PQ15RW08/PQ15RW11/PQ15RW21

Variable Output, General Purpose Type Low Power-Loss Voltage Regulator

■ Features

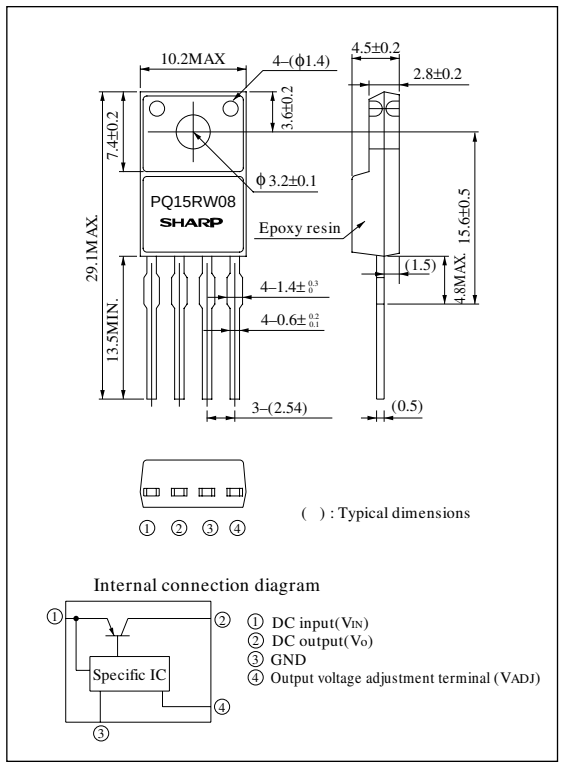
- Low power-loss
  (Dropout voltage: MAX. 0.5V at Io=0.5A [PQ15RW08/11],
  Io=2A [PQ15RW21])
- Compact resin mold package(equivalent to TO-220)
- Variable output voltage(3.0 to 15V)
- Low voltage operation (Minimum supply voltage: 3.5V)
- Reference voltage precision: ±2.5%
- Built-in overcurrent, overheat protection functions, ASO protection circuit
- Lead forming type is also available.

■ Applications

- Power supplies for various electronic equipment such as AV, OA eguipment

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Ta=25˚C)

Parameter	Symbol	Rating			Unit
		PQ15RW08	PQ15RW11	PQ15RW21	
※1 Input voltage	V_{IN}	20			V
※1 Output adjustment terminal voltage	V_{ADJ}	5			V
Output current	Io	0.8	1.0	2.0	A
※2 Power dissipation	P_{D1}	1.25	1.4		W
	P_{D2}	10	15		W
※3 Junction temperature	T_j	150			˚C
Operating temperature	T_{opr}	-20 to +80			˚C
Storage temperature	T_{stg}	-40 to +150			˚C
Soldering temperature	T_{sol}	260(For 10s)			˚C

※1 All are open except GND and applicable terminals.

※2 P_{D1}: No heat sink, P_{D2}: With infinite heat sink

※3 Overheat protection may operate at 125<=Tj<=150˚C

• Please refer to the chapter " Handling Precautions ".

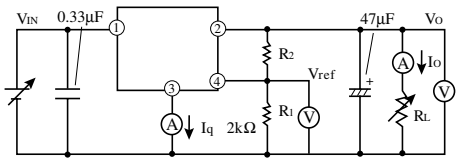
■ Electrical Characteristics (Unless otherwise specified, conditions shall be V_{IN}=5V, Vo=3.3V(R_1=2kΩ, R_2=500Ω), Io=0.5A)(T_a=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	—	3.5	—	20	V
Output voltage	Vo	—	3.0	—	15	V
Load regulation	R_{egL}	※4	—	0.3	2.0	%
Line regulation	R_{egI}	V_{IN}=5 to 15V, Io=5mA	—	0.5	2.5	%
Ripple rejection	RR	Refer to Fig. 2	45	55	—	dB
Reference voltage	V_{ref}	—	2.574	2.64	2.706	V
Temperature coefficient of reference voltage	T_cV_{ref}	Tj=0 to 125°C	—	±0.01	—	%/°C
Dropout voltage	V_{i-o}	V_{IN}=3.5V, ※5	—	—	0.5	V
Quiescent current	I_q	Io=0A	—	—	8	mA

※4 PQ15RW08: Io=5mA to 0.8A, PQ15RW11: Io=5mA to 1A, PQ15RW21: Io=5mA to 2A

※5 PQ15RW08/PQ15RW11: Io=0.5A, PQ15RW21: Io=2A

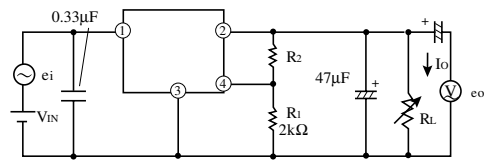
Fig. 1 Test Circuit



$$V_O = V_{ref} \times \left(1 + \frac{R_2}{R_1}\right) \text{Nearly} = 2.64 \times \left(1 + \frac{R_2}{R_1}\right)$$

