

# HA179L00 Series

## 3-terminal Negative Fixed Voltage Regulators

REJ03D0690-0300

Rev.3.00

Jan 16, 2009

### Description

The HA179L00 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

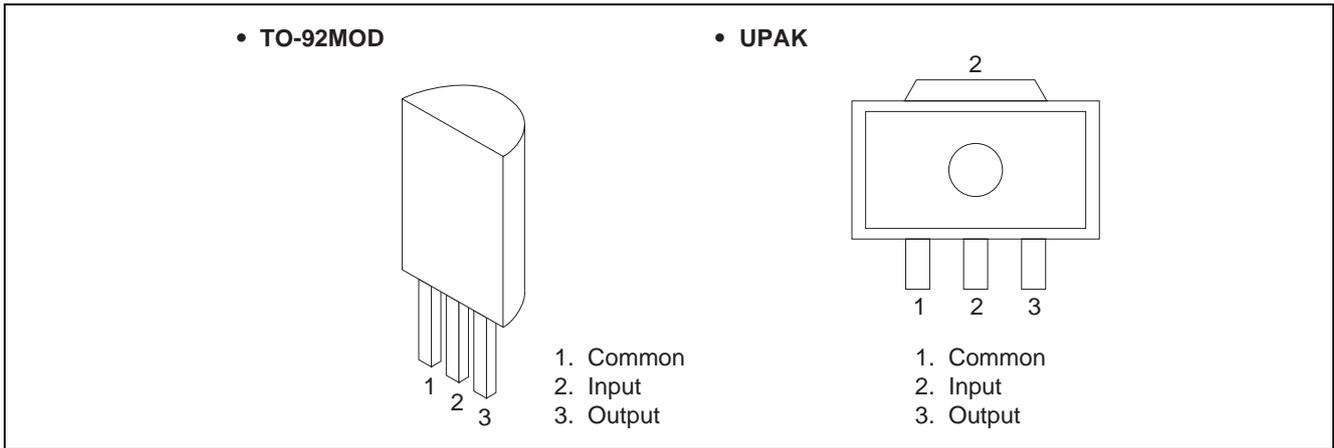
Part No.	Output Voltage (V)	Output Voltage Tolerance (%)	Package Name	Package Code	Taping Abbreviation (Quantity)	Application
HA179L05-TZ	-5	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L05P-TZ						Industrial use
HA179L05U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use

Part No.	Output Voltage (V)	Output Voltage Tolerance (%)	Package Name	Package Code	Taping Abbreviation (Quantity)	Application
HA179L08-TZ	-8	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L08P-TZ						Industrial use
HA179L08U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use

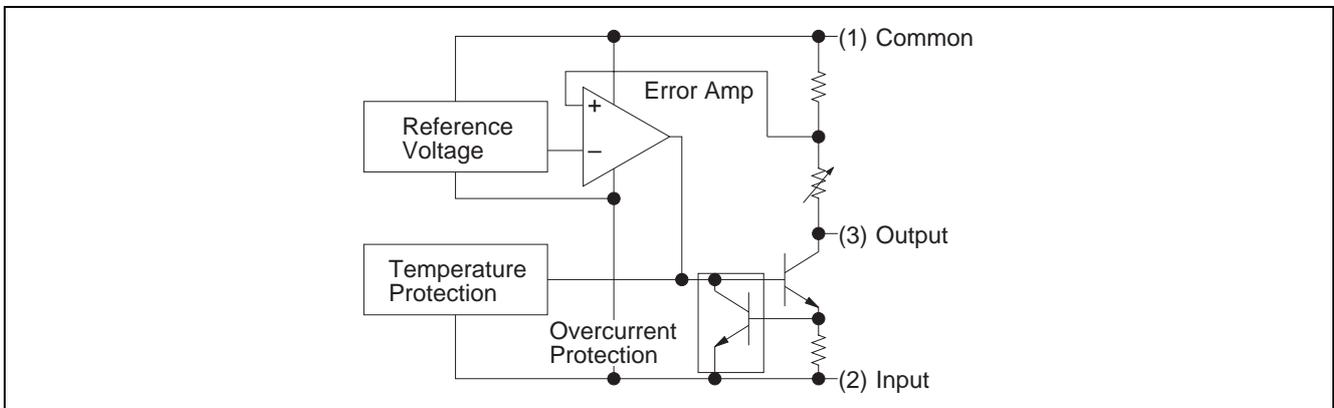
Part No.	Output Voltage (V)	Output Voltage Tolerance (%)	Package Name	Package Code	Taping Abbreviation (Quantity)	Application
HA179L12-TZ	-12	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L12P-TZ						Industrial use
HA179L12U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use

