To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

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Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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HA179L06/09/10 Series

3-terminal Negative Fixed Voltage Regulators

REJ03D0919-0100
Rev.1.00
Jan 16, 2009

Description

The HA179L06/09/10 series are three-terminal fixed output voltage regulators. These are small outline packages which are useful ICs. For application example, as Zener diodes, easy stabilized power sources.

Features

- Some kinds output voltage series
- Superior ripple rejection ratio for audio frequency
- Large maximum power dissipation: 800 mW
- Over current and over temperature protection
- Ordering Information

Part No.	Output Voltage (V)	Output Voltage Tolerance (%)	Package Name	Package Code	Taping Abbreviation (Quantity)	Application
HA179L06-TZ	–6	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L06P-TZ						Industrial use
HA179L06U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use
HA179L09-TZ	–9	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L09P-TZ						Industrial use
HA179L09U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use
HA179L10-TZ	–10	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L10P-TZ						Industrial use
HA179L10U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use

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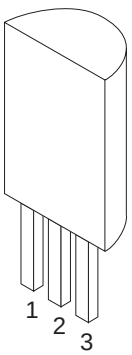
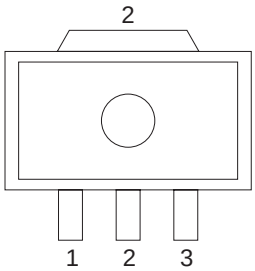
Pin Arrangement

- **TO-92MOD**



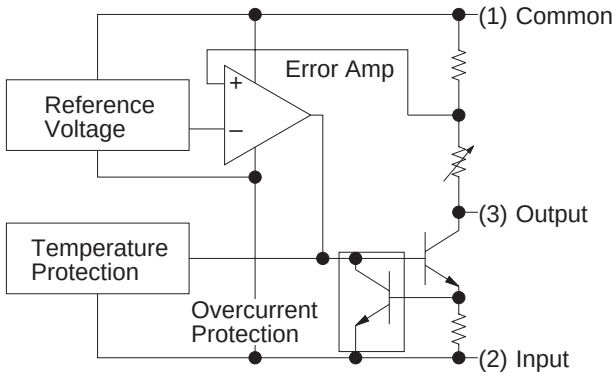
1. Common
2. Input
3. Output

- **UPAK**

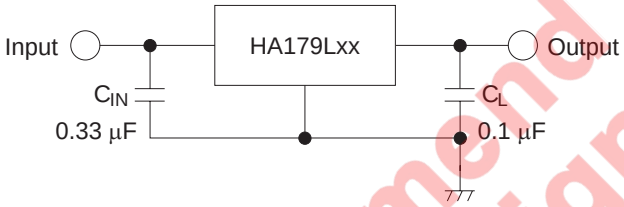


1. Common
2. Input
3. Output

Block Diagram



Standard Circuit



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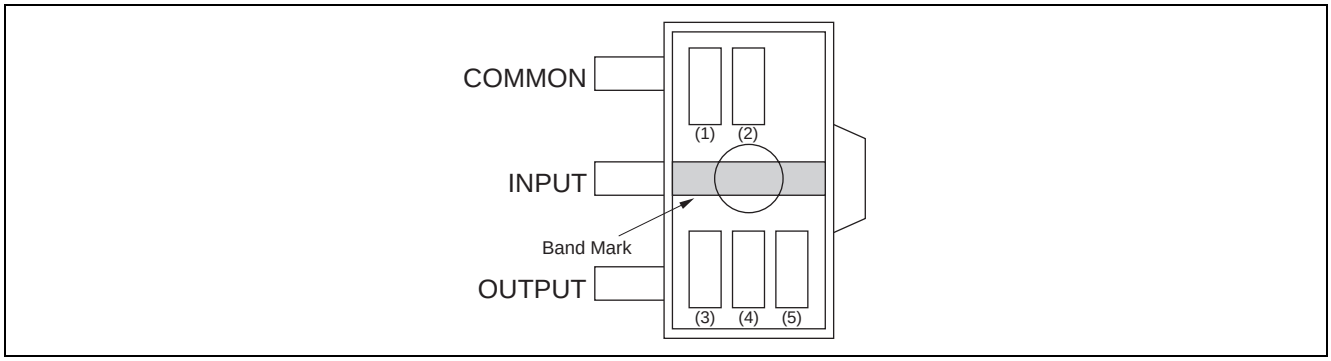
UPAK Product (HA179LxxU) Mark Patterns

The mark patterns shown below are used on UPAK products, as the package is small. Note that the product code and mark pattern are different.

The pattern is laser-printed.



