

PQxxxFZ5MZ Series/PQxxxFZ01Z Series

Low Voltage Operation Low Power-Loss Voltage Regulators (SC-63)

Features

- Low voltage operation (Minimum operating voltage: 1.7V)
1.8V input → available 1.0 to 1.2V output
- Surface mount package (equivalent to EIAJ SC-63)

Applications

- Personal computers, power supply in peripherals
- Power supplies for various electronic equipment such as DVD player or STB

Model Line-up

Output current (I _o)	Package type	1.0V Output	1.2V Output
0.5A	Taping	PQ010FZ5MZP	PQ012FZ5MZP
	Sleeve	PQ010FZ5MZZ	PQ012FZ5MZZ
1A	Taping	PQ010FZ01ZP	PQ012FZ01ZP
	Sleeve	PQ010FZ01ZZ	PQ012FZ01ZZ

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Input voltage	V _{IN}	3.7	V
Bias supply voltage	V _B	7	V
*1 Output Voltage	V _C	7	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}	-25 to +85	°C
Storage temperature	T _{stg}	-40 to +150	°C
Soldering temperature	T _{sol}	260(10s)	°C

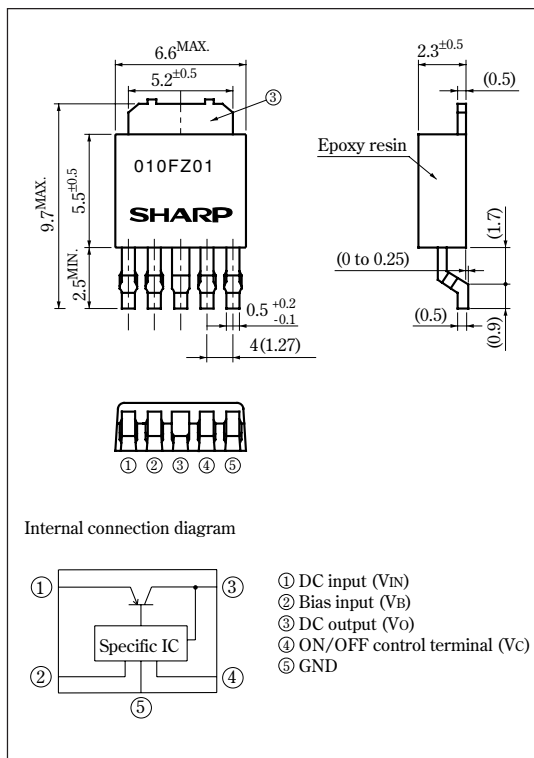
*1 All are open except GND and applicable terminals.

*2 P_D:With infinite heat sink

*3 Overheat protection may operate at T_j=125°C to 150°C.

Outline Dimensions

(Unit : mm)



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•Please refer to the chapter " Handling Precautions ".

Electrical Characteristics (Unless otherwise specified, $V_{IN}=1.8V$, $V_B=3.3V$, $I_O=0.3A$, $V_C=2.7V$, $T_a=25^\circ C$ (PQxxxFZ5MZ))
 (Unless otherwise specified, $V_{IN}=1.8V$, $V_B=3.3V$, $I_O=0.5A$, $V_C=2.7V$, $T_a=25^\circ C$ (PQxxxFZ01Z))

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input voltage	V_{IN}	-	1.7	-	3.7	V
Bias supply voltage	V_B	-	2.35	-	7	V
Output voltage	V_O	-	Refer to following table			V
Load regulation	PQxxxFZ5MZ	$I_O=5mA$ to $0.5A$	-	0.2	1	%
	PQxxxFZ01Z					
Line regulation	$RegI$	$V_{IN}=1.7$ to $3.7V$, $V_B=2.35$ to $7V$, $I_O=5mA$	-	0.2	1	%
Temperature coefficient of output voltage	TcV_O	$T_j=0$ to $125^\circ C$, $I_O=5mA$	-	0.5	-	%/ $^\circ C$
Ripple rejection	RR1	Refer to Fig.2	-	65	-	dB
	RR2	Refer to Fig.3	-	60	-	dB
*4 ON-state voltage for control	$V_C(ON)$	-	-	-	-	V
ON-state current for control	$I_C(ON)$	-	2	-	200	μA
OFF-state voltage for control	$V_C(OFF)$	-	-	-	0.8	V
OFF-state current for control	$I_C(OFF)$	$V_C=0.4V$	-	-	2	μA
Bias inflow current	I_B	$I_O=0$	-	1.5	3	mA
Output OFF-state dissipation current	I_{qs}	$I_O=0$, $V_C=0.4V$	-	-	10	μA