Part No.	Output Voltage (V)	Output Voltage Tolerance (%)	Package Name	Package Code	Taping Abbreviation (Quantity)	Application
HA179L15-TZ	-15	±4	TO-92MOD	PRSS0003DC-A	TZ (2,500pcs/box)	Commercial use
HA179L15P-TZ						Industrial use
HA179L15U-TL			UPAK	PLZZ0004CA-A	TL (1,000pcs/reel)	Commercial use

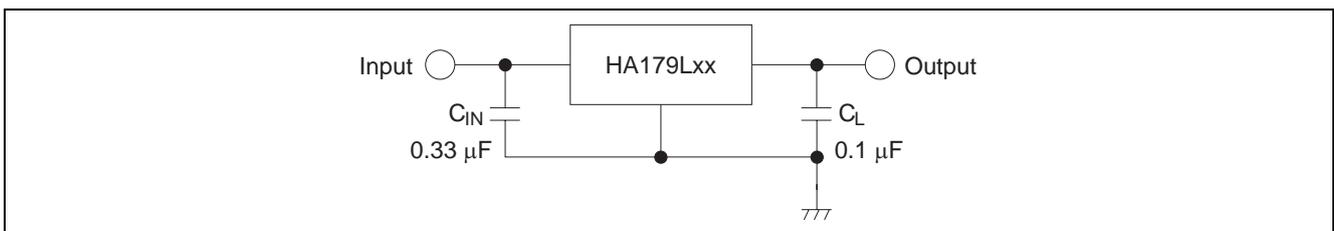
## Pin Arrangement



## Block Diagram



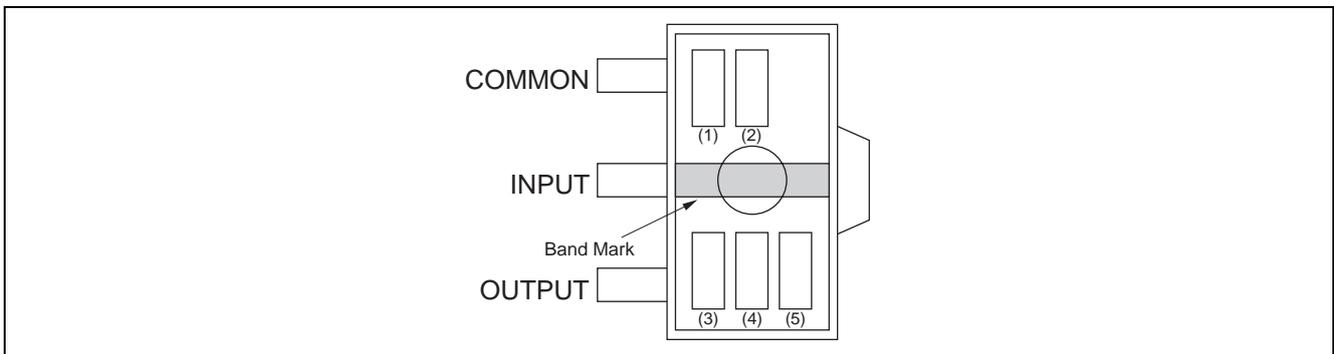
## Standard Circuit



## UPAK Product (HA179L00U) 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)
-5	HA179L05U	9B
-8	HA179L08U	9E
-12	HA179L12U	9H
-15	HA179L15U	9J

