

## General Description

The MY028CNE2 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

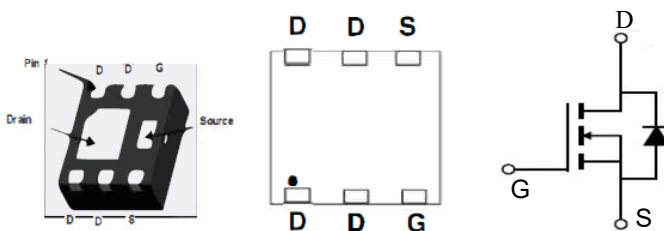


## Features

|                                  |    |            |
|----------------------------------|----|------------|
| $V_{DSS}$                        | 20 | V          |
| $I_D$                            | 8  | A          |
| $R_{DS(ON)}$ (at $V_{GS}=4.5V$ ) | 19 | m $\Omega$ |
| $R_{DS(ON)}$ (at $V_{GS}=2.5V$ ) | 25 | m $\Omega$ |

## Application

- Battery protection
- Load switch
- Uninterruptible power supply



## Package Marking and Ordering Information

| Product ID | Pack      | Marking | Qty(PCS) |
|------------|-----------|---------|----------|
| MY028CNE2  | PDFN2*2-6 | 028CN   | 5000     |

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

| Parameter                                                | Symbol          | Limit      | Unit           |
|----------------------------------------------------------|-----------------|------------|----------------|
| Drain-Source Voltage                                     | $V_{DS}$        | 20         | V              |
| Gate-Source Voltage                                      | $V_{GS}$        | $\pm 10$   | V              |
| Drain Current-Continuous                                 | $I_D$           | 8          | A              |
| Pulsed Drain Current                                     | $I_{DM}$        | 40         | A              |
| Maximum Power Dissipation                                | $P_D$           | 60         | W              |
| Derating factor                                          | $R_{\theta JC}$ | 0.48       | W/ $^{\circ}C$ |
| Operating Junction and Storage Temperature Range         | $T_J, T_{STG}$  | -55 To 150 | $^{\circ}C$    |
| Thermal Resistance, Junction-to-Case <sup>(Note 2)</sup> | $R_{\theta JC}$ | 167        | $^{\circ}C/W$  |