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

Output Voltage Line-up (Unless otherwise specified, $V_{IN}=1.8V$, $V_B=3.3V$, $I_O=0.3A$, $V_C=2.7V$, $T_a=25^\circ C$ (PQxxxFZ5MZ))
 (Unless otherwise specified, $V_{IN}=1.8V$, $V_B=3.3V$, $I_O=0.5A$, $V_C=2.7V$, $T_a=25^\circ C$ (PQxxxFZ01Z))

Model No.	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
PQ010FZ5MZ/PQ010FZ01Z	V_O	-	0.97	1.0	1.03	V
PQ012FZ5MZ/PQ012FZ01Z	V_O	-	1.17	1.2	1.23	

Fig.1 Test Circuit

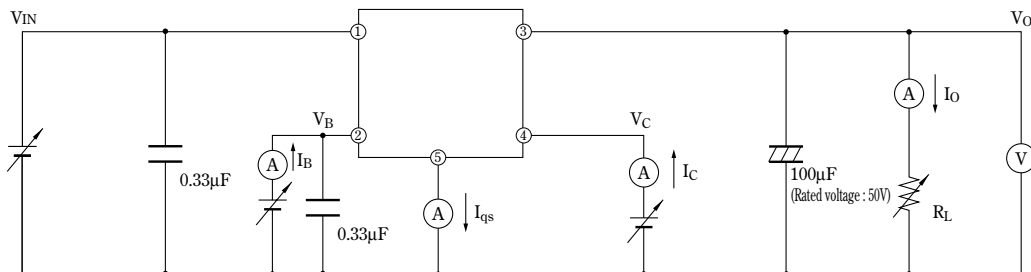


Fig.2 Test Circuit for Ripple Rejection

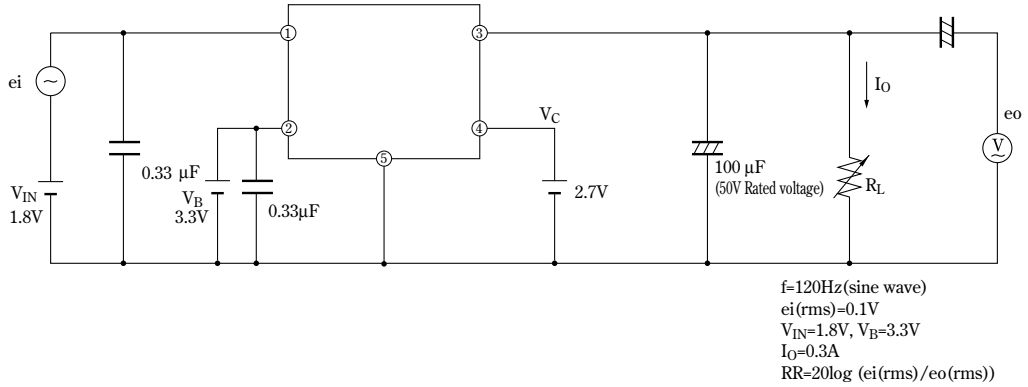


Fig.3 Test Circuit for Ripple Rejection