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

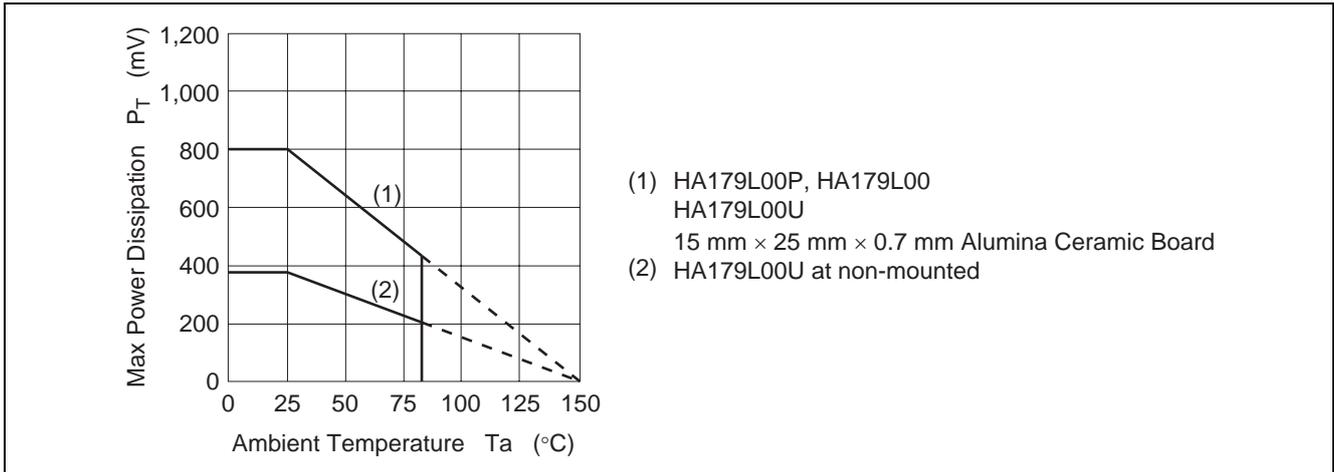
5. (5) shows the production week code.

**Absolute Maximum Ratings**

(Ta = 25°C)

Item	Symbol	Rating		Unit
		HA179L00P, HA179L00 Series	HA179L00U Series	
Input voltage	V <sub>IN</sub>	-35	-35	V
Max power dissipation	P <sub>T</sub> *1	800	800 *2	mW
Operating ambient temperature	T <sub>opr</sub>	-40 to +85	-40 to +85	°C
Storage temperature	T <sub>stg</sub>	-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



## Electrical Characteristics

## HA179L05P, HA179L05, HA179L05U

(V<sub>IN</sub> = -10 V, I<sub>OUT</sub> = 40 mA, 0°C ≤ T<sub>j</sub> ≤ 125°C, C<sub>IN</sub> = 0.33 μF, C<sub>L</sub> = 0.1 μF)

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output voltage	V <sub>OUT</sub>	-4.8	-5.0	-5.2	V	T <sub>j</sub> = 25°C
		-4.75	—	-5.25		V <sub>IN</sub> = -10 V, 1.0 mA ≤ I <sub>OUT</sub> ≤ 70 mA
Line regulation	ΔV <sub>OLINE</sub>	—	55	150	mV	T <sub>j</sub> = 25°C
		—	45	100		-20 V ≤ V <sub>IN</sub> ≤ -7 V -20 V ≤ V <sub>IN</sub> ≤ -8 V
Load regulation	ΔV <sub>OLOAD</sub>	—	16	—	mV	T <sub>j</sub> = 25°C
		—	11	60		1.0 mA ≤ I <sub>OUT</sub> ≤ 150 mA 1.0 mA ≤ I <sub>OUT</sub> ≤ 100 mA
		—	5.0	30		1.0 mA ≤ I <sub>OUT</sub> ≤ 40 mA
Quiescent current	I <sub>Q</sub>	—	2.0	4.0	mA	T <sub>j</sub> = 25°C
Quiescent current change	ΔI <sub>Q</sub>	—	—	1.5	mA	T <sub>j</sub> = 25°C
		—	—	1.0		-20 V ≤ V <sub>IN</sub> ≤ -8.0 V 1.0 mA ≤ I <sub>OUT</sub> ≤ 40 mA
Voltage drop	V <sub>DROP</sub>	—	1.3	—	V	T <sub>j</sub> = 25°C
Output short circuit current	I <sub>OS</sub>	—	300	—	mA	T <sub>j</sub> = 25°C