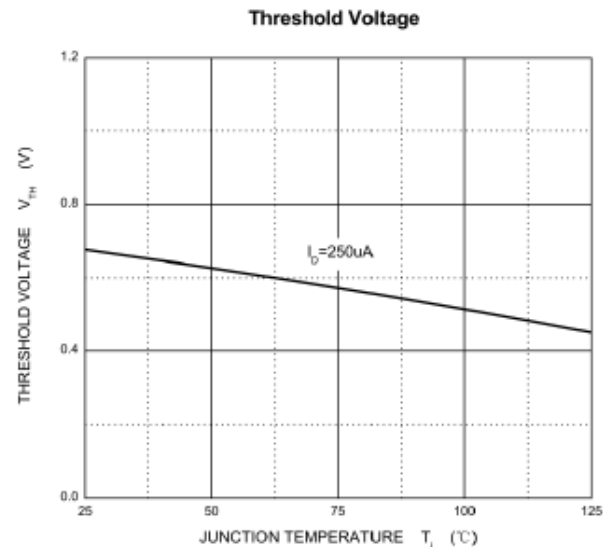
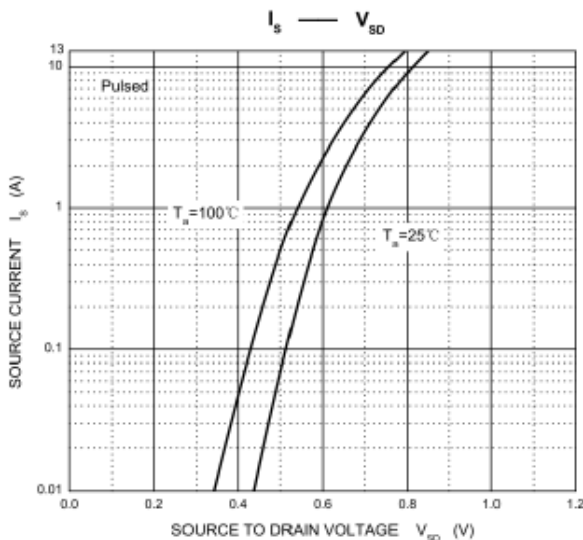
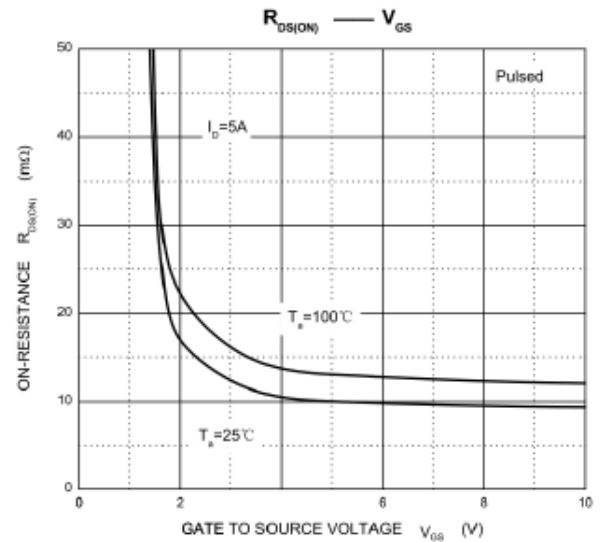
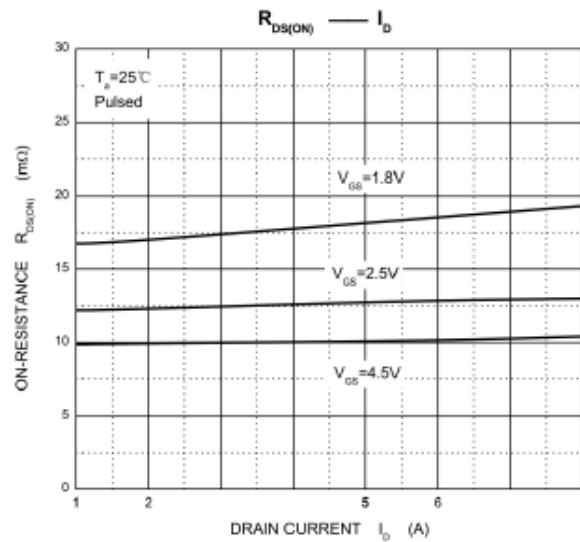
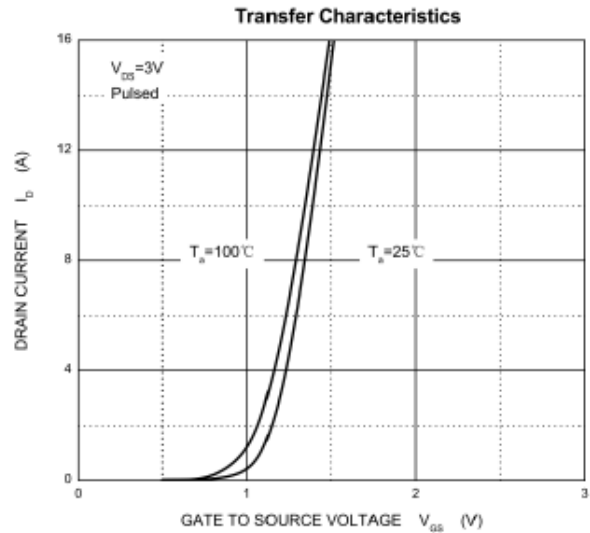
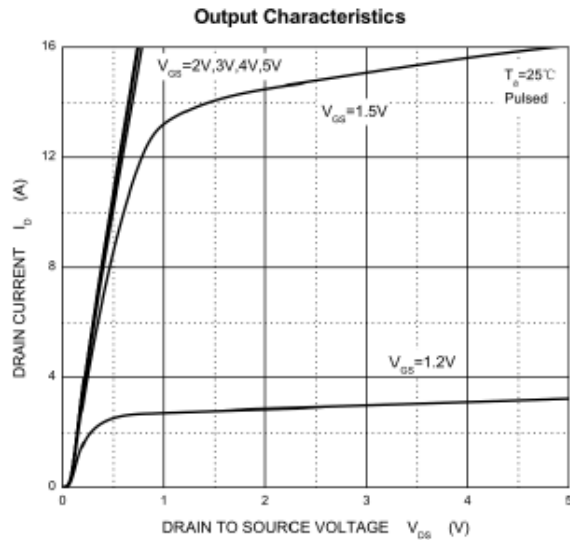
**Electrical Characteristics ( $T_c=25\text{ }^{\circ}\text{C}$ , unless otherwise noted)**

