

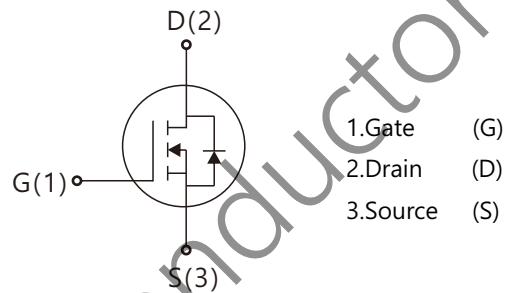
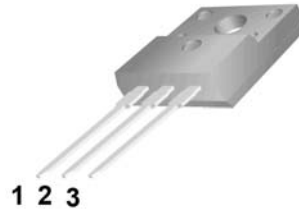


WGF65R760

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge :Qg=9.5nC(Typ.).
- BVDS=650 V, I<sub>D</sub>=7A
- R<sub>DS(on)</sub> : 0.76 Ω (Max) @V<sub>G</sub>=10V
- 100% Avalanche Tested

TO-220F



Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

| Symbol           | Parameter                                | Value                 | Unit |
|------------------|------------------------------------------|-----------------------|------|
| V <sub>DSS</sub> | Drain-Source Voltage                     | 650                   | V    |
| I <sub>D</sub>   | Drain Current                            | T <sub>j</sub> =25°C  | 7.0  |
|                  |                                          | T <sub>j</sub> =100°C | 4.7  |
| V <sub>GSS</sub> | Gate - Source voltage                    | ±30                   | V    |
| E <sub>AS</sub>  | Single Pulse Avalanche Energy (note1)    | 140                   | mJ   |
| I <sub>DM</sub>  | Pulsed Drain Current (note2)             | 21                    | A    |
| P <sub>D</sub>   | Power Dissipation (T <sub>j</sub> =25°C) | 26                    | W    |
| T <sub>j</sub>   | Junction Temperature(Max)                | 150                   | °C   |
| T <sub>stg</sub> | Storage Temperature                      | -55~+150              | °C   |
| dv/dt            | MOSFET dv/dt ruggedness,VDS=0V...480V    | 50                    | V/nS |

