

## General Description

The MY30P03NE3 is the single P-Channel logic enhancement mode power field effect transistors to provide excellent  $R_{DS(on)}$ , low gate charge and low gate resistance.

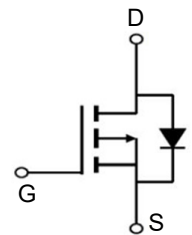
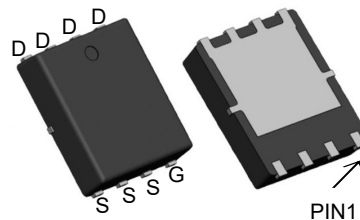


## Features

|                                  |     |            |
|----------------------------------|-----|------------|
| $V_{DSS}$                        | -30 | V          |
| $I_D$                            | -30 | A          |
| $R_{DS(ON)}$ (at $V_{GS}=10V$ )  | 17  | m $\Omega$ |
| $R_{DS(ON)}$ (at $V_{GS}=4.5V$ ) | 25  | m $\Omega$ |

## Application

- Battery protection System
- Switching power supply, SMPS
- DC/DC Converter
- DC/AC Converter
- Load Switch



## Package Marking and Ordering Information

| Product ID | Pack       | Marking    | Qty(PCS) |
|------------|------------|------------|----------|
| MY30P03NE3 | PDFN3*3-8L | MY30P03NE3 | 5000     |

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

| Symbol                       | Parameter                                                  | Rating     | Units              |
|------------------------------|------------------------------------------------------------|------------|--------------------|
| VDS                          | Drain-Source Voltage                                       | -30        | V                  |
| VGS                          | Gate-Source Voltage                                        | $\pm 20$   | V                  |
| $I_{D@T_A=25^\circ\text{C}}$ | Drain Current <sup>3</sup> , $V_{GS}$ @ 10V                | -30        | A                  |
| $I_{D@T_A=70^\circ\text{C}}$ | Drain Current <sup>3</sup> , $V_{GS}$ @ 10V                | -23        | A                  |
| IDM                          | Pulsed Drain Current <sup>1</sup>                          | -80        | A                  |
| $P_{D@T_A=25^\circ\text{C}}$ | Total Power Dissipation                                    | 3.57       | W                  |
| TSTG                         | Storage Temperature Range                                  | -55 to 150 | $^\circ\text{C}$   |
| $T_J$                        | Operating Junction Temperature Range                       | -55 to 150 | $^\circ\text{C}$   |
| Rthj-c                       | Maximum Thermal Resistance, Junction- case                 | 6          | $^\circ\text{C/W}$ |
| Rthj-a                       | Maximum Thermal Resistance, Junction- ambient <sup>3</sup> | 35         | $^\circ\text{C/W}$ |

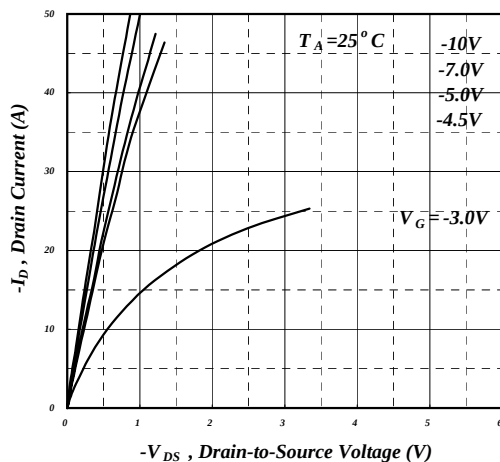
**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