## HA179L08P, HA179L08, HA179L08U

(V<sub>IN</sub> = -14 V, I<sub>OUT</sub> = 40 mA, 0°C ≤ T<sub>j</sub> ≤ 125°C, C<sub>IN</sub> = 0.33 μF, C<sub>L</sub> = 0.1 μF)

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output voltage	V <sub>OUT</sub>	-7.68	-8.0	-8.32	V	T <sub>j</sub> = 25°C
		-7.60	—	-8.40		V <sub>IN</sub> = -14 V, 1.0 mA ≤ I <sub>OUT</sub> ≤ 70 mA
Line regulation	ΔV <sub>OLINE</sub>	—	65	175	mV	T <sub>j</sub> = 25°C
		—	55	125		-23 V ≤ V <sub>IN</sub> ≤ -10.5 V -23 V ≤ V <sub>IN</sub> ≤ -11 V
Load regulation	ΔV <sub>OLOAD</sub>	—	22	—	mV	T <sub>j</sub> = 25°C
		—	15	80		1.0 mA ≤ I <sub>OUT</sub> ≤ 150 mA 1.0 mA ≤ I <sub>OUT</sub> ≤ 100 mA
		—	7.0	40		1.0 mA ≤ I <sub>OUT</sub> ≤ 40 mA
Quiescent current	I <sub>Q</sub>	—	2.0	4.0	mA	T <sub>j</sub> = 25°C
Quiescent current change	ΔI <sub>Q</sub>	—	—	1.5	mA	T <sub>j</sub> = 25°C
		—	—	1.0		-23 V ≤ V <sub>IN</sub> ≤ -11 V 1.0 mA ≤ I <sub>OUT</sub> ≤ 40 mA
Voltage drop	V <sub>DROP</sub>	—	1.3	—	V	T <sub>j</sub> = 25°C
Output short circuit current	I <sub>OS</sub>	—	270	—	mA	T <sub>j</sub> = 25°C

