



TN4R01 — ExPD (Excellent Power Device) Switching Regulator IC for RCC Method Power Supplies Applications

Features

- Original control 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} | | 450 | V |
| Drain Current (DC) | I _D | | 4.5 | A |
| Drain Current (Pulse) | I _{DP} | PW≤10μs, duty cycle≤1% | 18 | A |
| IC Input Voltage | V _{IN} | | 30 | V |
| Allowable Power Dissipation | P _D | | 2.0 | W |
| | | T _c =25°C | 25 | W |
| Operating Temperature | T _{opr} | | -25 to +125 | °C |
| Junction Temperature | T _J | | 150 | °C |
| Storage Temperature | T _{stg} | | -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 | 450 | | | V |
| Zero-Gate Voltage Drain Current | I _{DSS} | V _{DS} =450V, 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 =2.3A, V _{DELAY} =15V | | 1.25 | 1.6 | Ω |
| Input Capacitance | C _{iss} | V _{DS} =20V, f=1MHz | | 610 | | pF |
| Output Capacitance | C _{oss} | V _{DS} =20V, f=1MHz | | 160 | | 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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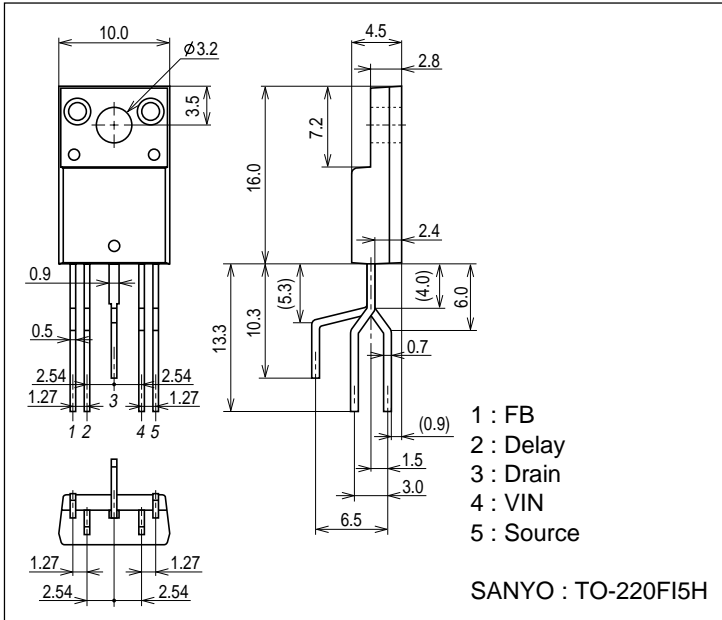
Recommend Operating Conditions at Ta=25°C

