

PQ1CG2032FZ PQ1CG2032RZ

Chopper Regulator

TO-220 Type Chopper Regulator

General Description

Sharp's chopper regulator PQ1CG2032FZ/PQ1CG2032RZ of TO-220 package uses PWM method.

It is suitable for the applications of large voltage difference between input and output and applications of negative power supply thanks to its low heat loss.

Features

- (1) Maximum switching current: 3.5 A
- (2) Built-in ON/OFF control function
- (3) Built-in soft start function to suppress overshoot of output voltage in power on sequence or ON/OFF control sequence.
- (4) Built-in oscillation circuit
(Oscillation frequency : TYP. 70 kHz)
- (5) Built-in overheat/overcurrent protection function
- (6) TO-220 type package
- (7) Variable output voltage
(Output variable range : 1.26 to 35 V/-1.26 to -30 V)
[Possible to choose step-down output/inverting output according to external connection circuit]
- (8) **PQ1CG2032FZ** : Zigzag forming
PQ1CG2032RZ : Self-stand forming

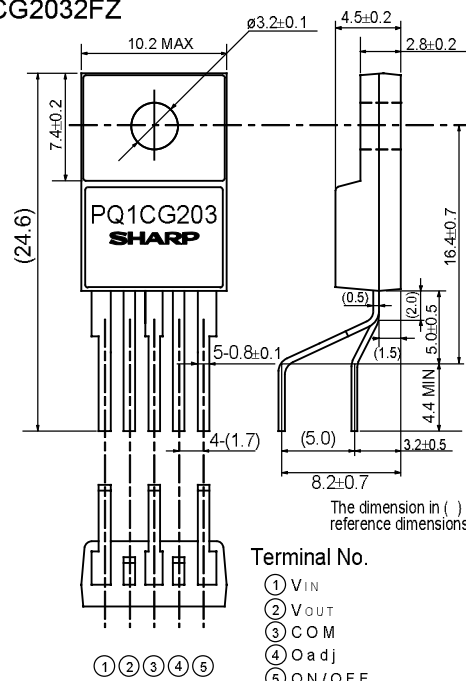
Applications

- (1) Switching power supplies
- (2) Facsimiles, printers and other OA equipment
- (3) Battery chargers
- (4) Personal computers and amusement equipment

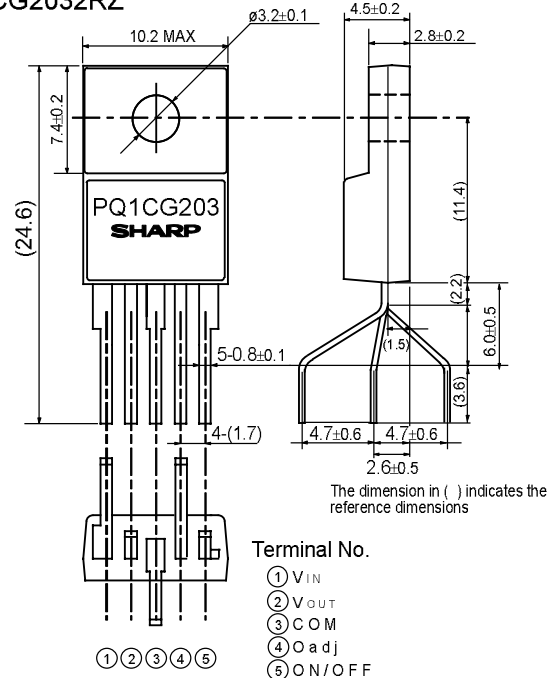
Outline Dimensions

(Unit: mm)

PQ1CG2032FZ



PQ1CG2032RZ



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www.DataSheet4U.com

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Chopper Regulator

Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
*1 Input voltage	V _{IN}	40	V
Output adjustment terminal voltage	V _{adj}	7	V
Dropout voltage	V _{I-O}	41	V
*2 Output-COM voltage	V _{out}	-1	V
*3 ON/OFF control voltage	V _c	-0.3 to 40	V
Switching current	I _{sw}	3.5	A
*4 Power dissipation	P _{d1}	1.4	W
	P _{d2}	14	W
*5 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