| Symbol            | Parameter                                      | Test Conditions                                           | Min. | Typ. | Max. | Units |
|-------------------|------------------------------------------------|-----------------------------------------------------------|------|------|------|-------|
| BV <sub>DSS</sub> | Drain- Source Breakdown Voltage                | V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA               | -30  | -    | -    | V     |
| RDS(ON)           | Static Drain-Source On-Resistance <sup>2</sup> | V <sub>GS</sub> =- 10V, I <sub>D</sub> =-20A              | -    | 17   | 22   | mΩ    |
|                   |                                                | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =- 10A             | -    | 25   | 32   | mΩ    |
| VGS(th)           | Gate Threshold Voltage                         | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA | -1.0 | -1.6 | -2.5 | V     |
| g <sub>fs</sub>   | Forward Transconductance                       | V <sub>DS</sub> =- 10V, I <sub>D</sub> =-6A               | -    | 15   | -    | S     |
| IDSS              | Drain- Source Leakage Current                  | V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V                | -    | -    | -1   | uA    |
| IGSS              | Gate- Source Leakage                           | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                | -    | -    | ±100 | nA    |
| Q <sub>g</sub>    | Total Gate Charge                              | I <sub>D</sub> =-6A                                       | -    | 15   | 24   | nC    |
| Q <sub>gs</sub>   | Gate- Source Charge                            | V <sub>DS</sub> =- 15V                                    | -    | 3    | -    | nC    |
| Q <sub>gd</sub>   | Gate-Drain ("Miller") Charge                   | V <sub>GS</sub> =-4.5V                                    | -    | 8    | -    | nC    |
| td(on)            | Turn-on Delay Time                             | V <sub>DS</sub> =- 15V                                    | -    | 12   | -    | ns    |
| t <sub>r</sub>    | Rise Time                                      | I <sub>D</sub> =- 1A<br>R <sub>G</sub> =3.3Ω              | -    | 7.5  | -    | ns    |
| td(off)           | Turn-off Delay Time                            | V <sub>GS</sub> =- 10V                                    | -    | 39   | -    | ns    |
| t <sub>f</sub>    | Fall Time                                      |                                                           | -    | 21   | -    | ns    |
| C <sub>iss</sub>  | Input Capacitance                              | V <sub>GS</sub> =0V                                       | -    | 1260 | 2000 | pF    |
| C <sub>oss</sub>  | Output Capacitance                             | V <sub>DS</sub> =- 15V<br>f=1.0MHz.                       | -    | 245  | -    | pF    |
| C <sub>rss</sub>  | Reverse Transfer Capacitance                   | I <sub>S</sub> =-6A, V <sub>GS</sub> =0V,                 | -    | 210  | -    | pF    |
| t <sub>rr</sub>   | Reverse Recovery Time                          | dI/dt=100A/μs                                             | -    | 19   | -    | ns    |
| Q <sub>rr</sub>   | Reverse Recovery Charge                        |                                                           | -    | 10   | -    | nC    |

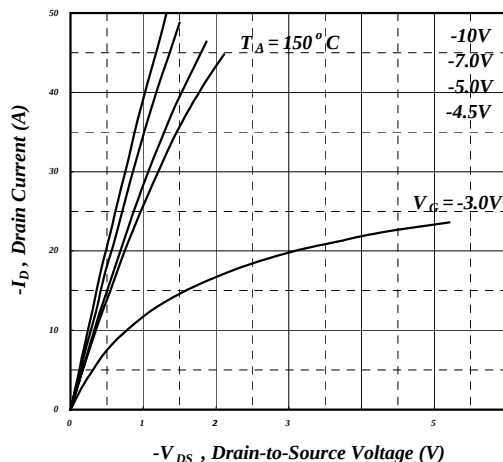
**Notes:**

1. Pulse width limited by Max. junction temperature.
2. Pulse test

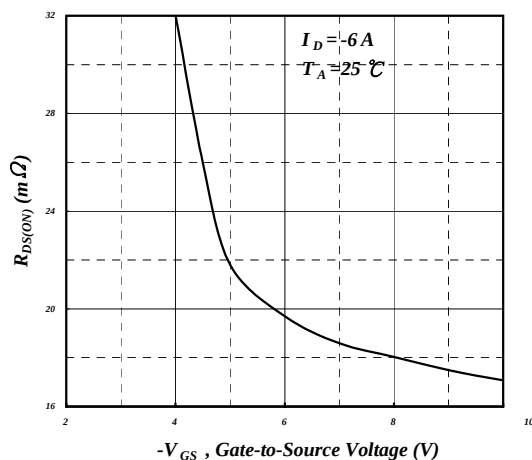
## Typical Characteristics



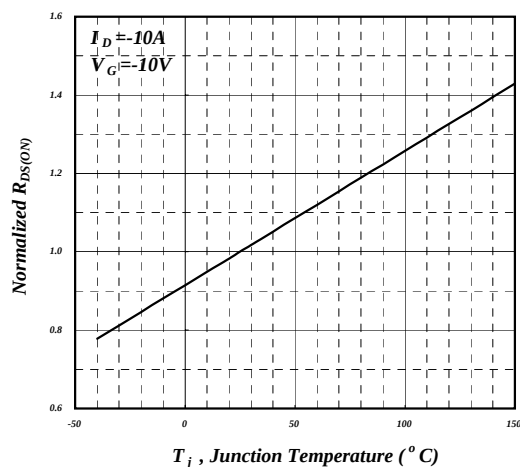
**Fig 1. Typical Output Characteristics**



