

800V N-Plane Enhancement Mode MOSFET

Description

The AP4N80F/P series are from the innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance

General Features

$V_{DS} = 800V, I_D = 4A$

$R_{DS(ON)} < 2.5\Omega @ V_{GS} = 10V$

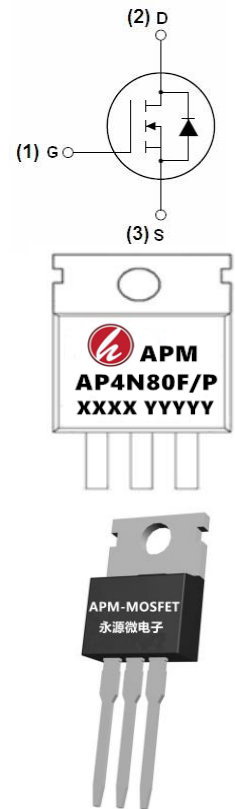
Application

100% UIS Test

Simple Drive Requirement

Fast Switching Characteristic

RoHS Compliant & Halogen-Free



Package Marking and Ordering Information

| Product ID | Pack | Marking | Qty(PCS) |
|------------|------------|-------------------|----------|
| AP4N80F | TO-220F-3L | AP4N80F XXX YYYYY | 1000 |
| AP4N80P | TO-220-3L | AP4N80P XXX YYYYY | 1000 |

Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise noted)

| Symbol | Parameter | Rating | Units |
|--------------------------------------|---|------------|-------|
| V _{DS} | Drain-Source Voltage | 800 | V |
| V _{GS} | Gate-Source Voltage | ±30 | V |
| I _D @T _C =25°C | Drain Current, V _{GS} @ 10V ³ | 4 | A |
| IDM | Pulsed Drain Current ¹ | 16 | A |
| P _D @T _C =25°C | Total Power Dissipation | 32.9 | W |
| P _D @T _A =25°C | Total Power Dissipation | 1.92 | W |
| E _{AS} | Single Pulse Avalanche Energy ⁴ | 8 | mJ |
| TSTG | Storage Temperature Range | -55 to 150 | °C |
| T _J | Operating Junction Temperature Range | -55 to 150 | °C |
| R _{thj-c} | Maximum Thermal Resistance, Junction-case | 3.8 | °C/W |
| R _{thj-a} | Maximum Thermal Resistance, Junction-ambient | 65 | °C/W |

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Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-------------------|--|--|------|------|------|-------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 800 | - | - | V |
| RDS(ON) | Static Drain-Source On-Resistance ² | V _{GS} =10V, I _D =2A | - | - | 2.5 | Ω |
| VGS(th) | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250uA | 2.5 | - | 4.5 | V |
| g _{fs} | Forward Transconductance | V _{DS} =20V, I _D =2A | - | 5.3 | - | S |
| IDSS | Drain-Source Leakage Current | V _{DS} =640V, V _{GS} =0V | - | - | 100 | uA |
| IGSS | Gate-Source Leakage | V _{GS} =±30V, V _{DS} =0V | - | - | +1 | uA |
| Q _g | Total Gate Charge | I _D =4A | - | 27 | 43.2 | nC |
| Q _{gs} | Gate-Source Charge | V _{DS} =640V | - | 4 | - | nC |
| Q _{gd} | Gate-Drain ("Miller") Charge | V _{GS} =10V | - | 15 | - | nC |
| td(on) | Turn-on Delay Time | V _{DD} =400V | - | 14 | - | ns |
| t _r | Rise Time | I _D =4A | - | 30 | - | ns |
| td(off) | Turn-off Delay Time | R _G =25Ω | - | 69 | - | ns |
| t _f | Fall Time | V _{GS} =10V | - | 34 | - | ns |
| C _{iss} | Input Capacitance | V _{GS} =0V | - | 680 | 1088 | pF |
| C _{oss} | Output Capacitance | V _{DS} =100V f=1.0MHz. | - | 40 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 10 | - | pF |
| R _g | Gate Resistance | f=1.0MHz | - | 3.7 | 7.4 | Ω |
| VSD | Forward On Voltage ² | I _S =4A, V _{GS} =0V | - | - | 1.5 | V |
| t _{rr} | Reverse Recovery Time | I _S =4A, V _{GS} =0V di/dt=100A/μs | - | 430 | - | ns |
| Q _{rr} | Reverse Recovery Charge | | - | 1.9 | - | uC |

Notes:

- 1.Pulse width limited by max. junction temperature.
- 2.Pulse test
- 3.Ensure that the junction temperature does not exceed T_{Jmax}.

