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The Winbond logo consists of a series of red slanted bars on the left, followed by the word "winbond" in a bold, italicized, red sans-serif font, and another series of red slanted bars on the right.

**Winbond**  
**DC Fan Pre-Driver**  
**W83391TS**  
**W83391TG**

## W83391TS/TG



### W83391TS/TG

#### Data Sheet Revision History

|    | PAGES | DATES   | VERSION | VERSION ON WEB | MAIN CONTENTS                                                                               |
|----|-------|---------|---------|----------------|---------------------------------------------------------------------------------------------|
| 1. | N.A   | Sep/04  | 0.5     | N.A.           | All versions before 0.5 are for internal use and <b>W83391DG/TG/QG are Pb-free package.</b> |
| 2. | N.A   | Jan/06  | 0.51    | N.A            | Remove W83391DS/DG                                                                          |
| 3. | N.A   | Jan./06 | 0.52    | N.A            | Remove W83391QS/QG.                                                                         |
| 4  | N.A   | Jan./06 | 0.53    | N.A            | Update the datasheet with new templet.                                                      |
|    |       |         |         |                |                                                                                             |
|    |       |         |         |                |                                                                                             |
|    |       |         |         |                |                                                                                             |
|    |       |         |         |                |                                                                                             |

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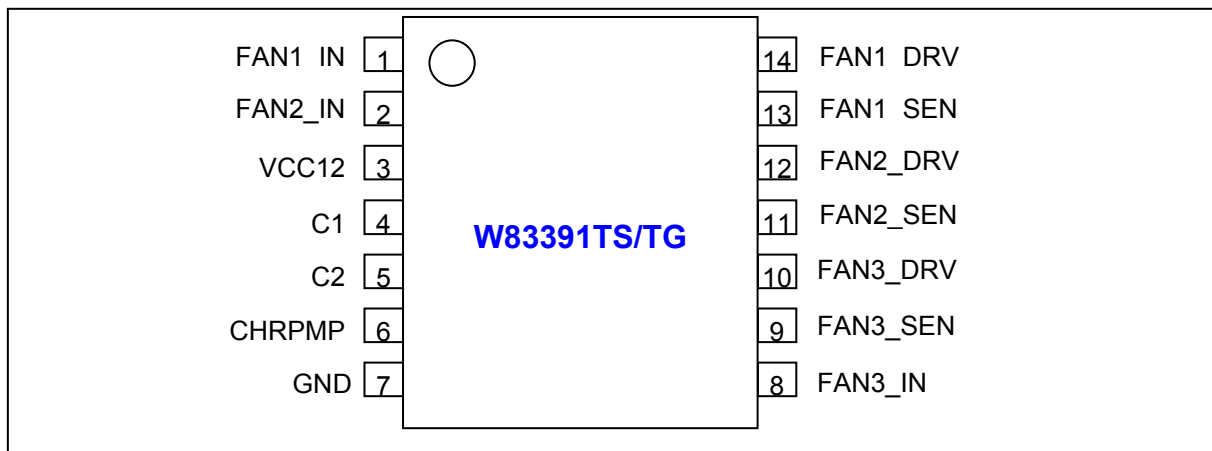
## W83391TS/TG



### 1. FEATURES

- Provide up to 24V gate voltage for external N-channel MOSFET driving
- Pairing with Winbond all new series Super IO and Hardware Monitoring IC for DC Fan voltage regulation
- External resistors for output voltage scale adjustment
- W83391TS/TG provides 3 channels Fan control.

