Ordering number : ENN7908

SANYO Semiconductors
DATA SHEET

ExPD (Excellent Power Device)

# TN6R04 — Switching Regulator IC for RCC Method Power Supplies Applications

## Features

- Original contorol IC for Delay RCC-type.
- High voltage Power MOSFET with current sense.
- Overload protection.
- Only few external components required.
- Small Full-Isolation package : TO-220FI5H.

## Specifications

### Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain-to-Source Voltage | $V_{DS}$ | | 650 | V |
| Drain Current (DC) | $I_D$ | | 5.5 | A |
| Drain Current (Pulse) | $I_{DP}$ | PW≤10μs, duty cycle≤1% | 16.5 | A |
| IC Input Voltage | $V_{IN}$ | | 30 | V |
| Allowable Power Dissipation | $P_D$ | | 2.0 | W |
| | | Tc=25°C | 35 | W |
| Operating Temperature | Topr | | −25 to +125 | °C |
| Junction Temperature | Tj | | 150 | °C |
| Storage Temperature | Tstg | | −55 to +150 | °C |

### Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| [MOSFET] | | | | | | |
| Drain-to-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D$=1mA, $V_{DELAY}$=0 | 650 | | | V |
| Zero-Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=650V, $V_{DELAY}$=0 | | | 1.0 | mA |
| Cutoff Voltage | $V_{GS}$(off) | $V_{DS}$=10V, $I_D$=1mA | 3.0 | | 4.0 | V |
| Static Drain-to-Source On-State Resistance | $R_{DS}$(on) | $I_D$=2.8A, $V_{DELAY}$=15V | | 1.2 | 1.6 | Ω |
| Input Capacitance | Ciss | $V_{DS}$=20V, f=1MHz | | 1450 | | pF |
| Output Capacitance | Coss | $V_{DS}$=20V, f=1MHz | | 250 | | pF |
| [IC] | | | | | | |
| Restriction of Drive Voltage | $V_{IN(OV)}$ | $I_{IN}$=1mA, $V_{FB}$=0 | 30 | | | V |
| Detection Voltage of Feedback and Overload Amplifier | $V_{FB}$ | $V_{DELAY}$, $V_{IN}$=10V, $I_{IN}$=50mA | | 2.0 | | V |




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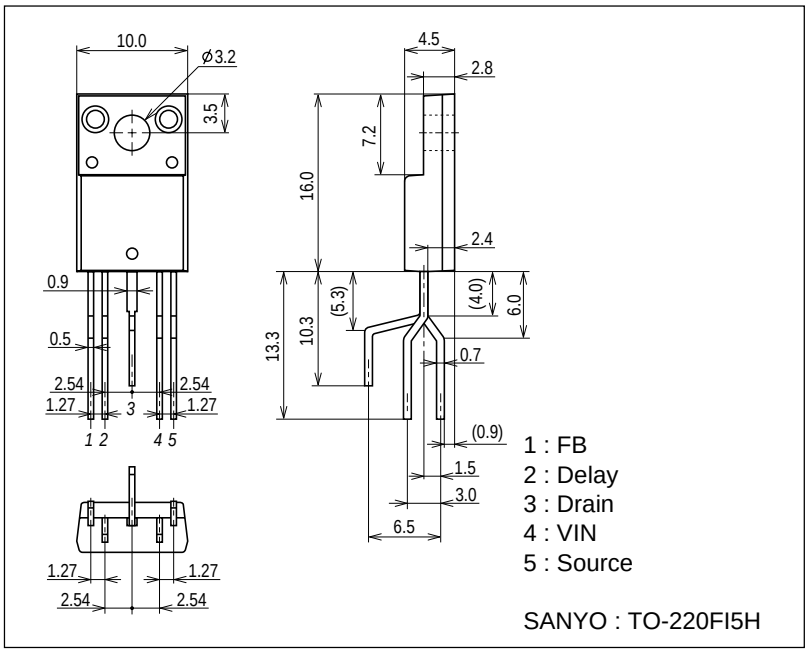
## Recommend Operating Conditions at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| IC Input Voltage | $V_{IN}$ | | ±10 to ±25 | V |
| Operating Frequency | $F_{OSC}$ | | 20 to 200 | kHz |

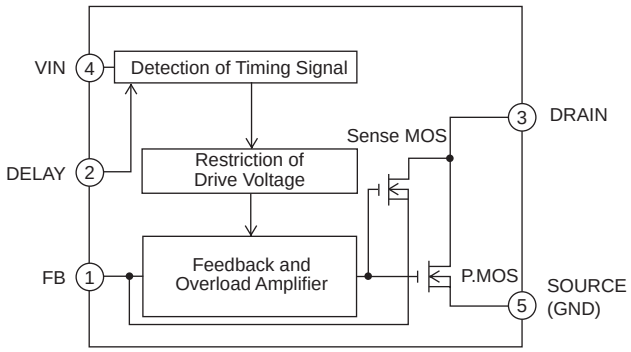
## Package Dimensions

unit : mm

2226




## Block Diagram

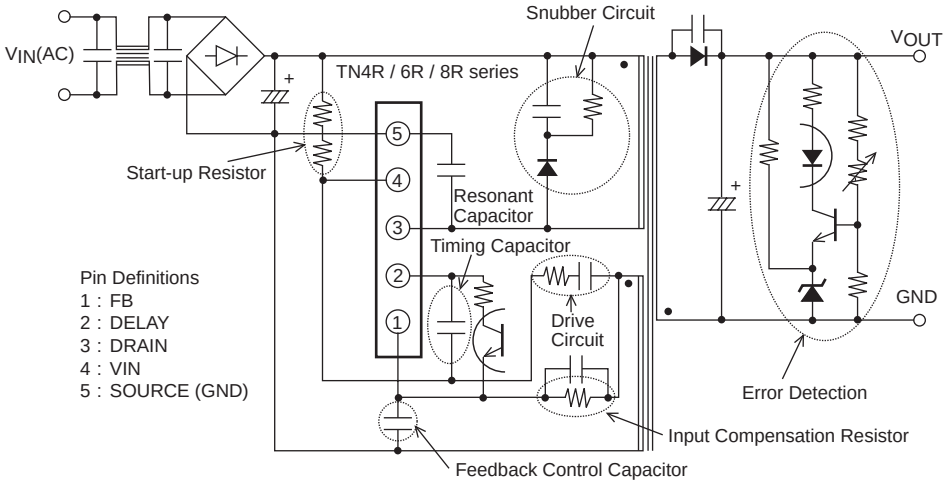



## Pin Definitions and Functions

| Pin No. | Symbol | Function |
|---|---|---|
| 1 | FB | Input for feedback voltage and current sense |
| 2 | DELAY | Input for timing signal |
| 3 | DRAIN | Power MOSFET Drain |
| 4 | VIN | Input for Start-up voltage and drive voltage |
| 5 | SOURCE(GND) | Power MOSFET Source (Ground) |

## Circuit Function Diagram

[Feedback control]




[Semi-regulated control]