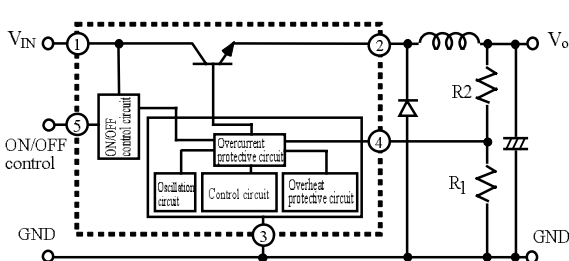
- *1 Voltage between Vin and COM
- *2 Voltage between Vout and COM
- *3 Voltage between ON/OFF and COM
- *4 P_{d1}: No heat sink P_{d2}: With infinite heat sink.
- *5 Overheat protector may operate for T_j=125 to 150°C.

Electrical Characteristics

(V_{in}=12 V, I_o=0.5 A, Terminal No. 5 open and Ta=25°C unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Output saturation voltage	V _{sat}	I _{sw} =3A	-	1.4	1.8	V
Reference voltage	V _{ref}	-	1.235	1.26	1.285	V
Reference voltage temperature fluctuation	ΔV _{ref}	T _j =0 to 125°C	-	±0.5	-	%
Load regulation	R _{egL}	I _o =0.5 to 3A	-	0.2	1.5	%
Line regulation	R _{egI}	V _{in} =8 to 35V	-	0.5	2.5	%
Efficiency	η	I _o =3A	-	80	-	%
Oscillation frequency	f _o	-	60	70	80	kHz
Oscillation frequency temperature fluctuation	Δf _o	T _j =0 to 125°C	-	±2	-	%
Overcurrent detection level	I _L	-	3.6	4.2	5.8	A
Charge current	I _{CHG}	Terminals 2/4 are open, Terminal 5	-	-10	-	μA
Input threshold voltage	V _{THL}	Duty=0% Terminal 4 = 0 V, Terminal 5	-	1.3	-	V
	V _{THH}	Duty=100%, Terminal 4 is open, Terminal 5	-	2.3	-	V
ON threshold voltage	V _{THON}	Terminal 4 = 0 V, Terminal 5	0.7	0.8	0.9	V
Standby current	I _{SD}	V _{in} =40V, Terminal 5=0 V=0V	-	140	400	μA
Output OFF-state consumption current	I _{QS}	V _{in} =40V, Terminal 5=0 V=0.9V	-	8	16	mA

Step-down voltage output circuit diagram
PQ1CG2032FZ/PQ1CG2032RZ

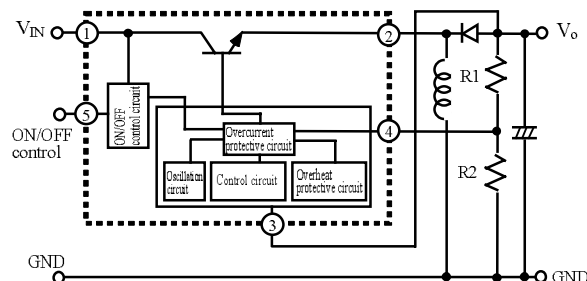


$$V_o = V_{ref} \times (1 + R_2/R_1)$$

$$V_o = 1.26V \sim 35V \quad (V_{ref} = 1.26V)$$

Here, the upper limit is restricted by V_{in}-V_{sa} value according to the input.

Inverting output circuit diagram
PQ1CG2032FZ/PQ1CG2032RZ



$$V_o = -V_{ref} \times (1 + R_2/R_1)$$

$$V_o = -1.26V \sim -30V \quad (V_{ref} = 1.26V)$$

Here, the upper limit of the absolute value is restricted by 40V-V_i according to the input.

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