Thermal Characteristics

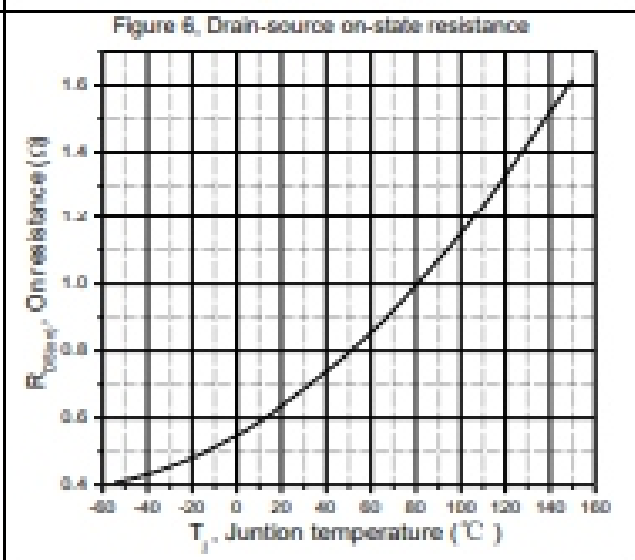
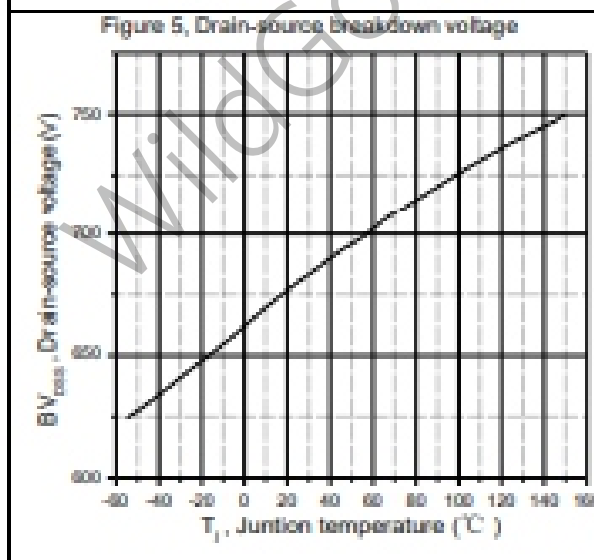
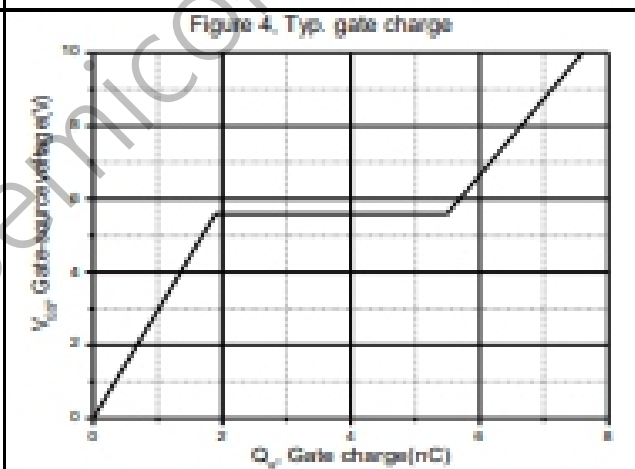
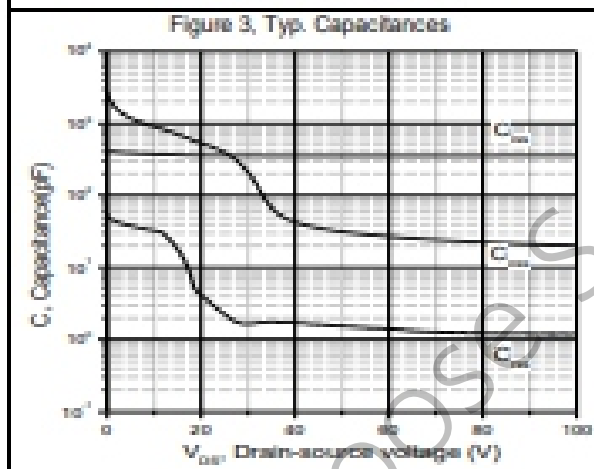
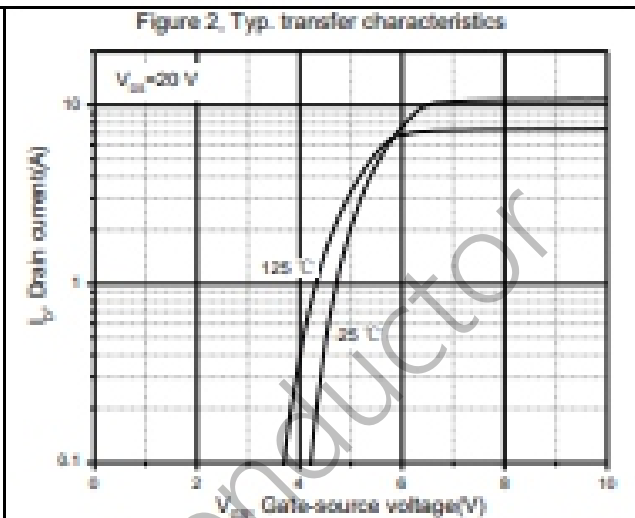
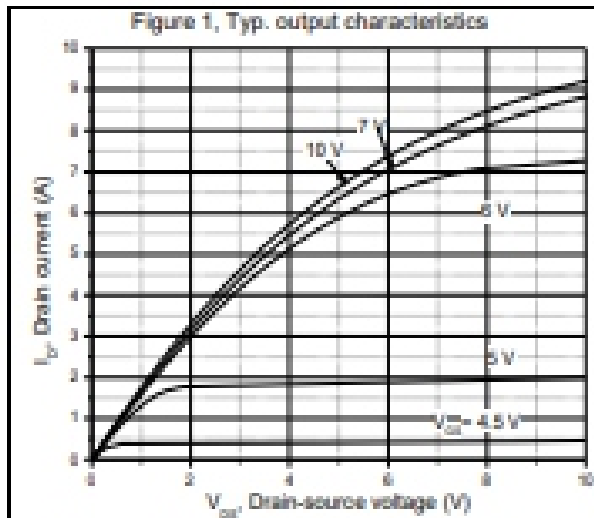
| Symbol           | Parameter                              | Typ. | Max. | Unit |
|------------------|----------------------------------------|------|------|------|
| R <sub>θJC</sub> | Thermal Resistance Junction to Case    | -    | 4.8  | °C/W |
| R <sub>θJA</sub> | Thermal Resistance Junction to Ambient | -    | 62.5 | °C/W |

