

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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# HA17555 Series

## Precision Timer

REJ03D0681-0100  
 (Previous: ADE-204-064)  
 Rev.1.00  
 Jun 15, 2005

### Description

HA17555 Series are ICs designed for accurate time delays or oscillations. It provides both of trigger terminal and reset terminal in order to enable a wide scope of application including Mono Multi Vibrator and Astable Multi Vibrator, and the number of external components is fewer. Further, it's compatible with NE555 of singnetics.

### Features

- Mono multi vibrator can be constructed with one resistor and one capacitor.
- Astable multi vibrator can be constructed with two resistors and one capacitor.
- Delay time can be established widely from several  $\mu$  seconds to several hours.
- Pulse Duty can be controlled.
- The maximum value of both sink current and source current is 200mA.
- Direct connection of output to TTL is possible.
- Temperature/delay time ratio is 50 ppm/ $^{\circ}$ C (typ).
- Output is normally in the on and off states.

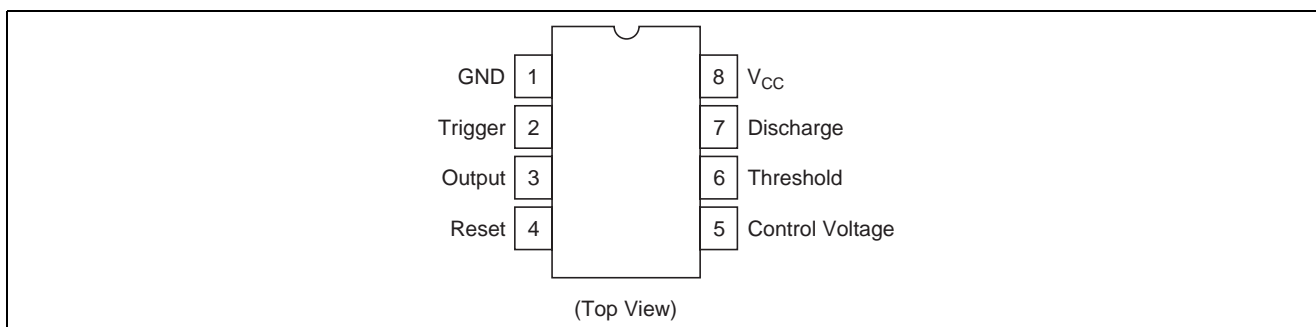
### Ordering Information

Application	Type No.	Package Code (Previous Code)
Industrial use	HA17555PS	PRDP0008AF-A (DP-8B)
	HA17555FP	PRSP0008DE-B (FP-8DGV)
Commercial use	HA17555	PRDP0008AF-A (DP-8B)
	HA17555F	PRSP0008DE-B (FP-8DGV)

### Applications

- Delay Time Generator (Mono Multi Vibrator)
- Pulse Generator (Astable Multi Vibrator)
- Pulse Width Modulator
- Pulse Location Modulator
- Miss Pulse Detector

