SHARP

PQxxxEF01SZ series
PQ070XF01SZ

Under development	
New product	●

Low Power-Loss Voltage Regulator

Low Voltage Operation Low Power-Loss Voltage Regulator

■ Features

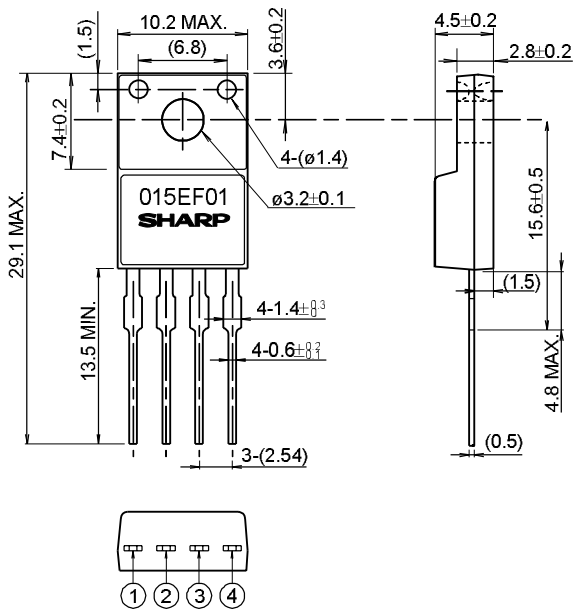
(1) Low Voltage operation
(minimum operating voltage : 2.35V)
2.5V input → available 1.5V, 1.8V output
(2) Low dissipation current
(Dissipation current at no load: MAX. 2mA
OFF-state dissipation current: MAX. 5μA
(3) Low power-loss
Dropout voltage: MAX. 0.5V
(4) Fixed output and variable output are available.
(5) Built-in overcurrent and overheat protection functions
(6) TO-220 package

■ Applications

(1) Peripheral equipment of personal computers
(2) Power supplies for various electronic equipment such as DVD player or STB.
(3) LBP

■ Outline Dimensions

(Unit:mm)



PQxxxEF01SZ series
① DC input (Vin)
② DC output (Vo)
③ GND
④ ON/OFF control terminal (Vc)

PQ070XF01SZ
① DC input (Vin)
② DC output (Vo)
③ GND
④ Output voltage adjustment terminal (Vadj)

■ Model line-up

Output voltage (Vo)	Fixed output type				Variable output type
	1.5V	1.8V	2.5V	3.3V	
Part No.	**PQ015EF01SZ**	**PQ018EF01SZ**	**PQ025EF01SZ**	**PQ033EF01SZ**	**PQ070XF01SZ**

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
*1 Input voltage	Vin	10	V
*1 ON/OFF control terminal voltage	Vc	10	V
*1 Output adjustment terminal voltage (PQ070XF01SZ)	Vadj	5	V
Output current	Io	1.0	A
*2 Power dissipation	Pd1	1.4	W
	Pd2	15	
*3 Junction temperature	Tj	150	°C
Operating temperature	Topr	- 40 to +85	°C
Storage temperature	Tstg	- 40 to +150	°C
Soldering temperature	Tsol	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