## Electrical Characteristics (Ta=25°C unless otherwise noted)

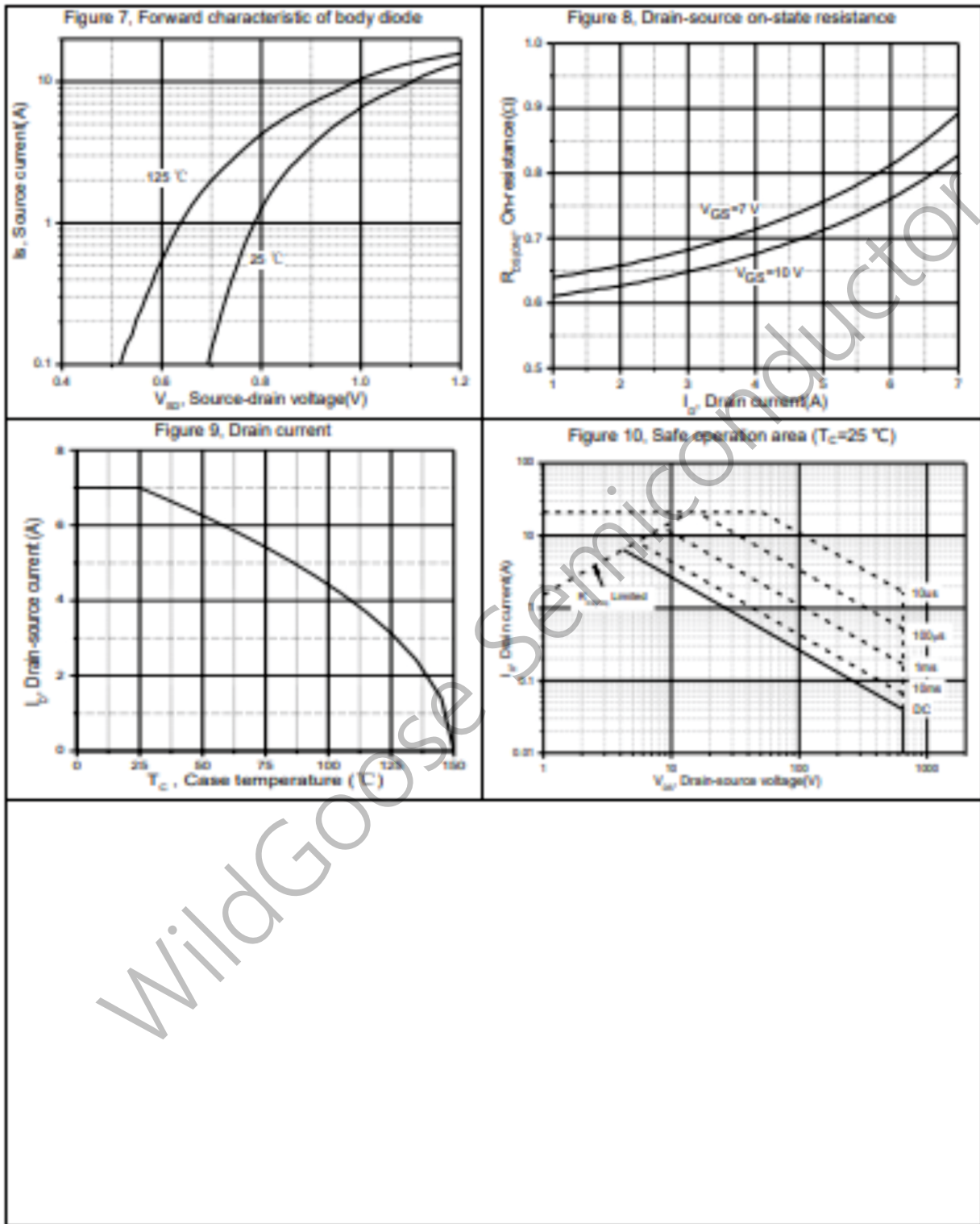
| Symbol                                                 | Parameter                                 | Test Condition                                                              | Min. | Typ.  | Max. | Unit |
|--------------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------|------|-------|------|------|
| Off Characteristics                                    |                                           |                                                                             |      |       |      |      |
| BV <sub>DSS</sub>                                      | Drain-Source Breakdown Voltage            | I <sub>D</sub> =250μA, V <sub>GS</sub> =0                                   | 650  | -     | -    | V    |
| ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>                    | Breakdown Voltage Temperature Coefficient | I <sub>D</sub> =250μA, Reference to 25°C                                    | -    | 0.67  | -    | V/°C |
| I <sub>DSS</sub>                                       | Zero Gate Voltage Drain Current           | V <sub>DS</sub> =650V, V <sub>GS</sub> =0V                                  | -    | -     | 10   | μA   |
|                                                        |                                           | V <sub>DS</sub> =520V, T <sub>J</sub> =125°C                                | -    | -     | 100  |      |
| I <sub>GSSF</sub>                                      | Gate-body leakage Current, Forward        | V <sub>GS</sub> =+30V, V <sub>DS</sub> =0V                                  | -    | -     | 100  | nA   |
| I <sub>GSSR</sub>                                      | Gate-body leakage Current, Reverse        | V <sub>GS</sub> =-30V, V <sub>DS</sub> =0V                                  | -    | -     | -100 |      |
| On Characteristics                                     |                                           |                                                                             |      |       |      |      |
| V <sub>GS(TH)</sub>                                    | Gate Threshold Voltage                    | I <sub>D</sub> =250μA, V <sub>DS</sub> =V <sub>GS</sub>                     | 2    | -     | 4    | V    |
| R <sub>DS(ON)</sub>                                    | Static Drain-Source On-Resistance         | I <sub>D</sub> =3.5A, V <sub>GS</sub> =10V                                  | -    | 0.70  | 0.76 | Ω    |
| Dynamic Characteristics                                |                                           |                                                                             |      |       |      |      |
| C <sub>iss</sub>                                       | Input Capacitance                         | V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1.0MHz                          | -    | 431.7 | -    | pF   |
| C <sub>oss</sub>                                       | Output Capacitance                        |                                                                             | -    | 24.7  | -    |      |
