

PQ070XZ5MZxH PQ070XZ01ZxH

Low Voltage Operation
Low Power-loss Voltage Regulator

Features

1. Low voltage operation (Minimum operating voltage: 2.35V)
2.5V input → available 1.5 to 1.8V
2. Low dissipation current
Dissipation current at no load: MAX.2mA
Output OFF-state dissipation current: MAX.5μA
3. Low power-loss (Dropout voltage: MAX.0.5V)
4. Built-in overcurrent and overheat protection functions
5. RoHS directive compliant

Applications

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

Model Line-up

Output current (I _o)	Package type	Variable output
0.5A	Taping	PQ070XZ5MZPH
	Sleeve	PQ070XZ5MZZH
1A	Taping	PQ070XZ01ZPH
	Sleeve	PQ070XZ01ZZH

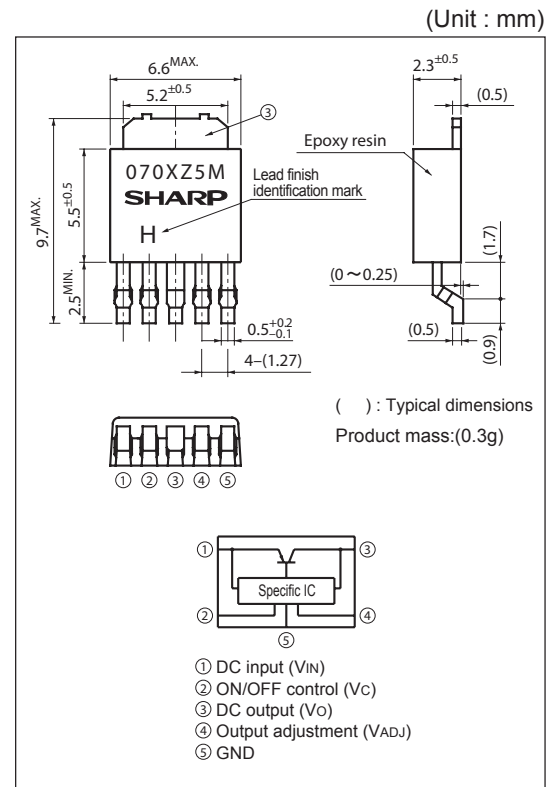
Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V _{IN}	10	V
*1 ON/OFF control terminal voltage	V _C	10	V
*1 Output adjustment terminal voltage	V _{ADJ}	5	V
Output current	I _O	0.5	A
		1	
*2 Power dissipation	P _D	8	W
*3 Junction temperature	T _J	150	°C
Operating temperature	T _{opr}	-40 to +85	°C
Storage temperature	T _{stg}	-40 to +150	°C
Soldering temperature	T _{sol}	260(10s)	°C

- *1 All are open except GND and applicable terminals.
*2 P_D: With infinite heat sink
*3 Overheat protection may operate at T_J: 125°C to 150°C

Outline Dimensions



Lead finish: Lead-free solder plating
(Composition: Sn2Cu)

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Electrical Characteristics

(Unless otherwise specified, condition shall be $V_{IN}=5V$, $V_O=3V(R1=1k\Omega)$, $I_O=0.3A$, $V_C=2.7V$, $T_a=25^\circ C$, (PQ070XZ5MZxH))
 (Unless otherwise specified, condition shall be $V_{IN}=5V$, $V_O=3V(R1=1k\Omega)$, $I_O=0.5A$, $V_C=2.7V$, $T_a=25^\circ C$, (PQ070XZ01ZxH))

