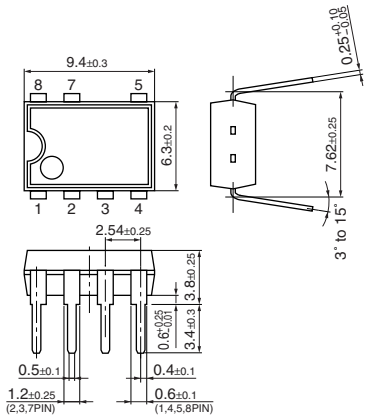
Panasonic

Under Development

*Saves power during standby, enhances efficiency*

# MIP2C2 High-Performance IPD for Battery Chargers

Unit : mm




DIP8-A1(CF)

## ■ Overview

MIP2C2 is a high-performance IPD designed for 7W battery chargers. It features built-in protection circuits necessary for compact power source charger circuitry. This allows a significant reduction in externally connected parts. MIP2C2 provides PWM control when a normal load is applied and intermittent control with low load. This results in greater efficiency for very low to maximum loads, while also conserving power during standby.

## ■ Features

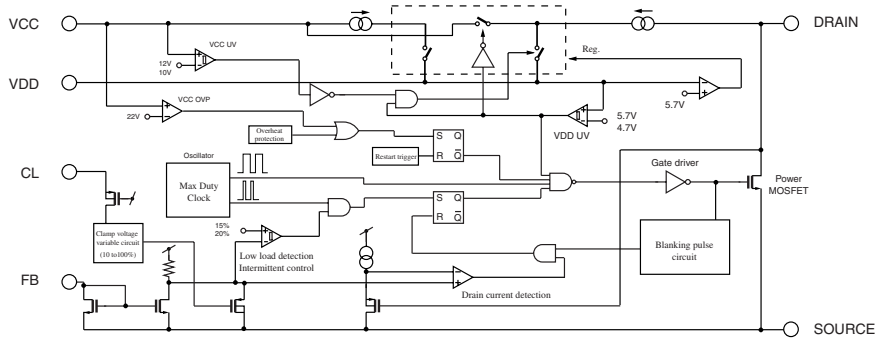
- Built-in charge protection circuit
  Built-in overcurrent, overheating, load shorting and overvoltage protection circuits
- Significantly reduced power consumption with no load*
  20mW at 100VAC, 25mW at 240VAC
- High efficiency with rated load*
  75% at 100VAC,72% at 240VAC
- Reduced number of parts (12 less than conventional Panasonic models)

  * With worldwide input and 5.8V/0.7A output

## ■ Applications

- Chargers (for cellular phones, etc. )

## ■ Block Diagram




## ■ Pin Descriptions

| Pin No. | Function |
|---|---|
| 1 | $V_{DD}$ |
| 2 | FB |
| 3 | CL |
| 4 | $V_{CC}$ |
| 5 | Drain |
| 6 | — |
| 7 | Source |
| 8 | Source |



Semiconductor Company, Matsushita Electric Industrial Co., Ltd.

1 Kotari-yakemachi, Nagaokakyo, Kyoto 617-8520, Japan Tel. (075) 951-8151 http://www.panasonic.co.jp/semicon/

E00107AE

New publication, effective from Jan. 25. 2002.

