

PQ05RD11 Series

1A Output, General Purpose Low Power-loss Voltage Regulators

■ Features

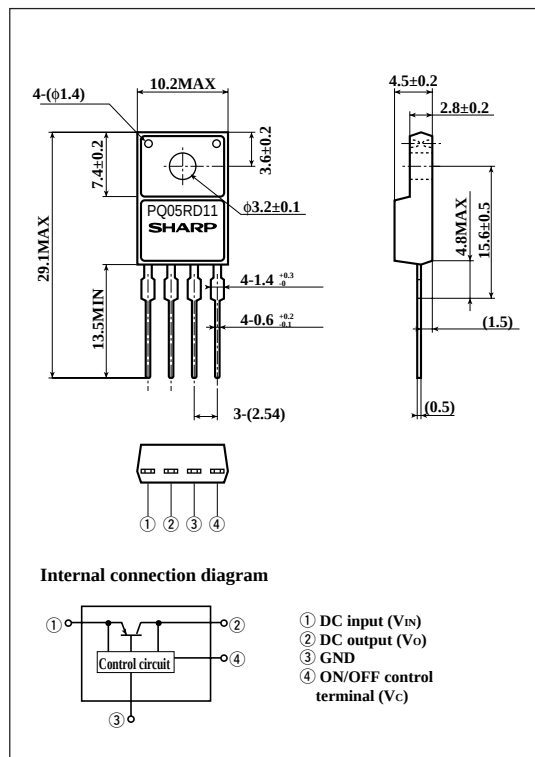
- Low Power-loss (Dropout voltage : MAX.0.5V at $I_o=0.5A$)
- Line-up for 5V, 9V and 12V output type
- Compact resin package (TO-220 package)
- High-precision output voltage type
Output voltage precision : $\pm 3.0\%$
- Built-in ON/OFF control function
- Built-in overcurrent protection, overheat protection, ASO protection circuit

■ 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
*1 Input voltage	V_{IN}	20	V
*1 ON/OFF control terminal voltage	V_c	20	V
Output current	I_o	1.0	A
Power dissipation (No heat sink)	P_{D1}	1.4	W
Power dissipation (With infinite heat sink)	P_{D2}	15	
*2 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 Overheat protection may operate at $125 < T_j < 150^\circ C$

· Please refer to the chapter "Handling Precautions".

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■ Electrical Characteristics

(Unless otherwise specified, conditions shall be $I_o=0.5A$,^{*3}, $T_a=25^{\circ}C$)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output voltage	PQ05RD11	V_o	-	4.85	5.0	5.15	V
	PQ09RD11			8.73	9.0	9.27	
	PQ12RD11			11.64	12.0	12.36	
Load regulation		R_{egL}	$I_o=5mA$ to $1.0A$	-	0.1	2.0	%
Line regulation		R_{egI}	^{*4} , $I_o=5mA$	-	0.5	2.5	%
Temperature coefficient of output voltage		T_cV_o	$T_j=0$ to $125^{\circ}C$, $I_o=5mA$	-	± 0.02	-	%/ $^{\circ}C$
Ripple rejection		RR	-	45	55	-	dB
Dropout voltage		V_{i-o}	^{*5}	-	-	0.5	V
^{*6} 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

^{*3} PQ05RD11: $V_{IN}=7V$, PQ09RD11: $V_{IN}=11V$, PQ12RD11: $V_{IN}=14V$

^{*4} PQ05RD11: $V_{IN}=6$ to $12V$, PQ09RD11: $V_{IN}=10$ to $16V$, PQ12RD11: $V_{IN}=13$ to $19V$

^{*5} Input voltage shall be the value when output voltage is 95% in comparison with the initial value.

^{*6} In case of opening control terminal ④, output voltage turns on.

Fig.1 Test Circuit

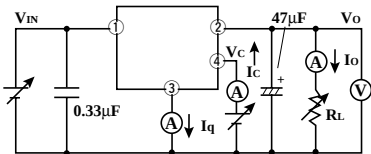
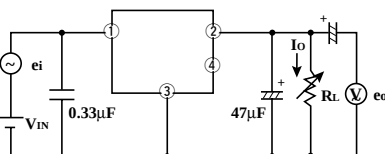
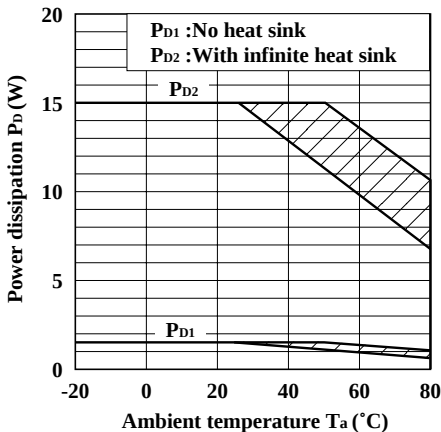


Fig.2 Test circuit for Ripple Rejection



$f=120Hz$ (sine wave)
 $e_i=0.5V_{rms}$
 $V_{IN}=7V$ (PQ05RD11)
 $V_{IN}=11V$ (PQ09RD11)
 $V_{IN}=14V$ (PQ12RD11)
 $I_o=0.3A$
 $RR=20\log(e_i/e_o)$

Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (Typical Value) (PQ05RD11)

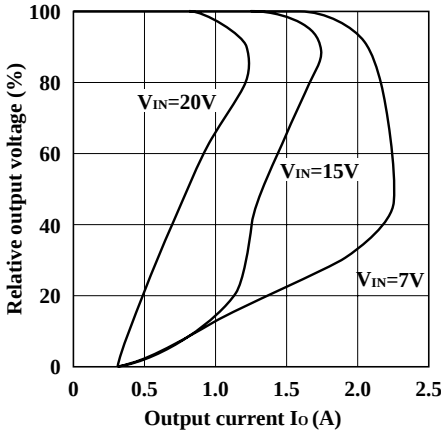


Fig.5 Overcurrent Protection Characteristics (Typical Value) (PQ09RD11)

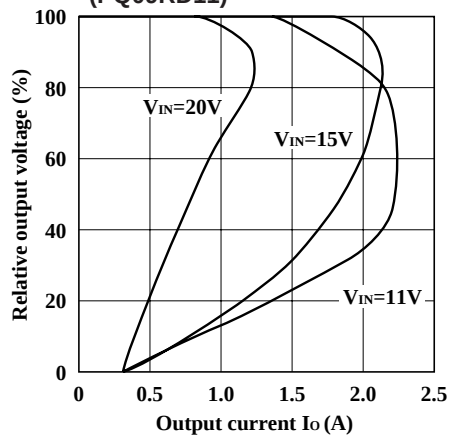


Fig.6 Overcurrent Protection Characteristics (Typical Value) (PQ12RD11)

