

PQ15RW21 Datasheet



DiGi Electronics Part Number	PQ15RW21-DG
Manufacturer	Sharp Microelectronics
Manufacturer Product Number	PQ15RW21
Description	IC REG LINEAR POS ADJ 2A TO220-4
Detailed Description	Linear Voltage Regulator IC Positive Adjustable 1 Output 2A TO-220-4

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Purchase and inquiry

Manufacturer Product Number:

PQ15RW21

Series:

-

Output Configuration:

Positive

Number of Regulators:

1

Voltage - Output (Min/Fixed):

3V

Voltage Dropout (Max):

0.5V @ 2A

Current - Quiescent (Iq):

8 mA

Control Features:

-

Operating Temperature:

-20°C ~ 80°C

Package / Case:

TO-220-4

Base Product Number:

PQ15

Manufacturer:

Sharp Microelectronics

Product Status:

Obsolete

Output Type:

Adjustable

Voltage - Input (Max):

20V

Voltage - Output (Max):

15V

Current - Output:

2A

PSRR:

55dB (120Hz)

Protection Features:

Over Current, Over Temperature

Mounting Type:

Through Hole

Supplier Device Package:

TO-220-4

Environmental & Export classification

RoHS Status:

RoHS non-compliant

ECCN:

EAR99

Moisture Sensitivity Level (MSL):

1 (Unlimited)

HTSUS:

8542.39.0001

PQ15RW08/PQ15RW11/PQ15RW21

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

Features

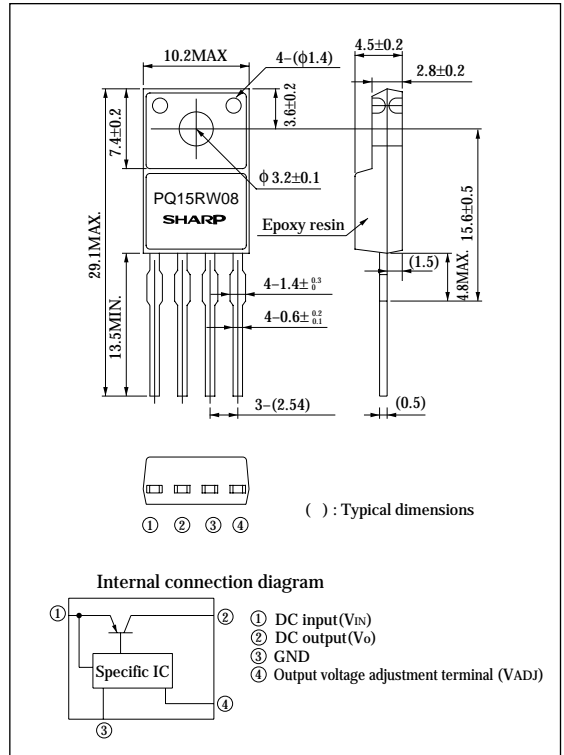
- Low power-loss
(Dropout voltage: MAX. 0.5V at $I_o=0.5A$ [PQ15RW08/11], $I_o=2A$ [PQ15RW21])
- Compact resin mold package (equivalent to TO-220)
- Variable output voltage (3.0 to 15V)
- Low voltage operation (Minimum supply voltage: 3.5V)
- Reference voltage precision: $\pm 2.5\%$
- Built-in overcurrent,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

Applications

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

Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

($T_a=25^\circ C$)

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	I_o	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			$^\circ C$
Operating temperature	T_{opr}	-20 to +80			$^\circ C$
Storage temperature	T_{stg}	-40 to +150			$^\circ C$
Soldering temperature	T_{sol}	260 (For 10s)			$^\circ C$

*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 $125 \leq T_j < 150^\circ C$

• Please refer to the chapter " Handling Precautions ".



