

## General Description

The MY20N65F is silicon N-channel Enhanced VDMOSFETs, obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy.

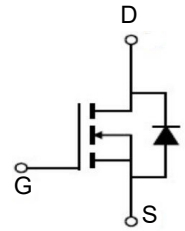
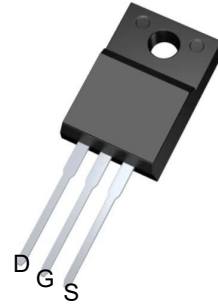


## Features

|                              |      |          |
|------------------------------|------|----------|
| $V_{DSS}$                    | 650  | V        |
| $I_D$                        | 20   | A        |
| $P_D(T_C=25\text{C})$        | 65   | W        |
| $R_{DS(ON)}(at\ V_{GS}=10V)$ | 0.35 | $\Omega$ |

## Application

- Fast Switching
- Low ON Resistance
- Low Gate Charge
- Power factor correction



## Package Marking and Ordering Information

| Product ID | Pack    | Marking  | Qty(PCS) |
|------------|---------|----------|----------|
| MY20N65F   | TO-220F | MY20N65F | 1000     |

## Absolute Maximum Ratings ( $T_C=25\text{ }^\circ\text{C}$ unless otherwise noted)

| Symbol    | Parameters                           | Ratings  | Unit                      |
|-----------|--------------------------------------|----------|---------------------------|
| $V_{DSS}$ | Drain-Source Voltage                 | 650      | V                         |
| $V_{GS}$  | Gate-Source Voltage-Continuous       | $\pm 30$ | V                         |
| $I_D$     | Drain Current-Continuous (Note 2)    | 20       | A                         |
| $I_{DM}$  | Drain Current-Single Plused (Note 1) | 36       | A                         |
| $P_D$     | Power Dissipation (Note 2)           | 65       | W                         |
| $T_j$     | Max.Operating junction temperature   | 150      | $^\circ\text{C}/\text{W}$ |

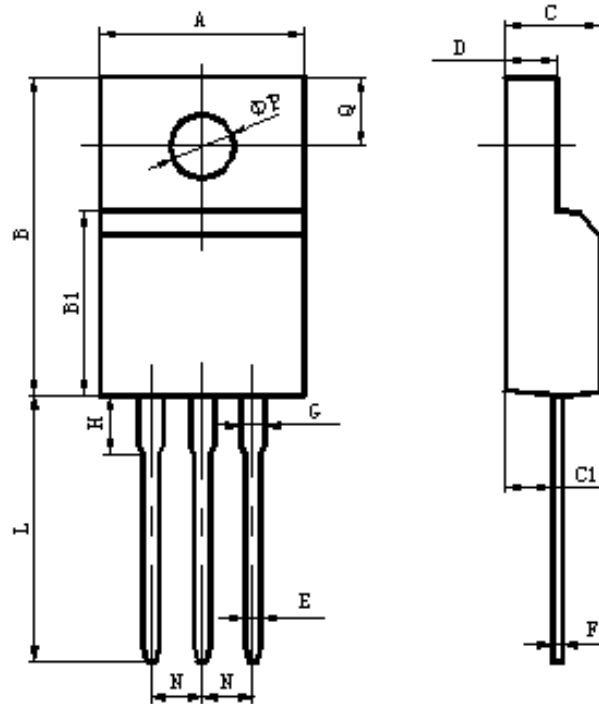
**Electrical Characteristics (T<sub>c</sub>=25 °C, unless otherwise noted)**