| C <sub>rss</sub>                                       | Reverse Transfer Capacitance              |                                                                             | -    | 7.3   | -    |      |
| Switching Characteristics                              |                                           |                                                                             |      |       |      |      |
| T <sub>d(on)</sub>                                     | Turn-On Delay Time                        | V <sub>DD</sub> =400V, I <sub>D</sub> =5A<br>R <sub>G</sub> =25Ω (Note 3,4) | -    | 19.6  | -    | nS   |
| T <sub>r</sub>                                         | Turn-on Rise Time                         |                                                                             | -    | 25.2  | -    |      |
| T <sub>d(off)</sub>                                    | Turn-Off Delay Time                       |                                                                             | -    | 47.9  | -    |      |
| T <sub>f</sub>                                         | Turn-Off Rise Time                        |                                                                             | -    | 22.5  | -    |      |
| Q <sub>g</sub>                                         | Total Gate Charge                         | V <sub>DS</sub> =400V, V <sub>GS</sub> =10V, I <sub>D</sub> =5A (Note3,4)   | -    | 9.5   | -    | nC   |
| Q <sub>gs</sub>                                        | Gate-Source Charge                        |                                                                             | -    | 3.0   | -    |      |
| Q <sub>gd</sub>                                        | Gate-Drain Charge                         |                                                                             | -    | 3.3   | -    |      |
| Drain-Source Diode Characteristics and Maximum Ratings |                                           |                                                                             |      |       |      |      |
| I <sub>S</sub>                                         | Max. Diode Forward Current                | -                                                                           | -    | -     | 7    | A    |
| I <sub>SM</sub>                                        | Max. Pulsed Forward Current               | -                                                                           | -    | -     | 21   |      |
| V <sub>SD</sub>                                        | Diode Forward Voltage                     | I <sub>D</sub> =7A                                                          | -    | -     | 1.3  | V    |
| T <sub>rr</sub>                                        | Reverse Recovery Time                     | I <sub>S</sub> =5A, V <sub>GS</sub> =0V<br>diF/dt=100A/μs (Note3)           | -    | 19.2  | -    | nS   |
| Q <sub>rr</sub>                                        | Reverse Recovery Charge                   |                                                                             | -    | 1.6   | -    | μC   |