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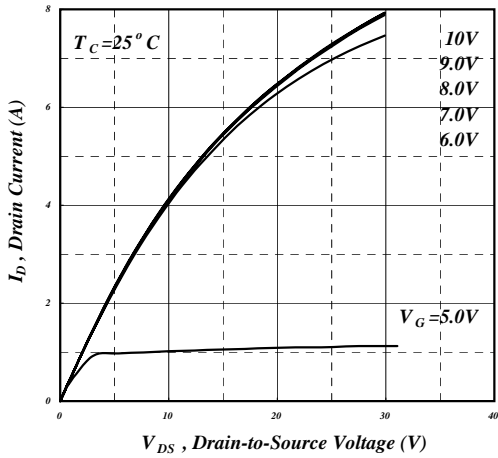


Fig 1. Typical Output Characteristics

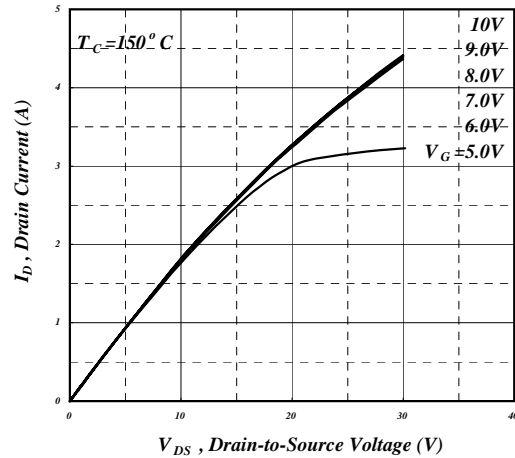


Fig 2. Typical Output Characteristics

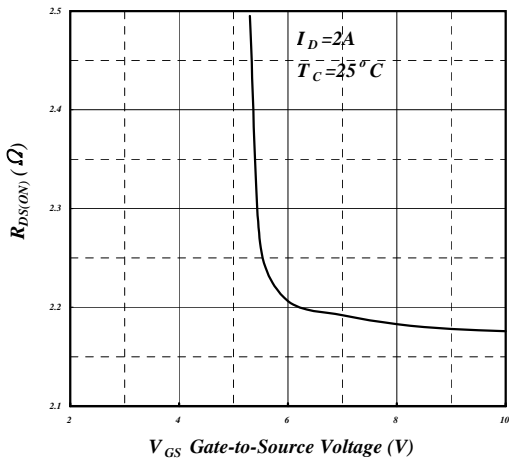


Fig 3. On-Resistance v.s. Gate Voltage

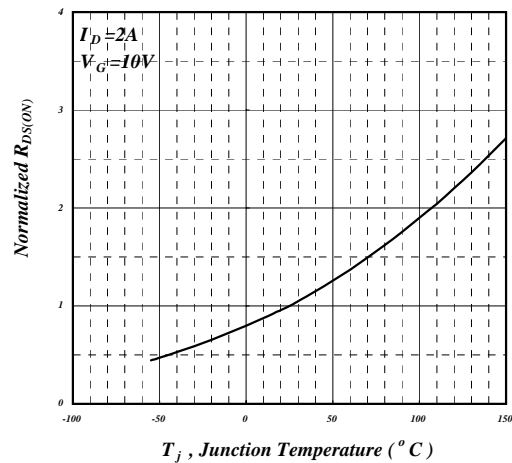


Fig 4. Normalized On-Resistance v.s. Junction Temperature

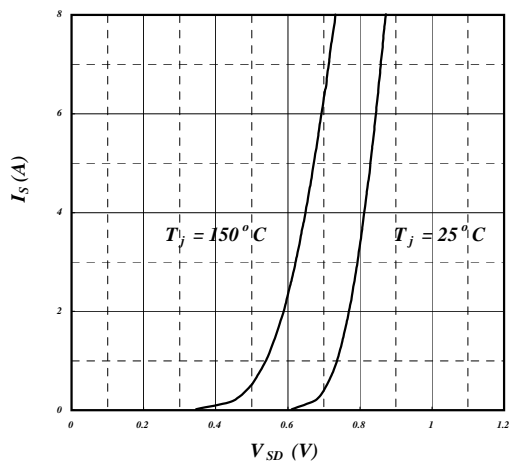


Fig 5. Forward Characteristic of Reverse Diode

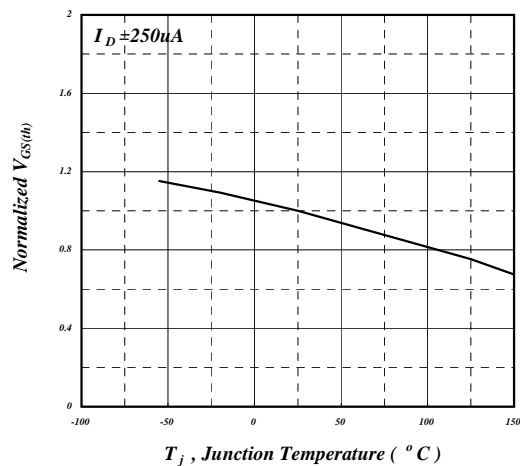


Fig 6. Gate Threshold Voltage v.s. Junction Temperature



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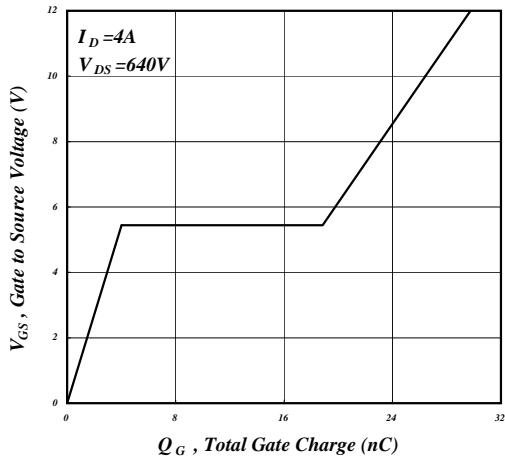