| Symbol                           | Parameters                                            | Min | Typ  | Max  | Units | Conditions                                                                        |
|----------------------------------|-------------------------------------------------------|-----|------|------|-------|-----------------------------------------------------------------------------------|
| <b>Static Characteristics</b>    |                                                       |     |      |      |       |                                                                                   |
| B <sub>VDSS</sub>                | Drain-Source Breakdown VoltageCurrent (Note 1)        | 650 | --   | --   | mA    | I <sub>D</sub> =250μA<br>V <sub>GS</sub> =0V , T <sub>J</sub> =25°C               |
| V <sub>GS(th)</sub>              | Gate Threshold Voltage                                | 2.0 | --   | 4.0  | V     | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                          |
| R <sub>DS(on)</sub>              | Drain-Source On-Resistance                            | --  | 0.35 | 0.4  | Ω     | V <sub>GS</sub> =10V , I <sub>D</sub> =10A                                        |
| I <sub>GSS</sub>                 | Gate-Body Leakage Current                             | --  | --   | ±100 | nA    | V <sub>GS</sub> =±30V , V <sub>DS</sub> =0                                        |
| I <sub>DSS</sub>                 | Zero Gate Voltage Drain Current                       | --  | --   | 1    | μA    | V <sub>DS</sub> =650V , V <sub>GS</sub> =0                                        |
| <b>Switching Characteristics</b> |                                                       |     |      |      |       |                                                                                   |
| T <sub>d (on)</sub>              | Turn-On Delay Time                                    | --  | 35   | --   | ns    | V <sub>DS</sub> =325V , I <sub>D</sub> =20A<br>, R <sub>G</sub> =25Ω (Note 2)     |
| T <sub>r</sub>                   | Rise Time                                             | --  | 55   | --   | ns    |                                                                                   |
| T <sub>d (off)</sub>             | Turn-Off Delay Time                                   | --  | 120  | --   | ns    |                                                                                   |
| T <sub>f</sub>                   | Fall Time                                             | --  | 50   | --   | ns    |                                                                                   |
| Q <sub>g</sub>                   | Total Gate Charge                                     | --  | 70   | --   | nC    | V <sub>DS</sub> =480V ,<br>V <sub>GS</sub> =10V ,<br>I <sub>D</sub> =20A (Note 2) |
| Q <sub>gs</sub>                  | Gate-Source Charge                                    | --  | 19   | --   | nC    |                                                                                   |
| Q <sub>gd</sub>                  | Gate-Drain Charge                                     | --  | 28   | --   | nC    |                                                                                   |
| <b>Dynamic Characteristics</b>   |                                                       |     |      |      |       |                                                                                   |
| C <sub>iss</sub>                 | Input Capacitance                                     | --  | 2500 | 3095 | pF    | V <sub>DS</sub> =25V , V <sub>GS</sub> =0 ,<br>f=1MHz                             |
| C <sub>oss</sub>                 | Output Capacitance                                    | --  | 280  | 385  | pF    |                                                                                   |
| C <sub>rss</sub>                 | Reverse Transfer Capacitance                          | --  | 23.6 | 35.5 | pF    |                                                                                   |
| I <sub>S</sub>                   | Continuous Drain-Source Diode ForwardCurrent (Note 2) | --  | --   | 20   | A     |                                                                                   |
| V <sub>SD</sub>                  | Diode Forward On-Voltage                              | --  | --   | 1.3  | V     | I <sub>S</sub> =10A , V <sub>GS</sub> =0                                          |
| R <sub>th(j-c)</sub>             | Thermal Resistance, Junction to Case                  | --  | --   | 1.9  | °C/W  |                                                                                   |

Note 1: Repetitive Rating : Pulse width limited by maximum junction temperature

Note 2: Pulse test: PW ≤ 300us , duty cycle ≤ 2%.

**Package Mechanical Data-TO-220F Single**



| Items    | Values(mm) |      |
|----------|------------|------|
|          | MIN        | MAX  |
| A        | 9.60       | 10.4 |
| B        | 15.4       | 16.2 |
| B1       | 8.90       | 9.50 |
| C        | 4.30       | 4.90 |
| C1       | 2.10       | 3.00 |
| D        | 2.40       | 3.00 |
| E        | 0.60       | 1.00 |
| F        | 0.30       | 0.60 |
| G        | 1.12       | 1.42 |
| H        | 3.40       | 3.80 |
|          | 2.40       | 2.90 |
| L*       | 12.0       | 14.0 |
| N        | 2.34       | 2.74 |
| Q        | 3.15       | 3.55 |
| $\phi P$ | 2.90       | 3.30 |