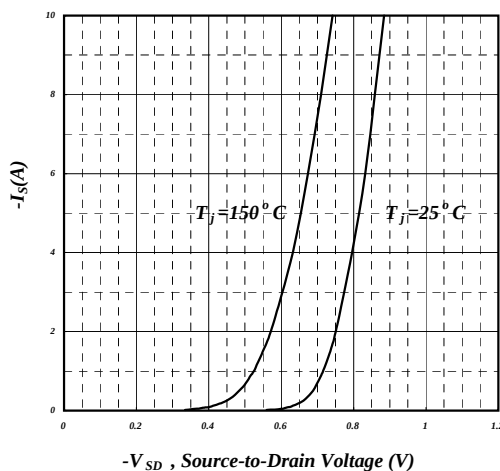
**Fig 2. Typical Output Characteristics**



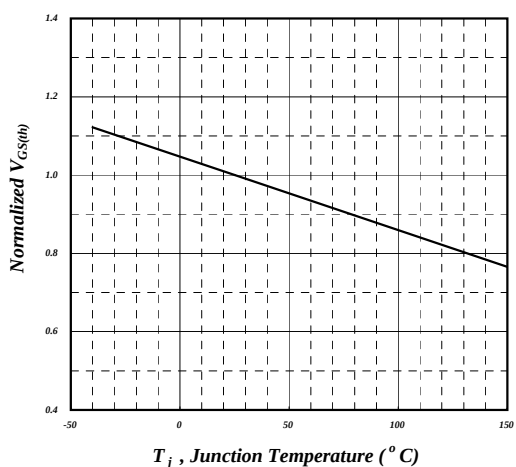
**Fig 3. On-Resistance v.s. Gate Voltage**



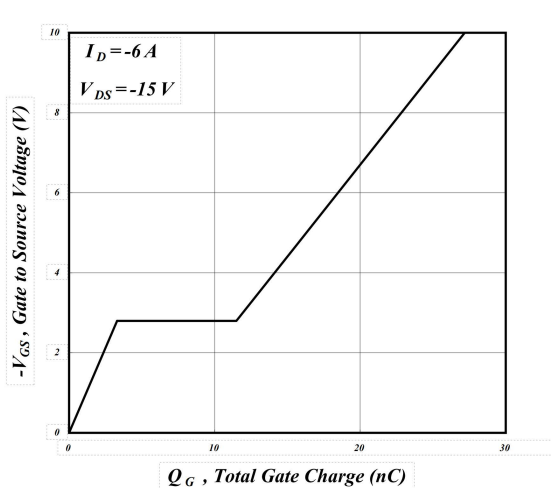
**Fig 4. Normalized On-Resistance  
v.s. Junction Temperature**



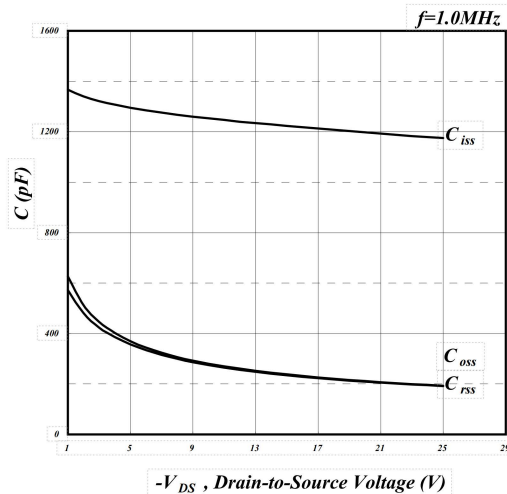
**Fig 5. Forward Characteristic of  
Reverse Diode**



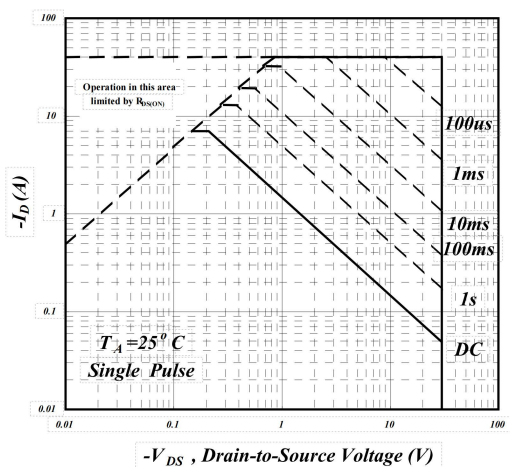
**Fig 6. Gate Threshold Voltage v.s.  
Junction Temperature**