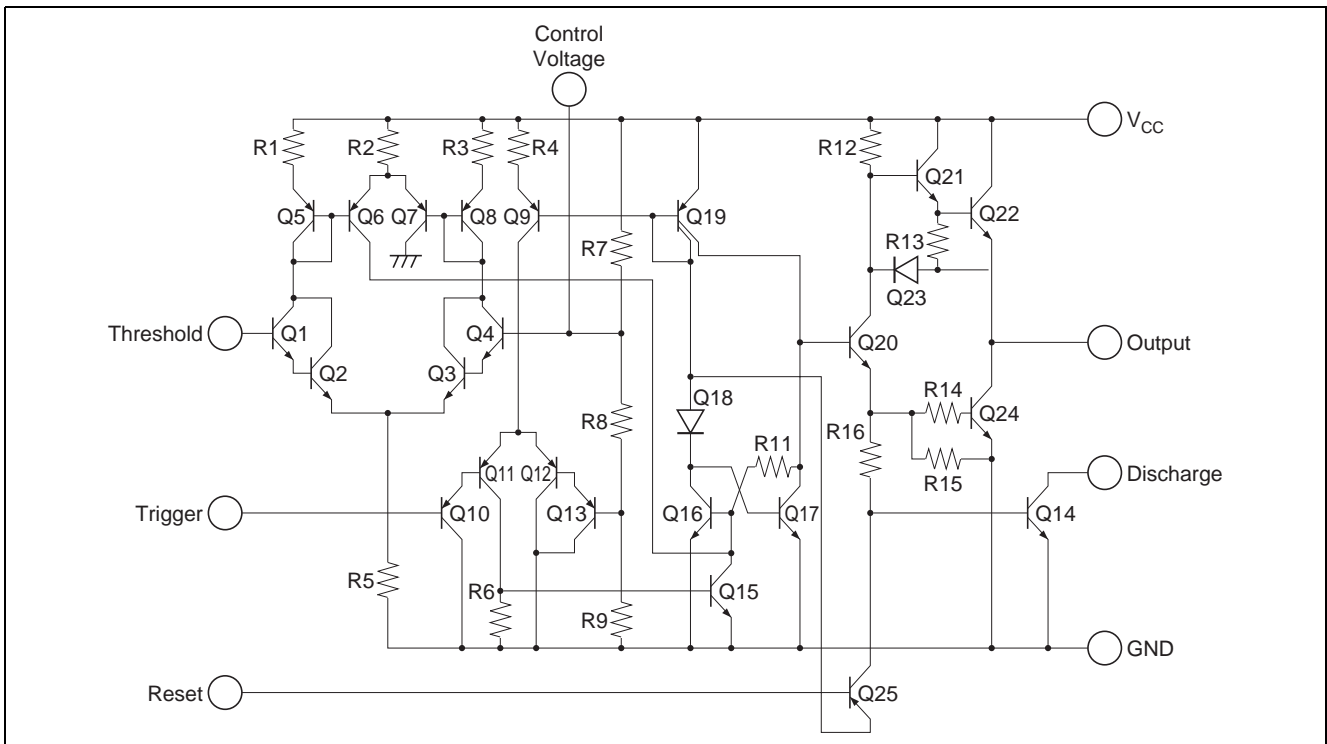
### Pin Arrangement



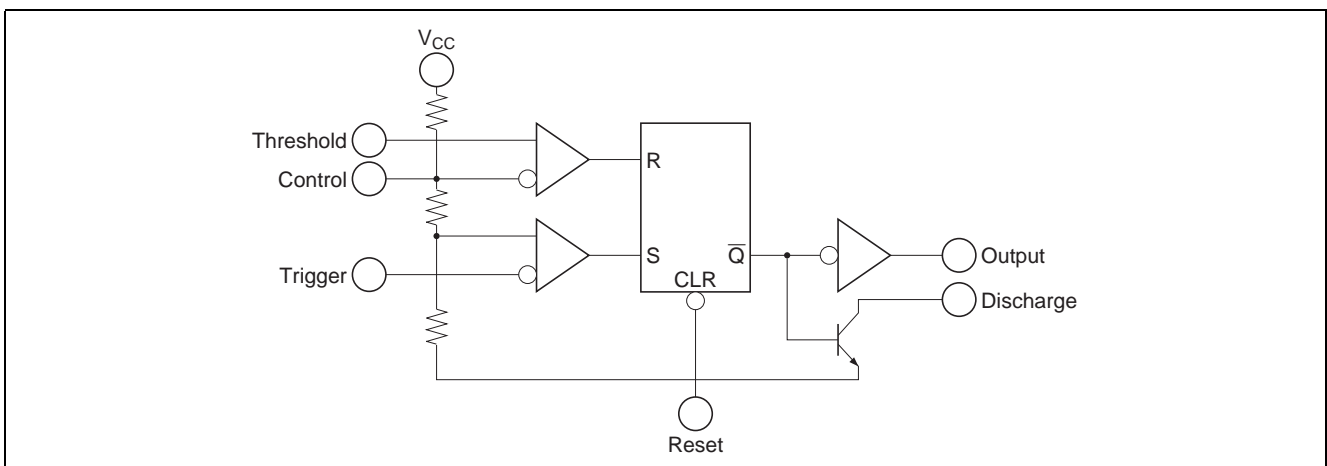
Pin Description

Pin No.	Function
1	Ground pin
2	Trigger pin
3	Output pin
4	Reset pin
5	Control voltage pin
6	Threshold pin
7	Discharge pin
8	V <sub>CC</sub> pin