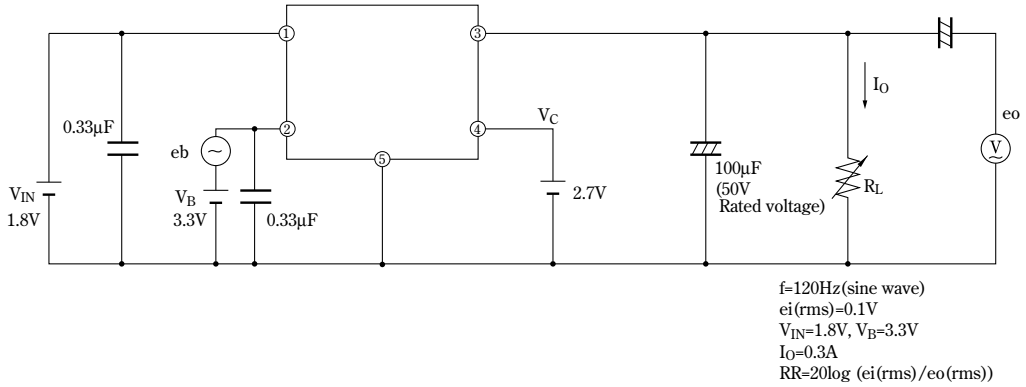


Fig.4 Power Dissipation vs. Ambient Temperature

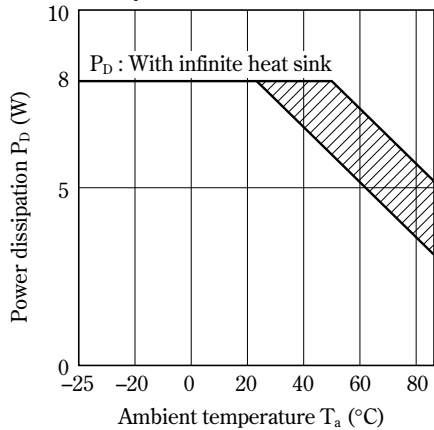


Fig.5 Overcurrent Protection Characteristics (PQ010FZ5MZ)

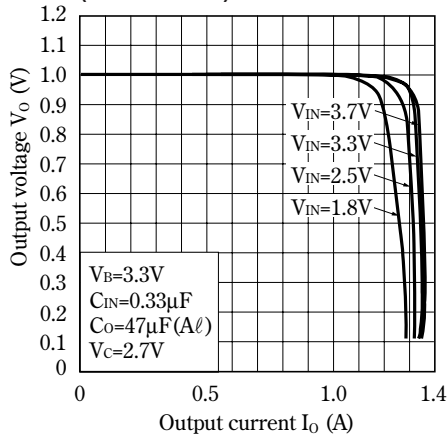


Fig.6 Overcurrent Protection Characteristics (PQ012FZ5MZ)

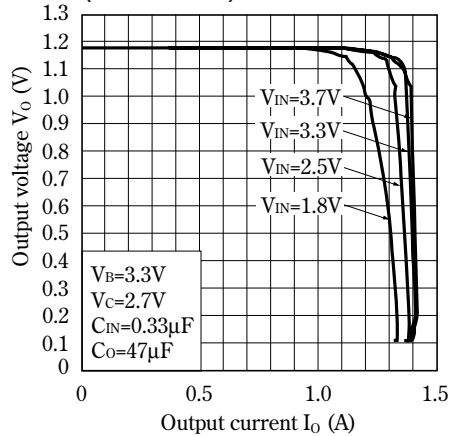


Fig.7 Overcurrent Protection Characteristics (PQ010FZ01Z)

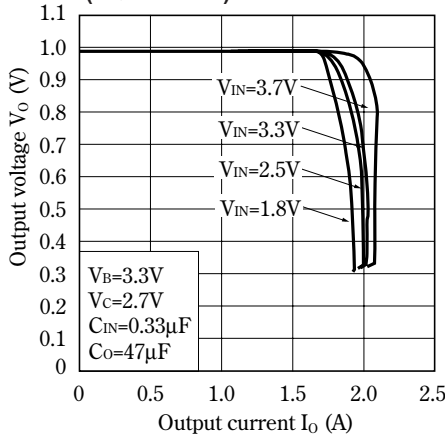


Fig.8 Overcurrent Protection Characteristics (PQ012FZ01Z)

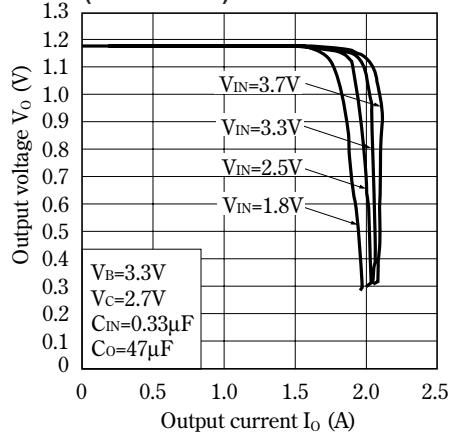


Fig.9 Output Voltage vs. Ambient Temperature (PQ010FZ5MZ / PQ010FZ01Z)