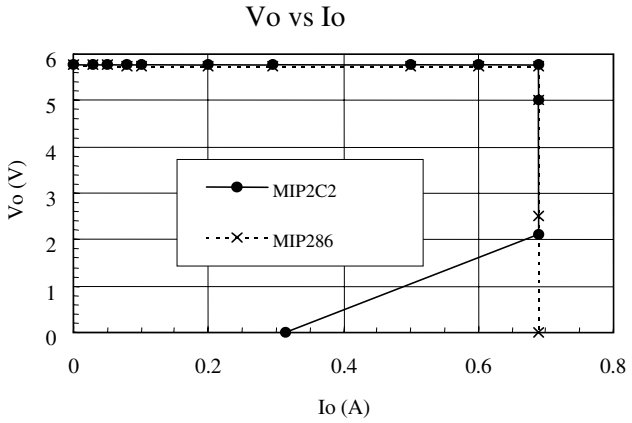
## ■ Absolute Maximum Ratings

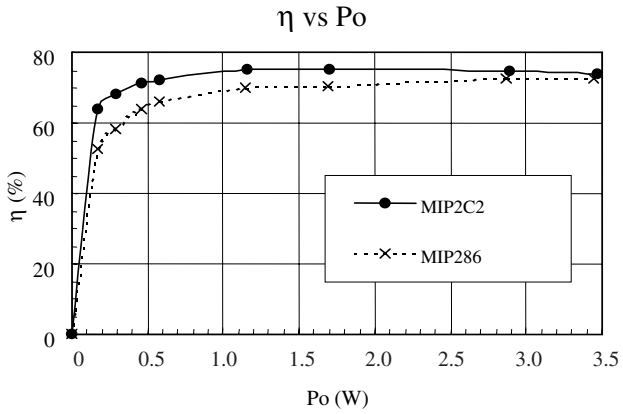
| Parameters | Symbol | Rating | Unit |
|---|---|---|---|
| Drain voltage | $V_D$ | 700 | V |
| Supply voltage | $V_{CC}$ | 30 | V |
| Feedback voltage | $V_{FB}$ | 7 | V |
| CL terminal voltage | $V_{CL}$ | 7 | V |
| Drain current | $I_D$ | 500 | V |
| Operating Junction Temperature | $T_{ch}$ | 150 | °C |
| Storage temperature | $T_{stg}$ | -55 to +150 | °C |

## ■ Electrical Characteristics (Ta = 25°C ± 3°C)

| Parameters | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| ( Control Function ) | | | | | | |
| Oscillator output frequency | $f_{OSC}$ | FB:Open | 90 | 100 | 110 | kHz |
| Max. Duty cycle | MAXDC | FB:Open | - | 50 | - | % |
| VDD reference voltage | $V_{DD}$ | | - | 5.7 | - | V |
| VDD stop voltage | $V_{UV}$ | | - | 5.1 | - | V |
| Circuit current | $I_{CC}$ | | - | 0.5 | - | mA |
| VCC charge start voltage | $V_{CC(ON)}$ | | - | 12 | - | V |
| VCC charge stop voltage | $V_{CC(OFF)}$ | | - | 10 | - | V |
| VCC charge voltage hysteresis | $\Delta V_{CC}$ | | - | 2 | - | V |
| VDD charge current | $I_{ch1}$ | $V_{DD}$ = 0V | - | 3.0 | - | mA |
| | $I_{ch2}$ | $V_{DD}$ = 4V | - | 1.5 | - | mA |
| Feedback current | $I_{FB}$ | | - | 120 | - | µA |
| Feedback current hystereses | $I_{FBHYS}$ | | - | 3 | - | µA |
| LC terminal current | $I_{CLMAX}$ | | 20 | - | - | µA |
| LC terminal current | $I_{CLMIN}$ | | - | - | 5 | µA |
| (Protection Function) | | | | | | |
| Overcurrent detection | $I_{LIMITMIN}$ | $I_{CL} < I_{CLMIN}$ | - | 0.05 | - | A |
| | $I_{LIMITMAX}$ | $I_{CL} > I_{CLMAX}$ | - | 0.35 | - | |
| Overvoltage detection | $V_{CC(0V)}$ | | - | 20 | - | V |
| Overheating detection | $T_{OTP}$ | | 130 | 140 | 150 | °C |
| Latch reset voltage | $V_{creset}$ | | - | 3 | - | V |
| (Output Function) | | | | | | |
| ON resistance | $R_{DS(ON)}$ | $I_D$ = 0.1 A | - | 22 | 27 | Ω |
| Drain leak current | $I_{DSS}$ | $V_{DS}$ = 630 V | - | - | 250 | µA |
| Drain breakdown voltage | $V_{DSS}$ | $I_D$ = 0.25 mA | 700 | - | - | V |
| Rise time | $t_r$ | | - | 100 | - | ns |
| Fall time | $t_f$ | | - | 50 | - | ns |
| (Supply Voltage) | | | | | | |
| Minimum drain voltage | $V_{D(MIN)}$ | | 50 | - | - | V |

## ■ Electrical Characteristics ( With 100VAC input and 5.8V/0.7A output)




## ■ Application Circuit Example