Notes: 1. Boxes (1) to (5) in the figures show the position of the letters or numerals, and are not actually marked on the package.
2. (1) and (2) show the product-specific mark pattern. (see table 1)

Table 1

Output Voltage (V)	Type No.	Mark Pattern (2 digit)
–6	HA179L06U	9D
–9	HA179L09U	9F
–10	HA179L10U	9G

3. (3) shows the production year code (the last digit of the year).
4. (4) shows the production month code (see table 2).

Table 2

Production Month	1	2	3	4	5	6	7	8	9	10	11	12
Marked Code	A	B	C	D	E	F	G	H	J	K	L	M

5. (5) shows the production week code.

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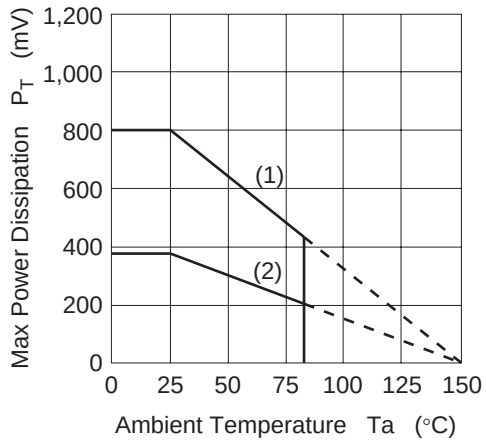
Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Rating		Unit
		HA179LxxP, HA179Lxx Series	HA179LxxU Series	
Input voltage	V_{IN}	–35	–35	V
Max power dissipation	P_T *1	800	800 *2	mW
Operating ambient temperature	Topr	–40 to +85	–40 to +85	°C
Storage temperature	Tstg	–55 to +150	–55 to +150	°C

Notes: 1. Ta ≤ 25°C, If Ta > 25°C, derate by 6.4 mW/°C
2. 15 mm × 25 mm × 0.7 mm glass epoxy board, Ta ≤ 25°C



(1) HA179LxxP, HA179Lxx
HA179LxxU
15 mm × 25 mm × 0.7 mm Alumina Ceramic Board
(2) HA179LxxU at non-mounted

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Electrical Characteristics

HA179L06P, HA179L06, HA179L06U

(V_{IN} = –11 V, I_{OUT} = 40 mA, 0°C ≤ Tj ≤ 125°C, C_{IN} = 0.33 µF, C_L = 0.1 µF)

Item	Symbol	Min	Typ	Max	Unit	Test Condition	
Output voltage	V_{OUT}	–5.76	–6.0	–6.24	V	Tj = 25°C	
		–5.70	—	–6.30		V_{IN} = –11 V, 1.0 mA ≤ I_{OUT} ≤ 70 mA	
Line regulation	ΔV_{OLINE}	—	50	150	mV	Tj = 25°C	–21 V ≤ V_{IN} ≤ –8.1 V
		—	45	110			–21 V ≤ V_{IN} ≤ –9.0 V
Load regulation	ΔV_{OLOAD}	—	17.5	—	mV	Tj = 25°C	1.0 mA ≤ I_{OUT} ≤ 150 mA
		—	12	70			1.0 mA ≤ I_{OUT} ≤ 100 mA
			5.5	35			1.0 mA ≤ I_{OUT} ≤ 40 mA
Quiescent current	I_Q	—	2.0	4.0	mA	Tj = 25°C	
Quiescent current change	ΔI_Q	—	—	1.5	mA	Tj = 25°C	–21 V ≤ V_{IN} ≤ –9.0 V
		—	—	1.0			1.0 mA ≤ I_{OUT} ≤ 40 mA
Voltage drop	V_{DROP}	—	1.3	—	V	Tj = 25°C	
Output short circuit current	I_{OS}	—	300	—	mA	Tj = 25°C	

HA179L09P, HA179L09, HA179L09U

(V_{IN} = –15 V, I_{OUT} = 40 mA, 0°C ≤ Tj ≤ 125°C, C_{IN} = 0.33 µF, C_L = 0.1 µF)