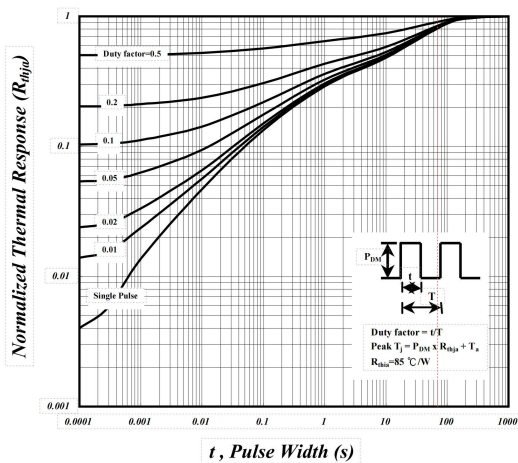
**Fig 7. Gate Charge Characteristics**



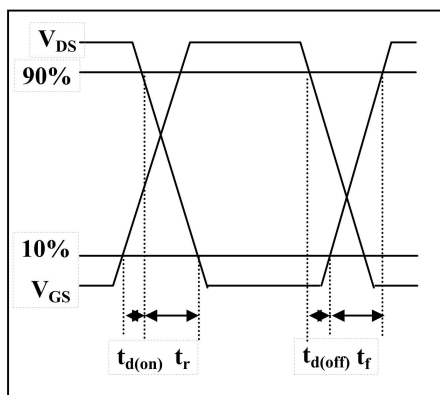
**Fig 8. Typical Capacitance Characteristics**



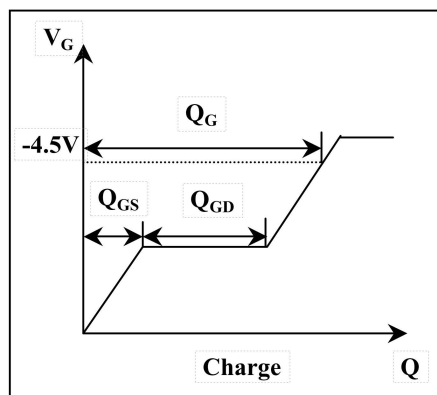
**Fig 9. Maximum Safe Operating Area**



**Fig 10. Effective Transient Thermal Impedance**

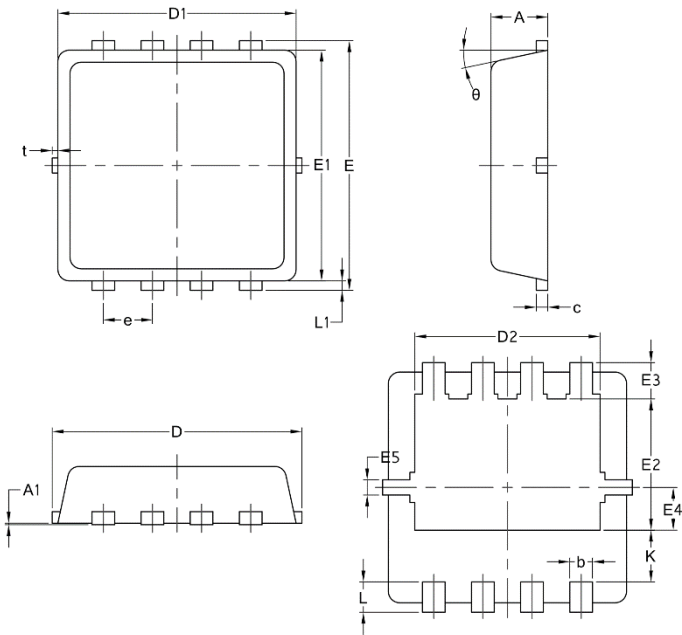


**Fig 11. Switching Time Waveform**



**Fig 12. Gate Charge Waveform**

Package Mechanical Data-DFN3\*3-8L-JQ Single



| Symbol | Common |       |      |
|--------|--------|-------|------|
|        | mm     |       |      |
|        | Mim    | Nom   | Max  |
| A      | 0.70   | 0.75  | 0.85 |
| A1     | /      | /     | 0.05 |
| b      | 0.20   | 0.30  | 0.40 |
| c      | 0.10   | 0.152 | 0.25 |
| D      | 3.15   | 3.30  | 3.45 |
| D1     | 3.00   | 3.15  | 3.25 |
| D2     | 2.29   | 2.45  | 2.65 |
| E      | 3.15   | 3.30  | 3.45 |
| E1     | 2.90   | 3.05  | 3.20 |
| E2     | 1.54   | 1.74  | 1.94 |
| E3     | 0.28   | 0.48  | 0.65 |
| E4     | 0.37   | 0.57  | 0.77 |
| E5     | 0.10   | 0.20  | 0.30 |
| e      | 0.60   | 0.65  | 0.70 |
| K      | 0.59   | 0.69  | 0.89 |
| L      | 0.30   | 0.40  | 0.50 |
| L1     | 0.06   | 0.125 | 0.20 |
| t      | 0      | 0.075 | 0.13 |
| Φ      | 10     | 12    | 14   |