PQ1PF2 (Under Development)

Primary Regulator for Switching Power Supply (30W Class)
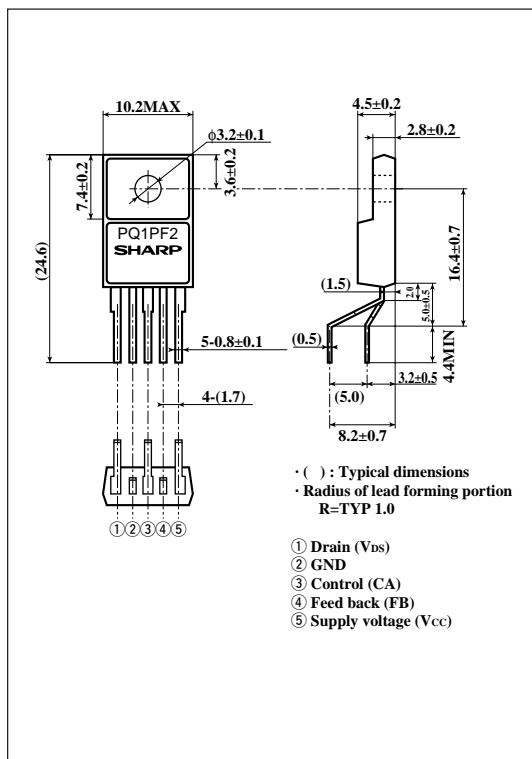
■ Features

- 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)

· ( ) : Typical dimensions
· Radius of lead forming portion
  R=TYP 1.0

① Drain (V_{DS})
② GND
③ Control (CA)
④ Feed back (FB)
⑤ Supply voltage (V_{CC})

■ Absolute Maximum Ratings   ($T_a=25^\circ C$)

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	$^\circ C$
Operating temperature	T_{opr}	-20 to +80	$^\circ C$
Storage temperature	T_{stg}	-40 to +150	$^\circ C$
Soldering temperature	T_{sol}	260 (For 10s.)	$^\circ C$

*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 $125 =< T_j =< 150^\circ C$

· 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}=OPEN,V_{FB}=2.2V,R_L=56Ω, T_a=25°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}=GND,V_{FB}=GND	-	-	250	μA
Oscillation frequency	fo		90	100	110	kHz
Temperature change in oscillation frequency	Δfo	T_j=0 to 125°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
	$V_{FB (OCP)}$	V_{CA}=6V	2.6	2.8	3.1	V
FB current	I_{FB}	V_{FB}=GND	-800	-620	-440	μA
CA threshold voltage	V_{CAL}	Duty=0%	-	0.9	-	V
	V_{CAH}	Duty=D_{MAX}	-	1.8	-	V
	$V_{CA (ON/OFF)}$		0.49	0.6	0.74	V
	$V_{CA (OVP)}$		7.2	7.7	8.2	V
CA sink current	I_{CAIN}	V_{FB}=1V,V_{CA}=6V	20	36	52	μA
Overcurrent detecting level	$I_{D (OCP)}$		-	1.8	-	A
Operation starting voltage	$V_{CC (ON)}$	V_{DS}=OPEN,V_{FB}=OPEN	15.5	17.0	18.5	V
Operation stopping voltage	$V_{CC (OFF)}$	V_{DS}=OPEN,V_{FB}=OPEN	8.5	9.3	10.1	V
Stand-by current	$I_{CC (ST)}$	V_{DS}=OPEN,V_{CC}=14V, V_{FB}=OPEN	-	100	150	μA
Output OFF-mode consumpion current	$I_{CC (OFF)}$	V_{DS}=OPEN,V_{CA}=GND V_{FB}=OPEN	-	0.6	1.8	mA
Output-operating mode consumption current	$I_{CC (OP)}$		-	10	18	mA
Charging current	$I_{CA (CHG)}$	V_{CA}=GND,V_{FB}=OPEN	-15	-10	-5	μA

Fig.1 Test Circuit
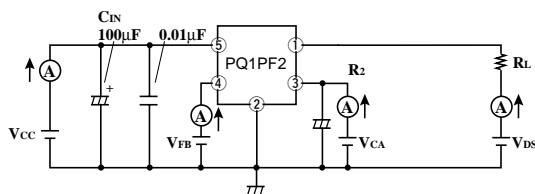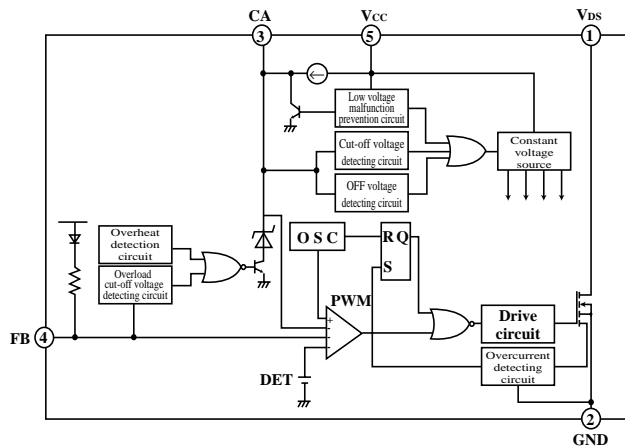
Fig. 2 Power Dissipation vs. Ambient Temperature
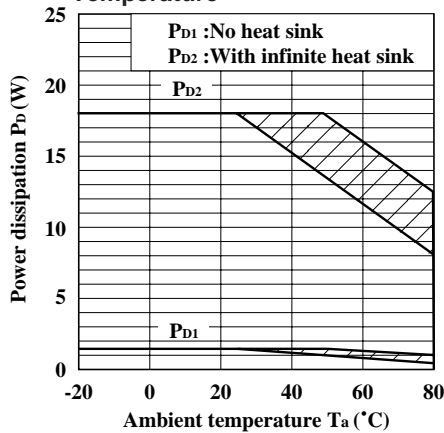
Note) Oblique line portion:Overheat protection may operate in this area.

■ **Block Diagram**