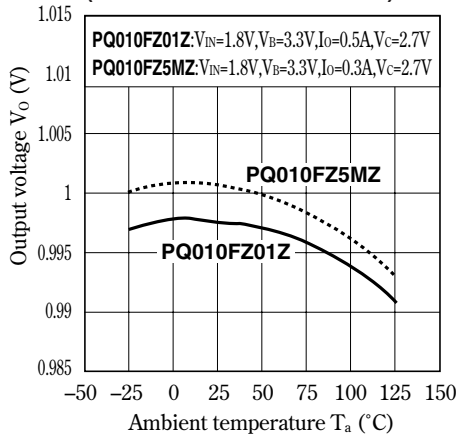


Fig.10 Output Voltage vs. Ambient Temperature (PQ012FZ5MZ / PQ012FZ01Z)

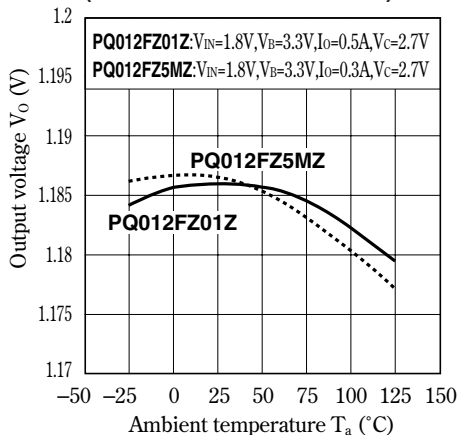


Fig.11 Bias Inflow Current vs. Ambient Temperature

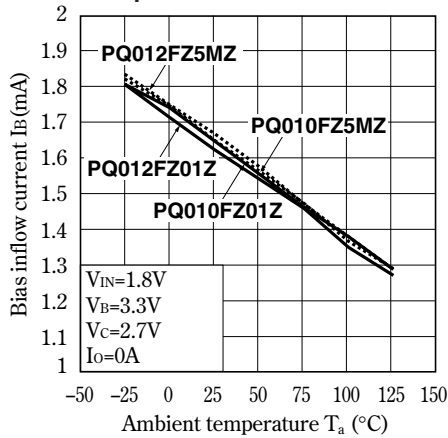


Fig.12 Output Short-circuit Current vs. Ambient Temperature (Reference)

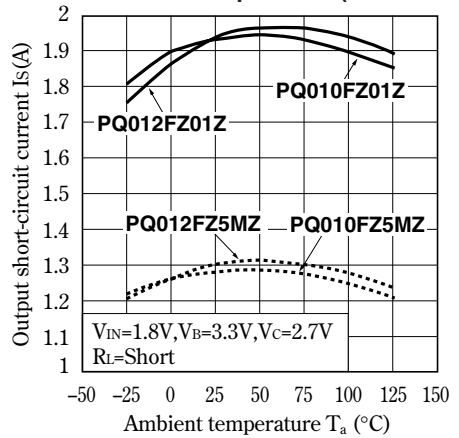


Fig.13 Output Voltage vs. Input Voltage (PQ010FZ5MZ)

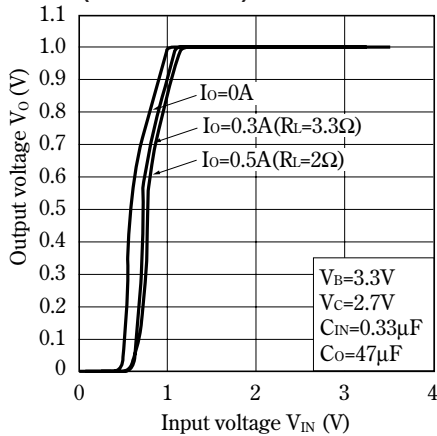


Fig.14 Output Voltage vs. Input Voltage (PQ012FZ5MZ)

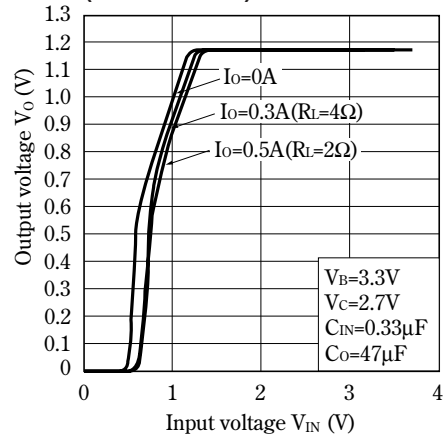


Fig.15 Output Voltage vs. Input Voltage (PQ010FZ01Z)