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	-	2.35	-	10	V
Output voltage	V_O	-	1.5	-	7	V
Load regulation	RegL	$I_O=5mA$ to 0.5A	-	0.2	2.0	%
		$I_O=5mA$ to 1.0A	-	-	-	-
Line regulation	RegL	$V_{IN}=4$ to 8V, $I_O=5mA$	-	0.2	1.0	%
Ripple rejection	RR	Refer to Fig.2	45	60	-	dB
Dropout voltage	V_{I-O}	$V_{IN}=2.85V$, $I_O=0.3A$	-	-	0.5	V
		$V_{IN}=2.85V$, $I_O=0.5A$	-	-	-	-
Reference voltage	V_{ref}	-	1.225	1.25	1.275	V
Temperature coefficient of reference voltage	TcV_{ref}	$T_j=0$ to $125^\circ C$, $I_O=5mA$	-	± 1.0	-	%
*4 ON-state voltage for control	$V_{C(ON)}$	*4	2.0	-	-	V
ON-state current for control	$I_{C(ON)}$	-	-	-	200	μA
OFF-state voltage for control	$V_{C(OFF)}$	$I_O=0mA$	-	-	0.8	V
OFF-state current for control	$I_{C(OFF)}$	$I_O=0mA$, $V_C=0.4V$	-	-	2	μA
Quiescent current	I_q	$I_O=0A$	-	1	2	mA
Output OFF-state consumption current	I_{qs}	$V_C=0.4V$	-	-	5	μA

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

Fig.1 Test Circuit

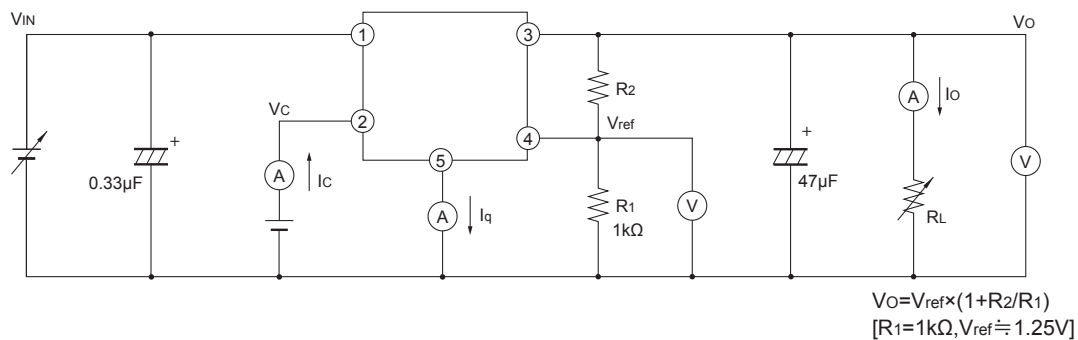


Fig.2 Test Circuit for Ripple Rejection

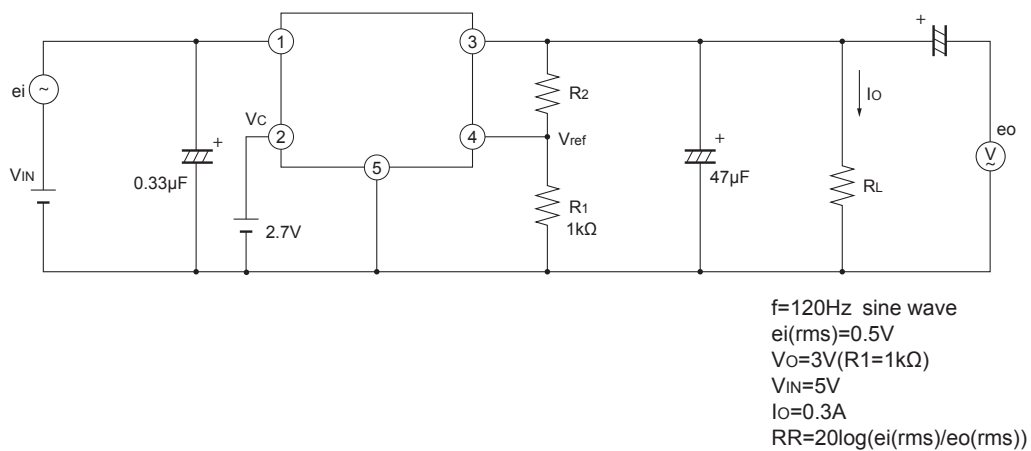
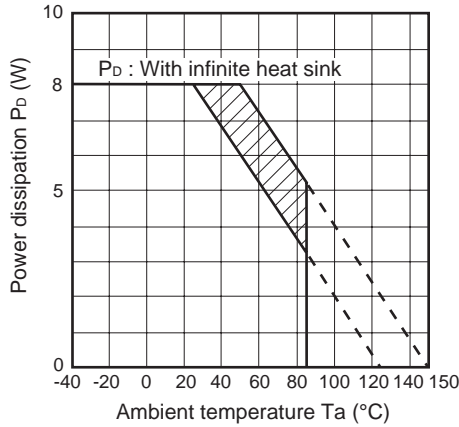


