

PQ1PF2 (Under Development)

Primary Regulator for Switching Power Supply (30W Class)

■ Features

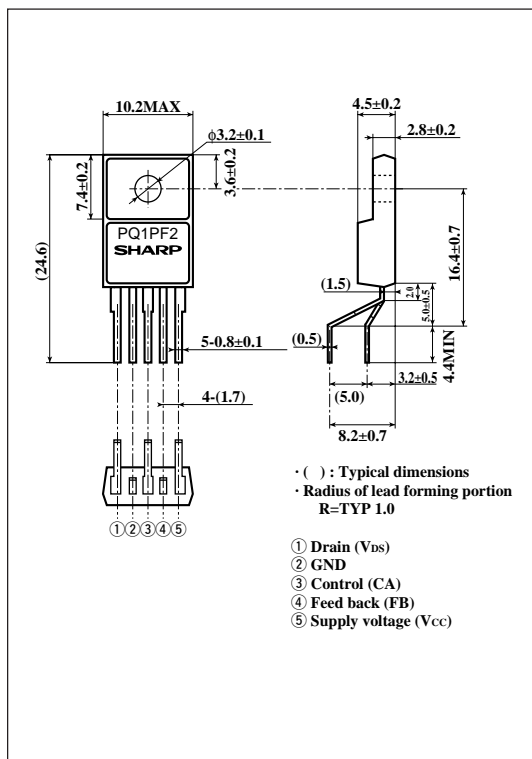
- 5-terminal lead forming package (equivalent to TO-220)
- Built-in oscillation circuit
(oscillation frequency : TYP.100kHz)
- Output for power supply : 30W class
- Built-in overheat protection, overcurrent protection function

■ 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_a=25°C)

Parameter	Symbol	Rating	Unit
Drain-GND (source) voltage	V _{DS}	500	V
Drain current	I _D	3	A
^{*1} Power supply voltage	V _{CC}	35	V
^{*2} FB terminal input voltage	V _{FB}	4	V
CA terminal input current	I _{CA}	2	mA
^{*3} Power dissipation	P _{D1}	1.5	W
	P _{D2}	18	W
^{*4} 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 V_{CC} terminal and GND terminal.

^{*2} Voltage between FB-terminal and GND terminal.

^{*3} P_{D1}:No heat sink, P_{D2}:With infinite heat sink

^{*4} Overheat protection may operate at 125<T_j<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	Ω
Drain-source leakage current	I_{DSS}	$V_{DS}=500V, V_{CC}=7V$ $V_{CA}=\text{GND}, V_{FB}=\text{GND}$	-	-	250	μA
Oscillation frequency	f_o		90	100	110	kHz
Temperature change in oscillation frequency	Δf_o	$T_j=0 \text{ to } 125^\circ\text{C}$	-	± 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	μA
	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	μA
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	μA
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	μA

Fig. 1 Test Circuit

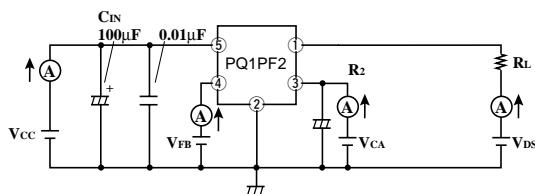
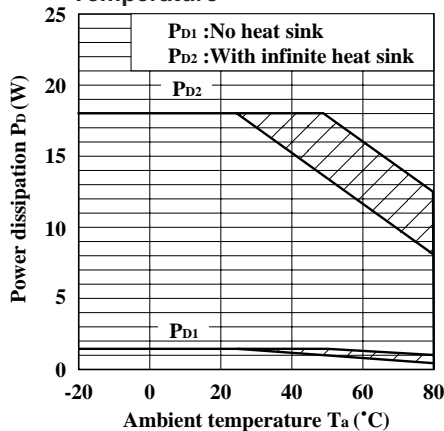


Fig. 2 Power Dissipation vs. Ambient Temperature



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

■ **Block Diagram**

