

SILICON TRANSISTOR ARRAY

μ PA1428A

NPN SILICON POWER TRANSISTOR ARRAY

HIGH SPEED SWITCHING USE (DARLINGTON TRANSISTOR)

INDUSTRIAL USE

DESCRIPTION

The μ PA1428A is NPN silicon epitaxial Darlington Power Transistor Array that built in Surge Absorber 4 circuits designed for driving solenoid, relay, lamp and so on.

FEATURES

- Surge Absorber built in.
- Easy mount by 0.1 inch of terminal interval.
- High h_{FE} for Darlington Transistor.

ORDERING INFORMATION

Part Number	Package	Quality Grade
μ PA1428AH	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 ($T_a = 25^\circ\text{C}$)

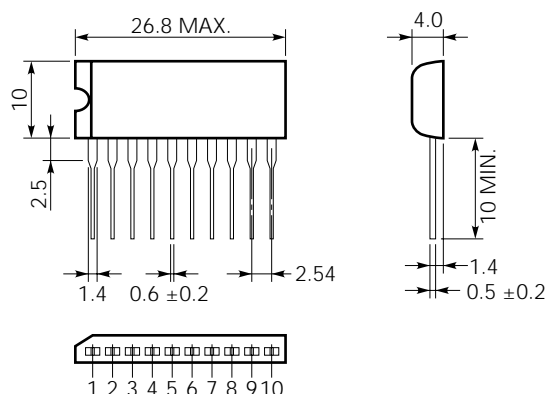
Collector to Base Voltage	V_{CBO}	60 ± 10	V
Collector to Emitter Voltage	V_{CEO}	60 ± 10	V
Emitter to Base Voltage	V_{EBO}	8	V
Surge Sustaining Energy	$E_{CEO(sus)}$	30	mJ/unit
Collector Current (DC)	$I_{C(DC)}$	± 2	A/unit
Collector Current (pulse)	$I_{C(pulse)^*}$	± 3	A/unit
Base Current (DC)	$I_{B(DC)}$	0.2	A/unit
Total Power Dissipation	P_{T1}^{**}	3.5	W
Total Power Dissipation	P_{T2}^{***}	28	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$

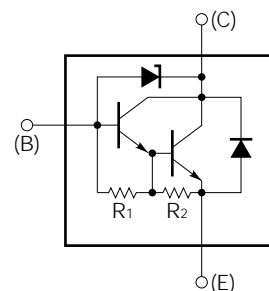
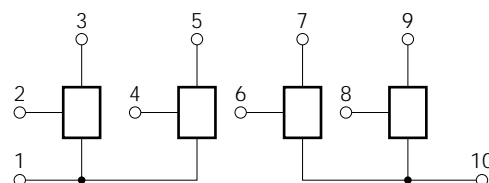
** 4 Circuits, $T_a = 25^\circ\text{C}$

*** 4 Cuircuits, $T_c = 25^\circ\text{C}$

PACKAGE DIMENSION (in millimeters)



CONNECTION DIAGRAM



PIN NO.

2, 4, 6, 8: Base (B)
3, 5, 7, 9: Collector (C)
1, 10: Emitter (E)
 $R_1 \approx 10 \text{ k}\Omega$
 $R_2 \approx 900 \Omega$

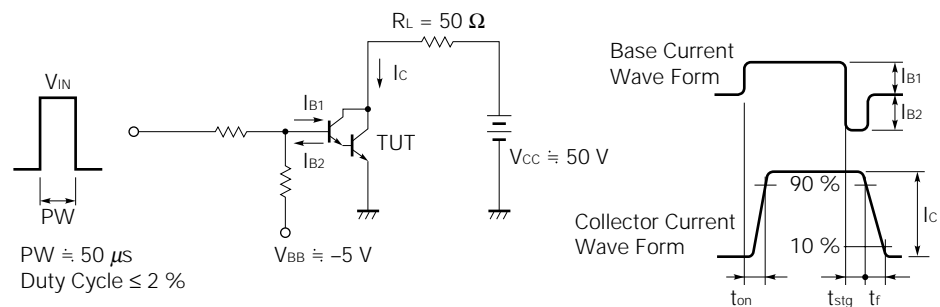
The information in this document is subject to change without notice.