Fig.3 Power Dissipation vs. Ambient Temperature



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

Fig.4 Overcurrent Protection Characteristics (PQ070XZ01ZxH)

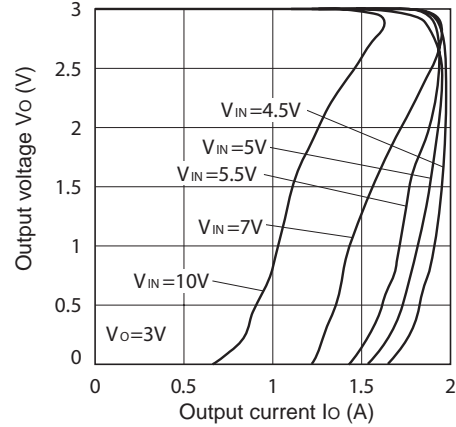


Fig.5 Overcurrent Protection Characteristics (PQ070XZ5MZxH)

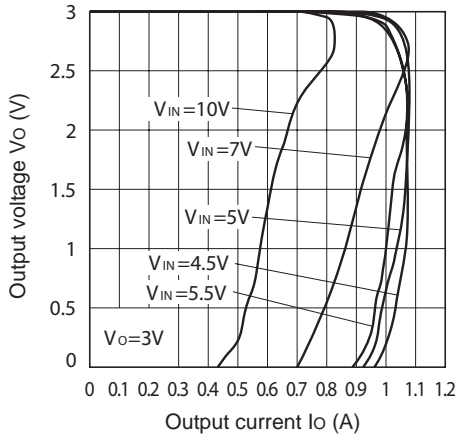


Fig.6 Reference Voltage vs. Ambient Temperature

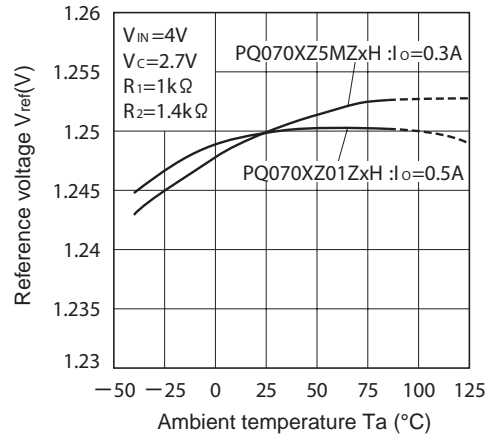


Fig.7 Output Voltage vs. Input Voltage (PQ070XZ5MZxH)

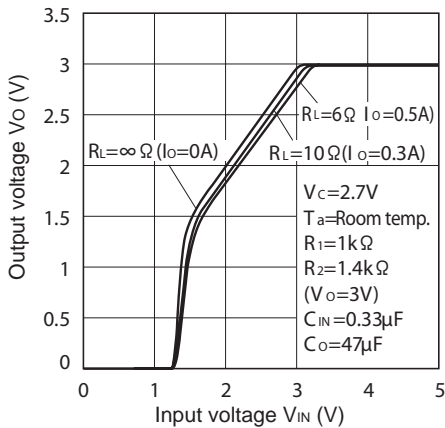


Fig.8 Output Voltage vs. Input Voltage (PQ070XZ01ZxH)

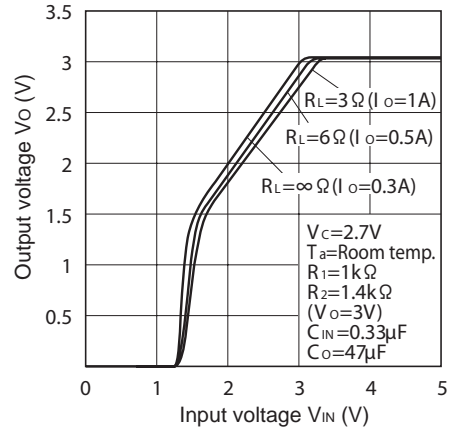


Fig.9 Circuit Operating Current vs. Input Voltage (PQ070XZ5MZxH)