| Parameter                            | Symbol        | Test Condition                                                                    | Min  | Typ  | Max       | Unit       |
|--------------------------------------|---------------|-----------------------------------------------------------------------------------|------|------|-----------|------------|
| <b>STATIC PARAMETERS</b>             |               |                                                                                   |      |      |           |            |
| Drain-source breakdown voltage       | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                                                     | 20   |      |           | V          |
| Zero gate voltage drain current      | $I_{DSS}$     | $V_{DS} = 20V, V_{GS} = 0V$                                                       |      |      | 1         | $\mu A$    |
| Gate-body leakage current            | $I_{GSS}$     | $V_{GS} = \pm 10V, V_{DS} = 0V$                                                   |      |      | $\pm 100$ | nA         |
| Gate threshold voltage (note 3)      | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                                                 | 0.35 | 0.7  | 1         | V          |
| Drain-source on-resistance(note 3)   | $R_{DS(on)}$  | $V_{GS} = 4.5V, I_D = 5A$                                                         |      | 19   | 28        | m $\Omega$ |
|                                      |               | $V_{GS} = 2.5V, I_D = 5A$                                                         |      | 25   | 33        | m $\Omega$ |
|                                      |               | $V_{GS} = 1.8V, I_D = 5A$                                                         |      |      |           | m $\Omega$ |
| Forward tranconductance(note 3)      | $g_{FS}$      | $V_{DS} = 4V, I_D = 9.7A$                                                         | 20   |      |           | S          |
| Diode forward voltage (note 3)       | $V_{SD}$      | $I_S = 10A, V_{GS} = 0V$                                                          |      |      | 1.2       | V          |
| <b>DYNAMIC PARAMETERS (note 4)</b>   |               |                                                                                   |      |      |           |            |
| Input Capacitance                    | $C_{iss}$     | $V_{DS} = 4V, V_{GS} = 0V, f = 1MHz$                                              |      | 1800 |           | pF         |
| Output Capacitance                   | $C_{oss}$     |                                                                                   |      | 650  |           | pF         |
| Reverse Transfer Capacitance         | $C_{rss}$     |                                                                                   |      | 450  |           | pF         |
| Gate Resistance                      | $R_g$         | $f = 1MHz$                                                                        |      | 2.5  |           | $\Omega$   |
| <b>SWITCHING PARAMETERS (note 4)</b> |               |                                                                                   |      |      |           |            |
| Turn-on delay time                   | $t_{d(on)}$   | $V_{GEN} = 4.5V, V_{DD} = 4V,$<br>$I_D = 10A, R_g = 1\Omega$<br>$R_L = 0.4\Omega$ |      | 12   | 20        | ns         |
| Turn-on rise time                    | $t_r$         |                                                                                   |      | 10   | 15        | ns         |
| Turn-off delay time                  | $t_{d(off)}$  |                                                                                   |      | 65   | 100       | ns         |
| Turn-off fall time                   | $t_f$         |                                                                                   |      | 20   | 30        | ns         |
| Total Gate Charge                    | $Q_g$         | $V_{DS} = 4V, V_{GS} = 5V$<br>$I_D = 10A$                                         |      |      | 32        | nC         |
| Gate-Source Chage                    | $Q_{gs}$      |                                                                                   |      | 2.5  |           | nC         |
| Gage-Drain Charge                    | $Q_{gd}$      |                                                                                   |      | 6.5  |           | nC         |