Fig 7. Gate Charge Characteristics

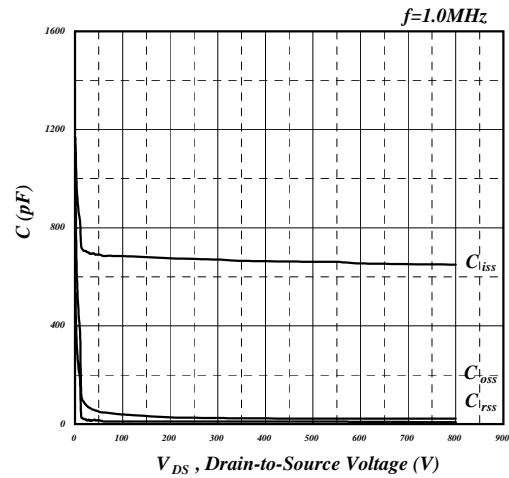


Fig 8. Typical Capacitance Characteristics

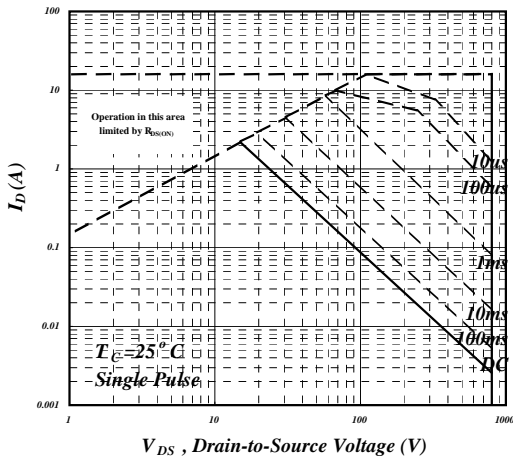


Fig 9. Maximum Safe Operating Area

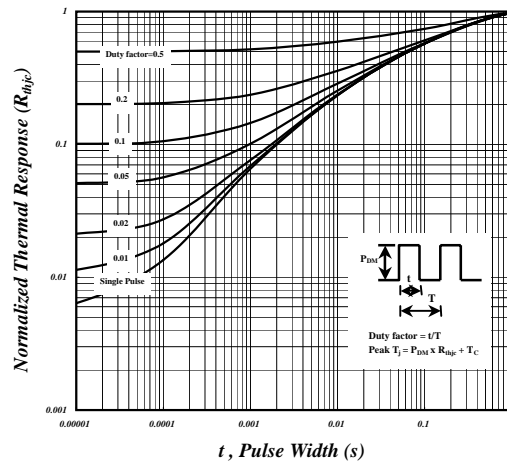


