



SANYO Semiconductors

# DATA SHEET

## TND507S — ExPD (Excellent Power Device) Ballast, General Purpose Driver for Applications Including PDP Sustain Pulse Drive, DC / AC Motor Drive, Induction Heating, Battery Charger, High Frequency Switching Power Supply, and Switching Amplifiers

### Features

- Monolithic structure.
- Single input and two output.
- Allows simplified configuration of driver circuit.
- Withstand voltage of 600V is assured.
- Built-in shutdown protection function.

### Specifications

**Absolute Maximum Ratings** at Ta=25°C (All voltage parameters are absolute voltage referenced to GND)

| Parameter                                  | Symbol            | Conditions | Ratings                                      | Unit |
|--|-------------------|------------|--|------|
| High Side Floating Supply Absolute Voltage | V <sub>H</sub>    |            | -0.3 to 625                                  | V    |
| High Side Floating Supply Offset Voltage   | V <sub>HFG</sub>  |            | V <sub>H</sub> -25 to V <sub>H</sub> +0.3    | V    |
| High Side Output Voltage                   | V <sub>HOUT</sub> |            | V <sub>HFG</sub> -0.3 to V <sub>H</sub> +0.3 | V    |
| Low Side Fixed Supply Voltage              | V <sub>L</sub>    |            | -0.3 to 25                                   | V    |
| Low Side Output Voltage                    | V <sub>LOUT</sub> |            | -0.3 to V <sub>L</sub> +0.3                  | V    |
| Logic Input Voltage                        | V <sub>IN</sub>   |            | -0.3 to V <sub>L</sub> +0.3                  | V    |
| Allowable Power Dissipation                | P <sub>D</sub>    |            | 0.3  | W    |
| Junction Temperature                       | T <sub>J</sub>    |            | -55 to +150                                  | °C   |
| Storage Temperature                        | T <sub>stg</sub>  |            | -55 to +150                                  | °C   |

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# TND507S

## Recommended Operating Conditions at Ta=25°C

| Parameter                                  | Symbol            | Conditions | Ratings                                      | Unit |
|--|-------------------|------------|--|------|
| High Side Floating Supply Absolute Voltage | V <sub>H</sub>    |            | V <sub>HFG</sub> +10 to V <sub>HFG</sub> +20 | V    |
| High Side Floating Supply Offset Voltage   | V <sub>HFG</sub>  |            | 0 to 600                                     | V    |
| High Side Output Voltage                   | V <sub>HOUT</sub> |            | V <sub>HFG</sub> to V <sub>H</sub>           | V    |
| Low Side Fixed Supply Voltage              | V <sub>L</sub>    |            | 10 to 20                                     | V    |
| Low Side Output Voltage                    | V <sub>LOUT</sub> |            | 0 to V <sub>L</sub>                          | V    |
| Logic Input Voltage                        | V <sub>IN</sub>   |            | 0 to V <sub>L</sub>                          | V    |
| Ambient Temperature                        | T <sub>a</sub>    |            | -40 to +125                                  | °C   |

## AC Characteristics at Ta=25°C (V<sub>L</sub>=V<sub>HFG</sub>=15V, C<sub>L</sub>=1000pF)

| Parameter           | Symbol           | Conditions  | Ratings |     |     | Unit |
|---------------------|------------------|---|---------|-----|-----|------|
|                     |                  |   | min     | typ | max |      |
| Turn-ON Delay Time  | t <sub>on</sub>  | V <sub>HFG</sub> =0   |         | 950 |     | ns   |
| Turn-OFF Delay Time | t <sub>off</sub> | V <sub>HFG</sub> =600V  |         | 150 |     | ns   |
| Turn-ON Rise Time   | t <sub>r</sub>   | C <sub>L</sub> =1000pF  |         | 120 |     | ns   |
| Turn-OFF Fall Time  | t <sub>f</sub>   | C <sub>L</sub> =1000pF  |         | 60  |     | ns   |
| Delay Matching      | MT               | Ht <sub>on</sub> -Lt <sub>on</sub>  ,  Ht <sub>off</sub> -Lt <sub>off</sub> |         | 30  |     | ns   |
| Dead Time           | DT               |   |         | 800 |     | ns   |

