

# PQ1PF2 (Under Development)

Primary Regulator for Switching Power Supply (30W Class)

## ■ Features

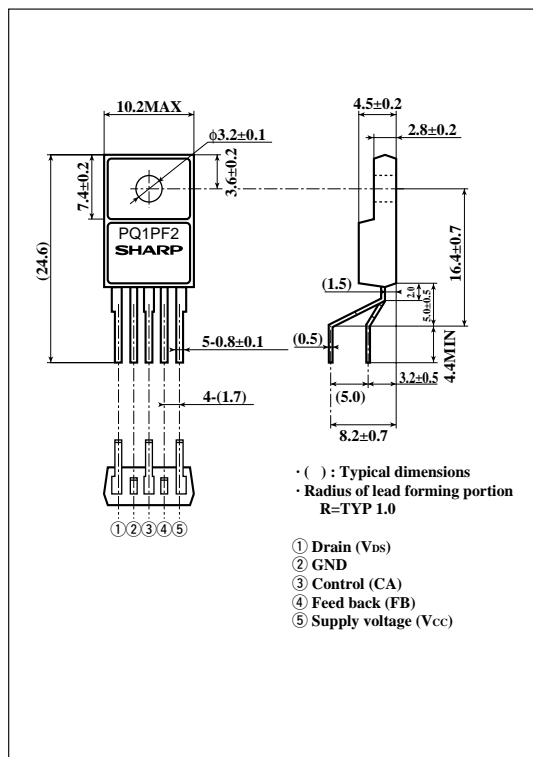
- 5-terminal lead forming package (equivalent to TO-220)
- Built-in oscillation circuit  
(oscillation frequency : TYP.100kHz)
- Output for power supply : 30W class
- Built-in overheat protection, overcurrent protection function

## ■ Applications

- Switching power supplies for VCRs
- Switching power supplies for peripheral equipment of PCs  
(FDD/CD-ROM drive/HDD)

## ■ Outline Dimensions

(Unit : mm)



## ■ Absolute Maximum Ratings

(T<sub>a</sub>=25°C)

Parameter	Symbol	Rating	Unit
Drain-GND (source) voltage	V <sub>DS</sub>	500	V
Drain current	I <sub>D</sub>	3	A
<sup>*1</sup> Power supply voltage	V <sub>CC</sub>	35	V
<sup>*2</sup> FB terminal input voltage	V <sub>FB</sub>	4	V
CA terminal input current	I <sub>CA</sub>	2	mA
<sup>*3</sup> Power dissipation	P <sub>D1</sub>	1.5	W
	P <sub>D2</sub>	18	W
<sup>*4</sup> Junction temperature	T <sub>j</sub>	150	°C
Operating temperature	T <sub>opr</sub>	-20 to +80	°C
Storage temperature	T <sub>stg</sub>	-40 to +150	°C
Soldering temperature	T <sub>sol</sub>	260 (For 10s.)	°C

<sup>\*1</sup> Voltage between V<sub>CC</sub> terminal and GND terminal.

<sup>\*2</sup> Voltage between FB-terminal and GND terminal.

<sup>\*3</sup> P<sub>D1</sub>:No heat sink, P<sub>D2</sub>:With infinite heat sink

<sup>\*4</sup> Overheat protection may operate at 125<T<sub>j</sub><150°C

· Please refer to the chapter " Handling Precautions ".

