

PQ1R30 series Low Power-Loss Voltage Regulator

Low Output Current, Compact Surface Mount Type Low Power-Loss Voltage Regulators

General Description

SHARP's **PQ1R30 series** are 180mA output, compact resin mold surface mount package type low power-loss voltage regulators.

It is suitable for energy and space saving of battery drive compact equipment such as portable equipment, personal information tools.

Features

- (1) Compact surface mount type package
(3.4 x 2.2 x 1.2mm)
- (2) Low power-loss
(Dropout voltage: TYP. 0.16V/MAX. 0.26V at $I_o=60\text{mA}$)
- (3) Low current operation type
(Dissipation current at no load: TYP. 170 μA)
- (4) Built-in ON/OFF control function
(Dissipation current at OFF-state: MAX. 0.1 μA)
- (5) Low voltage operation type
(MIN. 1.8V)
- (6) Overcurrent, overheat protection functions

Applications

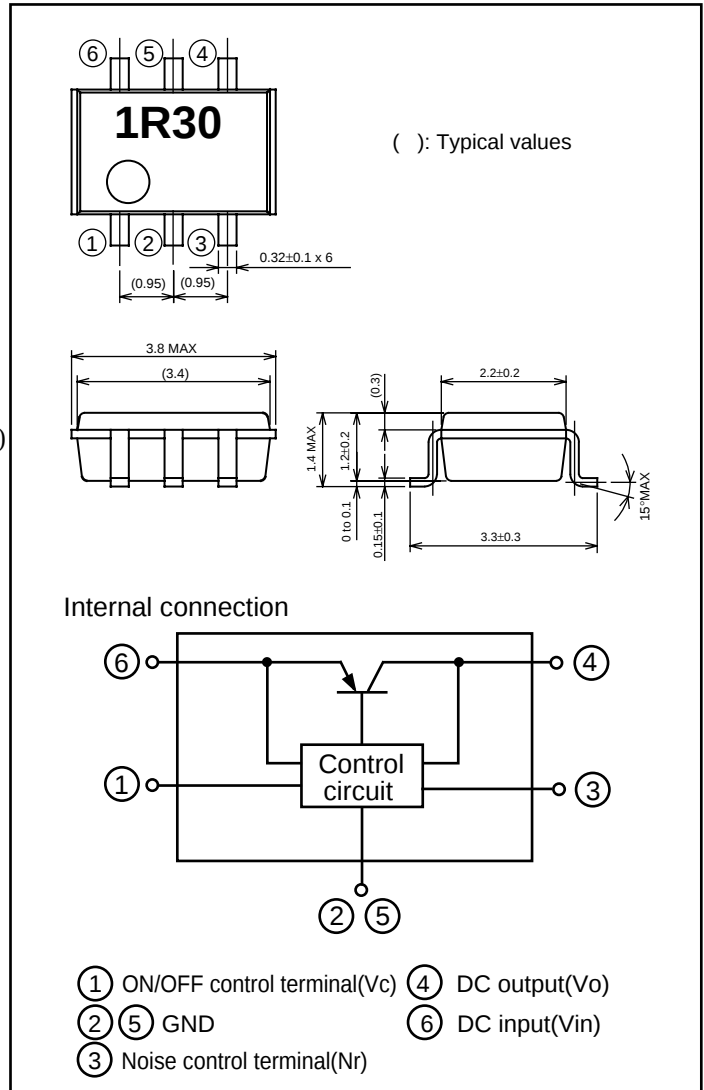
- (1) Cellular phones
- (2) Cordless phones
- (3) Personal information tools(PDA)
- (4) Cameras/Camcorders
- (5) PCMCIA cards for Notebook PCs

Output Voltage Line-up

Output voltage	Model
2.5V	PQ1R25
2.7V	PQ1R27
2.8V	PQ1R28
3.0V	PQ1R30
3.3V	PQ1R33
4.7V	PQ1R47
5.0V	PQ1R50

Outline Dimensions

(Unit : mm)



*It is available for every 0.1V (1.8V to 5.5V)

(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/>)

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Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	Vin	16	V
*1 ON/OFF control terminal voltage	Vc	16	V
Output current	Io	240	mA
*2 Power dissipation	Pd	400	mW
*3 Junction temperature	Tj	150	°C
Operating temperature	Topr	-30 to +80	°C
Storage temperature	Tstg	-55 to +150	°C
Soldering temperature	Tsol	260(For 10s)	°C

*1 All are open except GND and applicable terminals.

*2 At surface-mounted condition

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

Electrical Characteristics (Unless otherwise specified, Vc=1.8V, Io=30mA.)

(Ta=25°C)

Parameter	Symbol	Condition	MIN.	TYP.	MAX.	Unit
Output voltage	PQ1R25	—	2.42	2.5	2.58	V
	PQ1R27		2.62	2.7	2.78	
	PQ1R28		2.72	2.8	2.88	
	PQ1R30		2.92	3.0	3.08	
	PQ1R33		3.215	3.3	3.385	
	PQ1R47		4.58	4.7	4.82	
	PQ1R50		4.88	5.0	5.12	
Output current	Io	*4	180	240	—	mA
Recommended output current	—	—	—	—	150	mA
Load regulation	RegL1	Io=5mA to 60mA	—	10	50	mV
	RegL2	Io=5mA to 100mA	—	20	100	mV
	RegL3	Io=5mA to 150mA	—	30	160	mV
Line regulation	RegI	Vin=3.5 to 8.5V	—	3.0	20	mV
Temperature coefficient of output voltage	TcVo	Io=10mA, Tj= -25 to 75°C	—	0.05	—	%/°C
Ripple rejection	RR	—	45	55	—	dB
Output noise voltage	PQ1R25/27/28/30/33	10kHz<f<100kHz, Cn=0.1μF, Io=30mA	—	30	—	μV
	PQ1R47/50		—	50	—	
Dropout voltage	Vi-o1	Io=60mA,*5	—	0.16	0.26	V
	Vi-o2	Io=150mA,*5	—	0.29	0.4	
*6 ON-state voltage for control	Vc(on)	—	1.8	—	—	V
ON-state current for control	Ic(on)	Vc=1.8V	—	12	30	μA
OFF-state voltage for control	Vc(off)	—	—	—	0.6	V
Quiescent current	Iq	Io=0mA	—	170	350	μA
Output OFF-state dissipation current	Iqs	Vin=8V, Vc=0.4V	—	—	0.1	μA
Response time(Rise time)	tr	Io=30mA, Vc=0→1.8V	—	0.3	—	ms
Noise control terminal voltage	—	—	—	1.25	—	V

*4 Output current shall be the value when output voltage lowers 0.3V from the voltage at Io=30mA.

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

*6 In case of opening control terminal 1, output voltage turns off.