## DC Characteristics at Ta=25°C (V<sub>L</sub>=V<sub>HFG</sub>=15V)

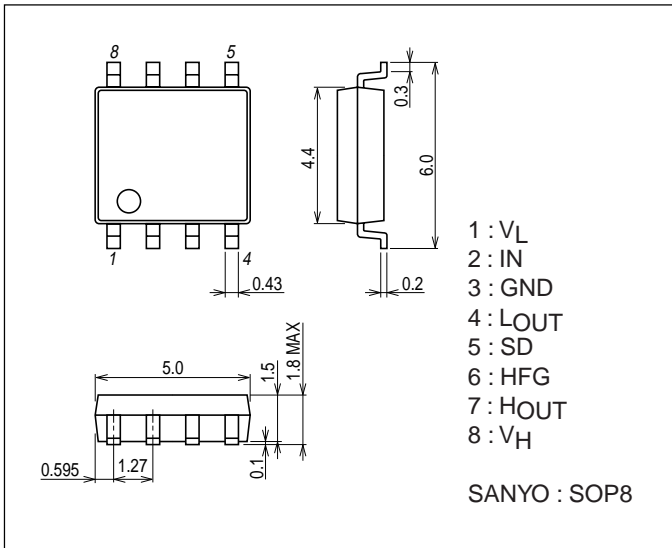
| Parameter  | Symbol            | Conditions                             | Ratings |     |     | Unit |
|--|-------------------|--|---------|-----|-----|------|
|  |                   |  | min     | typ | max |      |
| Logic "1" Input Voltage  | V <sub>IH</sub>   | V <sub>L</sub> =10V                    | 6.4     |     |     | V    |
|  |                   | V <sub>L</sub> =15V                    | 9.5     |     |     | V    |
|  |                   | V <sub>L</sub> =20V                    | 12.8    |     |     | V    |
| Logic "0" Input Voltage  | V <sub>IL</sub>   | V <sub>L</sub> =10V                    |         |     | 3.7 | V    |
|  |                   | V <sub>L</sub> =15V                    |         |     | 5.8 | V    |
|  |                   | V <sub>L</sub> =20V                    |         |     | 7.7 | V    |
| High-level Output Voltage(V <sub>BIAS</sub> -V <sub>O</sub> )  | V <sub>OH</sub>   | I <sub>O</sub> =0                      |         |     | 100 | mV   |
| Low-level Output Voltage(V <sub>O</sub> )                      | V <sub>OL</sub>   | I <sub>O</sub> =0                      |         |     | 100 | mV   |
| Offset Supply Leakage Current                                  | I <sub>LK</sub>   | V <sub>H</sub> =V <sub>HFG</sub> =600V |         |     | 10  | μA   |
| Quiescent V <sub>H</sub> Supply Current                        | I <sub>QH</sub>   | V <sub>IN</sub> =0 or V <sub>L</sub>   |         | 50  | 100 | μA   |
| Quiescent V <sub>L</sub> Supply Current                        | I <sub>QL</sub>   | V <sub>IN</sub> =0 or V <sub>L</sub>   |         | 70  | 180 | μA   |
| Logic "1" Input Bias Current                                   | I <sub>IN+</sub>  | V <sub>IN</sub> =15V                   |         | 20  | 40  | μA   |
| Logic "0" Input Bias Current                                   | I <sub>IN-</sub>  | V <sub>IN</sub> =0                     |         |     | 1   | μA   |
| V <sub>H</sub> Supply Undervoltage<br>Positive Going Threshold | V <sub>HUV+</sub> |  | 7.6     | 8.9 | 9.9 | V    |
| V <sub>H</sub> Supply Undervoltage<br>Negative Going Threshold | V <sub>HUV-</sub> |  | 6.7     | 8.1 | 9.5 | V    |
| V <sub>L</sub> Supply Undervoltage<br>Positive Going Threshold | V <sub>LUV+</sub> |  | 7.6     | 8.9 | 9.9 | V    |
| V <sub>L</sub> Supply Undervoltage<br>Negative Going Threshold | V <sub>LUV-</sub> |  | 6.7     | 8.1 | 9.5 | V    |
| Output High Short Circuit Pulsed Current                       | I <sub>O+</sub>   | V <sub>OUT</sub> =0, PW≤10μs           | 200     | 250 |     | mA   |
| Output Low Short Circuit Pulsed Current                        | I <sub>O-</sub>   | V <sub>OUT</sub> =15V, PW≤10μs         | 420     | 500 |     | mA   |

# TND507S

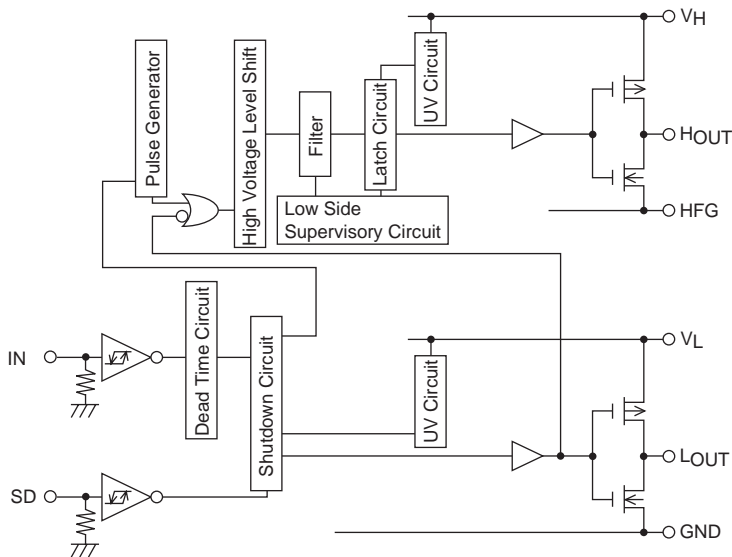
## Package Dimensions

unit : mm (typ)

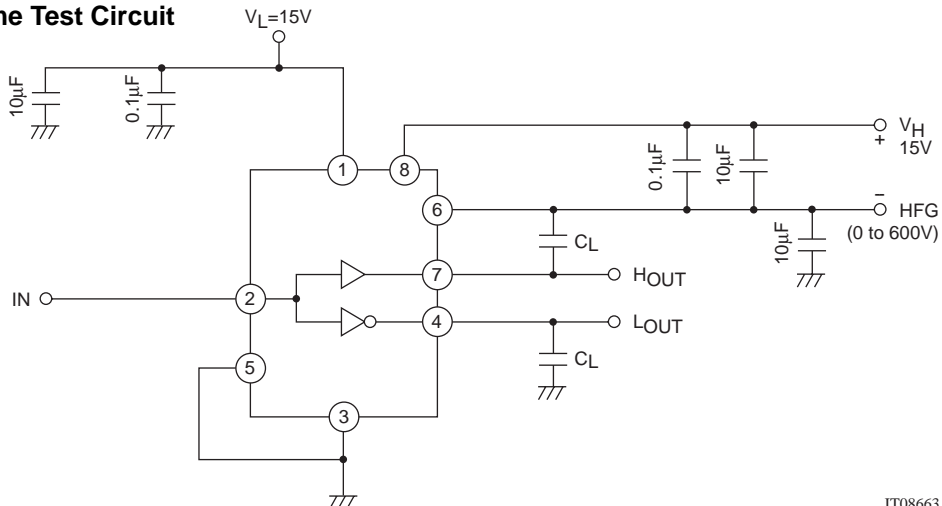
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## Block Diagram