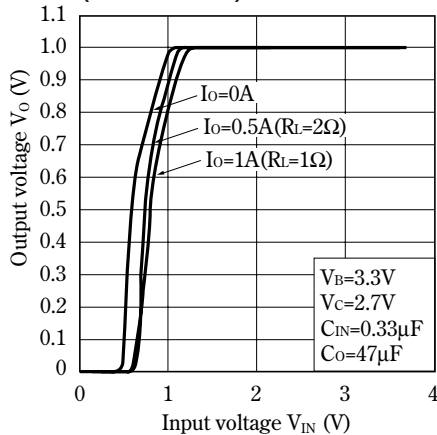


Fig.16 Output Voltage vs. Input Voltage (PQ012FZ01Z)

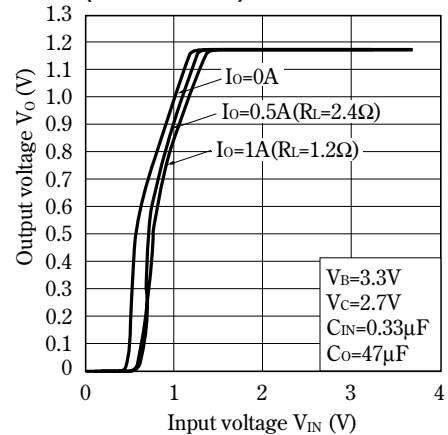


Fig.17 Output Voltage vs. Bias Supply Voltage (PQ010FZ5MZ)

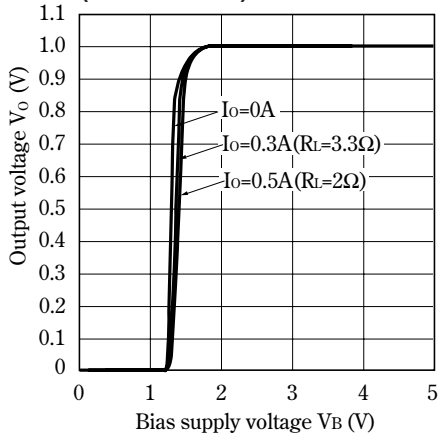


Fig.18 Output Voltage vs. Bias Supply Voltage (PQ012FZ5MZ)

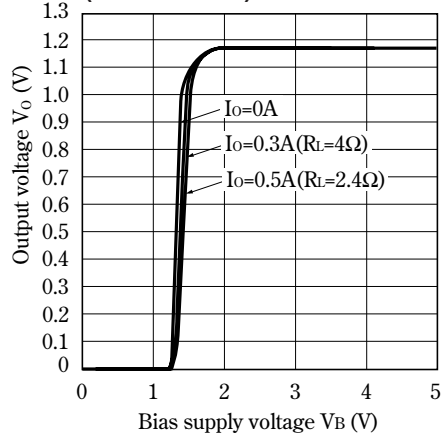


Fig.19 Output Voltage vs. Bias Supply Voltage (PQ010FZ01Z)

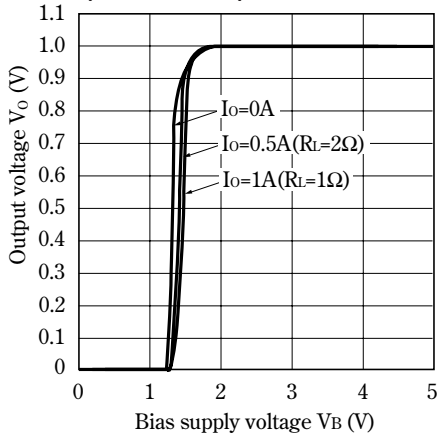


Fig.20 Output Voltage vs. Bias Supply Voltage (PQ012FZ01Z)

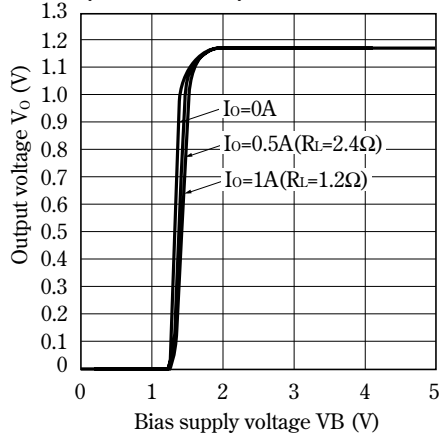


Fig.21 Circuit Operating Current vs. Input Voltage /Bias Supply Voltage (PQ010FZ5MZ)