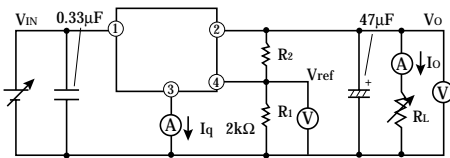
Electrical Characteristics (Unless otherwise specified, conditions shall be $V_{IN}=5V$, $V_O=3.3V$ ($R_1=2k\Omega$, $R_2=500\Omega$), $I_o=0.5A$) ($T_a=25^\circ C$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	—	3.5	—	20	V
Output voltage	V_o	—	3.0	—	15	V
Load regulation	R_{egL}	#4	—	0.3	2.0	%
Line regulation	R_{egl}	$V_{IN}=5$ to $15V$, $I_o=5mA$	—	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	$T_c V_{ref}$	$T_j=0$ to $125^\circ C$	—	± 0.01	—	%/ $^\circ C$
Dropout voltage	V_{i-o}	$V_{IN}=3.5V$, #5	—	—	0.5	V
Quiescent current	I_q	$I_o=0A$	—	—	8	mA

#4 PQ15RW08: $I_o=5mA$ to $0.8A$, PQ15RW11: $I_o=5mA$ to $1A$, PQ15RW21: $I_o=5mA$ to $2A$

#5 PQ15RW08/PQ15RW11: $I_o=0.5A$, PQ15RW21: $I_o=2A$

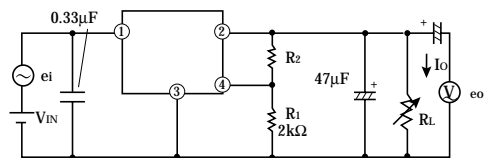
Fig. 1 Test Circuit



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

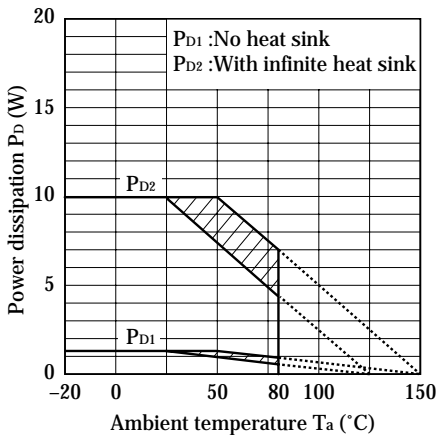
[$R_1=2k\Omega$, V_{ref} Nearly= $2.64V$]

Fig. 2 Test Circuit of Ripple Rejection



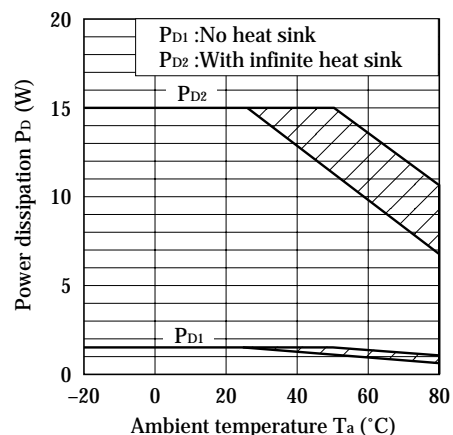
$f=120Hz$ (sine wave)
 $e_i=0.5V_{rms}$
 $I_o=0.5A$
 $RR=20 \log(e_i/e_o)$
 $V_{IN}=5V$
 $V_o=3.3V$ ($R_1=2k\Omega$)

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)

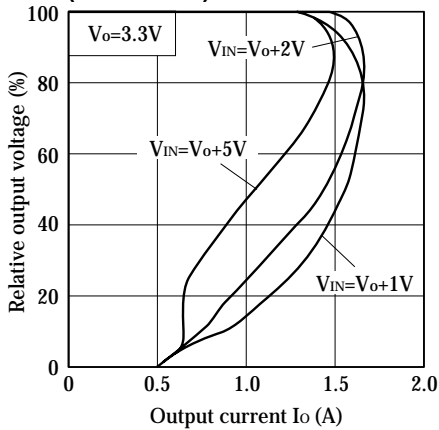


Fig. 6 Overcurrent Protection Characteristics (Typical Value) (PQ15RW11)

