



# TN8R03 — 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 <sub>DS</sub>		800	V
Drain Current (DC)	I <sub>D</sub>		4.5	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	13.5	A
IC Input Voltage	V <sub>IN</sub>		30	V
Allowable Power Dissipation	P <sub>D</sub>		2.0	W
		T <sub>c</sub> =25°C	35	W
Operating Temperature	T <sub>opr</sub>		-25 to +125	°C
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-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 <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>DELAY</sub> =0	800			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =800V, V <sub>DELAY</sub> =0			1.0	mA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	3.0		4.0	V
Static Drain-to-Source On-State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =2.3A, V <sub>DELAY</sub> =15V		1.75	2.3	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, f=1MHz		1450		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =20V, f=1MHz		220		pF
[IC]						
Restriction of Drive Voltage	V <sub>IN(OV)</sub>	I <sub>IN</sub> =1mA, V <sub>FB</sub> =0	30			V
Detection Voltage of Feedback and Overload Amplifier	V <sub>FB</sub>	V <sub>DELAY</sub> , V <sub>IN</sub> =10V, I <sub>IN</sub> =50mA		2.0		V

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# TN8R03

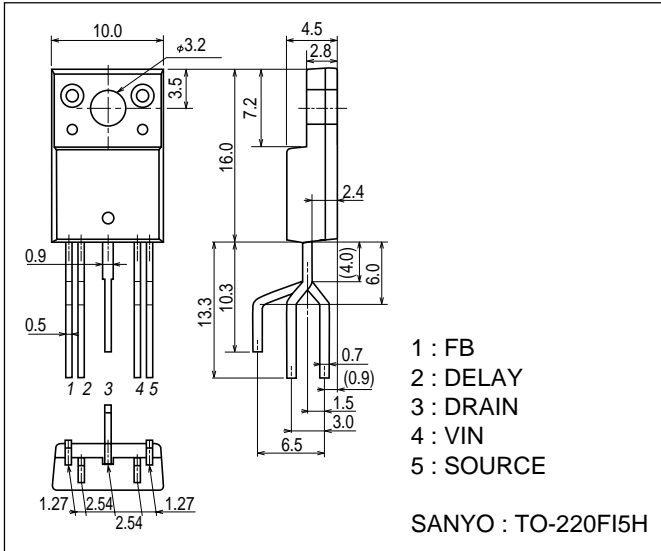
## Recommend Operating Conditions at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
IC Input Voltage	V <sub>IN</sub>		±10 to ±25	V
Operating Frequency	F <sub>OSC</sub>		20 to 200	kHz

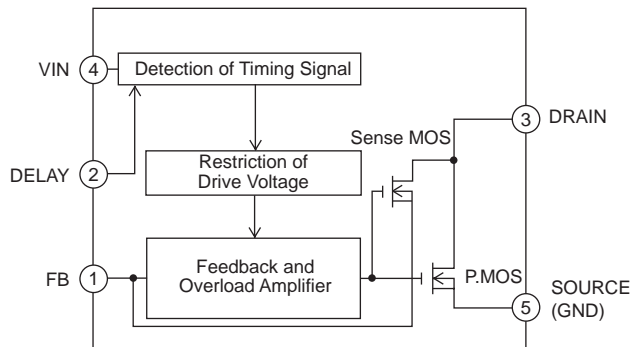
## Package Dimensions

unit : mm

2226



## Block Diagram



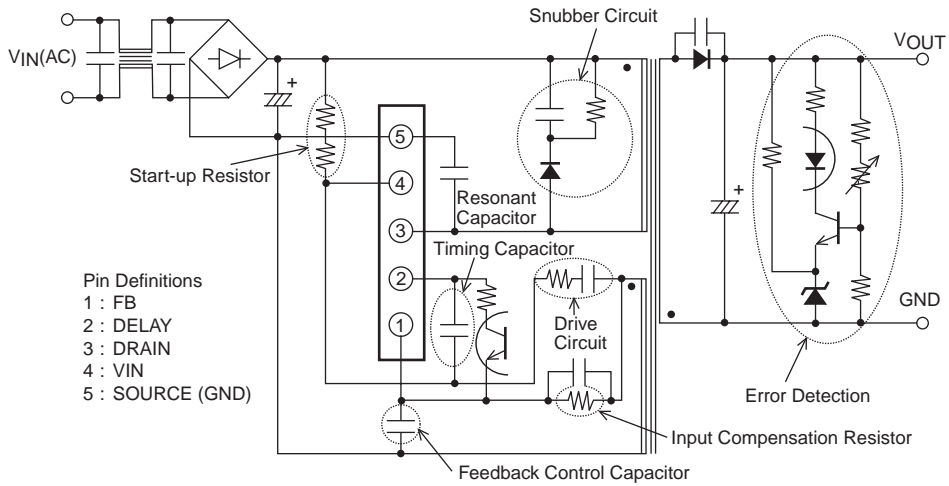
## Pin Definitions and Functions

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)

