# CMB80N03 /CMP80N03

**Cmos**

## N-Ch 30V Fast Switching MOSFETs

### General Description

The 80N03 is N-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

### Features

- Simple Drive Requirement
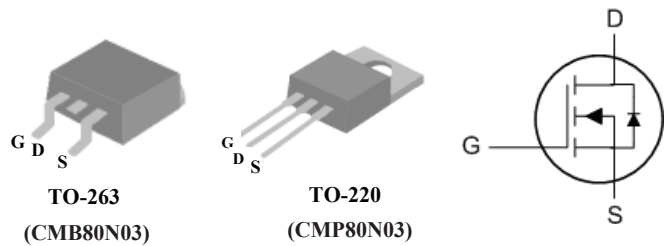- Fast Switching
- Low On-Resistance

### Product Summery

| BVDSS | RDSON | ID |
|-------|-------|-----|
| 30V | 5.2mΩ | 80A |

### Applications

- LED POWER CONTROLLER
- DC-DC & DC-AC CONVERTERS
- HIGH CURRENT, HIGH SPEED SWITCHING
- SOLENOID AND RELAY DRIVERS
- MOTOR CONTROL, AUDIO AMPLIFIERS

### TO263 / TO220 Pin Configuration

TO-263
(CMB80N03)

TO-220
(CMP80N03)

### Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|--------|-----------|--------|-------|
| $V_{DS}$ | Drain-Source Voltage | 30 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$@$T_C$=25°C | Continuous Drain Current [1] | 80 | A |
| $I_D$@$T_C$=100°C | Continuous Drain Current [1] | 50 | A |
| $I_{DM}$ | Pulsed Drain Current[2] | 220 | A |
| EAS | Single Pulse Avalanche Energy[3] | 400 | mJ |
| $I_{AS}$ | Avalanche Current | 50 | A |
| $P_D$@$T_C$=25°C | Total Power Dissipation | 120 | W |
| $T_{STG}$ | Storage Temperature Range | -55 to 175 | °C |
| $T_J$ | Operating Junction Temperature Range | -55 to 175 | °C |

### Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|--------|-----------|------|------|------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient [1] | --- | 62 | °C/W |
| $R_{\theta JC}$ | Thermal Resistance Junction-case | --- | 1.5 | °C/W |

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## Electrical Characteristics ($T_J$=25 ℃, unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------|-----------|------------|------|------|------|------|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V , $I_D$=250uA | 30 | --- | --- | V |
| $\triangle BV_{DSS}/\triangle T_J$ | BVDSS Temperature Coefficient | Reference to 25℃ , $I_D$=1mA | --- | 0.035 | --- | V/℃ |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance[2] | $V_{GS}$=10V , $I_D$=40A | --- | --- | 5.2 | mΩ |
| | | $V_{GS}$=4.5V , $I_D$=20A | --- | --- | 10 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS}$=$V_{DS}$ , $I_D$ =250uA | 1.3 | --- | 2.2 | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=24V , $V_{GS}$=0V | --- | --- | 1 | uA |
| | | $V_{DS}$=24V , $V_{GS}$=0V, $T_C$=125°C | --- | --- | 25 | |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V , $V_{DS}$=0V | --- | --- | ±100 | nA |
| gfs | Forward Transconductance | $V_{DS}$=10V , $I_D$=40A | --- | 50 | --- | S |
| $R_g$ | Gate Resistance | $V_{DS}$=0V , $V_{GS}$=0V , f=1MHz | --- | --- | 3.3 | Ω |
| $Q_g$ | Total Gate Charge | $I_D$=40A | --- | --- | 42 | nC |
| $Q_{gs}$ | Gate-Source Charge | $V_{DS}$=24V | --- | --- | 52 | |
| $Q_{gd}$ | Gate-Drain Charge | $V_{GS}$=5V | --- | --- | 26 | |
| $T_{d(on)}$ | Turn-On Delay Time | $V_{DS}$=15V | --- | 9.9 | --- | ns |
| $T_r$ | Rise Time | $I_D$=40A | --- | 100 | --- | |
| $T_{d(off)}$ | Turn-Off Delay Time | $R_G$=3.3Ω ,$V_{GS}$=10V | --- | 37 | --- | |
| $T_f$ | Fall Time | $R_D$=0.37Ω | --- | 60 | --- | |
| $C_{iss}$ | Input Capacitance | | --- | 1950 | --- | pF |
| $C_{oss}$ | Output Capacitance | $V_{DS}$=25V , $V_{GS}$=0V , f=1MHz | --- | 895 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 315 | --- | |

## Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------|-----------|------------|------|------|------|------|
| $I_S$ | Continuous Source Current[1] | $V_G$=$V_D$=0V , Force Current | --- | --- | 80 | A |
| $I_{SM}$ | Pulsed Source Current[2] | | --- | --- | 220 | A |
| $V_{SD}$ | Diode Forward Voltage[2] | $V_{GS}$=0V , $I_S$=40 A, $T_J$=25℃ | --- | --- | 1.28 | V |

Note :
1.The data tested by surface mounted on a 1 inch[2] FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width $\leqq$ 300us , duty cycle $\leqq$ 2%
3.The EAS data shows Max. rating . The test condition is $V_{DD}$=25V,$V_{GS}$=10V,L=0.1mH,$I_{AS}$=48A