

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

### DESCRIPTION

The μPA1458 is NPN silicon epitaxial Darlington Power Transistor Array that built in Surge Absorber and 4 circuits designed for driving solenoid, relay, lamp and so on.

### FEATURES

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

### ORDERING INFORMATION

Part Number	Package	Quality Grade
μPA1458H	10 Pin SIP	Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (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 ( $T_a = 25\text{ }^\circ\text{C}$ )

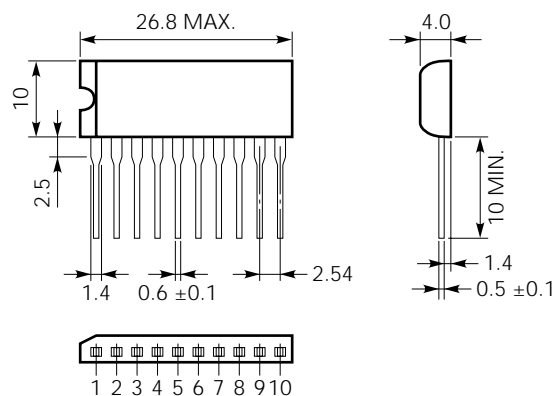
Collector to Base Voltage	$V_{CBO}$	$60 \pm 10$	V
Collector to Emitter Voltage	$V_{CEO}$	$60 \pm 10$	V
Emitter to Base Voltage	$V_{EBO}$	7	V
Surge Sustaining Energy	$E_{CEO(sus)}$	25	mJ/unit
Collector Current (DC)	$I_C(DC)$	$\pm 5$	A/unit
Collector Current (pulse)	$I_C(pulse)^*$	$\pm 10$	A/unit
Collector Current	$I_{CBS(DC)}$	5	mA/unit
Base Current (DC)	$I_B(DC)$	0.5	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	$^\circ\text{C}$

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

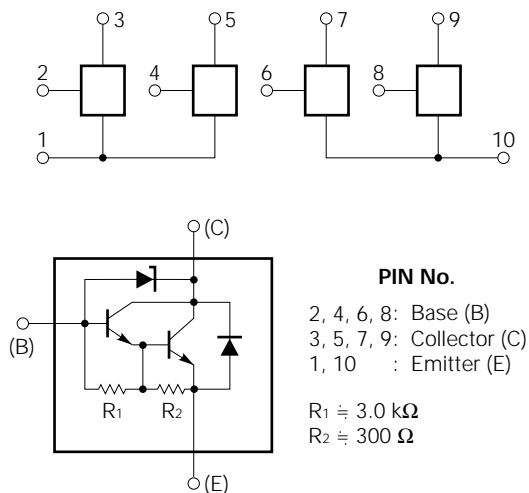
\*\* 4 Circuits,  $T_a = 25\text{ }^\circ\text{C}$

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

### PACKAGE DIMENSION (in millimeters)



### CONNECTION DIAGRAM



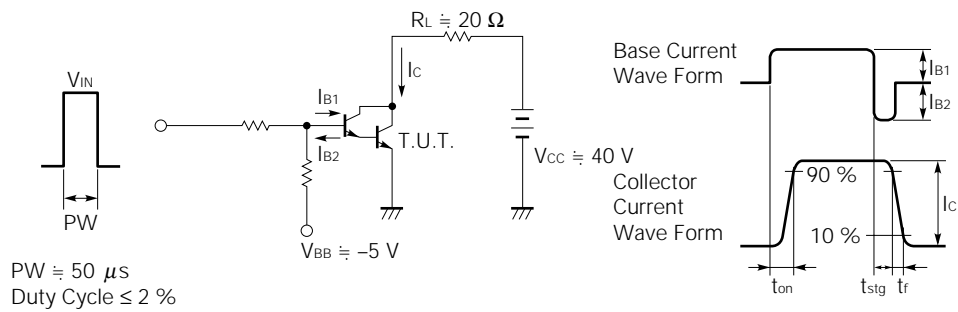
The information in this document is subject to change without notice.

ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)