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

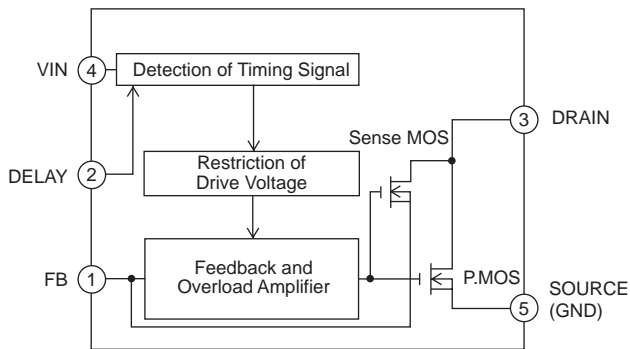
Package Dimensions

unit : mm

2226



Block Diagram



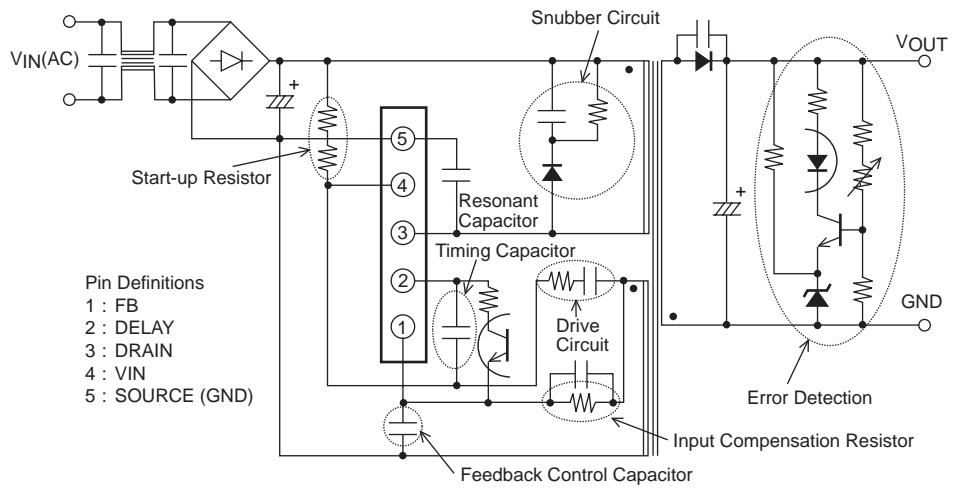
Pin Definitions and Functions

| 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) |

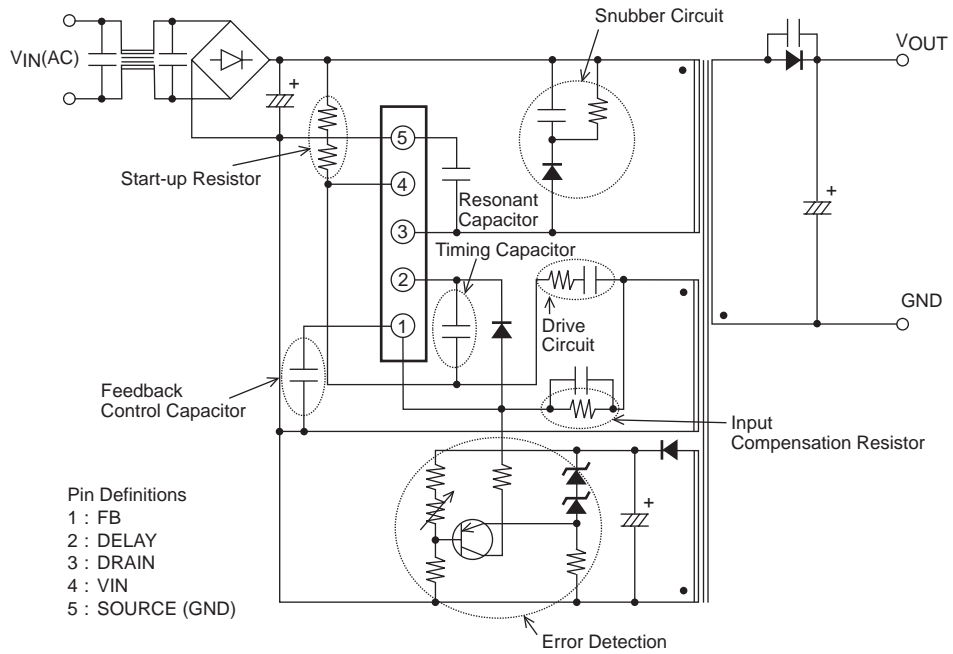
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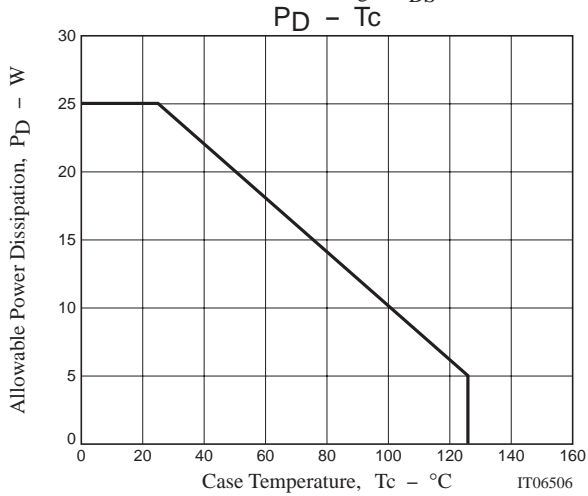
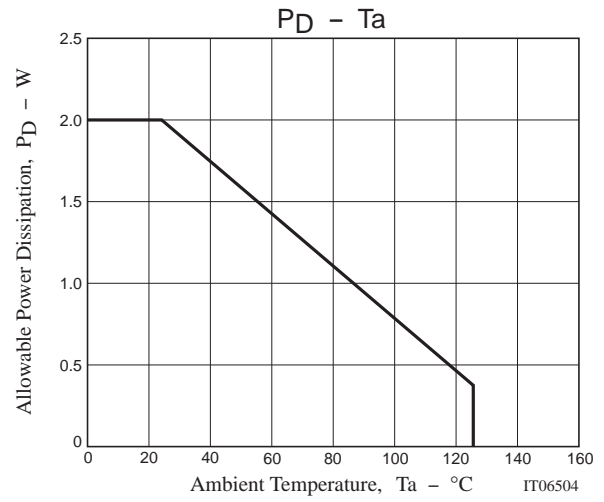
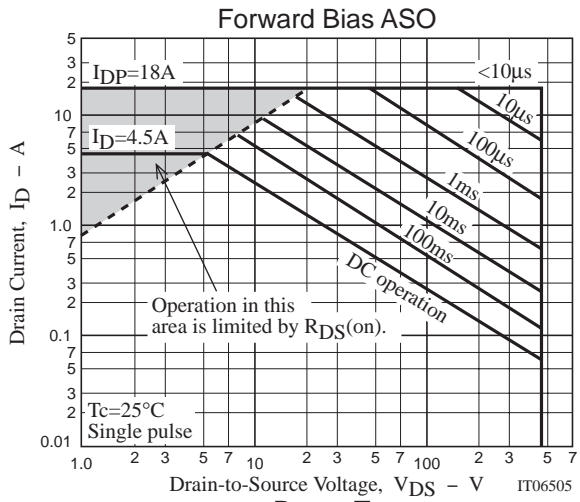
Circuit Function Diagram

[Feedback control]



[Semi-regulated control]





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