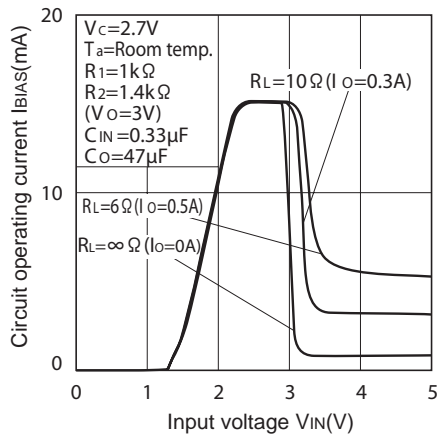


Fig.10 Circuit Operating Current vs. Input Voltage (PQ070XZ01ZxH)

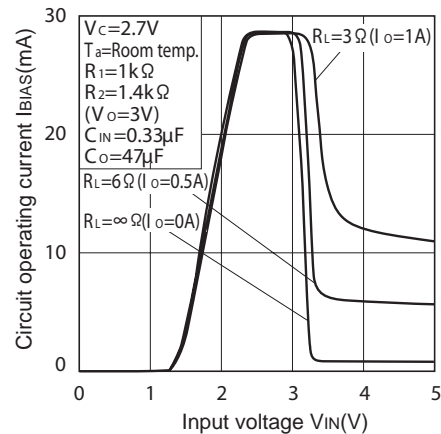


Fig.11 Dropout Voltage vs. Junction Temperature

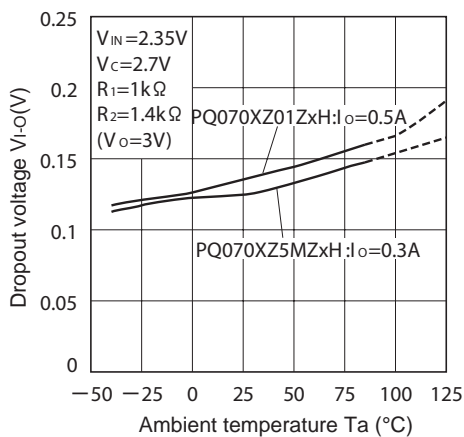


Fig.12 Quiescent Current vs. Junction Temperature

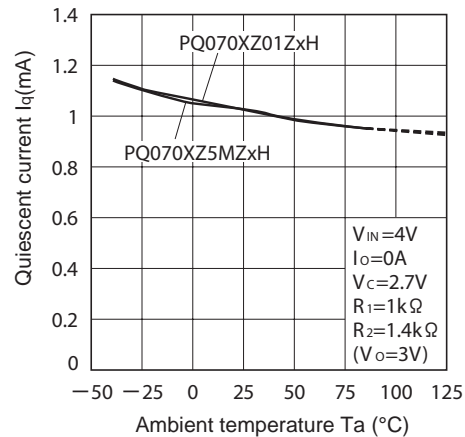


Fig.13 Ripple Rejection vs. Input Ripple Frequency

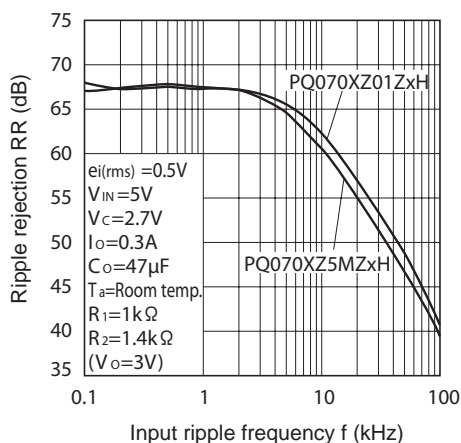


Fig.14 Ripple Rejection vs. Output Current

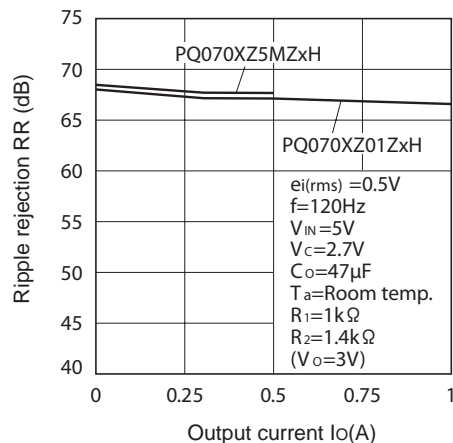


Fig.15 Typical Application

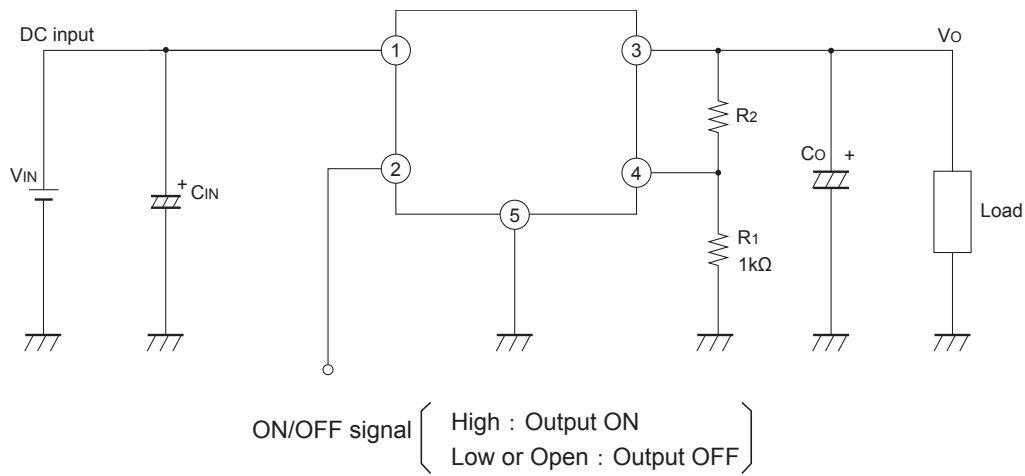