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

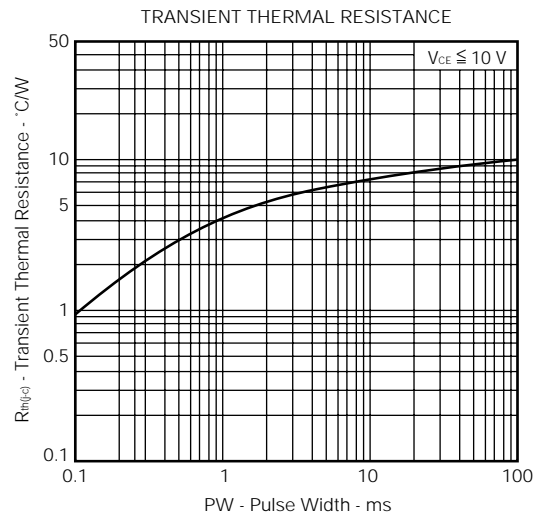
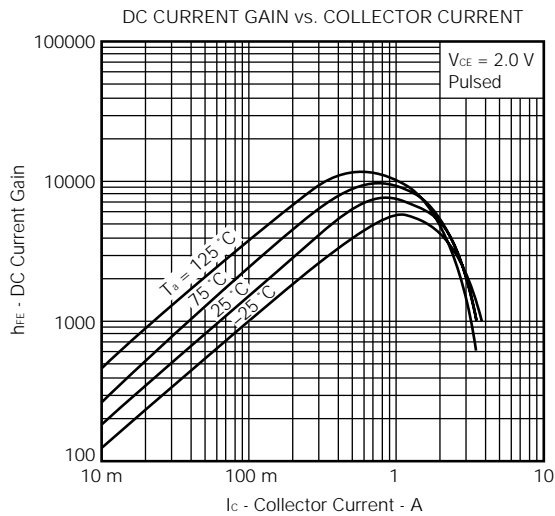
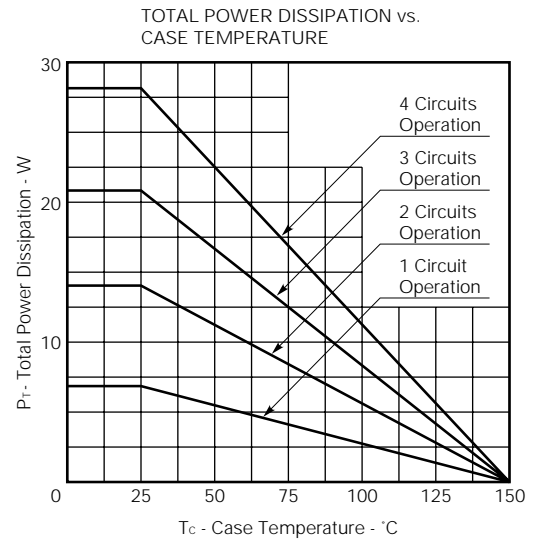
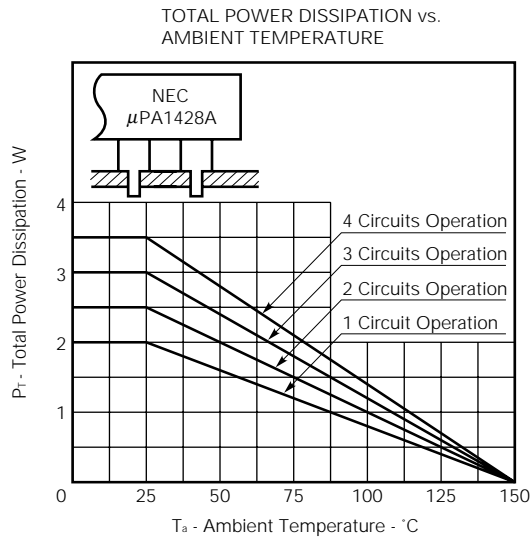
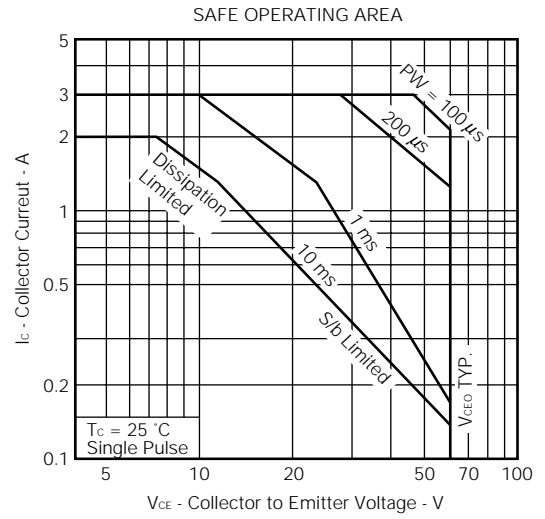
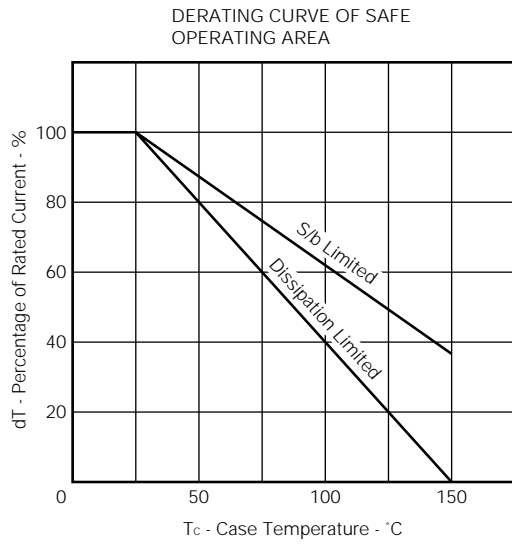
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Leakage Current	I_{CBO}			1	μA	$V_{CB} = 40\text{ V}$, $I_E = 0$
Emitter Leakage Current	I_{EBO}			5	mA	$V_{EB} = 5\text{ V}$, $I_C = 0$
Collector to Emitter Sustaining Voltage	$V_{CEO(sus)}$	50	60	70	V	$I_C = 1\text{ A}$, $L = 1\text{ mH}$
DC Current Gain	h_{FE1} *	2000		20000	—	$V_{CE} = 2\text{ V}$, $I_C = 1\text{ A}$
DC Current Gain	h_{FE2} *	500			—	$V_{CE} = 2\text{ V}$, $I_C = 2\text{ A}$
Collector Saturation Voltage	$V_{CE(sat)}$ *		1.0	1.5	V	$I_C = 1\text{ A}$, $I_B = 1\text{ mA}$
Base Saturation Voltage	$V_{BE(sat)}$ *		1.7	2	V	$I_C = 1\text{ A}$, $I_B = 1\text{ mA}$
Turn On Time	t_{on}		0.4		μs	$I_C = 1\text{ A}$ $I_{B1} = -I_{B2} = 2\text{ mA}$ $V_{CC} \cong 50\text{ V}$, $R_L = 50\text{ }\Omega$ See test circuit
Storage Time	t_{stg}		1.5		μs	
Fall Time	t_f		0.4		μs	