Circuit Schematic



Block Diagram



**Absolute Maximum Ratings**

(Ta = 25°C)

Item	Symbol	HA17555PS/FP	HA17555/F	Unit
Supply voltage	V <sub>CC</sub>	18	18	V
Discharge current	I <sub>T</sub>	200	200	mA
Output source current	I <sub>source</sub>	200	200	mA
Output sink current	I <sub>sink</sub>	200	200	mA
Power dissipation* <sup>1</sup>	P <sub>T</sub>	600/385	600/385	mW
Operating temperature	T <sub>opr</sub>	-20 to +75	-20 to +70	°C
Storage temperature	T <sub>stg</sub>	-55 to +125	-55 to +125	°C

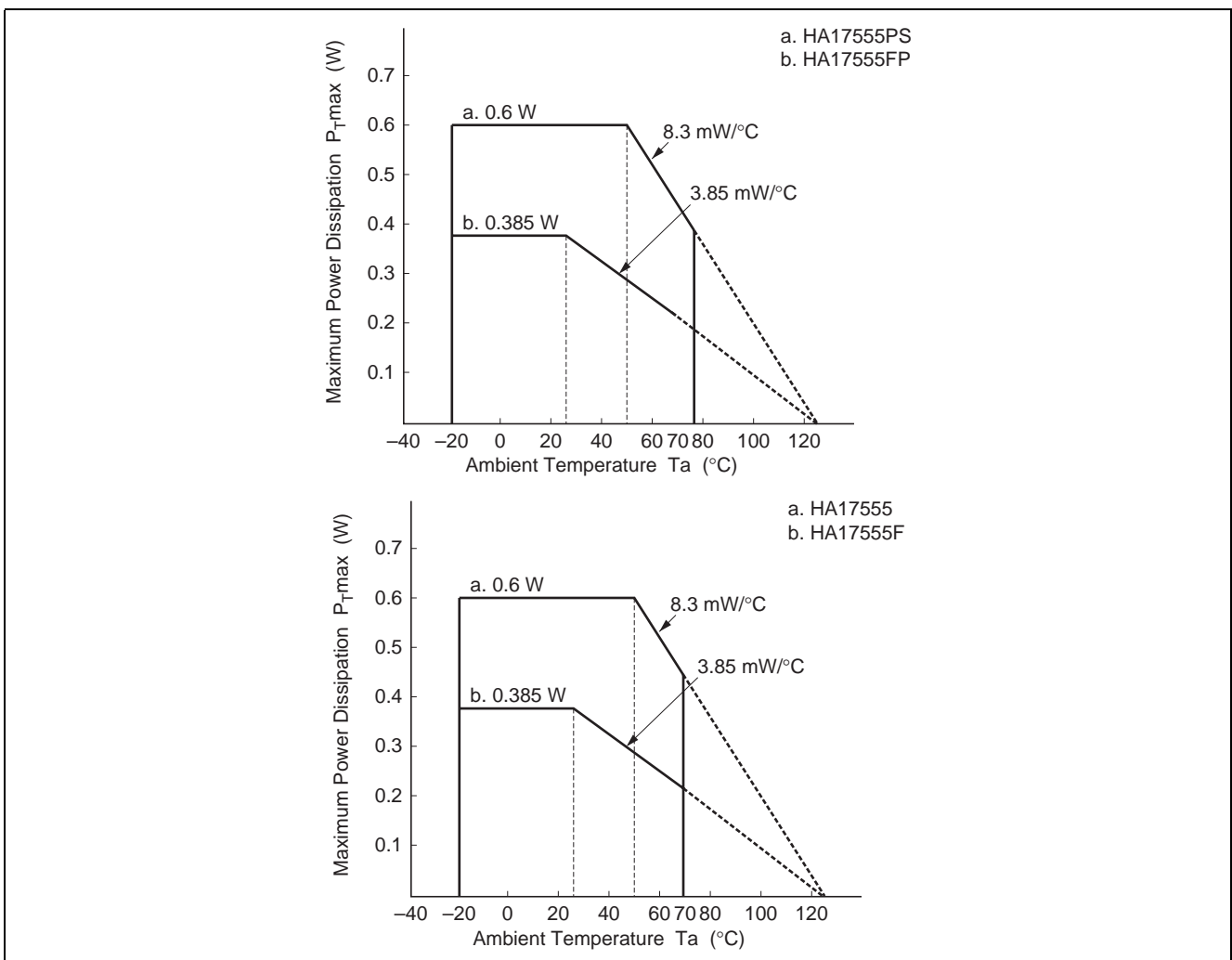
Note: 1. For the HA17555/PS,

This value applies up to Ta = 50°C; at temperatures above this, 8.3mW/°C derating should be applied.

For the HA17555F/FP,

This value applies up to Ta = 25°C; at temperatures above this, 3.85mW/°C derating should be applied.

See notes on SOP Package Usage in Reliability section.



## Electrical Characteristics

(V<sub>CC</sub> = 5 to 15 V, Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Supply voltage* <sup>1</sup>	V <sub>CC</sub>	4.5	—	16.0	V	
Supply current	I <sub>CC</sub>	—	3.0	6.0	mA	V <sub>CC</sub> = 5 V, R <sub>L</sub> = ∞
	I <sub>CC</sub>	—	10	15	mA	V <sub>CC</sub> = 15 V, R <sub>L</sub> = ∞
Timing error* <sup>2</sup> (Inherent error)	Et	—	1.0	—	%	
Timing error* <sup>2</sup> (Ta dependency)	Et	—	50	—	ppm/°C	Ta = -20 to +75°C