### 2. PIN CONFIGURATION AND DESCRIPTION



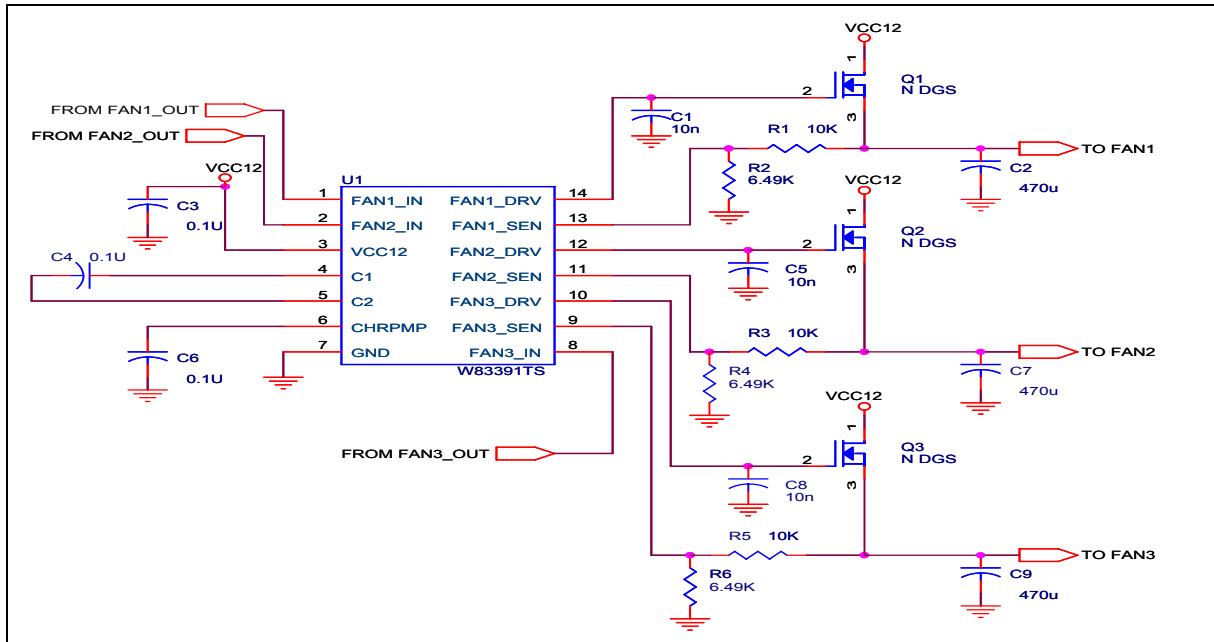
| PIN | SYMBOL   | FUNCTION                                                        |
|-----|----------|-----------------------------------------------------------------|
| 1   | FAN1_IN  | DC FAN1 Voltage Input Ranging from 0V~8V.                       |
| 2   | FAN2_IN  | DC FAN2 Voltage Input Ranging from 0V~8V.                       |
| 3   | VCC12    | 12Vcc input.                                                    |
| 4   | C1       | Charge Pump Pins. It insures output voltage achieve to 24V.     |
| 5   | C2       |                                                                 |
| 6   | CHRPMP   |                                                                 |
| 7   | GND      | Power Ground.                                                   |
| 8   | FAN3_IN  | DC FAN3 Voltage Input Ranging from 0V~8V.                       |
| 9   | FAN3_SEN | Voltage Sensing Pin for 3 <sup>rd</sup> Fan Voltage Regulation. |
| 10  | FAN3_DRV | Voltage Driving Pin for 3 <sup>rd</sup> Fan Voltage Regulation. |
| 11  | FAN2_SEN | Voltage Sensing Pin for 2 <sup>nd</sup> Fan Voltage Regulation. |
| 12  | FAN2_DRV | Voltage Driving Pin for 2 <sup>nd</sup> Fan Voltage Regulation. |
| 13  | FAN1_SEN | Voltage Sensing Pin for 1 <sup>st</sup> Fan Voltage Regulation. |
| 14  | FAN1_DRV | Voltage Driving Pin for 1 <sup>st</sup> Fan Voltage Regulation. |