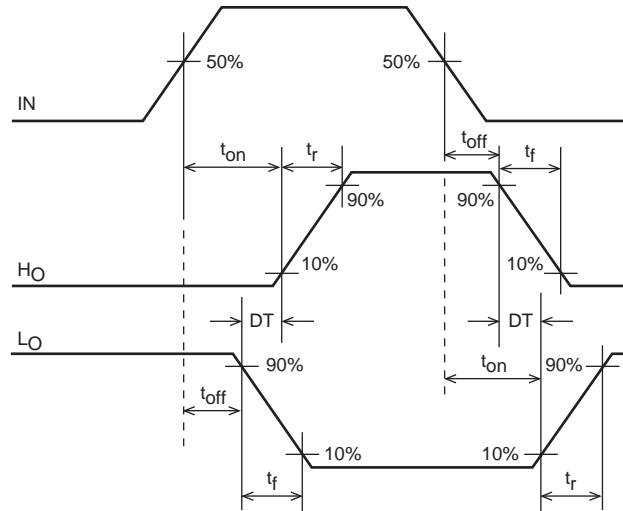


## Switching Time Test Circuit

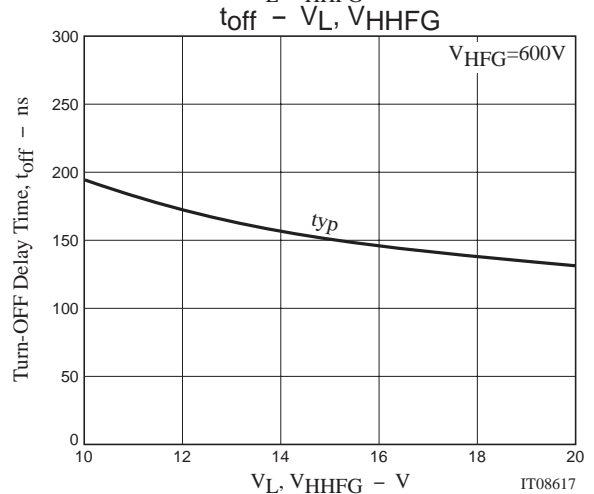
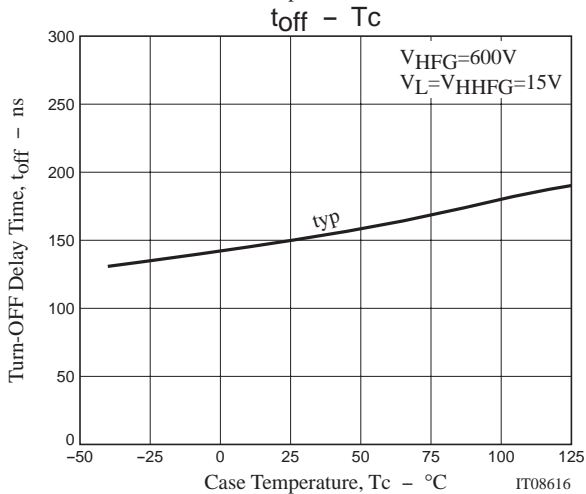
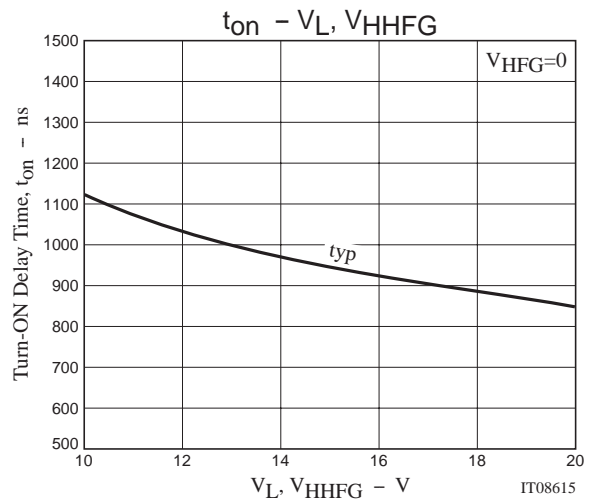
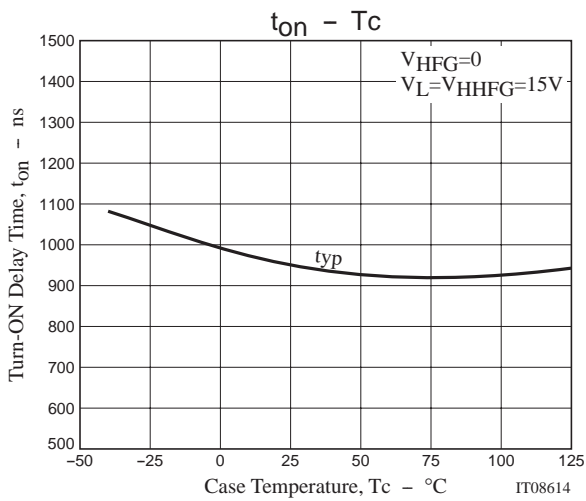