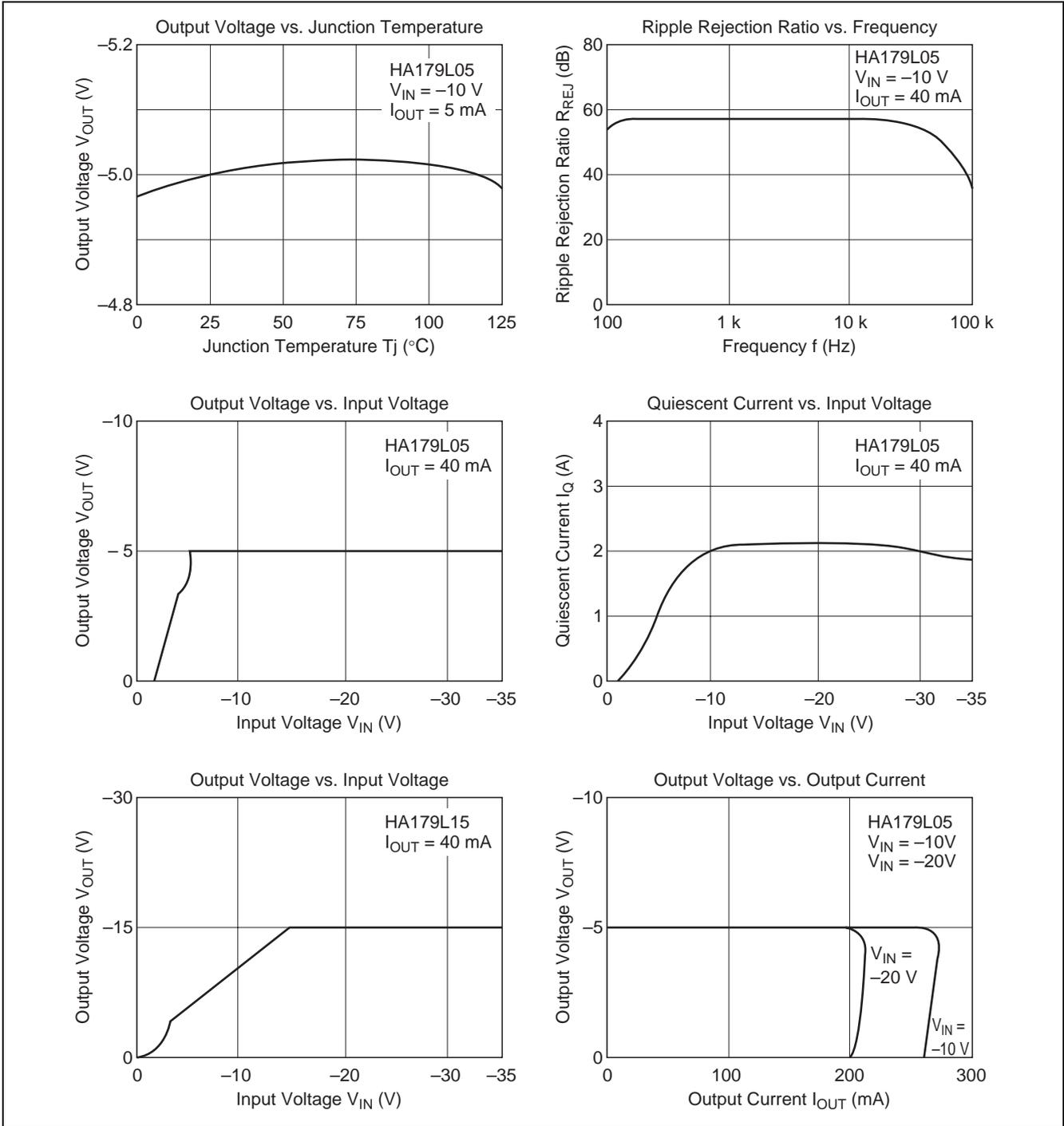
**HA179L12P, HA179L12, HA179L12U**
 $(V_{IN} = -19\text{ V}, I_{OUT} = 40\text{ mA}, 0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}, C_{IN} = 0.33\ \mu\text{F}, C_L = 0.1\ \mu\text{F})$ 

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output voltage	$V_{OUT}$	-11.52	-12	-12.48	V	$T_j = 25^{\circ}\text{C}$
		-11.40	—	-12.60		$V_{IN} = -19\text{ V}, 1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$
Line regulation	$\Delta V_{OLINE}$	—	120	250	mV	$T_j = 25^{\circ}\text{C}$
		—	100	200		$-27\text{ V} \leq V_{IN} \leq -14.5\text{ V}$ $-27\text{ V} \leq V_{IN} \leq -16\text{ V}$
Load regulation	$\Delta V_{OLOAD}$	—	28.5	—	mV	$T_j = 25^{\circ}\text{C}$
		—	20	100		$1.0\text{ mA} \leq I_{OUT} \leq 150\text{ mA}$
		—	10	50		$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$
Quiescent current	$I_Q$	—	2.6	4.6	mA	$T_j = 25^{\circ}\text{C}$
Quiescent current change	$\Delta I_Q$	—	—	1.5	mA	$T_j = 25^{\circ}\text{C}$
		—	—	1.0		$-27\text{ V} \leq V_{IN} \leq -16\text{ V}$ $1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$
Voltage drop	$V_{DROP}$	—	1.3	—	V	$T_j = 25^{\circ}\text{C}$
Output short circuit current	$I_{OS}$	—	250	—	mA	$T_j = 25^{\circ}\text{C}$

**HA179L15P, HA179L15, HA179L15U**
 $(V_{IN} = -23\text{ V}, I_{OUT} = 40\text{ mA}, 0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}, C_{IN} = 0.33\ \mu\text{F}, C_L = 0.1\ \mu\text{F})$ 