Timing error* <sup>2</sup> (Voltage dependency)	Et	—	0.01	—	%/V	V <sub>CC</sub> = 5 to 15 V
Threshold voltage	V <sub>th</sub>	—	2/3	—	V × V <sub>CC</sub>	
Trigger voltage	V <sub>T</sub>	—	5.0	—	V	V <sub>CC</sub> = 15 V
	V <sub>T</sub>	—	1.67	—	V	V <sub>CC</sub> = 5 V
Trigger current	I <sub>T</sub>	—	0.5	—	μA	
Reset voltage	V <sub>R</sub>	0.2	0.5	1.0	V	
Reset current	I <sub>R</sub>	—	0.1	—	mA	
Threshold current	I <sub>th</sub> * <sup>3</sup>	—	0.1	0.25	μA	
Control voltage	V <sub>CL</sub>	9	10	11	V	V <sub>CC</sub> = 15 V
	V <sub>CL</sub>	2.6	3.33	4.0	V	V <sub>CC</sub> = 5 V
Output voltage	V <sub>OL</sub>	—	0.1	0.25	V	V <sub>CC</sub> = 15 V, I <sub>sink</sub> = 10 mA
		—	0.4	0.75	V	V <sub>CC</sub> = 15 V, I <sub>sink</sub> = 50 mA
		—	2.0	2.5	V	V <sub>CC</sub> = 15 V, I <sub>sink</sub> = 100 mA
		—	2.5	—	V	V <sub>CC</sub> = 15 V, I <sub>sink</sub> = 200 mA
		—	0.25	0.35	V	V <sub>CC</sub> = 5 V, I <sub>sink</sub> = 5 mA
Output voltage	V <sub>OH</sub>	—	12.5	—	V	V <sub>CC</sub> = 15 V, I <sub>source</sub> = 200 mA
		12.75	13.3	—	V	V <sub>CC</sub> = 15 V, I <sub>source</sub> = 100 mA
		2.75	3.3	—	V	V <sub>CC</sub> = 5 V, I <sub>source</sub> = 100 mA
Output rise time	t <sub>r</sub>	—	100	—	ns	No loading
Output fall time	t <sub>f</sub>	—	100	—	ns	No loading
Oscillation pulse width* <sup>4</sup>	t <sub>w</sub>	10.0	—	—	ns	