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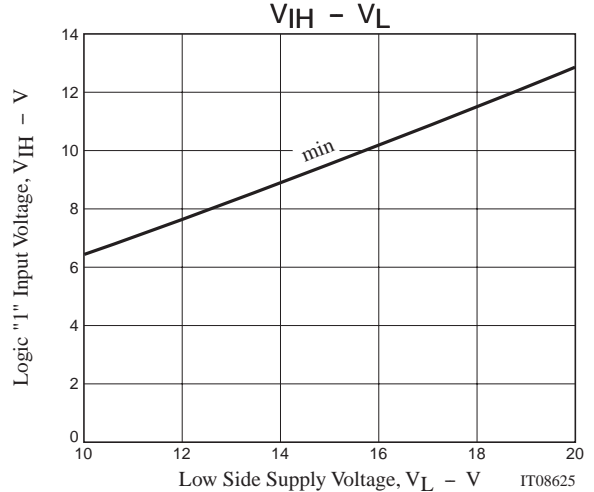
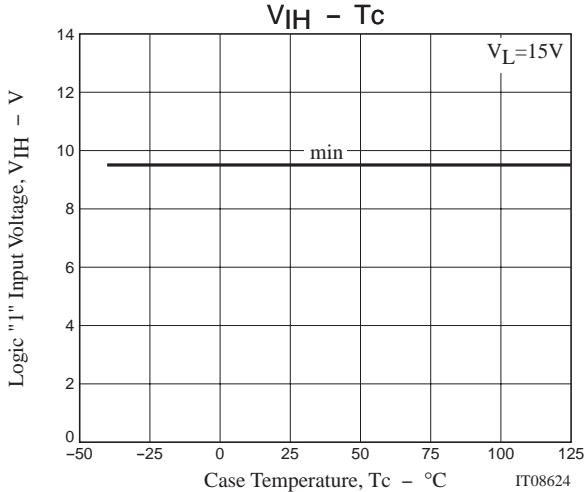
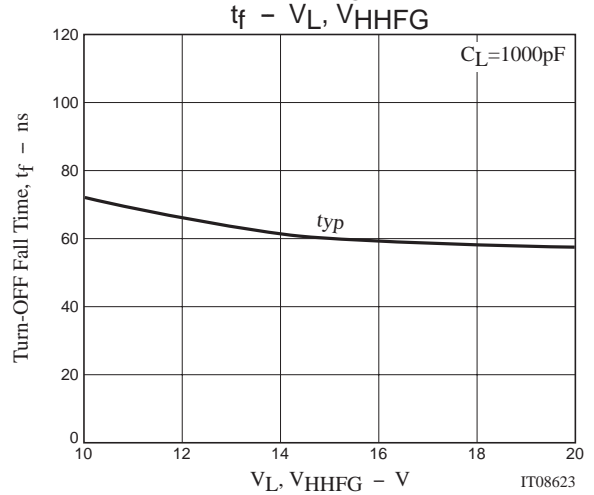
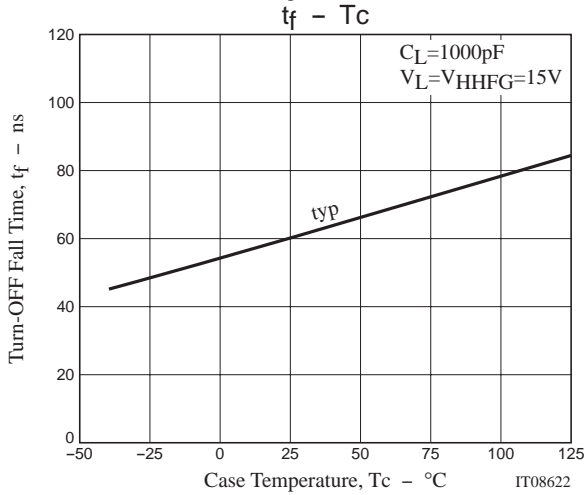
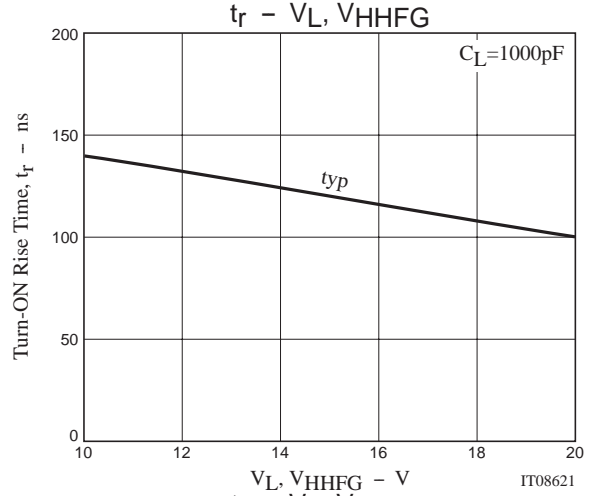
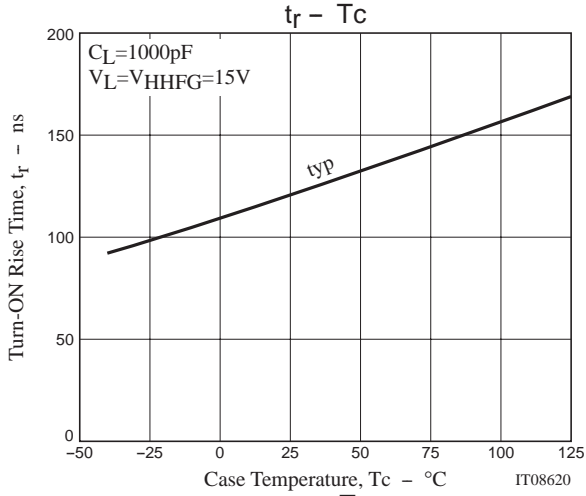
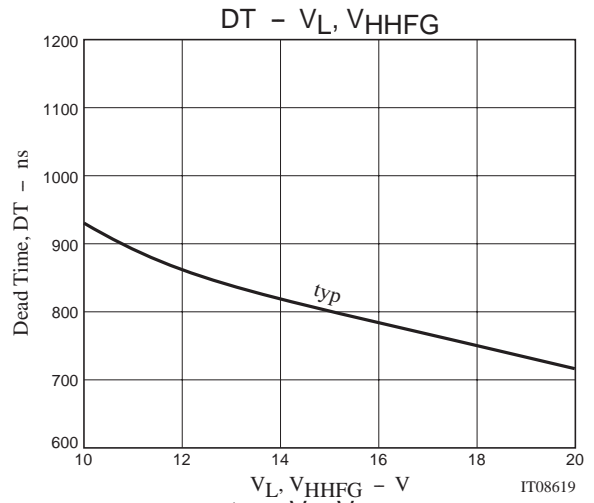
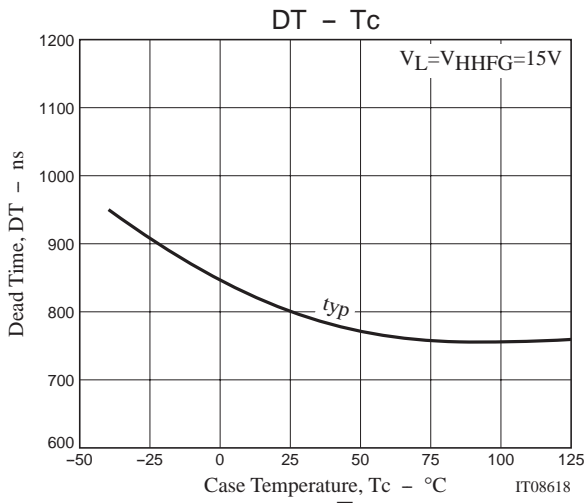
Switching Time Waveform Definition