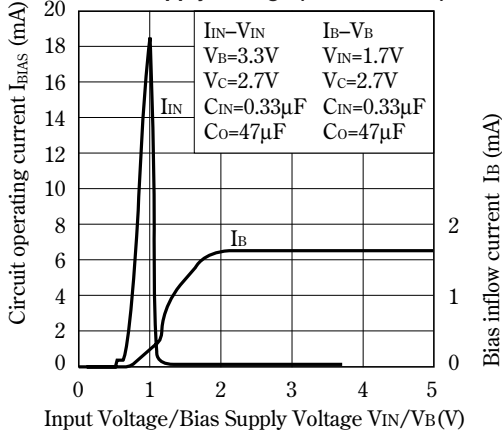


Fig.22 Circuit Operating Current vs. Input Voltage /Bias Supply Voltage (PQ012FZ5MZ)

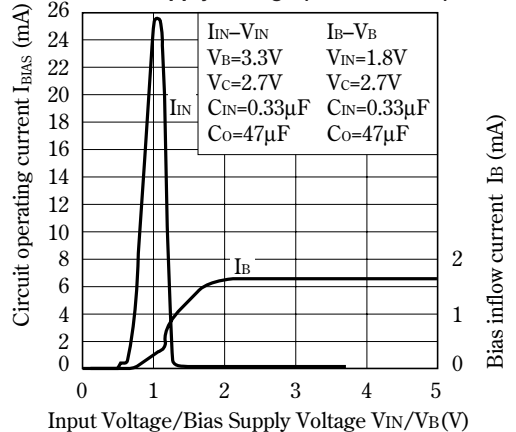


Fig.23 Circuit Operating Current vs. Input Voltage /Bias Supply Voltage (PQ010FZ01Z)

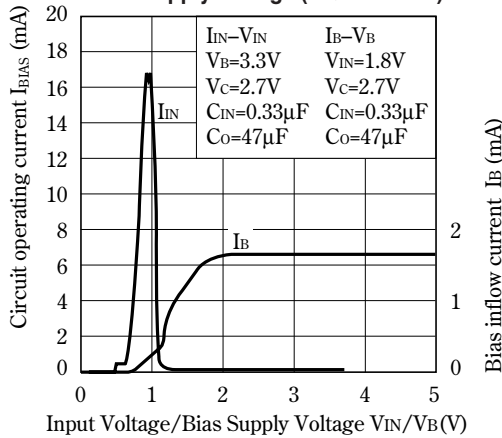


Fig.24 Circuit Operating Current vs. Input Voltage /Bias Supply Voltage (PQ012FZ01Z)

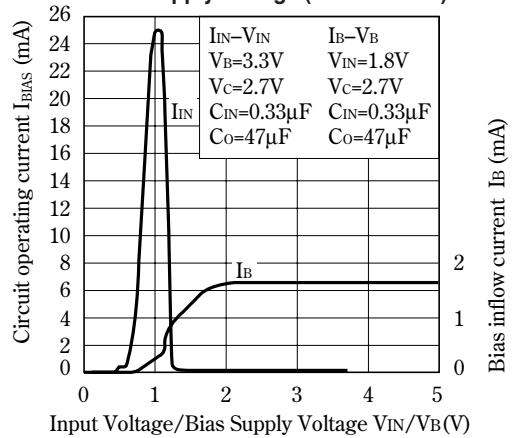


Fig.25 Output Voltage vs. Input Voltage / Bias Supply Voltage (PQ010FZ5MZ)

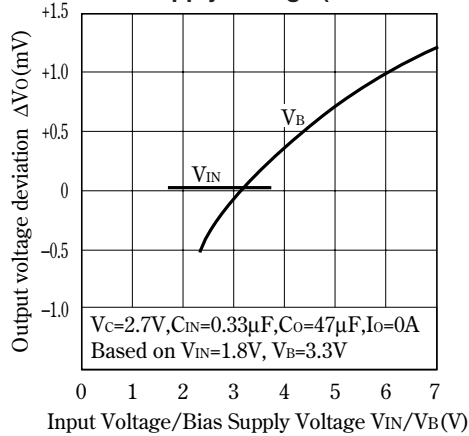


Fig.26 Output Voltage vs. Input Voltage / Bias Supply Voltage (PQ010FZ01Z)

