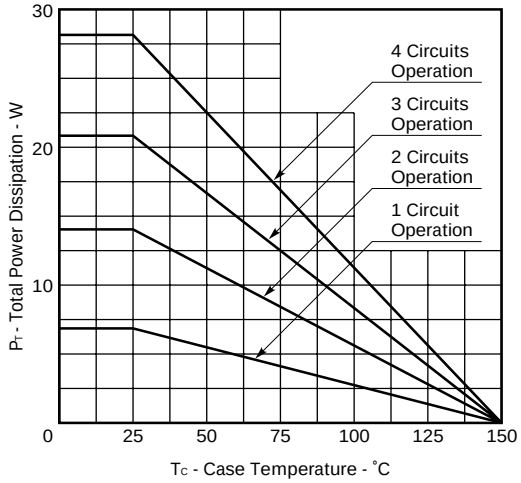
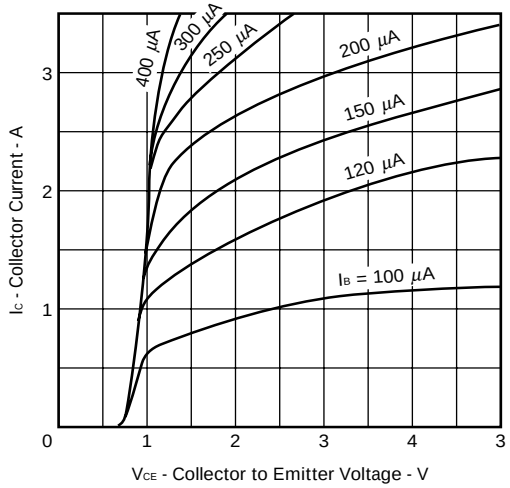
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



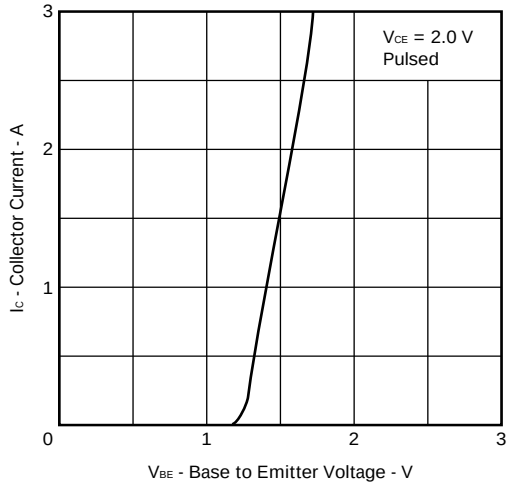
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



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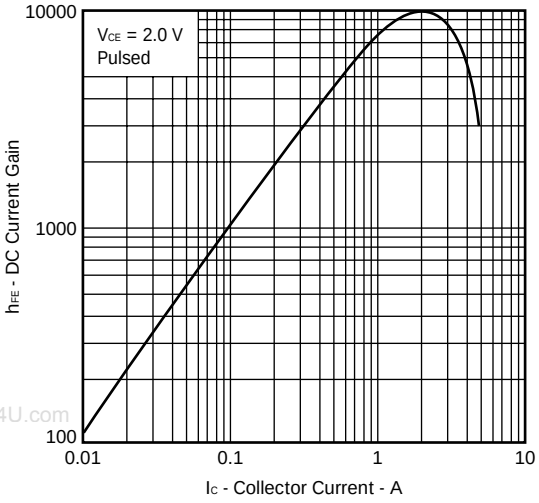
DC CURRENT GAIN vs. COLLECTOR CURRENT



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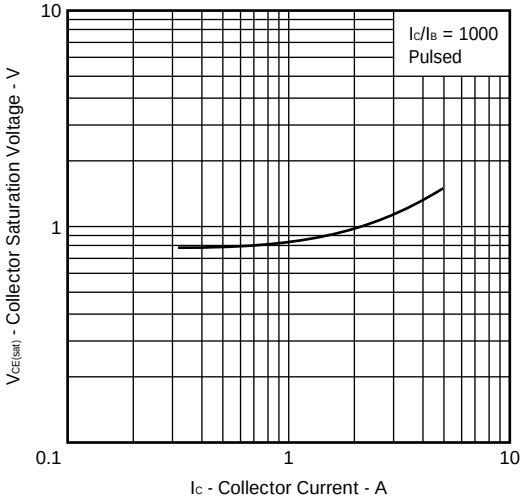
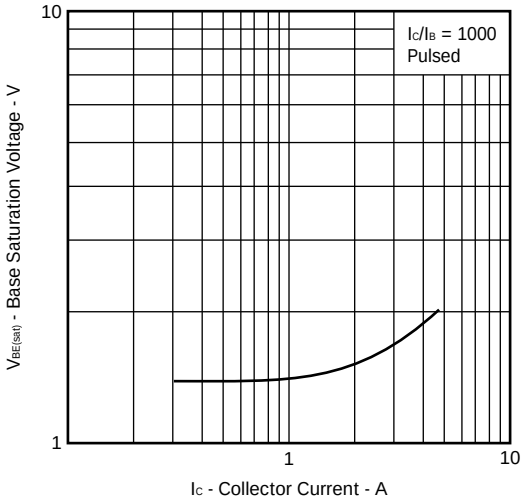
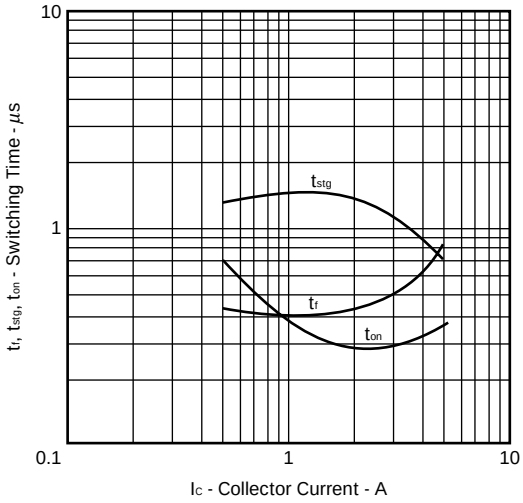
COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



TURN ON TIME. STORAGE TIME AND FALL TIME vs. COLLECTOR CURRENT



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REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134

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