SHARP

# PQ05DZ51/11 series Low Power-Loss Voltage Regulator

0.5A/1.0A Output, General Purpose, Surface Mount Type Low Power-Loss Voltage Regulator

## ■ General Description

SHARP's **PQ05DZ51/11 series** are 0.5A/1.0A output, general purpose, low power-loss voltage regulators which employ compact surface mount package.
They contribute to low voltage operation and suitable for power supplies of various electronic equipment.

## ■ Features

(1) Low power-loss
(Dropout voltage : MAX. 0.5V)
(2) Surface mount package (equivalent to SC-63)
(3) Available 3.3V, 5V, 9V, 12V output type
(4) Output current (0.5A : **PQ05DZ51 series**)
(1.0A : **PQ05DZ11 series**)
(5) Output voltage precision : ±3.0%
(6) Built-in ON/OFF control function
(7) Built-in overcurrent protection, overheat protection function
(8) Available tape-packaged products
(ø330mm real : 3000 pcs., **PQ05DZ5U/1U**)

## ■ Applications

(1) Personal computers
(2) CD-ROM drives
(3) Power supplies for various OA equipment

## ■ Absolute Maximum Ratings

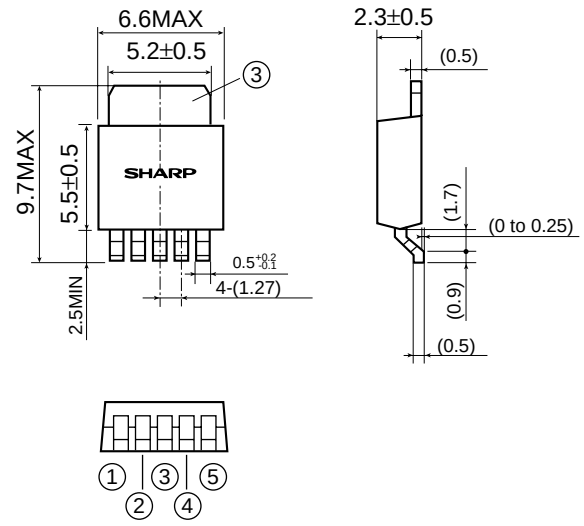
(Ta=25˚C)

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| *1Input voltage | | $V_{IN}$ | 24 | V |
| *1 ON/OFF control terminal voltage | | $V_C$ | 24 | V |
| Output current | PQ05DZ51 series | $I_O$ | 0.5 | A |
| | PQ05DZ11 series | | 1 | |
| *2 Power dissipation | | $P_D$ | 8 | 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 |

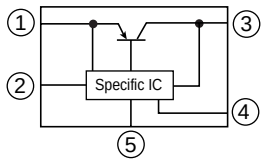
*1 All are open except GND and applicable terminals.
*2 $P_D$ : With infinite heat sink
*3 Overheat protection may operate at 125<=Tj<=150˚C

## ■ Outline Dimensions

(Unit : mm)




Internal connection




① DC input(Vin)
② ON/OFF control terminal(Vc)
③ DC output(Vo)
④ NC
⑤ GND

## ■ Model Line-up

| | | |
|---|---|---|
| 0.5A output | 3.3V output | **PQ3DZ53** |
| | 5.0V output | **PQ05DZ51** |
| | 9.0V output | **PQ09DZ51** |
| | 12.0V output | **PQ12DZ51** |
| 1.0A output | 3.3V output | **PQ3DZ13** |
| | 5.0V output | **PQ05DZ11** |
| | 9.0V output | **PQ09DZ11** |
| | 12.0V output | **PQ12DZ11** |

# PQ05DZ51/11 series

## Low Power-Loss Voltage Regulator

### ■ Electrical Characteristics

(Unless otherwise specified, conditions shall be Io=0.3A[**PQ05DZ51 series**], Io=0.5A[**PQ05DZ11 series**]*4, Ta=25˚C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|
| Output voltage | **PQ3DZ53/PQ3DZ13** | Vo | – | 3.201 | 3.3 | 3.399 | V |
| | **PQ05DZ51/PQ05DZ11** | | | 4.85 | 5.0 | 5.15 | |
| | **PQ09DZ51/PQ09DZ11** | | | 8.73 | 9.0 | 9.27 | |
| | **PQ12DZ51/PQ12DZ11** | | | 11.64 | 12.0 | 12.36 | |
| Load regulation | **PQ05DZ51 series** | RegL | Io=5mA to 0.5A | – | – | 2.0 | % |
| | **PQ05DZ11 series** | | Io=5mA to 1.0A | | | | |
| Line regulation | | RegI | *5, Io=5mA | – | – | 2.5 | % |
| Temperature coefficient of output voltage | | TcVo | Tj=0 to 125˚C, Io=5mA | – | ±0.01 | – | %/˚C |
| Ripple rejection | | RR | – | 45 | – | – | dB |
| Dropout voltage | **PQ05DZ51 series** | Vi-o | *6, Io=0.3A | – | – | 0.5 | V |
| | **PQ05DZ11 series** | | *6, Io=0.5A | | | | |
| *7 ON-state voltage for control | | $V_{C(on)}$ | – | 2.0 | – | – | V |
| ON-state current for control | | $I_{C(on)}$ | – | – | – | 200 | µA |
| OFF-state voltage for control | | $V_{C(on)}$ | – | – | – | 0.8 | V |
| OFF-state current for control | | $I_{C(off)}$ | $V_C$=0.4V | – | – | 2 | µA |
| Quiescent current | | Iq | Io=0A | – | – | 10 | mA |
| Output OFF-state consumption current | | Iqs | Vc=0.4V, Io=0A | – | – | 5 | µA |

*4 **PQ3DZ53/13**:Vin=5V, **PQ05DZ51/11**:Vin =7V, **PQ09DZ51/11**:Vin =11V, **PQ12DZ51/11**: Vin =14V

*5 **PQ3DZ53/13**:Vin=4 to 10V, **PQ05DZ51/11**:Vin = 6 to 16V, **PQ09DZ51/11**:Vin =10 to 20V, **PQ12DZ51/11**: Vin =13 to 23V

*6 Input voltage shall be the value when output voltage is 95% in comparison with the initial value. **PQ3DZ51/11**:Vin=3.7V

*7 In case of opening control terminal ②, output voltage turns off.