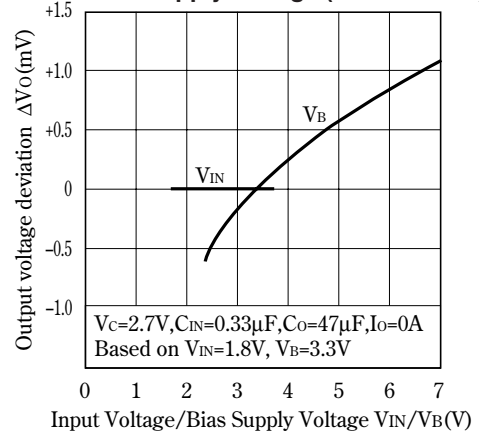


Fig.27 Output Voltage vs. Input Voltage / Bias Supply Voltage (PQ012FZ5MZ)

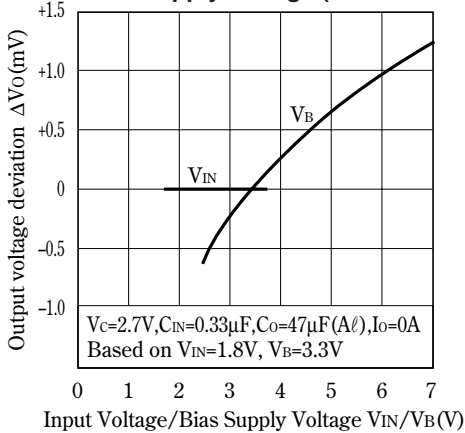


Fig.28 Output Voltage vs. Input Voltage / Bias Supply Voltage (PQ012FZ01Z)

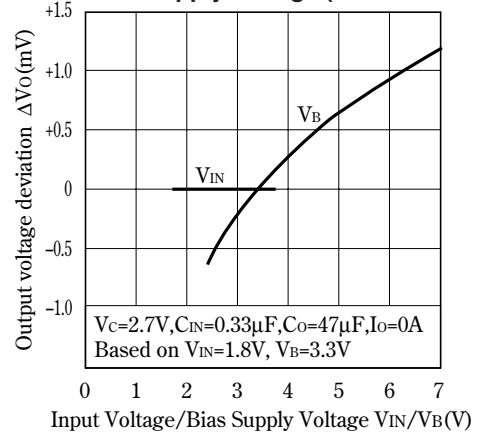


Fig.29 Output Voltage vs. Output Current

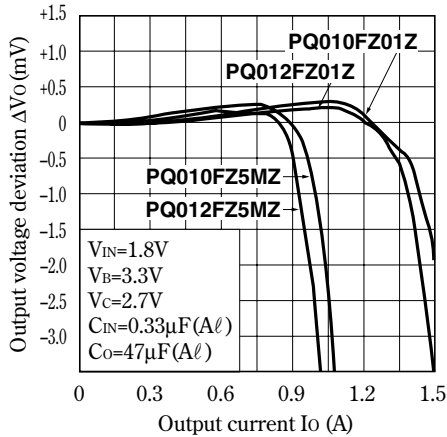


Fig.30 Ripple Rejection vs. Input Ripple Frequency(PQ010FZ5MZ/PQ010FZ01Z)

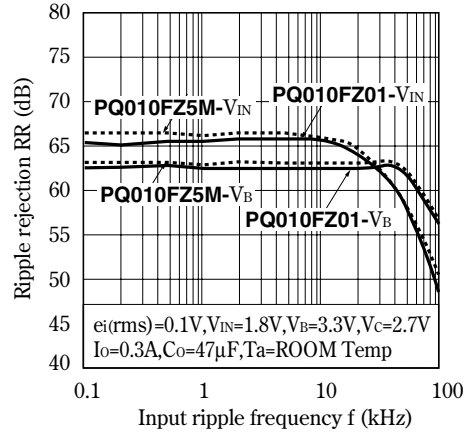


Fig.31 Ripple Rejection vs. Input Ripple Frequency(PQ012FZ5MZ/PQ012FZ01Z)