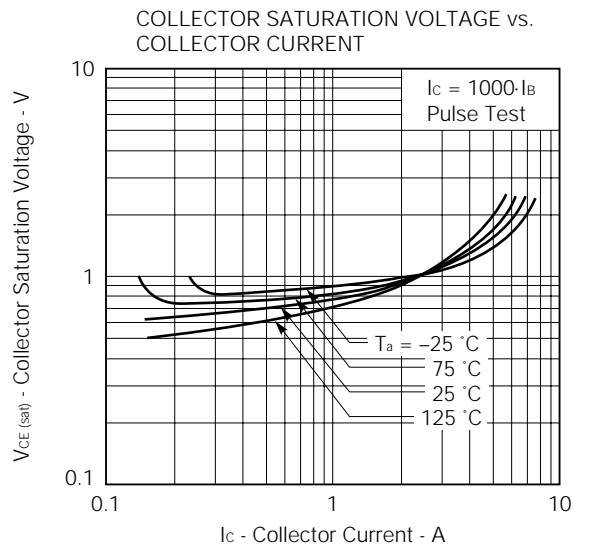
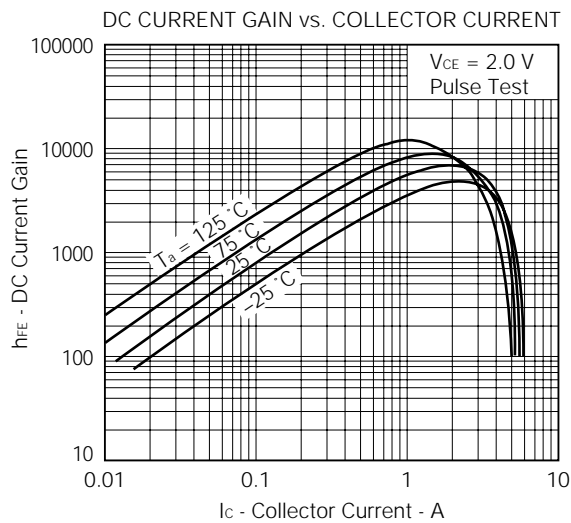
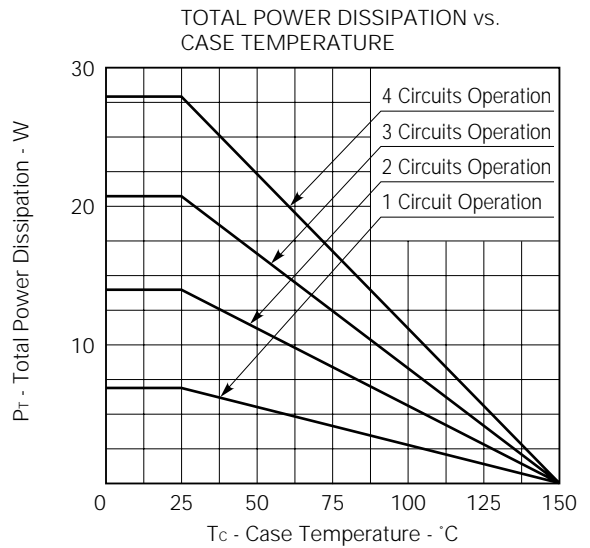
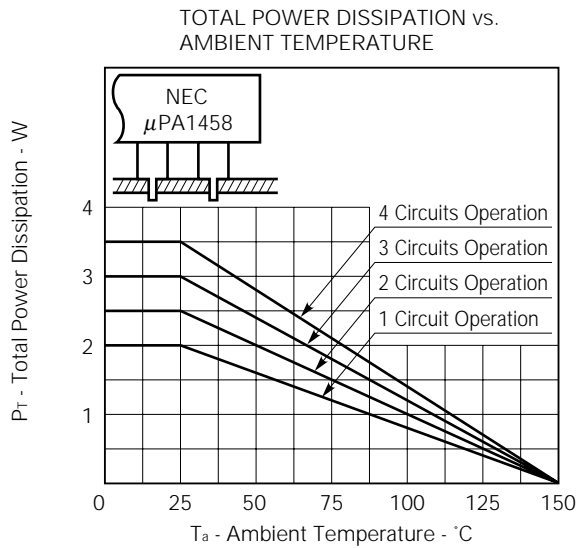
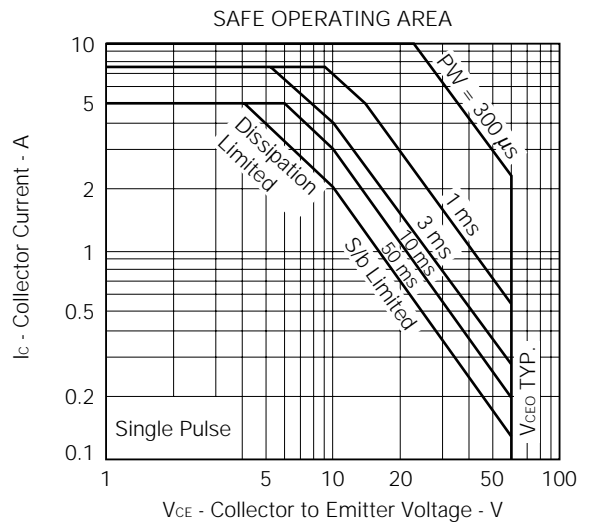
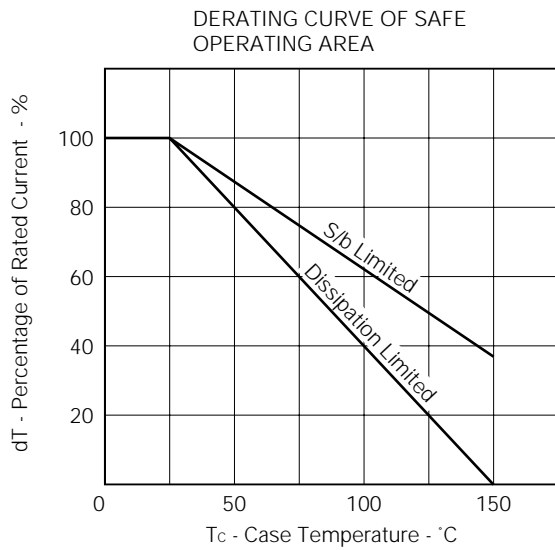
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Leakage Current	I <sub>CEs</sub>			10	μA	V <sub>CE</sub> = 40 V
Emitter Leakage Current	I <sub>EBO</sub>			10	mA	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0
Collector to Emitter Sustaining Voltage	V <sub>CEO(sus)</sub>	50	60	70	V	I <sub>C</sub> = 3 A, L = 1 mH
DC Current Gain	h <sub>FE1</sub> *	2000	7000	20000	—	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 2 A
DC Current Gain	h <sub>FE2</sub> *	500	3000		—	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 4 A
Collector Saturation Voltage	V <sub>CE(sat)</sub> *		0.9	1.5	V	I <sub>C</sub> = 2 A, I <sub>B</sub> = 2 mA
Base Saturation Voltage	V <sub>BE(sat)</sub> *		1.6	2	V	I <sub>C</sub> = 2 A, I <sub>B</sub> = 2 mA
Turn On Time	t <sub>on</sub>		1		μs	I <sub>C</sub> = 2 A
Storage Time	t <sub>stg</sub>		7		μs	I <sub>B1</sub> = -I <sub>B2</sub> = 2 mA V <sub>CC</sub> ≅ 40 V, R <sub>L</sub> ≅ 20 Ω
Fall Time	t <sub>f</sub>		2		μs	See test circuit