Item	Symbol	Min	Typ	Max	Unit	Test Condition	
Output voltage	V_{OUT}	–8.64	–9.0	–9.36	V	Tj = 25°C	
		–8.55	—	–9.45		V_{IN} = –15 V, 1.0 mA ≤ I_{OUT} ≤ 70 mA	
Line regulation	ΔV_{OLINE}	—	80	200	mV	Tj = 25°C	–24 V ≤ V_{IN} ≤ –11.4 V
		—	70	160			–24 V ≤ V_{IN} ≤ –12 V
Load regulation	ΔV_{OLOAD}	—	24.5	—	mV	Tj = 25°C	1.0 mA ≤ I_{OUT} ≤ 150 mA
		—	17	90			1.0 mA ≤ I_{OUT} ≤ 100 mA
		—	8.0	45			1.0 mA ≤ I_{OUT} ≤ 40 mA
Quiescent current	I_Q	—	2.6	4.6	mA	Tj = 25°C	
Quiescent current change	ΔI_Q	—	—	1.5	mA	Tj = 25°C	–24 V ≤ V_{IN} ≤ –12 V
		—	—	1.0			1.0 mA ≤ I_{OUT} ≤ 40 mA
Voltage drop	V_{DROP}	—	1.3	—	V	Tj = 25°C	
Output short circuit current	I_{OS}	—	270	—	mA	Tj = 25°C	

HA179L10P, HA179L10, HA179L10U

(V_{IN} = –16 V, I_{OUT} = 40 mA, 0°C ≤ Tj ≤ 125°C, C_{IN} = 0.33 µF, C_L = 0.1 µF)

Item	Symbol	Min	Typ	Max	Unit	Test Condition	
Output voltage	V_{OUT}	–9.6	–10	–10.4	V	Tj = 25°C	
		–9.50	—	–10.50		V_{IN} = –16 V, 1.0 mA ≤ I_{OUT} ≤ 70 mA	
Line regulation	ΔV_{OLINE}	—	80	230	mV	Tj = 25°C	–25 V ≤ V_{IN} ≤ –12.5 V
		—	70	170			–25 V ≤ V_{IN} ≤ –13 V
Load regulation	ΔV_{OLOAD}	—	26	—	mV	Tj = 25°C	1.0 mA ≤ I_{OUT} ≤ 150 mA
		—	18	90			1.0 mA ≤ I_{OUT} ≤ 100 mA
		—	8.5	45			1.0 mA ≤ I_{OUT} ≤ 40 mA
Quiescent current	I_Q	—	2.6	4.6	mA	Tj = 25°C	
Quiescent current change	ΔI_Q	—	—	1.5	mA	Tj = 25°C	–25 V ≤ V_{IN} ≤ –13 V
		—	—	1.0			1.0 mA ≤ I_{OUT} ≤ 40 mA
Voltage drop	V_{DROP}	—	1.3	—	V	Tj = 25°C	
Output short circuit current	I_{OS}	—	260	—	mA	Tj = 25°C	

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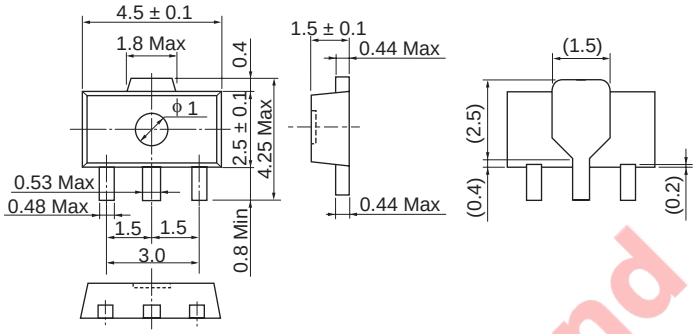
Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
UPAK	SC-62	PLZZ0004CA-A	UPAK / UPAKV	0.050g

Unit: mm



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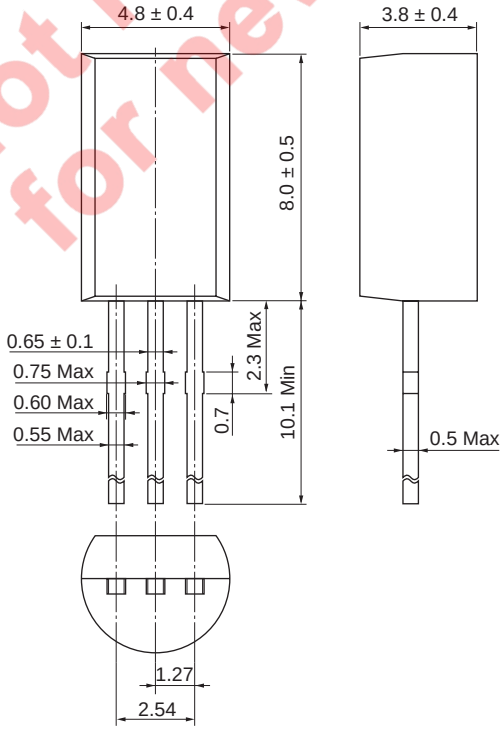
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-92 Mod	SC-51	PRSS0003DC-A	TO-92 Mod / TO-92 ModV	0.35g

Unit: mm



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