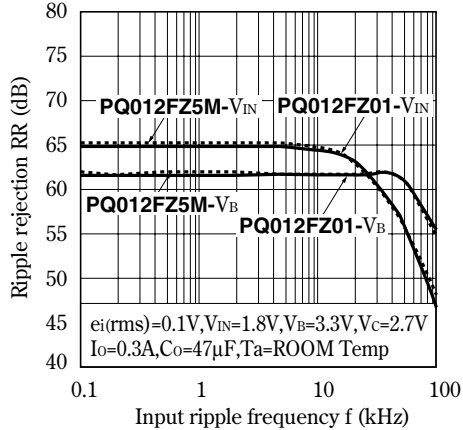


Fig.32 Ripple Rejection vs. Output Current (PQ010FZ5MZ / PQ010FZ01Z)

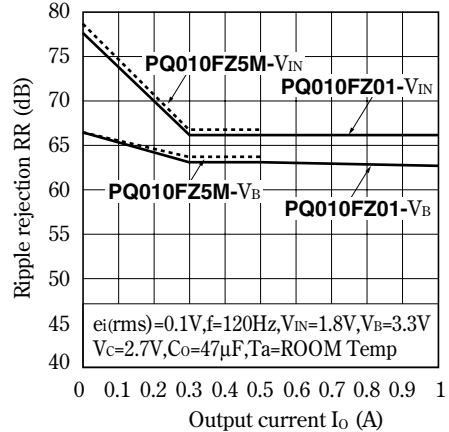


Fig.33 Ripple Rejection vs. Output Current (PQ010FZ5MZ / PQ010FZ01Z)

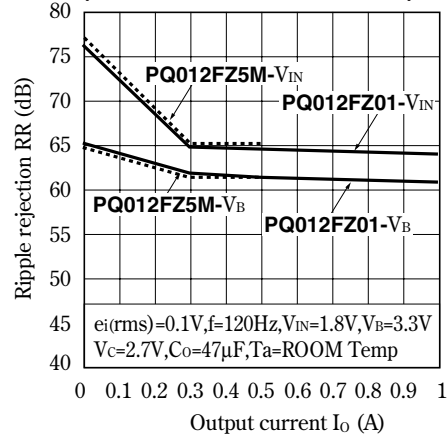


Fig.34 Typical Application

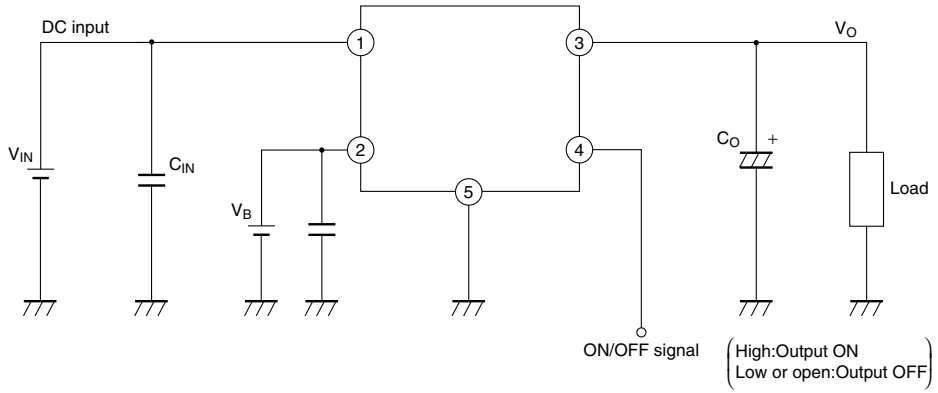
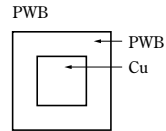
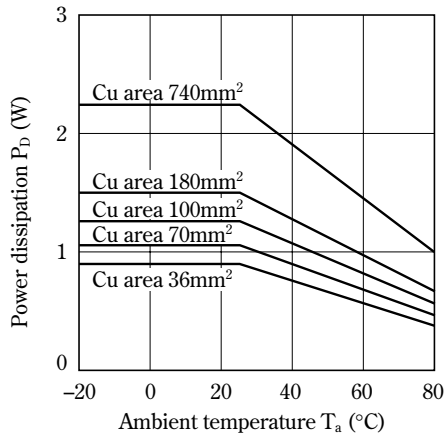


Fig.35 Power Dissipation vs. Ambient Temperature (Typical Value)



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

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