* $PW \leq 350\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$ /pulsed

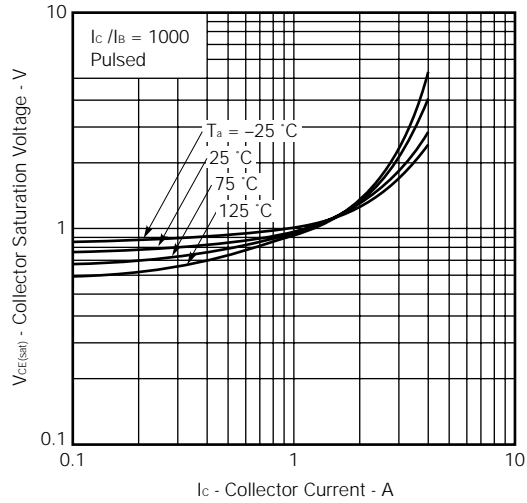
SWITCHING TIME TEST CIRCUIT



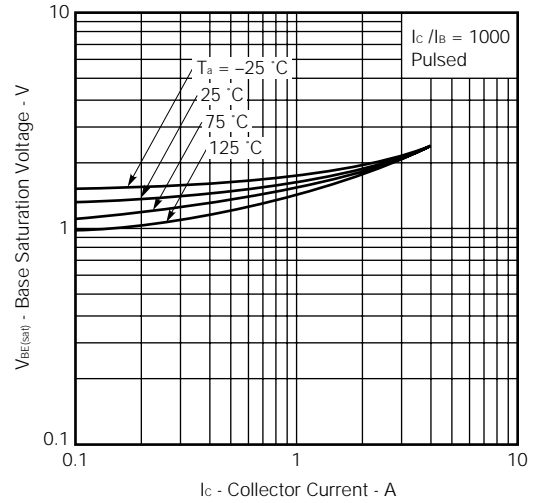
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



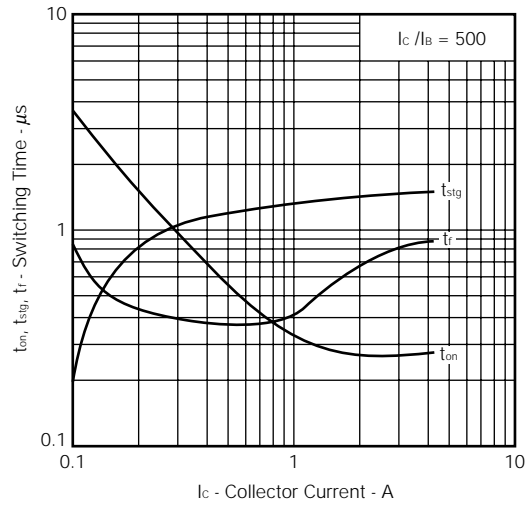
COLLECTOR SATURATION
VOLTAGE vs. COLLECTOR CURRENT



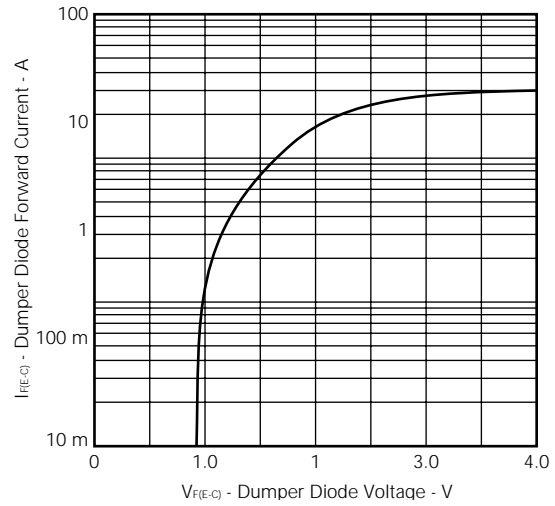
BASE SATURATION VOLTAGE vs.
COLLECTOR CURRENT



SWITCHING TIME vs. COLLECTOR CURRENT



DUMPER DIODE CHARACTERISTICS



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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Standard: Computer, Office equipment, Communication equipment, Test and Measurement equipment, Machine tools, Industrial robots, Audio and Visual equipment, Other consumer products, etc.

Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.