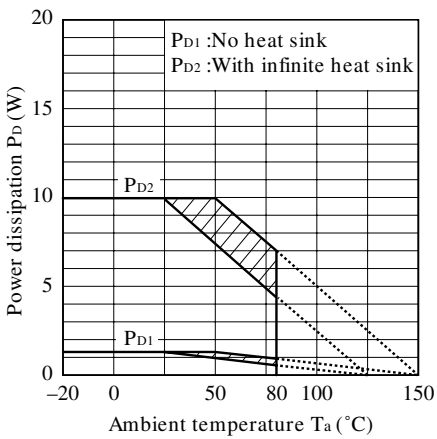
[R_1=2kΩ, V_{ref} Nearly=2.64V]

Fig. 2 Test Circuit of Ripple Rejection



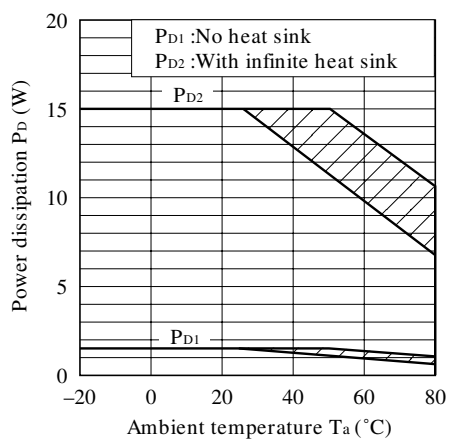
f=120Hz(sine wave)
ei=0.5Vrms
Io=0.5A
RR=20 log(ei/ eo)
V_{IN}=5V
Vo=3.3V(R_1=2kΩ)

Fig. 3 Power Dissipation vs. Ambient Temperature (PQ15RW08)



Note) Oblique line portion : Overheat protection may operate in this area.

Fig. 4 Power Dissipation vs. Ambient Temperature(PQ15RW11/21)



Note) Oblique line portion : Overheat protection may operate in this area.

Fig. 5 Overcurrent Protection Characteristics (Typical Value) (PQ15RW08)

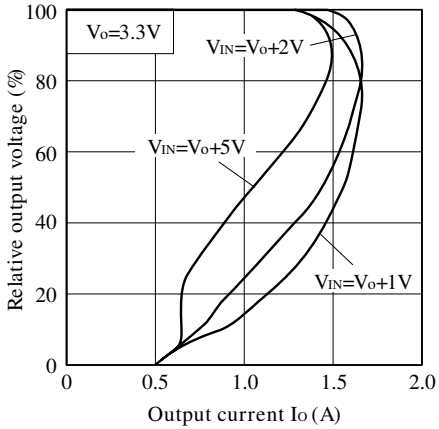


Fig. 6 Overcurrent Protection Characteristics (Typical Value) (PQ15RW11)

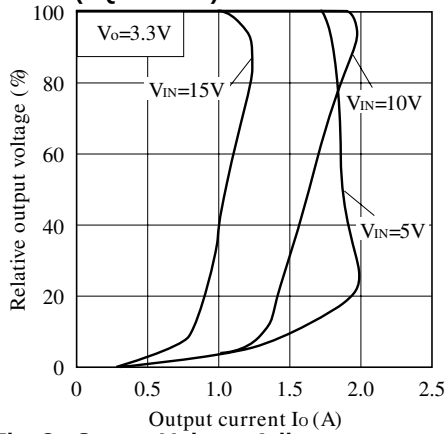


Fig. 7 Overcurrent Protection Characteristics (Typical Value) (PQ15RW21)

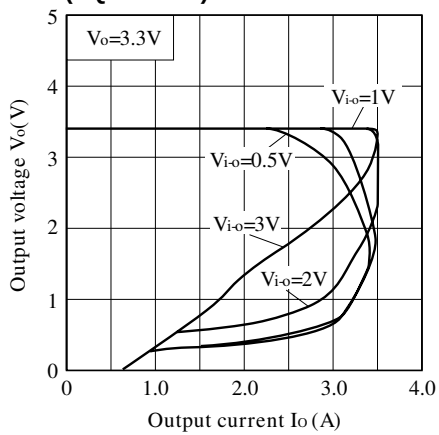
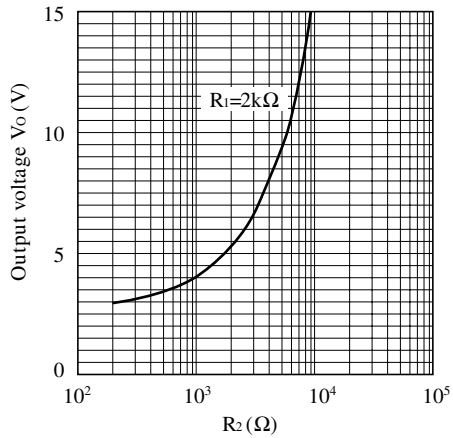
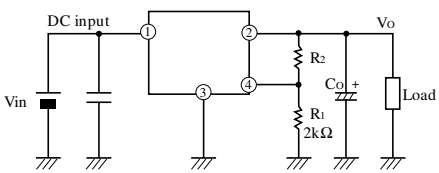


Fig. 8 Output Voltage Adjustment Characteristics



■ Typical Application



NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

(i) The devices in this publication are designed for use in general electronic equipment designs such as:
- Personal computers
- Office automation equipment
- Telecommunication equipment [terminal]
- Test and measurement equipment
- Industrial control
- Audio visual equipment
- Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
- Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
- Traffic signals
- Gas leakage sensor breakers
- Alarm equipment
- Various safety devices, etc.

(iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
- Space applications
- Telecommunication equipment [trunk lines]
- Nuclear power control equipment
- Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.