(**PQxxxEF01SZ series**: Unless otherwise specified, Vin=Vo(TYP.)+1V, Io=0.5A, Vc=2.7V, Ta=25°C)
(**PQ070XF01SZ**: Unless otherwise specified, Vin=5V, Vo=3V(R1=1kΩ), Io=0.5A, Vc=2.7V, Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage range	PQxxxEF01SZ series	Vin	-	Refer to the next page.			V
	PQ070XF01SZ			2.35	-	10	
Output voltage	PQxxxEF01SZ series	Vo	-	Refer to the next page.			V
	PQ070XF01SZ			1.5	-	7	
Reference voltage(PQ070XF01SZ)		Vref	-	1.225	1.25	1.275	V
Load regulation		RegL	Io=5mA to 1A	-	0.2	2.0	%
Line regulation	PQxxxEF01SZ series	RegI	Vin=Vo(TYP.)+1V to Vo(TYP.)+6V, Io=5mA	-	0.1	1.0	%
	PQ070XF01SZ		Vin=4 to 8V, Io=5mA	-	0.2	1.0	
Temperature coefficient of reference voltage	PQxxxEF01SZ series	TcVo	Tj=0 to 125°C, Io=5mA	-	±0.01	-	%/°C
	PQ070XF01SZ	TcVref	Tj=0 to 125°C, Io=5mA	-	±1.0	-	%
Ripple rejection		RR	-	45	60	-	dB
Dropout voltage	PQ033EF01SZ	Vi-o	Io=0.5A(at Vo=0.95V)	-	-	0.5	V
	PQ070XF01SZ		Vin=2.85A, Io=0.5A	-	-	0.5	
*4 ON-state voltage for control(PQxxxEF01SZ series)		Vc(on)	-	2.0	-	-	V
ON-state current for control(PQxxxEF01SZ series)		Ic(on)	-	-	-	200	μA
OFF-state voltage for control(PQxxxEF01SZ series)		Vc(off)	Io=0A	-	-	0.8	V
OFF-state current for control(PQxxxEF01SZ series)		Ic(off)	Io=0A, Vc=0.4V	-	-	–2	μA
Quiescent current	PQxxxEF01SZ series	Iq	Io=0A	-	1	2	mA
	PQ070XF01SZ			-	1.3	2	
OFF-state dissipation current(PQxxxEF01SZ series)		Iqs	Io=0A, Vc=0.4V	-	-	5	μA

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

■ Input Voltage Range

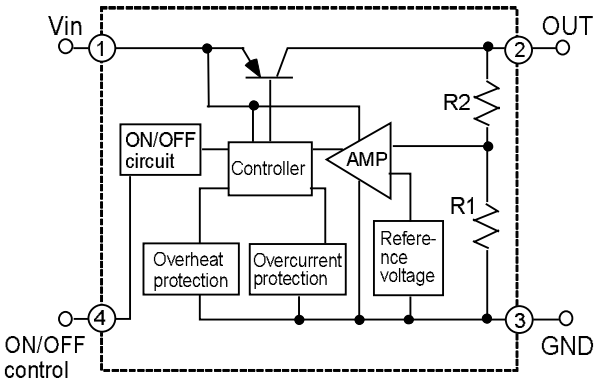
Part number	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EF01SZ	Vin	Io=0.5A,Vc=2.7V,Ta=25°C	2.35	-	10	V
PQ018EF01SZ			2.35	-	10	
PQ025EF01SZ			3.0	-	10	
PQ033EF01SZ			3.8	-	10	

■ Output Voltage Line-up

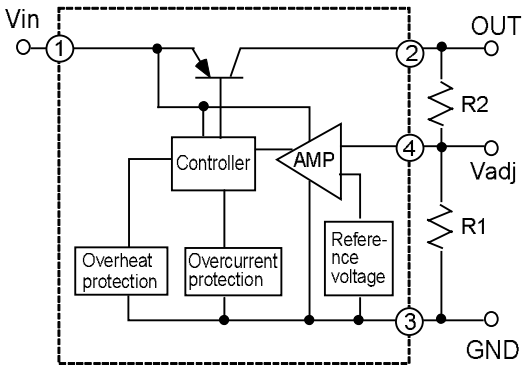
Part number	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ015EF01SZ	Vo	Vin=Vo(TYP.)+1V, Io=0.5A,Vc=2.7V,Ta=25°C	1.45	1.5	1.55	V
PQ018EF01SZ			1.75	1.8	1.85	
PQ025EF01SZ			2.438	2.5	2.562	
PQ033EF01SZ			3.218	3.3	3.382	

■ Internal Block Diagram

PQxxxEF01SZ series



PQ070XF01SZ Series



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  --- Personal computers
  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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  --- Traffic signals
  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

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  --- Telecommunication equipment [trunk lines]
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