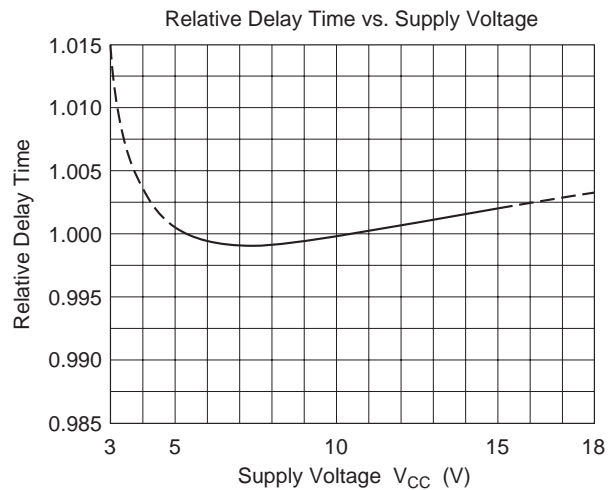
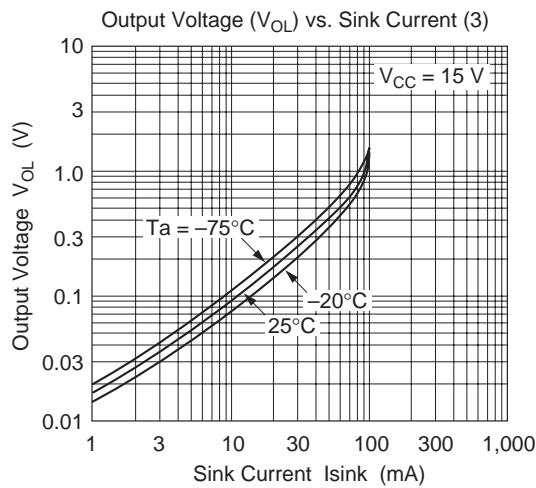
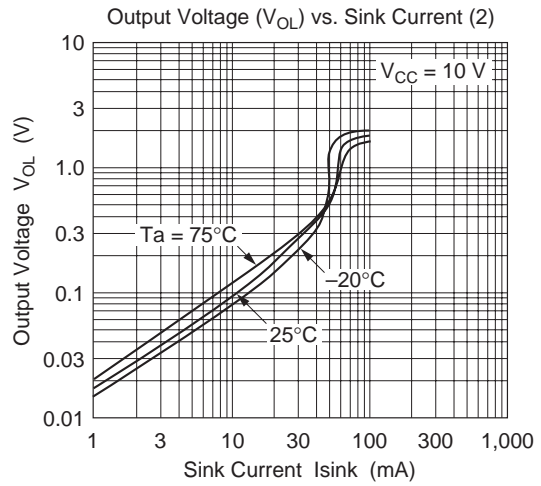
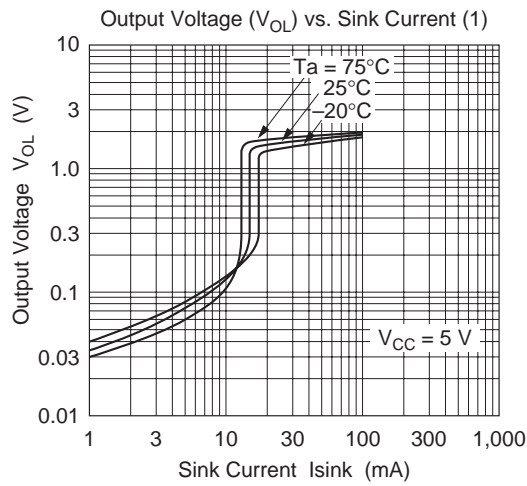
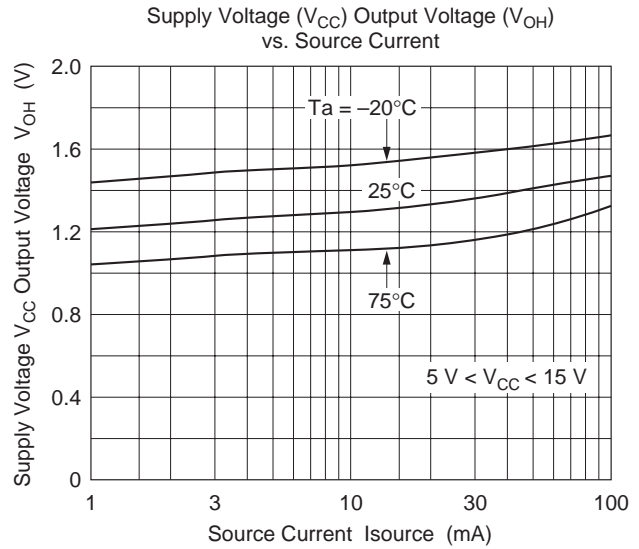
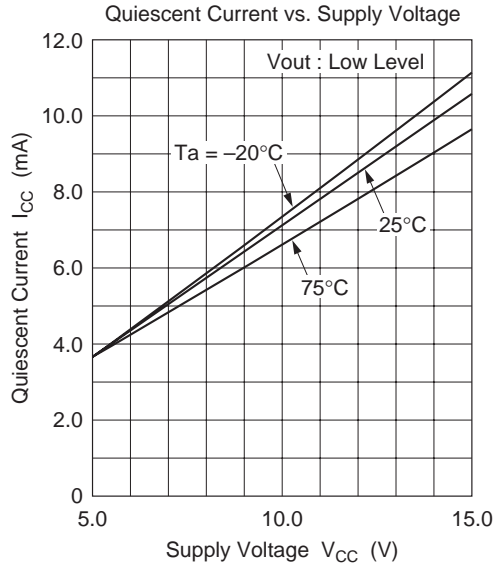
Notes: 1. When output is low (When it is high, I<sub>CC</sub> is lower by 1 mA typically.)

