

General Description

The 100N03 is N-ch MOSFETs with extreme high cell density, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

Features

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

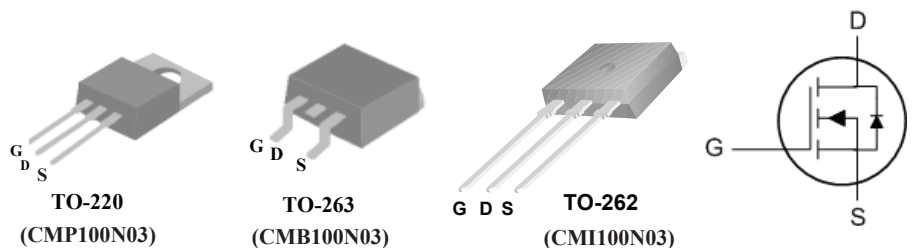
Product Summary

| BVDSS | R _{DS(on)} | I _D |
|-------|---------------------|----------------|
| 30V | < 4mΩ | 100A |

Applications

- HIGH CURRENT, HIGH SPEED SWITCHING
- DC-DC & DC-AC CONVERTERS
- MOTOR CONTROL, AUDIO AMPLIFIERS
- SOLENOID AND RELAY DRIVERS
- AUTOMOTIVE ENVIRONMENT

TO220 / TO263 / TO262 Pin Configuration



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 | 100 | A |
| I _D @T _C =100°C | Continuous Drain Current ¹ | 56 | A |
| I _{DM} | Pulsed Drain Current ² | 320 | A |
| EAS | Single Pulse Avalanche Energy ³ | 600 | mJ |
| I _{AS} | Avalanche Current | 56 | A |
| P _D | Total Power Dissipation | 210 | W |
| T _{STG} | Storage Temperature Range | -65 to 175 | °C |
| T _J | Operating Junction Temperature Range | -65 to 175 | °C |

Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|------------------|--|------|------|------|
| R _{θJA} | Thermal Resistance Junction-ambient ¹ | --- | 62.5 | °C/W |
| R _{θJC} | Thermal Resistance Junction-case | --- | 0.7 | °C/W |

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------------|--|--|------|-------|------|------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 30 | --- | --- | V |
| ΔBV _{DSS} /ΔT _J | BVDSS Temperature Coefficient | Reference to 25 °C, I _D =1mA | --- | 0.035 | --- | V/°C |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =10V, I _D =40A | 2.7 | 3 | 3.8 | mΩ |
| | | V _{GS} =4.5V, I _D =40A | --- | 4 | 5.5 | |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} =V _{DS} , I _D =250uA | 1 | --- | 3 | V |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =30V, V _{GS} =0V | --- | --- | 1 | uA |
| | | V _{DS} =30V, V _{GS} =0V, TC=125°C | --- | --- | 10 | |
| I _{GSS} | Gate-Source Leakage Current | V _{GS} =±20V, V _{DS} =0V | --- | --- | ±100 | nA |
| g _{fs} | Forward Transconductance | V _{DS} >I _{D(on)} × R _{DS(on)max} , I _D =15A | --- | 50 | --- | S |
| R _g | Gate Resistance | V _{DS} =0V, V _{GS} =0V, f=1MHz | --- | --- | 4.7 | Ω |
| Q _g | Total Gate Charge | I _D =100A V _{DD} =24V V _{GS} =4.5V | --- | 84 | 114 | nC |
| Q _{gs} | Gate-Source Charge | | --- | 21 | --- | |
| Q _{gd} | Gate-Drain Charge | | --- | 36 | --- | |
| T _{d(on)} | Turn-On Delay Time | V _{DD} =15V | --- | 40 | --- | ns |
| T _r | Rise Time | I _D =40A | --- | 112 | --- | |
| T _{d(off)} | Turn-Off Delay Time | R _G =4.7Ω | --- | 144 | --- | |
| T _f | Fall Time | V _{GS} =4.5V | --- | 85 | --- | |
| C _{iss} | Input Capacitance | V _{DS} =25V, V _{GS} =0V, f=1MHz | --- | --- | 4900 | pF |
| C _{oss} | Output Capacitance | | --- | --- | 1300 | |
| C _{rss} | Reverse Transfer Capacitance | | --- | --- | 490 | |

Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|---|------|------|------|------|
| I _S | Continuous Source Current ¹ | V _G =V _D =0V, Force Current | --- | --- | 100 | A |
| I _{SM} | Pulsed Source Current ² | | --- | --- | 320 | A |
| V _{SD} | Diode Forward Voltage ² | V _{GS} =0V, I _S =100A, T _J =25°C | --- | --- | 1.5 | V |

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%

3.The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=56A