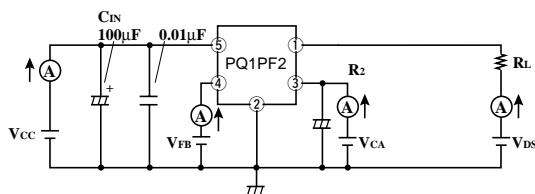
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■ **Electrical Characteristics** (Unless otherwise specified, conditions shall be  $V_{DS}=10V, V_{CC}=18V, V_{CA}=\text{OPEN}, V_{FB}=2.2V, R_L=56\Omega, T_a=25^\circ\text{C}$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Drain-source onstate resistance	$R_{DS(ON)}$	$I_D=1.3A$	-	2.2	3.0	$\Omega$
Drain-source leakage current	$I_{DSS}$	$V_{DS}=500V, V_{CC}=7V$ $V_{CA}=\text{GND}, V_{FB}=\text{GND}$	-	-	250	$\mu\text{A}$
Oscillation frequency	$f_o$		90	100	110	kHz
Temperature change in oscillation frequency	$\Delta f_o$	$T_j=0 \text{ to } 125^\circ\text{C}$	-	$\pm 5$	-	%
Maximum duty	$D_{MAX}$		42	45	50	%
FB threshold voltage	$V_{FBL}$	Duty=0%	-	0.9	-	V
	$V_{FBH}$	Duty= $D_{MAX}$	-	1.8	-	V
	$V_{FB(OC)}$	$V_{CA}=6V$	2.6	2.8	3.1	V
FB current	$I_{FB}$	$V_{FB}=\text{GND}$	-800	-620	-440	$\mu\text{A}$
	$V_{CAL}$	Duty=0%	-	0.9	-	V
	$V_{CAH}$	Duty= $D_{MAX}$	-	1.8	-	V
CA threshold voltage	$V_{CA(ON/OFF)}$		0.49	0.6	0.74	V
	$V_{CA(OVP)}$		7.2	7.7	8.2	V
	$I_{CAIN}$	$V_{FB}=1V, V_{CA}=6V$	20	36	52	$\mu\text{A}$
Overcurrent detecting level	$I_{D(OC)}$		-	1.8	-	A
Operation starting voltage	$V_{CC(ON)}$	$V_{DS}=\text{OPEN}, V_{FB}=\text{OPEN}$	15.5	17.0	18.5	V
Operation stopping voltage	$V_{CC(OFF)}$	$V_{DS}=\text{OPEN}, V_{FB}=\text{OPEN}$	8.5	9.3	10.1	V
Stand-by current	$I_{CC(ST)}$	$V_{DS}=\text{OPEN}, V_{CC}=14V,$ $V_{FB}=\text{OPEN}$	-	100	150	$\mu\text{A}$
Output OFF-mode consumption current	$I_{CC(OFF)}$	$V_{DS}=\text{OPEN}, V_{CA}=\text{GND}$ $V_{FB}=\text{OPEN}$	-	0.6	1.8	mA
Output-operating mode consumption current	$I_{CC(OP)}$		-	10	18	mA
Charging current	$I_{CA(CHG)}$	$V_{CA}=\text{GND}, V_{FB}=\text{OPEN}$	-15	-10	-5	$\mu\text{A}$

Fig. 1 Test Circuit



■ **Block Diagram**

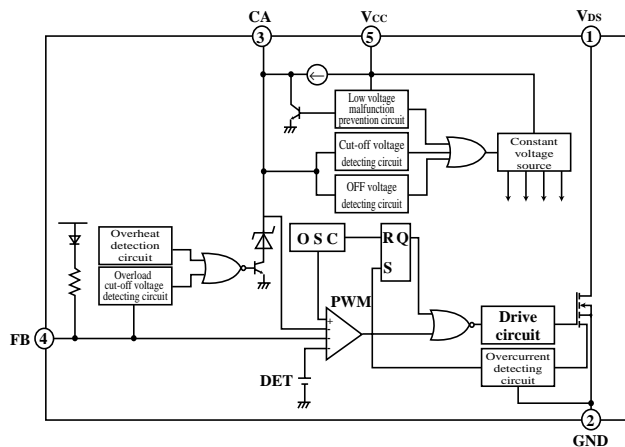
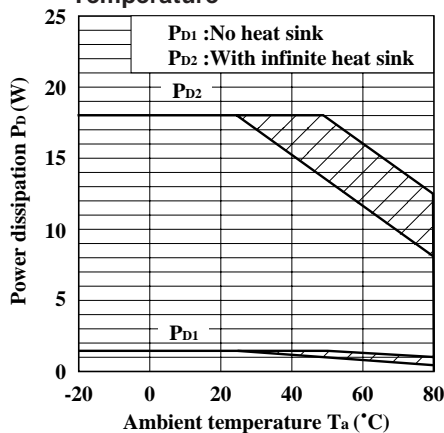


Fig. 2 Power Dissipation vs. Ambient Temperature



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