- Notes : 1, L=0.5mH, I<sub>AS</sub>= 7A, V<sub>DD</sub>=50V, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C  
 2, Repetitive Rating : Pulse width limited by maximum junction temperature  
 3, Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%  
 4, Essentially Independent of Operating Temperature

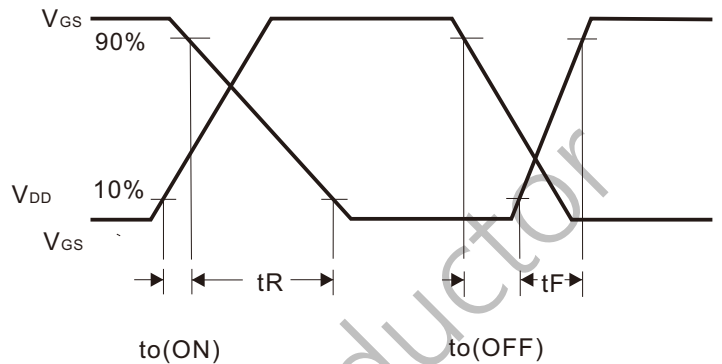
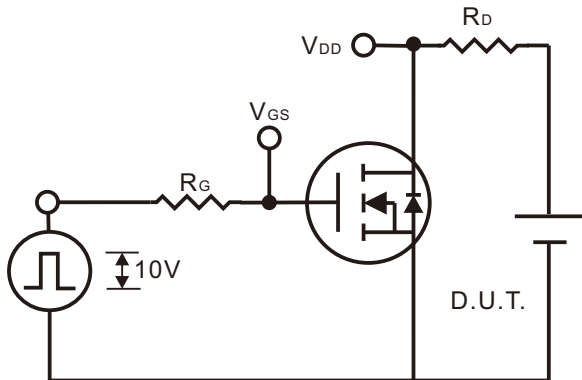
Typical Characteristics



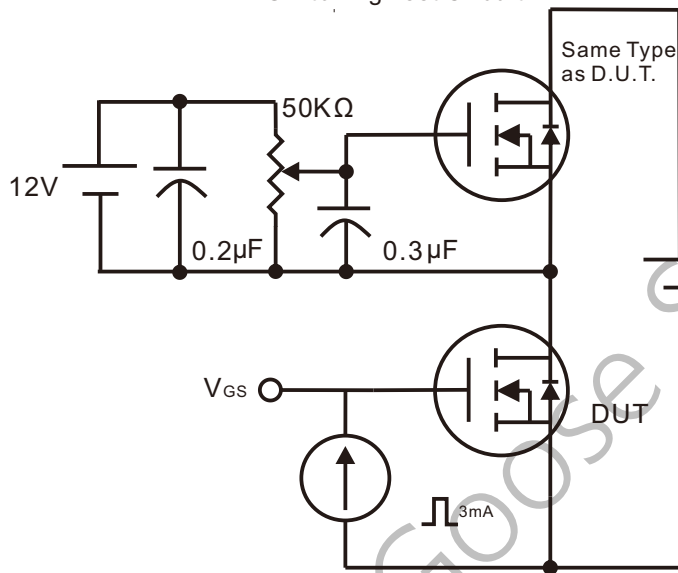
Typical Characteristics (Continued)



