

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

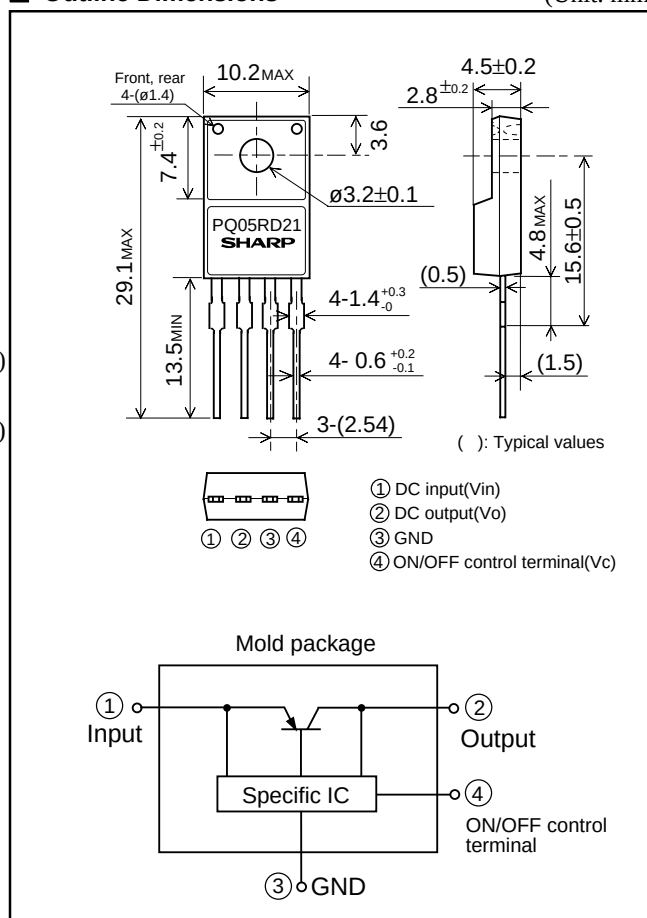
- (1) Low power-loss(Dropout voltage: MAX 0.5V at $I_o=2.0A$)
- (2) 2.0A output type
- (3) Compact resin full-mold package(equivalent to TO-220)
- (4) Available 3.3V/5V/9V/12V output type
- (5) Output voltage precision: $\pm 3.0\%$
- (6) Built-in ON/OFF control function
- (7) Overcurrent, overheat protection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

Applications

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

Outline Dimensions

(Unit: mm)



Model Line-up

2.0A output	3.3V output	PQ3RD23
	5.0V output	PQ05RD21
	9.0V output	PQ09RD21
	12.0V output	PQ12RD21

(Notice)

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- 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/>)

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■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V _{in}	20	V
*1 ON/OFF control terminal voltage	V _c	20	V
Output current	I _o	2.0	A
*2 Power dissipation	P _{d1}	1.4	W
	P _{d2}	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 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_o=1.0A, *4, Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	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 _o =5mA to 2.0A	—	0.1	2.0	%
Line regulation	RegI	*5, I _o =5mA	—	0.5	2.5	%
Temperature coefficient of output voltage	TcVo	Tj=0 to 125°C, I _o =5mA	—	±0.02	—	%/°C
Ripple rejection	RR	—	45	55	—	dB
Dropout voltage	V _{i-o}	*6, I _o =2A	—	—	0.5	V
*7 ON-state voltage for control	V _{C(on)}	—	2	—	—	V
ON-state current for control	I _{C(on)}	V _c =2.7V	—	—	20	μA
OFF-state voltage for control	V _{C(off)}	—	—	—	0.8	V
OFF-state current for control	I _{C(off)}	V _c =0.4V	—	—	-0.4	mA
Quiescent current	I _q	I _o =0A	—	—	10	mA

*4 PQ3RD23: V_{in}=5V, PQ05RD21: V_{in}=7V, PQ09RD21: V_{in}=11V, PQ12RD21: V_{in}=14V

*5 PQ3RD23: V_{in}=4 to 10V, PQ05RD21: V_{in}=6 to 12V, PQ09RD21: V_{in}=10 to 16V, PQ12RD21: V_{in}=13 to 19V

*6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value. PQ3RD23: V_{in}=3.7V

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