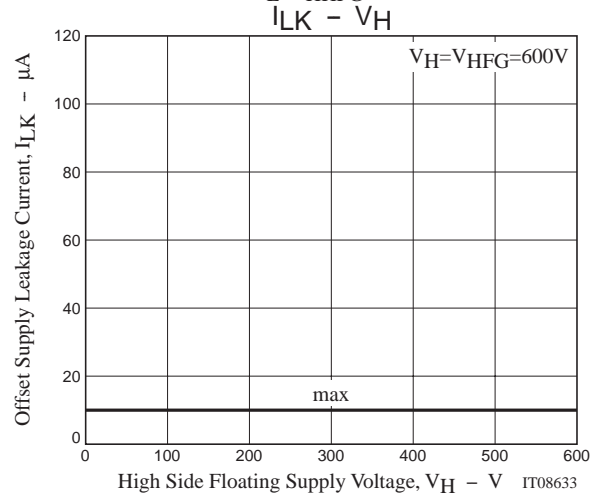
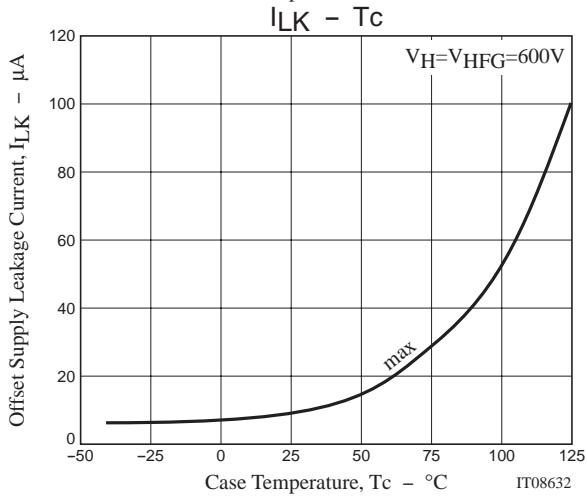
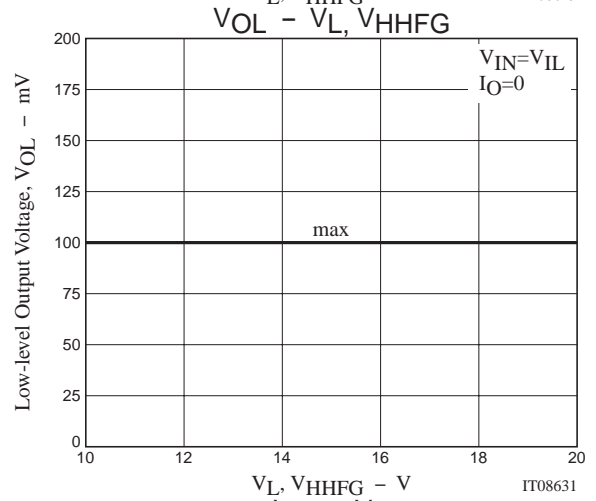
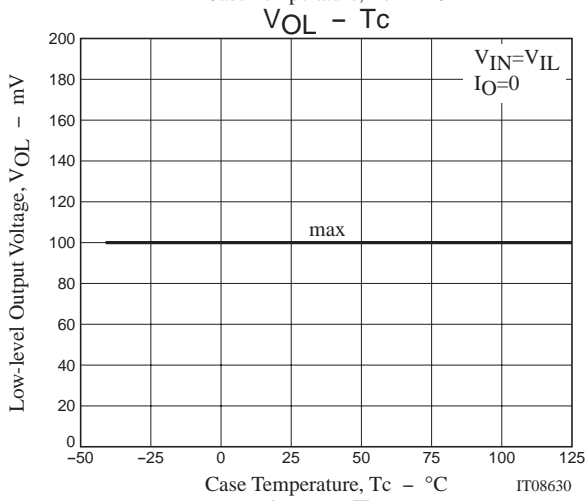
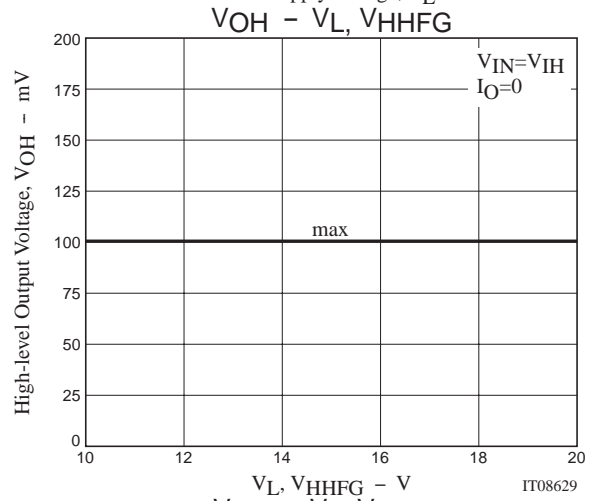
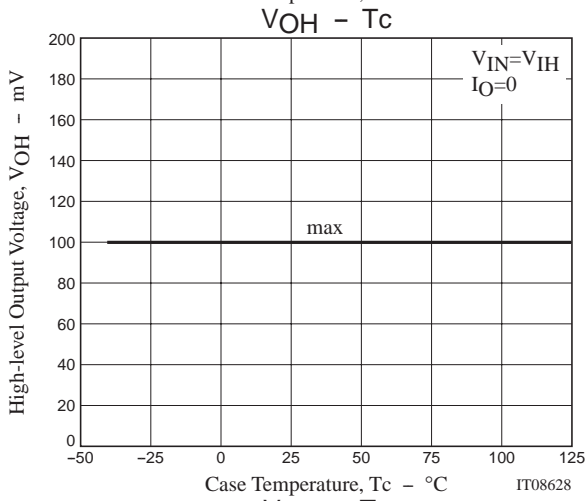