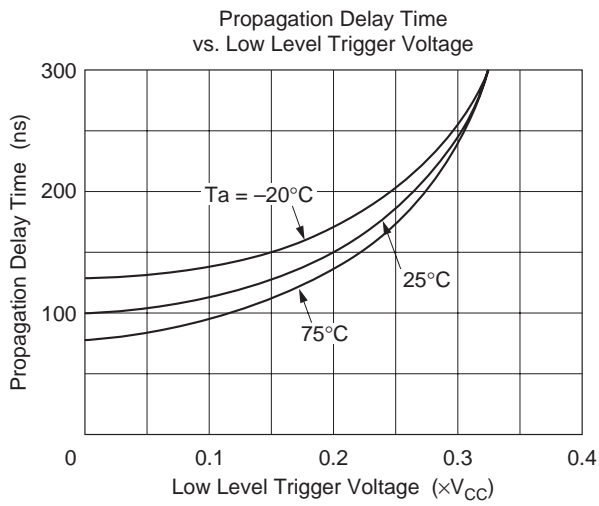
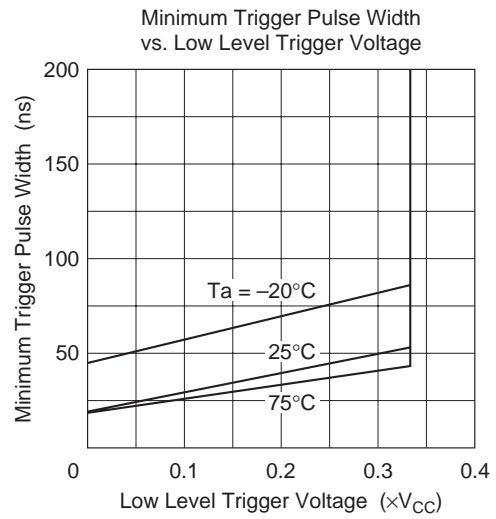
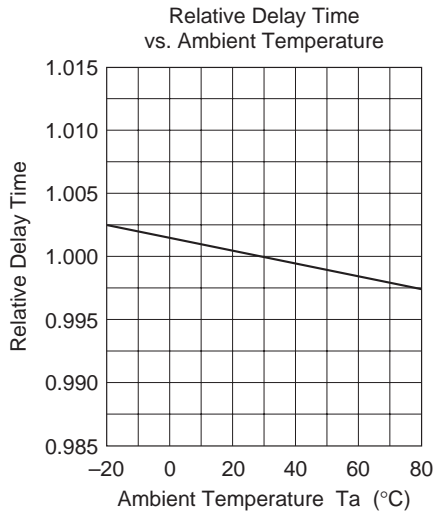
2. R<sub>A</sub>, R<sub>B</sub> = 1 k to 100 kΩ, C = 0.1 μF, V<sub>CC</sub> = 5 V or 15 V.