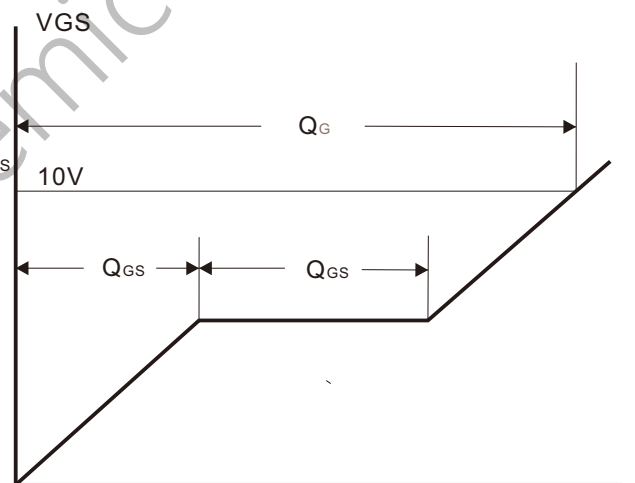
Gate Charge Test Circuit & Waveform



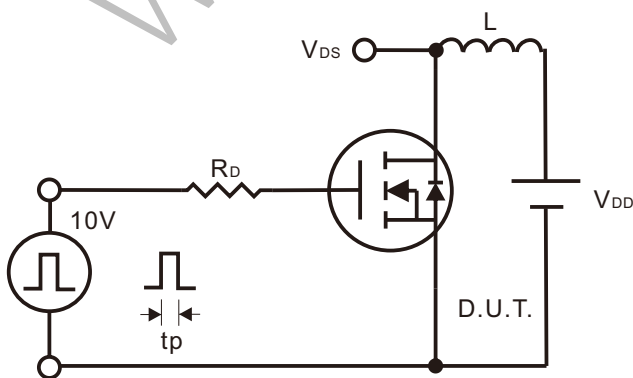
Switching Test Circuit



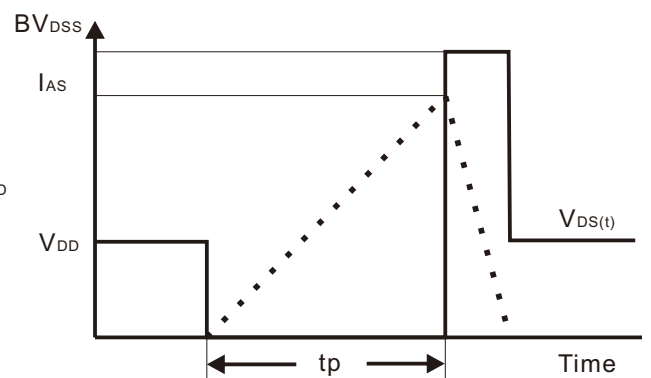
Switching Waveforms



Gate Charge Test Circuit



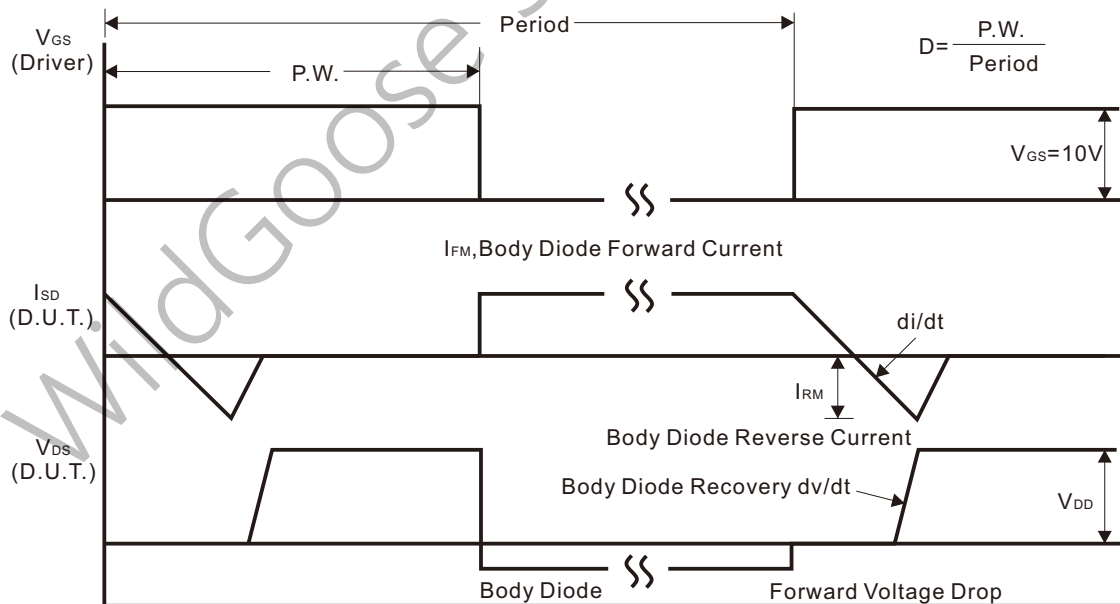
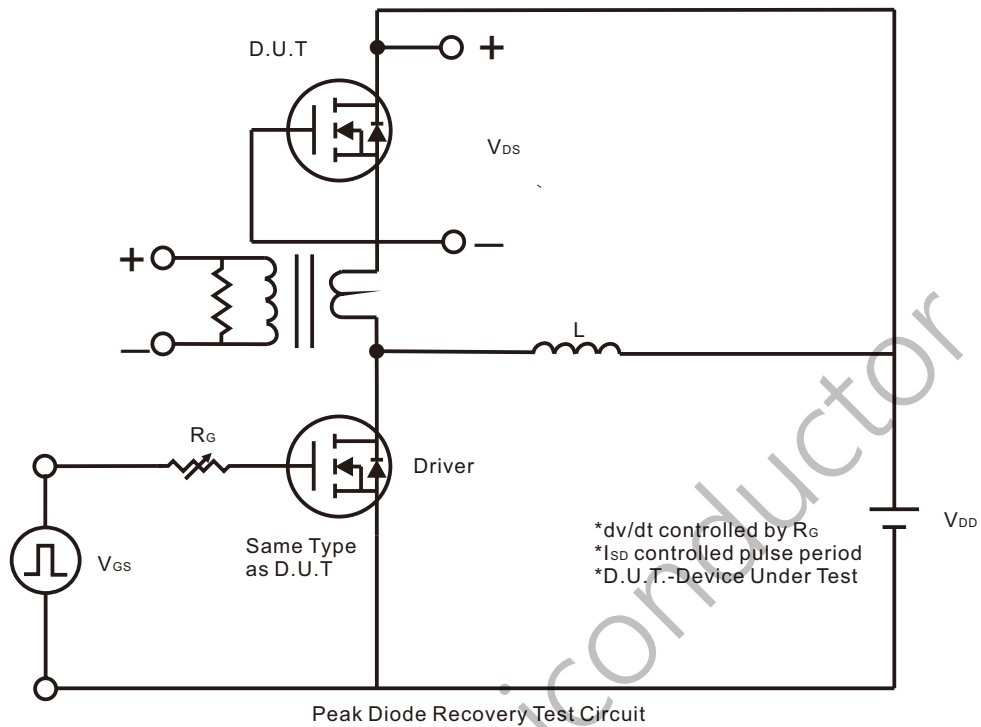
Gate Charge Waveform