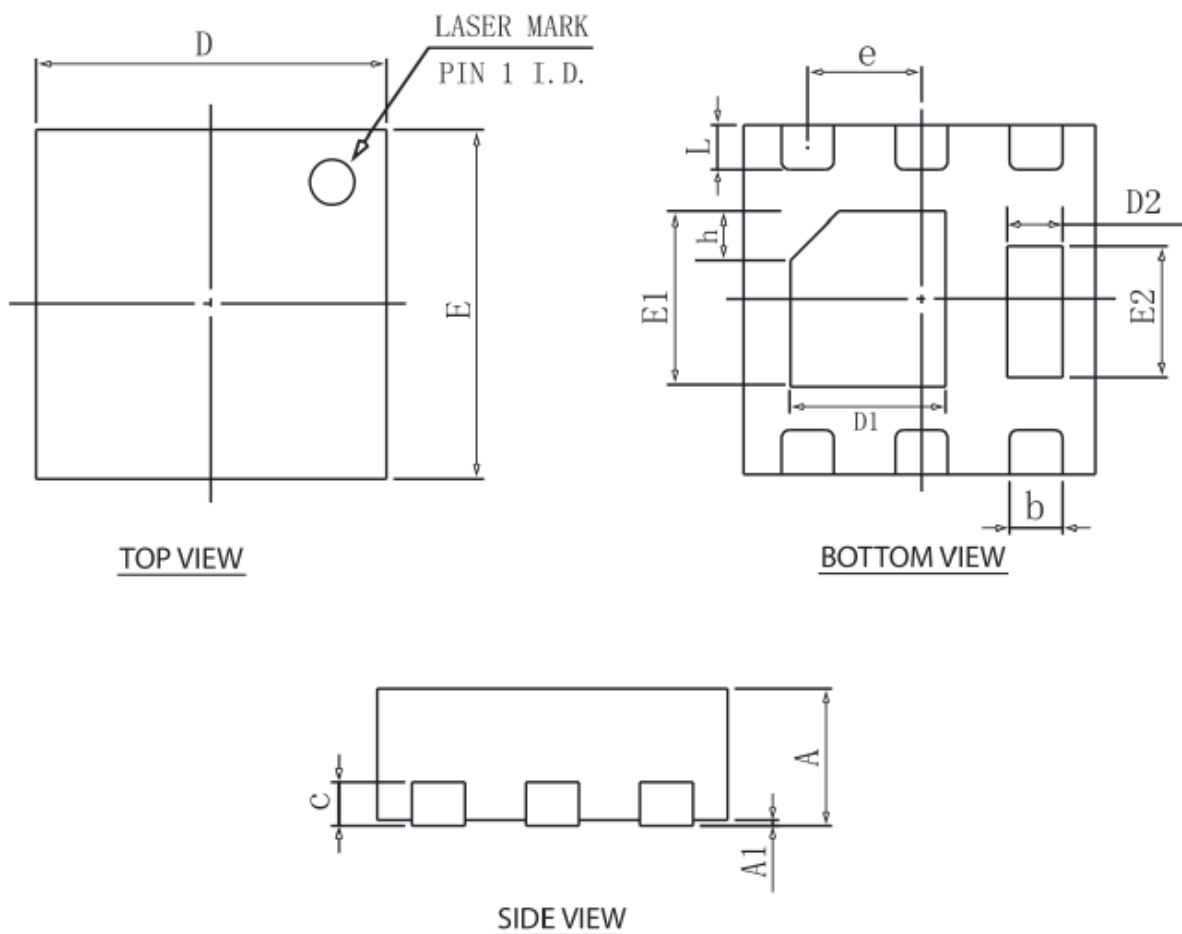
**Notes :**

- 1.Surface mounted on FR4 board using 1 square inch pad size,1oz copper.
- 2.Surface mounted on FR4 board using the minimum pad size,1oz copper.
3. Pulse test : Pulse width=300 $\mu s$ , duty cycle $\leq 2\%$ .
4. These parameters have no way to verify.

Typical Characteristics



**Package Mechanical Data-DFN2\*2-6L-JQ Single**



**COMMON DIMENSIONS**

| SYMBOL | mm      |       |       |
|--------|---------|-------|-------|
|        | MIN     | NOM   | MAX   |
| A      | 0.413   | 0.452 | 0.493 |
| A1     | NA      | 0.02  | 0.05  |
| b      | 0.20    | 0.27  | 0.34  |
| c      | 0.18    | 0.20  | 0.25  |
| D      | 1.95    | 2.00  | 2.07  |
| E      | 1.95    | 2.00  | 2.07  |
| D1     | 0.80    | 0.90  | 1.00  |
| E1     | 0.90    | 1.00  | 1.10  |
| D2     | 0.20    | 0.30  | 0.40  |
| E2     | 0.65    | 0.75  | 0.85  |
| L      | 0.20    | 0.25  | 0.35  |
| h      | 0.20    | 0.25  | 0.30  |
| e      | 0.65BSC |       |       |