

## PQ05RD21 series Low Power-Loss Voltage Regulator

2.0A Output Type, High Cost Performance Low Power-Loss Voltage Regulator

### General Description

Sharp's **PQ05RD21 series** is 2.0A output type low power-loss voltage regulator(TO-220). It contributes to energy and space saving of various electronic equipment such as AV, OA equipment.

### Features

- (1) Low power-loss(Dropout voltage: MAX 0.5V at  $I_o=2.0A$ )
- (2) 2.0A output type
- (3) Compact resin full-mold package(equivalent to TO-220)
- (4) Available 3.3V/5V/9V/12V output type
- (5) Output voltage precision:  $\pm 3.0\%$
- (6) Built-in ON/OFF control function
- (7) Overcurrent, overheat protection functions
- (8) Lead forming type is also available.

### Applications

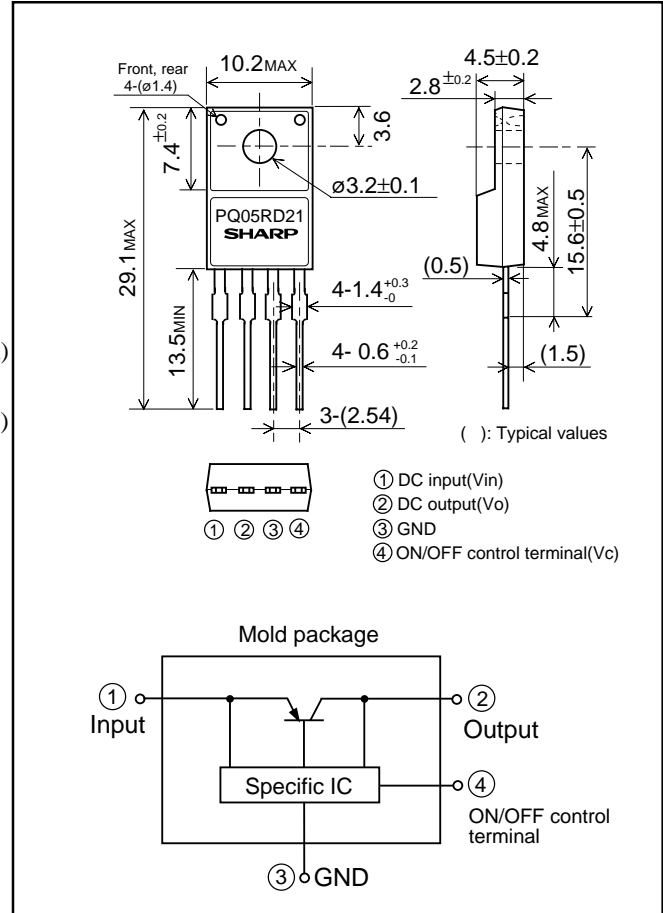
- (1) Power supplies for various electronic equipment such as AV, OA

### Model Line-up

2.0A output	3.3V output	<b>PQ3RD23</b>
	5.0V output	<b>PQ05RD21</b>
	9.0V output	<b>PQ09RD21</b>
	12.0V output	<b>PQ12RD21</b>

### Outline Dimensions

(Unit: mm)



(Notice)

- In the absence of device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.
- Specifications are subject to change without notice for improvement.

(Internet)

- Data for Sharp's optoelectronic/power devices is provided for internet. ( Address <http://www.sharp.co.jp/ecg/>)

### ■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V <sub>in</sub>	20	V
*1 ON/OFF control terminal voltage	V <sub>c</sub>	20	V
Output current	I <sub>o</sub>	2.0	A
*2 Power dissipation	P <sub>d1</sub>	1.4	W
	P <sub>d2</sub>	15	W
*3 Junction temperature	T <sub>j</sub>	150	°C
Operating temperature	T <sub>opr</sub>	-20 to +80	°C
Storage temperature	T <sub>stg</sub>	-40 to +150	°C
Soldering temperature	T <sub>sol</sub>	260(For 10s)	°C

\*1 All are open except GND and applicable terminals.

\*2 Pd1: No heat sink, Pd2: With infinite heat sink

\*3 Overheat protection may operate at 125<=Tj<=150°C.

### ■ Electrical Characteristics

(Unless otherwise specified, I<sub>o</sub>=1.0A, \*4, Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Output voltage	V <sub>o</sub>	-	PQ3RD23	3.201	3.3	3.399	V
			PQ05RD21	4.85	5.0	5.15	
			PQ09RD21	8.73	9.0	9.27	
			PQ12RD21	11.64	12.0	12.36	
Load regulation	RegL	I <sub>o</sub> =5mA to 2.0A	-	0.1	2.0	%	
Line regulation	RegI	*5, I <sub>o</sub> =5mA	-	0.5	2.5	%	
Temperature coefficient of output voltage	TcVo	T <sub>j</sub> =0 to 125°C, I <sub>o</sub> =5mA	-	±0.02	-	%/°C	
Ripple rejection	RR	-	45	55	-	dB	
Dropout voltage	V <sub>i-o</sub>	*6, I <sub>o</sub> =2A	-	-	0.5	V	
*7 ON-state voltage for control	V <sub>C(on)</sub>	-	2	-	-	V	
ON-state current for control	I <sub>C(on)</sub>	V <sub>c</sub> =2.7V	-	-	20	μA	
OFF-state voltage for control	V <sub>C(off)</sub>	-	-	-	0.8	V	
OFF-state current for control	I <sub>C(off)</sub>	V <sub>c</sub> =0.4V	-	-	-0.4	mA	
Quiescent current	I <sub>q</sub>	I <sub>o</sub> =0A	-	-	10	mA	

\*4 PQ3RD23:V<sub>in</sub>=5V,PQ05RD21:V<sub>in</sub>=7V, PQ09RD21:V<sub>in</sub>=11V, PQ12RD21: V<sub>in</sub>=14V

\*5 PQ3RD23:V<sub>in</sub>=4 to 10V, PQ05RD21:V<sub>in</sub>= 6 to 12V, PQ09RD21:V<sub>in</sub>=10 to 16V, PQ12RD21: V<sub>in</sub>=13 to19V

\*6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value. PQ3RD23:V<sub>in</sub>=3.7V

\*7 In case of opening control terminal ④, output voltage turns on.

This datasheet has been download from:

[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.