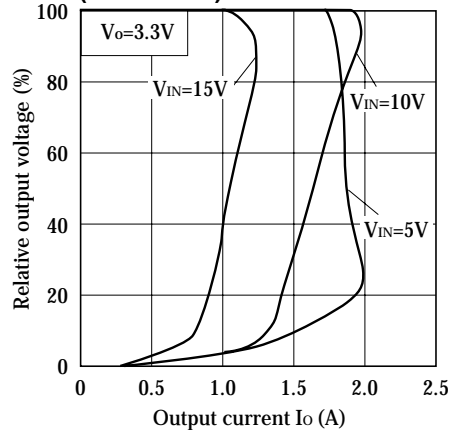


Fig. 7 Overcurrent Protection Characteristics (Typical Value) (PQ15RW21)

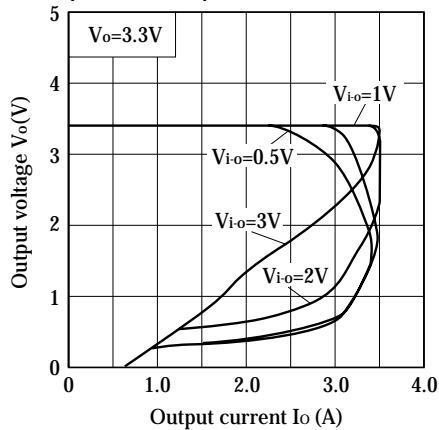
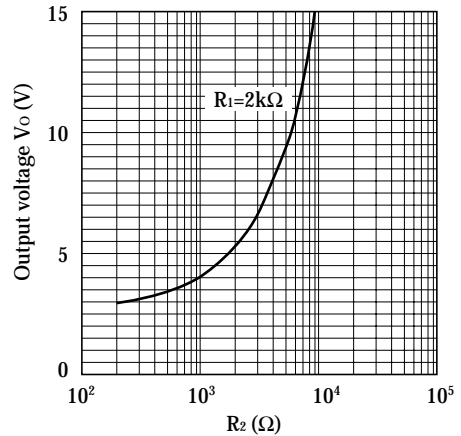
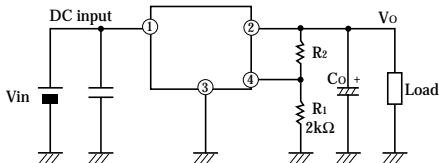


Fig. 8 Output Voltage Adjustment Characteristics



■ Typical Application



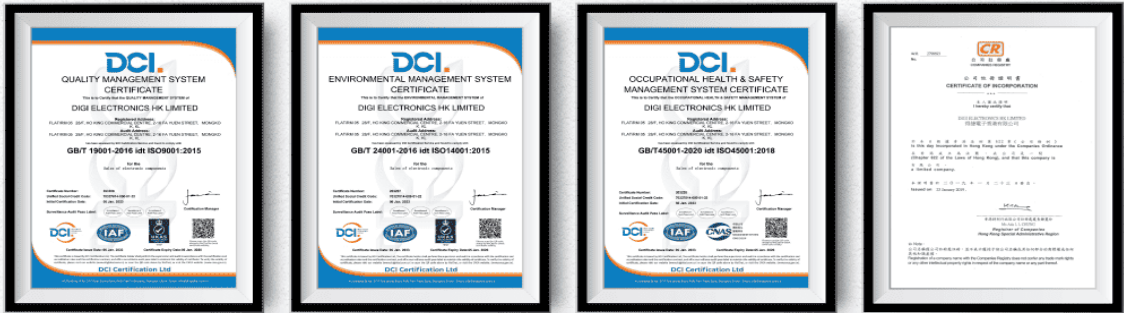
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