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output voltage	$V_{OUT}$	-14.4	-15	-15.6	V	$T_j = 25^{\circ}\text{C}$
		-14.25	—	-15.75		$V_{IN} = -23\text{ V}, 1.0\text{ mA} \leq I_{OUT} \leq 70\text{ mA}$
Line regulation	$\Delta V_{OLINE}$	—	130	300	mV	$T_j = 25^{\circ}\text{C}$
		—	110	250		$-30\text{ V} \leq V_{IN} \leq -17.5\text{ V}$ $-30\text{ V} \leq V_{IN} \leq -20\text{ V}$
Load regulation	$\Delta V_{OLOAD}$	—	36	—	mV	$T_j = 25^{\circ}\text{C}$
		—	25	150		$1.0\text{ mA} \leq I_{OUT} \leq 150\text{ mA}$
		—	12	75		$1.0\text{ mA} \leq I_{OUT} \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$
Quiescent current	$I_Q$	—	2.6	4.6	mA	$T_j = 25^{\circ}\text{C}$
Quiescent current change	$\Delta I_Q$	—	—	1.5	mA	$T_j = 25^{\circ}\text{C}$
		—	—	1.0		$-30\text{ V} \leq V_{IN} \leq -20\text{ V}$ $1.0\text{ mA} \leq I_{OUT} \leq 40\text{ mA}$
Voltage drop	$V_{DROP}$	—	1.3	—	V	$T_j = 25^{\circ}\text{C}$
Output short circuit current	$I_{OS}$	—	240	—	mA	$T_j = 25^{\circ}\text{C}$

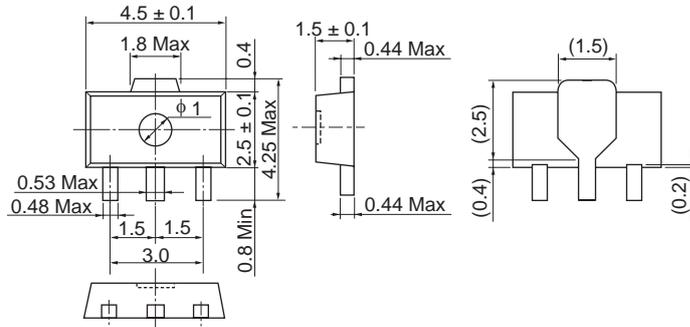
Characteristic Curves



Package Dimensions

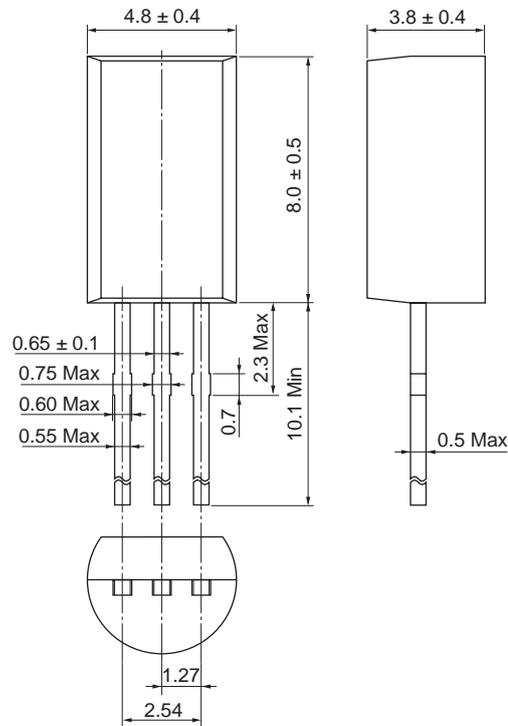
Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
UPAK	SC-62	PLZZ0004CA-A	UPAK / UPAKV	0.050g

Unit: mm



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



Notes:

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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology (Shanghai) Co., Ltd.**  
Unit 204, 205, AZIACenter, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120  
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7858/7898

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7th Floor, North Tower, World Finance Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong  
Tel: <852> 2265-6688, Fax: <852> 2377-3473

**Renesas Technology Taiwan Co., Ltd.**  
10th Floor, No.99, Fushing North Road, Taipei, Taiwan  
Tel: <886> (2) 2715-2888, Fax: <886> (2) 3518-3399

**Renesas Technology Singapore Pte. Ltd.**  
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

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Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**  
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510