

### General Description

The 065N04 uses advanced SGT technology to provide excellent  $R_{DS(ON)}$ . This device is suitable for use as a Battery protection or in other Switching application.

### Features

- Fast switching
- Lower On-resistance
- 100% avalanche tested
- RoHS Compliant

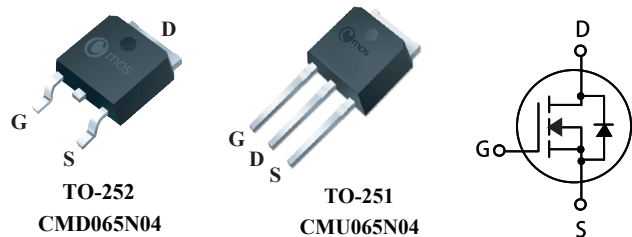
### Product Summary

| BVDSS | RDSON | ID  |
|-------|-------|-----|
| 40V   | 5.8mΩ | 80A |

### Applications

- Load Switch
- Networking DC-DC Power System
- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA

### TO-252/251 Pin Configuration



### Absolute Maximum Ratings

| Symbol                | Parameter                                  | Rating     | Units |
|-----------------------|--|------------|-------|
| $V_{DS}$              | Drain-Source Voltage                       | 40         | V     |
| $V_{GS}$              | Gate-Source Voltage                        | ±20        | V     |
| $I_D@T_C=25^\circ C$  | Continuous Drain Current                   | 80         | A     |
| $I_D@T_C=100^\circ C$ | Continuous Drain Current                   | 56         | A     |
| $I_{DM}$              | Pulsed Drain Current                       | 320        | A     |
| EAS                   | Single Pulse Avalanche Energy <sup>1</sup> | 100        | mJ    |
| $P_D@T_C=25^\circ C$  | Total Power Dissipation                    | 52         | W     |
| $T_{STG}$             | Storage Temperature Range                  | -55 to 150 | °C    |
| $T_J$                 | Operating Junction Temperature Range       | -55 to 150 | °C    |

### Thermal Data

| Symbol          | Parameter  | Typ. | Max. | Unit |
|-----------------|--|------|------|------|
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient <sup>2</sup> | ---  | 25   | °C/W |
| $R_{\theta JC}$ | Thermal Resistance Junction -Case                    | ---  | 2.4  | °C/W |

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

| Symbol              | Parameter                         | Conditions   | Min. | Typ. | Max. | Unit |
|---------------------|-----------------------------------|--|------|------|------|------|
| BV <sub>DSS</sub>   | Drain-Source Breakdown Voltage    | V <sub>GS</sub> =0V , I <sub>D</sub> =250μA  | 40   | ---  | ---  | V    |
| R <sub>DS(ON)</sub> | Static Drain-Source On-Resistance | V <sub>GS</sub> =10V , I <sub>D</sub> =28A   | ---  | 5    | 5.8  | mΩ   |
| R <sub>DS(ON)</sub> | Static Drain-Source On-Resistance | V <sub>GS</sub> =4.5V , I <sub>D</sub> =25A  | ---  | 7.6  | 8.8  | mΩ   |
| V <sub>GS(th)</sub> | Gate Threshold Voltage            | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA                                 | 1    | ---  | 3    | V    |
| I <sub>DSS</sub>    | Drain-Source Leakage Current      | V <sub>DS</sub> =32V , V <sub>GS</sub> =0V   | ---  | ---  | 1    | uA   |
| I <sub>GSS</sub>    | Gate-Source Leakage Current       | V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V   | ---  | ---  | ±100 | nA   |
| g <sub>fs</sub>     | Forward Transconductance          | V <sub>DS</sub> =10V , I <sub>D</sub> =20A   | ---  | 9    | ---  | S    |
| R <sub>g</sub>      | Gate Resistance                   | V <sub>DS</sub> =0V , V <sub>GS</sub> =0V , f=1MHz                                       | ---  | 2    | ---  | Ω    |
| Q <sub>g</sub>      | Total Gate Charge                 | V <sub>DD</sub> =20V , I <sub>D</sub> =12A<br>V <sub>GS</sub> =4.5V                      | ---  | 10   | ---  | nC   |
| Q <sub>gs</sub>     | Gate-Source Charge                |  | ---  | 3.5  | ---  |      |
| Q <sub>gd</sub>     | Gate-Drain Charge                 |  | ---  | 4    | ---  |      |
| T <sub>d(on)</sub>  | Turn-On Delay Time                | V <sub>DD</sub> =15V , V <sub>GS</sub> =10V , R <sub>G</sub> =3.3Ω<br>I <sub>D</sub> =1A | ---  | 5    | ---  | ns   |
| T <sub>r</sub>      | Rise Time                         |  | ---  | 9    | ---  |      |
| T <sub>d(off)</sub> | Turn-Off Delay Time               |  | ---  | 25   | ---  |      |
| T <sub>f</sub>      | Fall Time                         |  | ---  | 15   | ---  |      |
| C <sub>iss</sub>    | Input Capacitance                 | V <sub>DS</sub> =25V , V <sub>GS</sub> =0V , f=1MHz                                      | ---  | 1000 | ---  | pF   |
| C <sub>oss</sub>    | Output Capacitance                |  | ---  | 270  | ---  |      |
| C <sub>rss</sub>    | Reverse Transfer Capacitance      |  | ---  | 16   | ---  |      |

**Diode Characteristics**

| Symbol               | Parameter                        | Conditions  | Min. | Typ. | Max. | Unit |
|----------------------|----------------------------------|---|------|------|------|------|
| I <sub>S</sub>       | Diode continuous forward current | V <sub>G</sub> =V <sub>D</sub> =0V , Force Current                | ---  | ---  | 80   | A    |
| I <sub>S,pulse</sub> | Diode pulse current              |   | ---  | ---  | 320  | A    |
| V <sub>SD</sub>      | Diode Forward Voltage            | V <sub>GS</sub> =0V , I <sub>S</sub> =28A , T <sub>J</sub> =25 °C | ---  | 0.89 | 1.2  | V    |

Notes:

- 1.The EAS data shows Max. rating .The test condition is V<sub>DS</sub>=25V , V<sub>GS</sub>=10V , L=0.5mH , I<sub>AS</sub>=20A.
2. The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

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Typical Characteristics