3. (R<sub>A</sub> + R<sub>B</sub>) at V<sub>CC</sub> = 15 V is determined by the value of I<sub>th</sub>. It is 20 MΩ Max.

4. Output pulse width at mono multi circuit. Output high level pulse width at astable circuit.

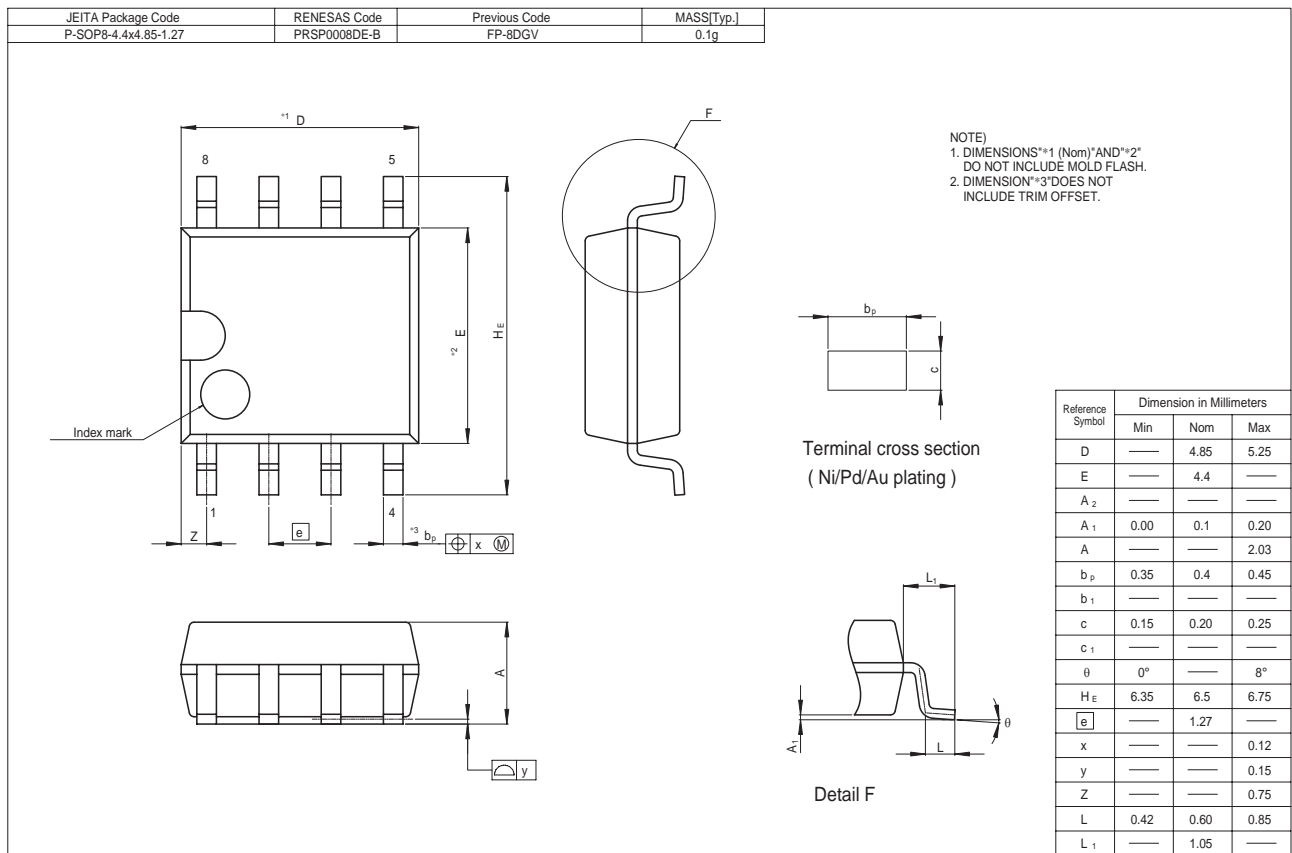
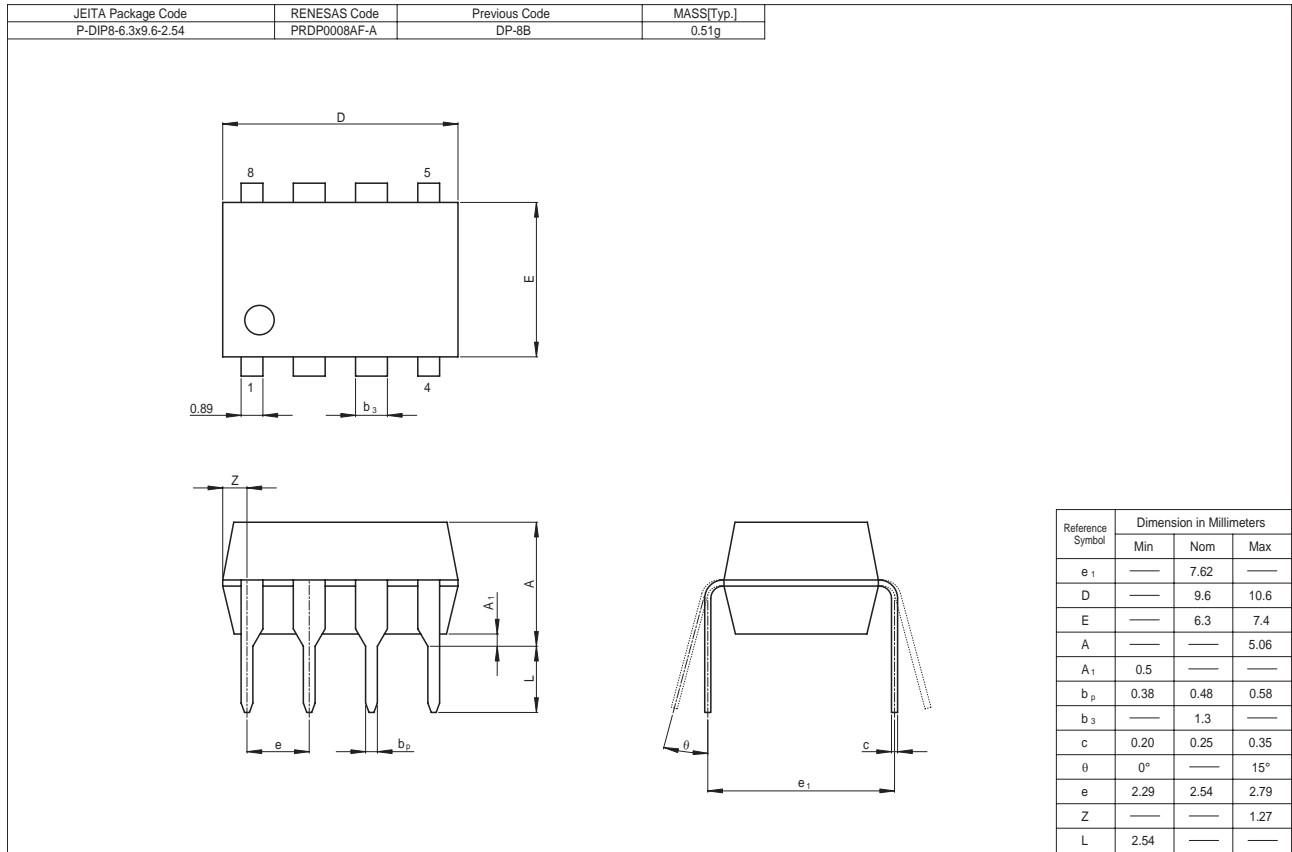
Characteristic Curves







### Package Dimensions



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