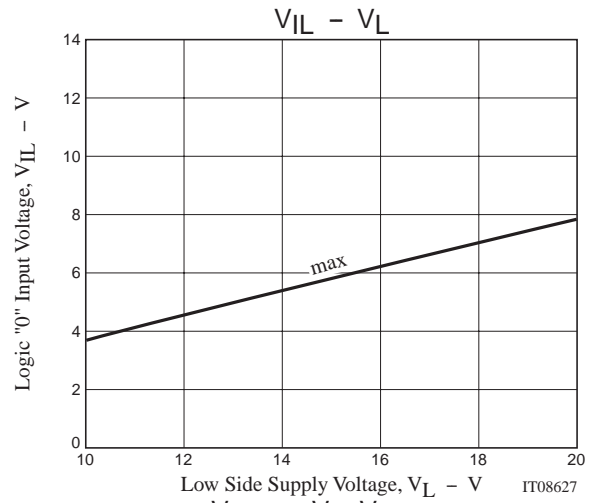
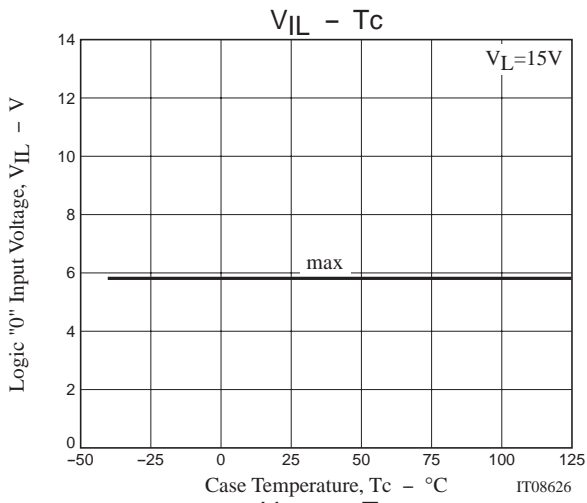
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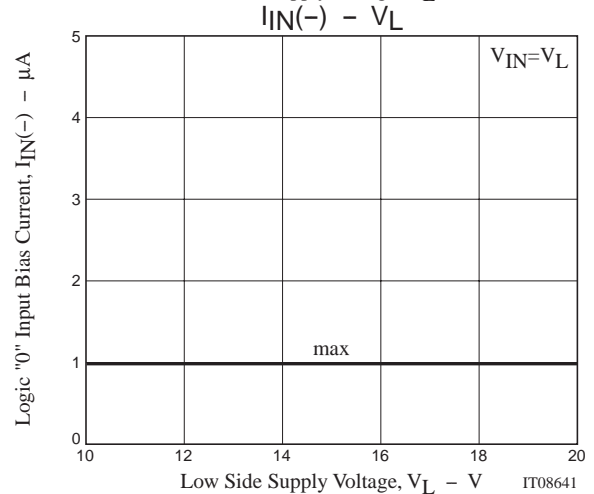
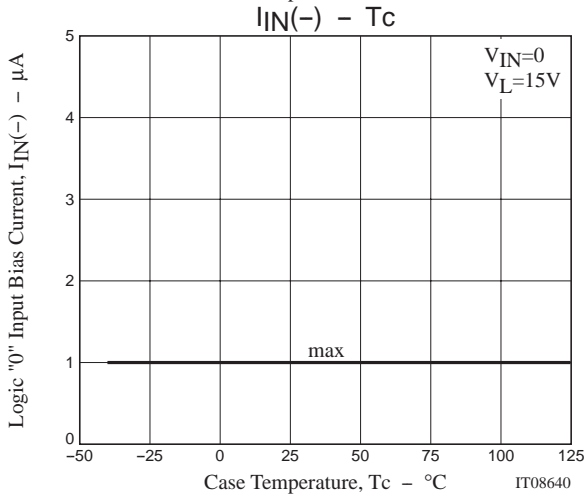