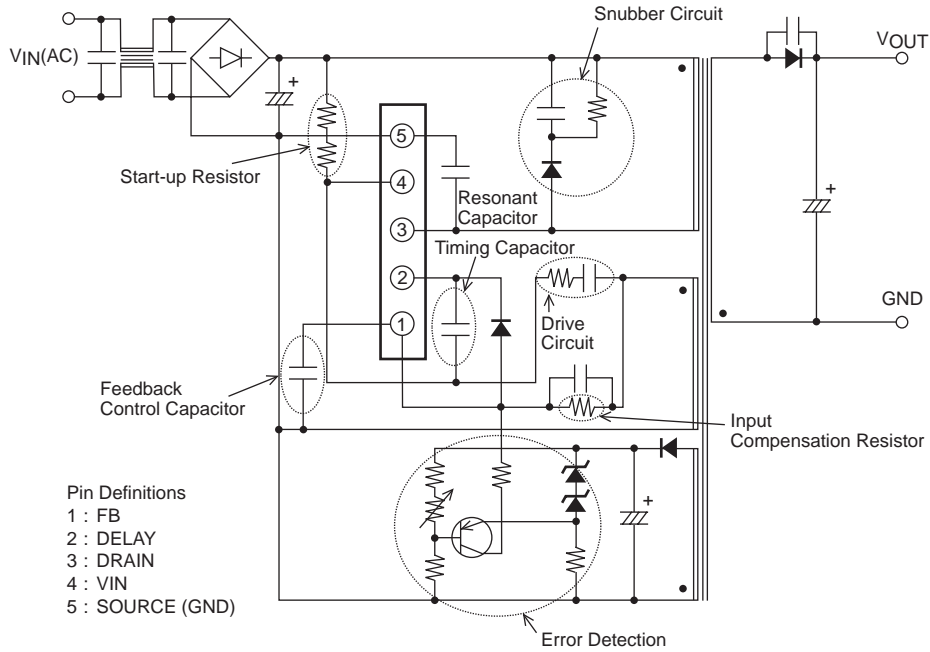
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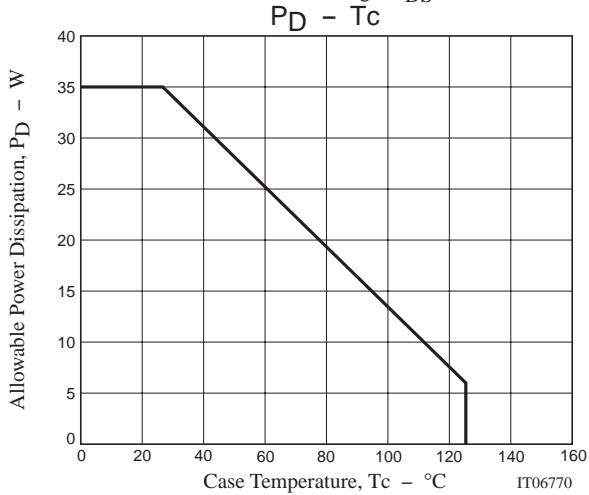
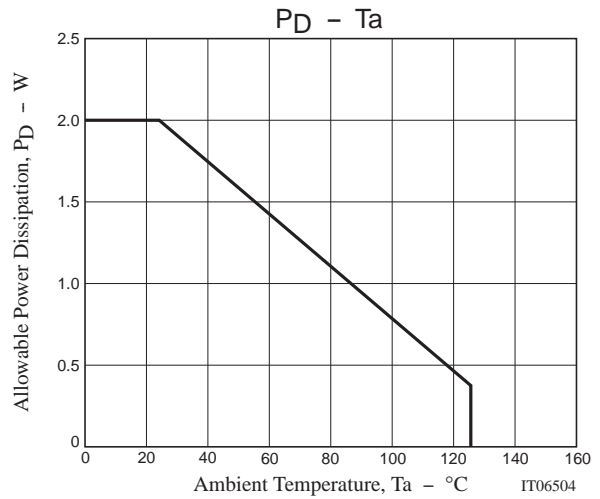
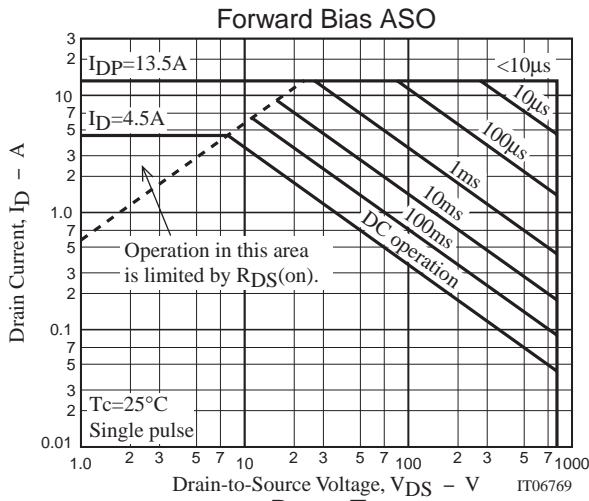
## Circuit Function Diagram

[Feedback control]



[Semi-regulated control]





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