# W83391TS/TG



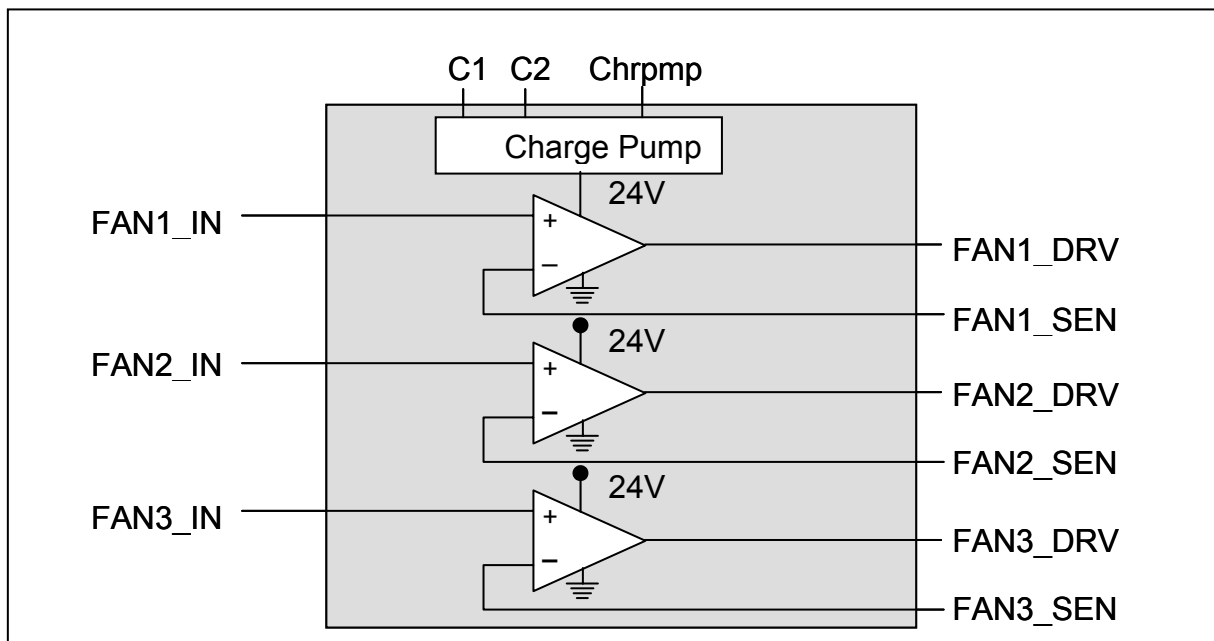
## 3. APPLICATION CIRCUIT

- W83391TS/TG



## 4. INTERNAL BLOCK DIAGRAM

- W83391TS/TG





## 5. ELECTRICAL SPECIFICATION

## 6. AC CHARACTERISTICS

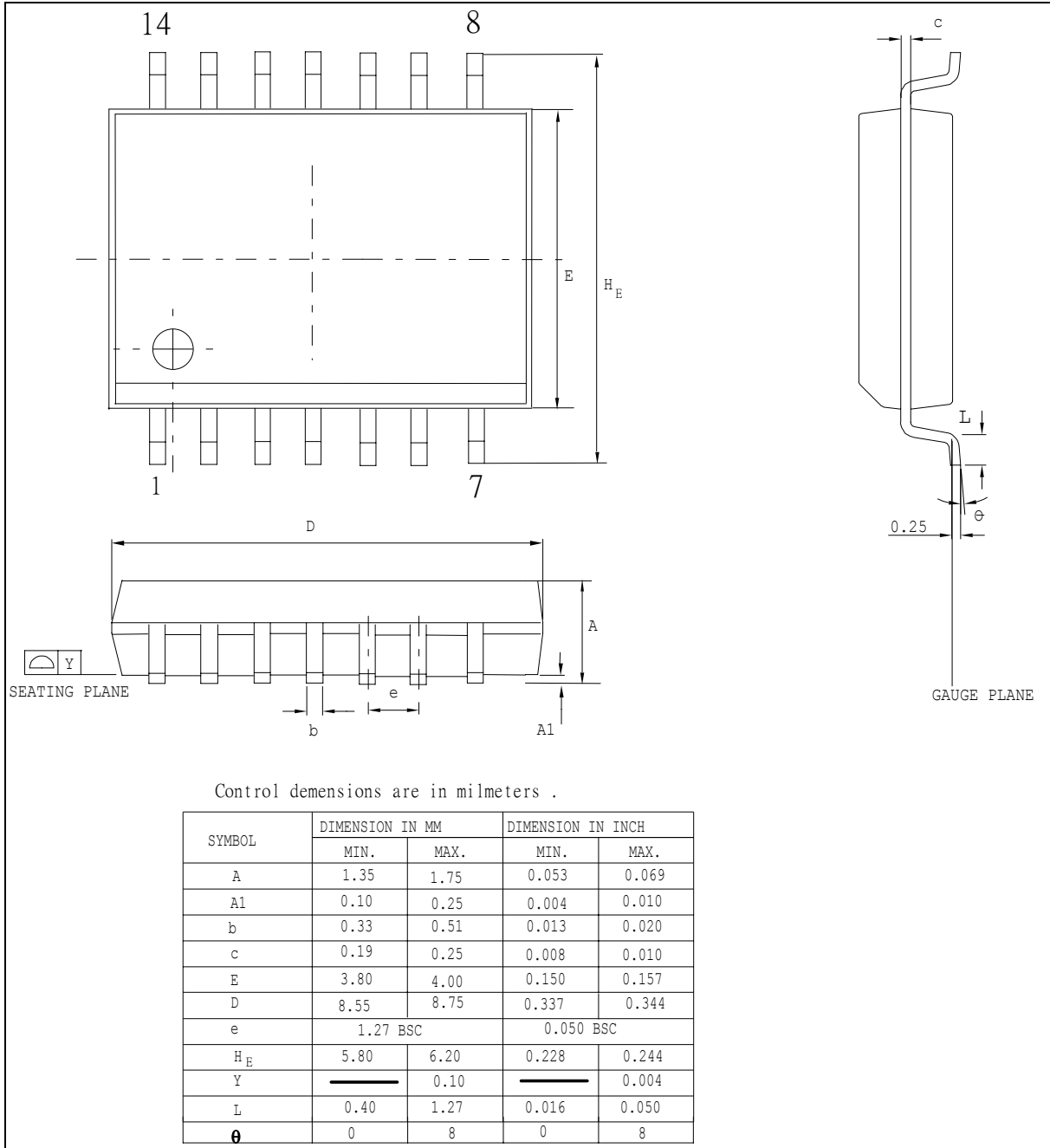
| <b><math>V_{cc12}=12V \pm 5\%</math>, <math>T_A = 0^{\circ}C</math> to <math>+70^{\circ}C</math></b> |                       |      |      |     |       |                 |
|------------------------------------------------------------------------------------------------------|-----------------------|------|------|-----|-------|-----------------|
| PARAMETER                                                                                            | SYMBOL                | MIN  | TYP  | MAX | UNITS | TEST CONDITIONS |
| <b>FAN#_IN Input</b>                                                                                 |                       |      |      |     |       |                 |
| Input Offset Voltage                                                                                 | <b>V<sub>io</sub></b> | 2    | 5    | 50  | mV    |                 |
| Input Voltage Range                                                                                  |                       | 0    |      | 8   | V     |                 |
| <b>FAN#_DRV Output</b>                                                                               |                       |      |      |     |       |                 |
| Output Drive Current                                                                                 |                       |      | 45   |     | uA    | Cout=10nF       |