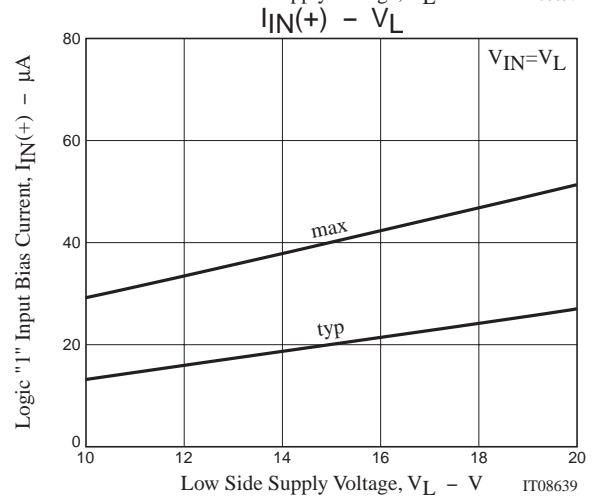
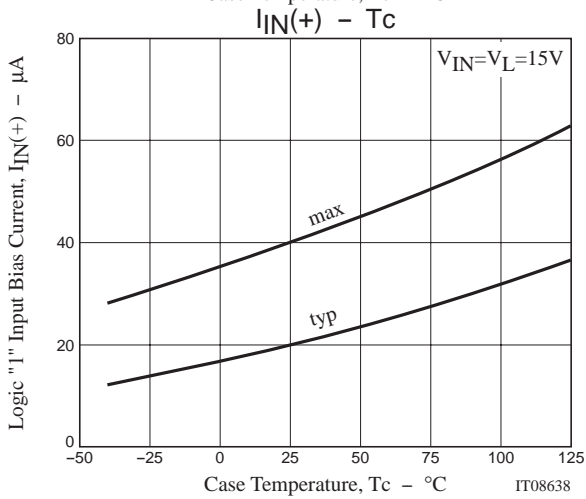
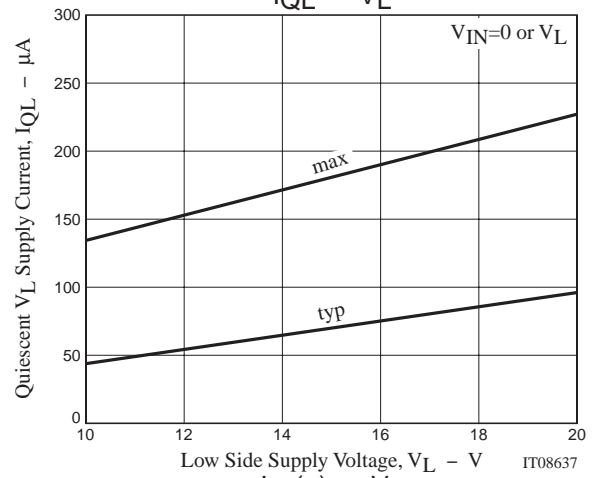
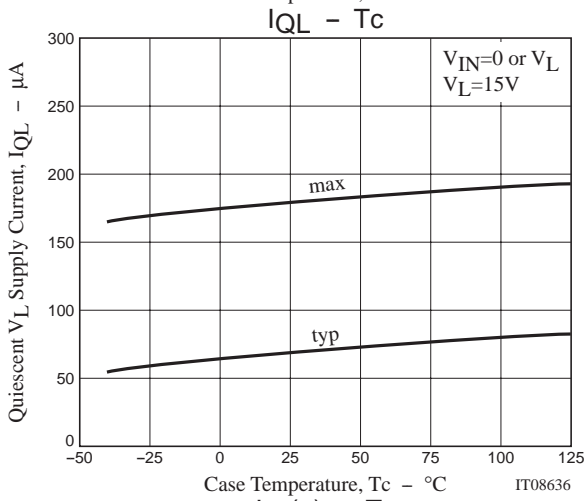
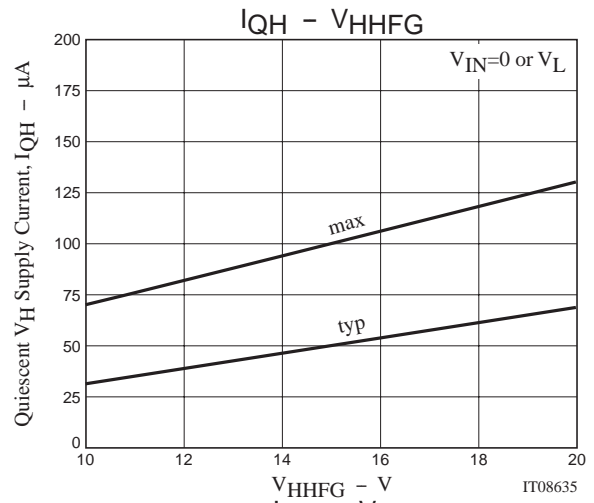
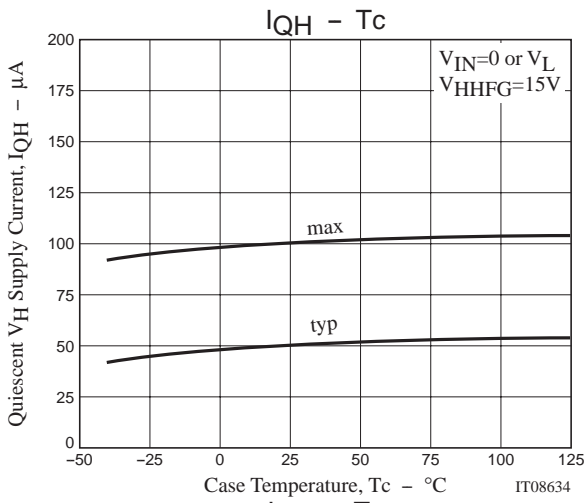