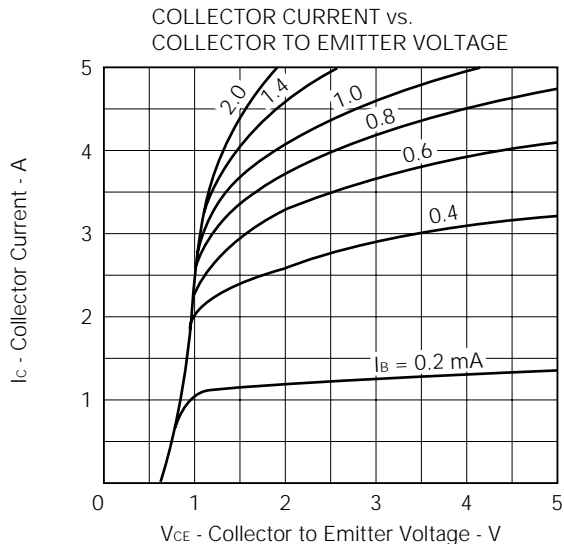
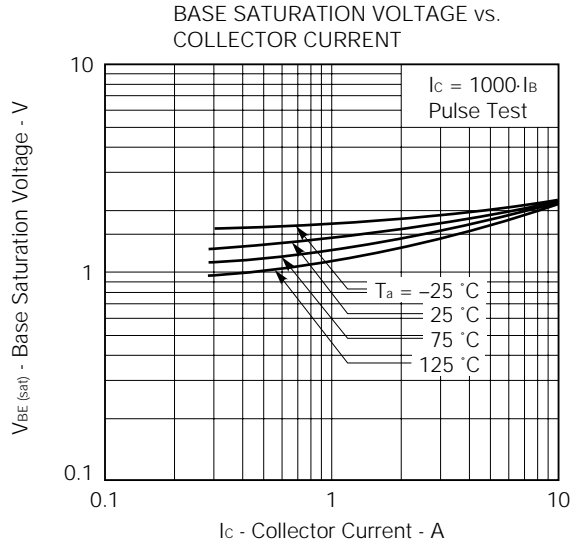
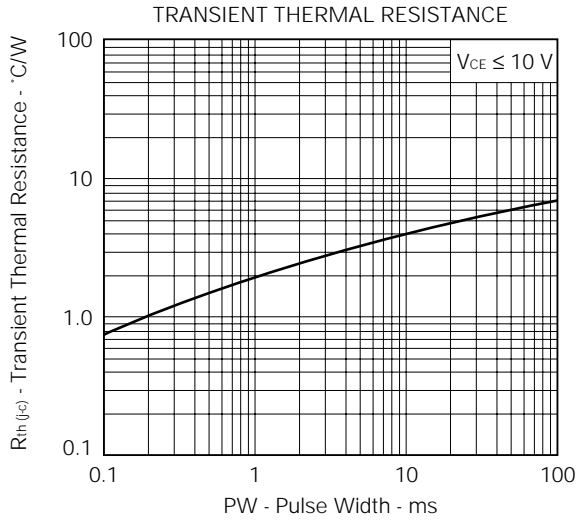
\* PW ≤ 350 μs, Duty Cycle ≤ 2 % / pulsed

SWITCHING TIME TEST CIRCUIT



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





## 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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