Unclamped Inductive Switching Test Circuit

Unclamped Inductive Switching Waveforms

Peak Diode Recovery dv/dt Test Circuit & Waveform

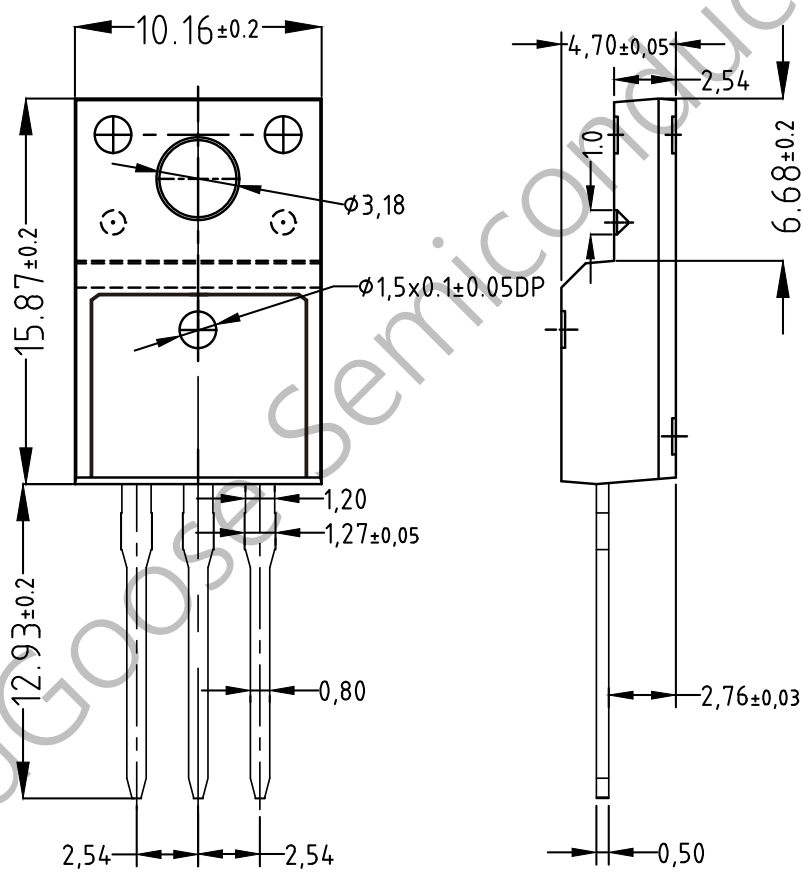
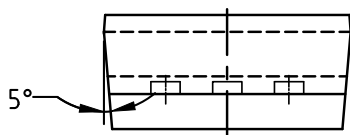


Peak Diode Recovery dv/dt Waveforms

Package Dimension

TO-220F

Unit: mm



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