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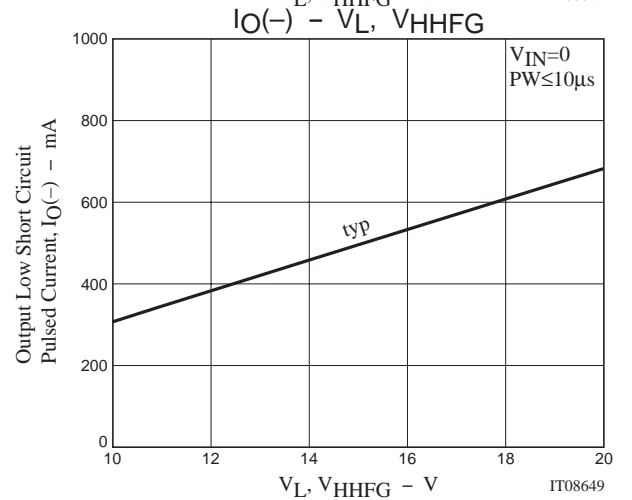
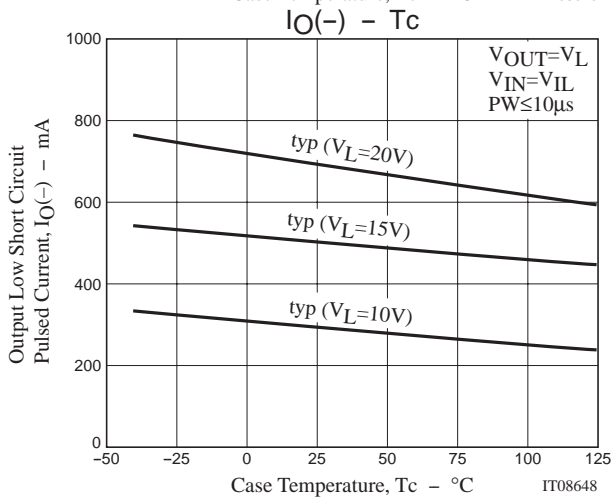
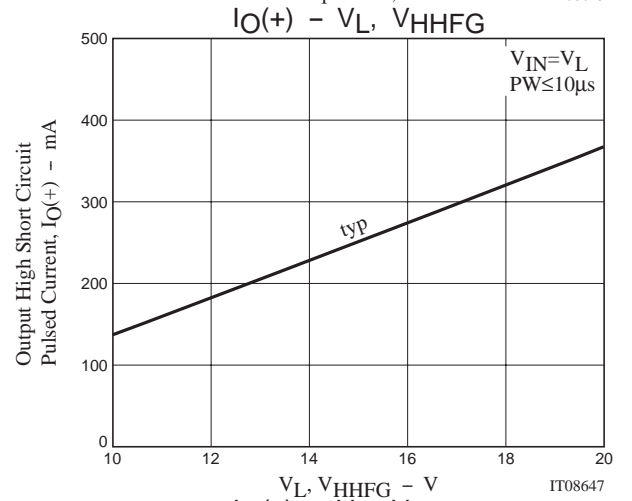
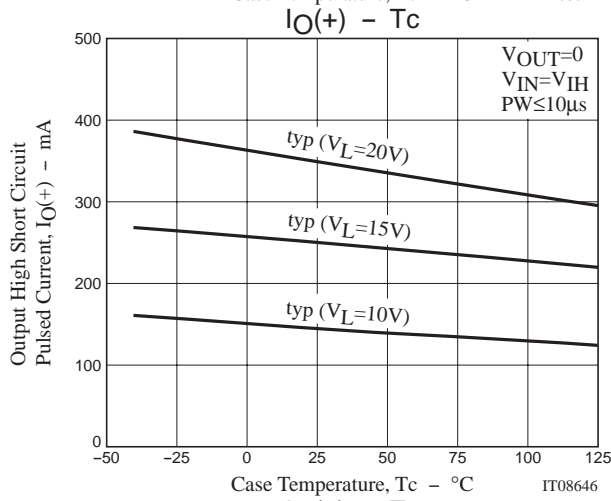
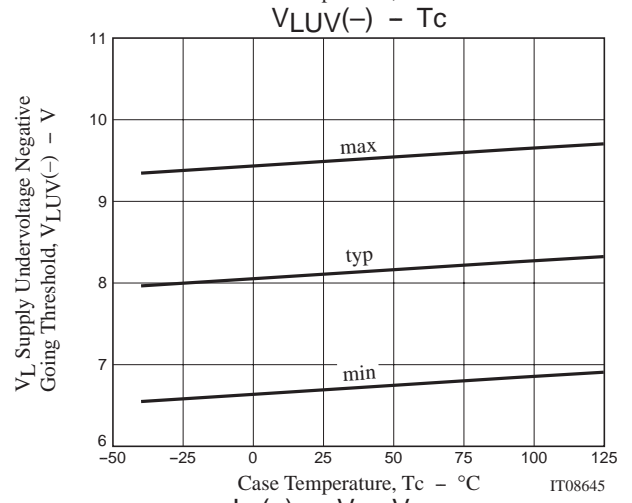
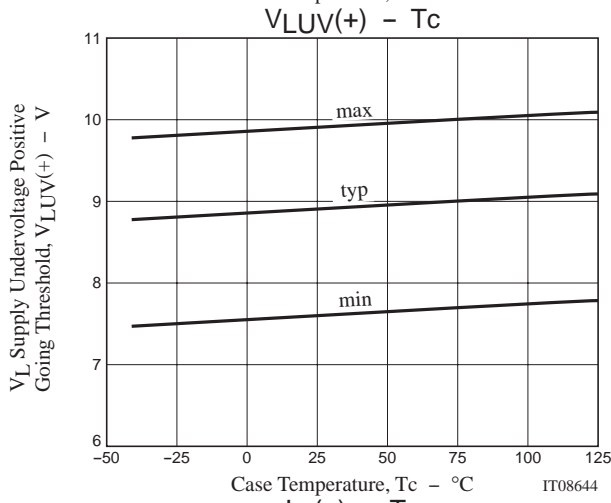
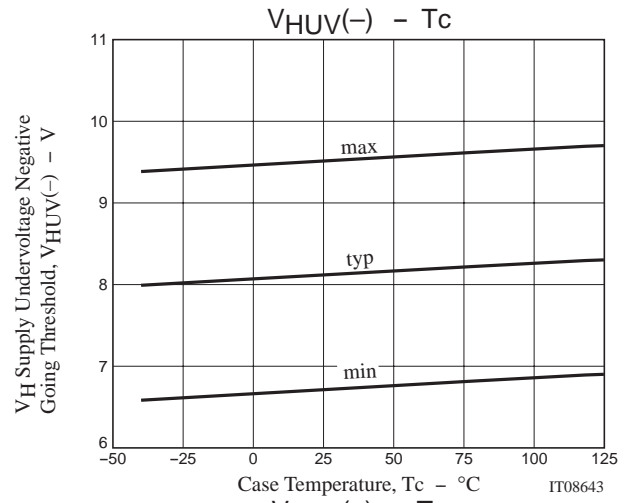
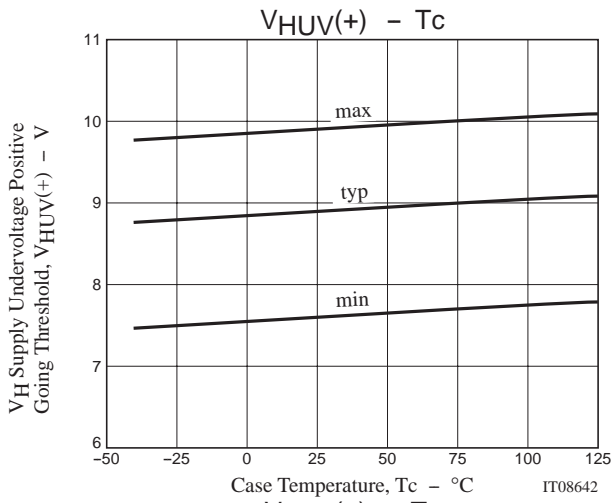


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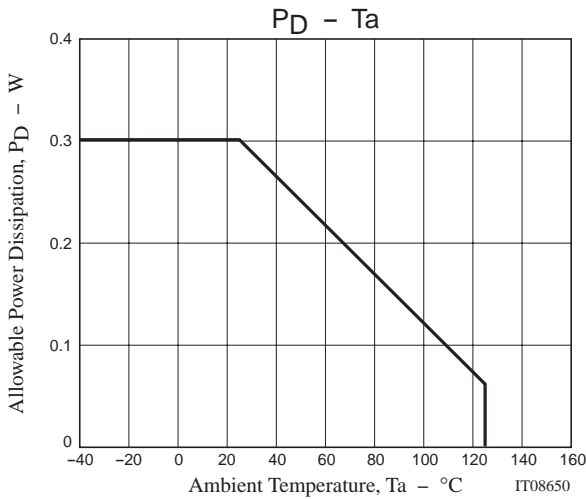




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