| Output Voltage Range                                                                                 |                       | 1.5  |      | 24  | V     |                 |
| <b>Charge Pump</b>                                                                                   |                       |      |      |     |       |                 |
| Charge Pump Frequency                                                                                |                       |      | 180  |     | KHz   |                 |
| Charge Pump Voltage                                                                                  |                       | 22.8 | 23.2 | 24  |       |                 |

# W83391TS/TG



## 7. PACKAGE DIMENSION

- W83391TS/TG; 14L SOP 150mil



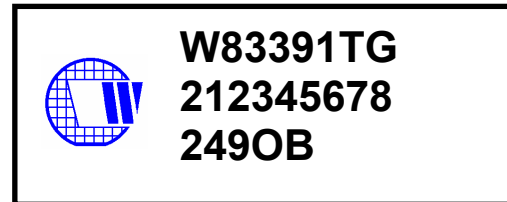
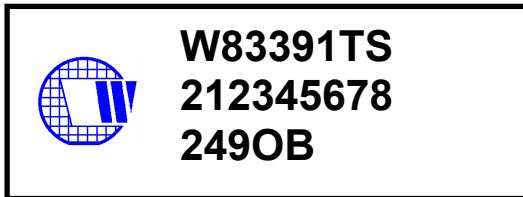
## W83391TS/TG



### 8. ORDERING INFORMATION

| PART NUMBER | PACKAGE TYPE               | PRODUCTION FLOW          |
|-------------|----------------------------|--------------------------|
| W83391TS    | 14PIN SOP                  | Commercial, 0°C to +70°C |
| W83391TG    | 14PIN SOP(Pb-free package) | Commercial, 0°C to +70°C |

### 9. HOW TO READ THE TOP MARKING



Left line: Winbond logo

1<sup>st</sup> line: W83391TS, W83391TG – the part number

2<sup>nd</sup> line: Chip lot no

3<sup>rd</sup> line: Tracking code 249 O A

249: packages assembled in Year 02', week 49

O: assembly house ID; O means OSE, G means GR, etc.

B: the IC version



**W83391TS/TG**



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