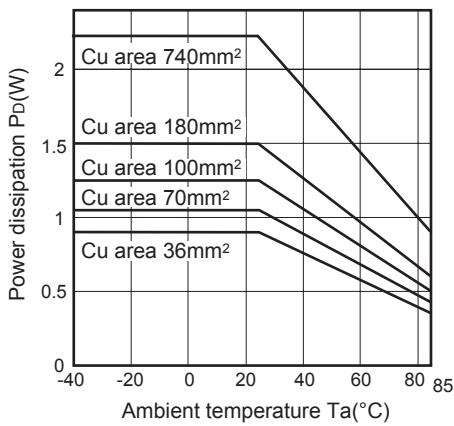
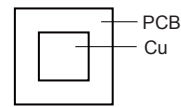


Fig.16 Power Dissipation vs. Ambient Temperature (Typical Value)

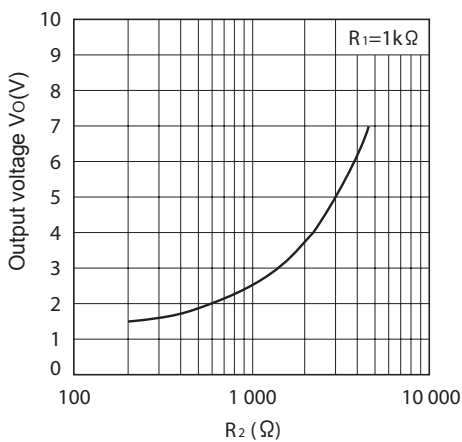


Mounting PCB



Material : Glass-cloth epoxy resin
 Size : 50×50×1.6mm
 Cu thickness : 35μm

Fig.17 Output Voltage Adjustment Characteristics



■ Setting of Output Voltage

Output voltage is able to set from 1.5V to 7V when resistors R₁ and R₂ are attached to ③,④,⑤ terminals. As for the external resistors to set output voltage, refer to the figure below and Fig.17.