Fig 10. Effective Transient Thermal Impedance

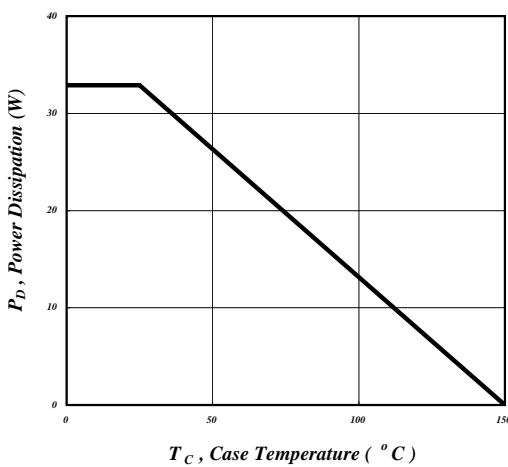


Fig 11. Total Power Dissipation

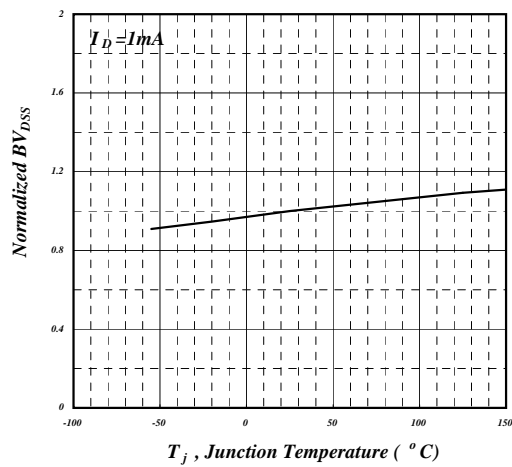
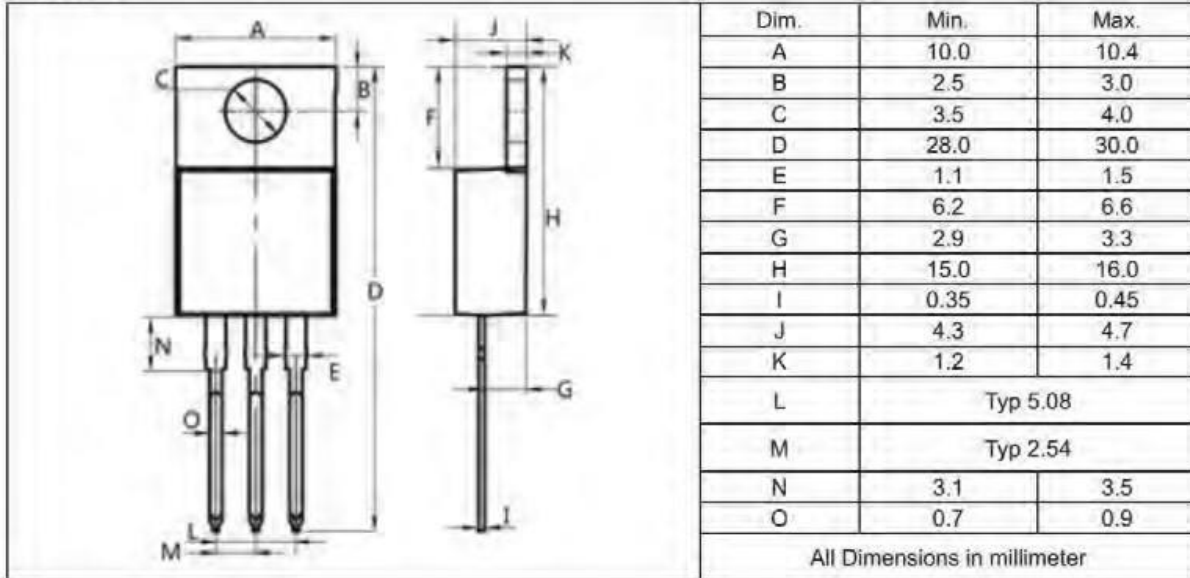


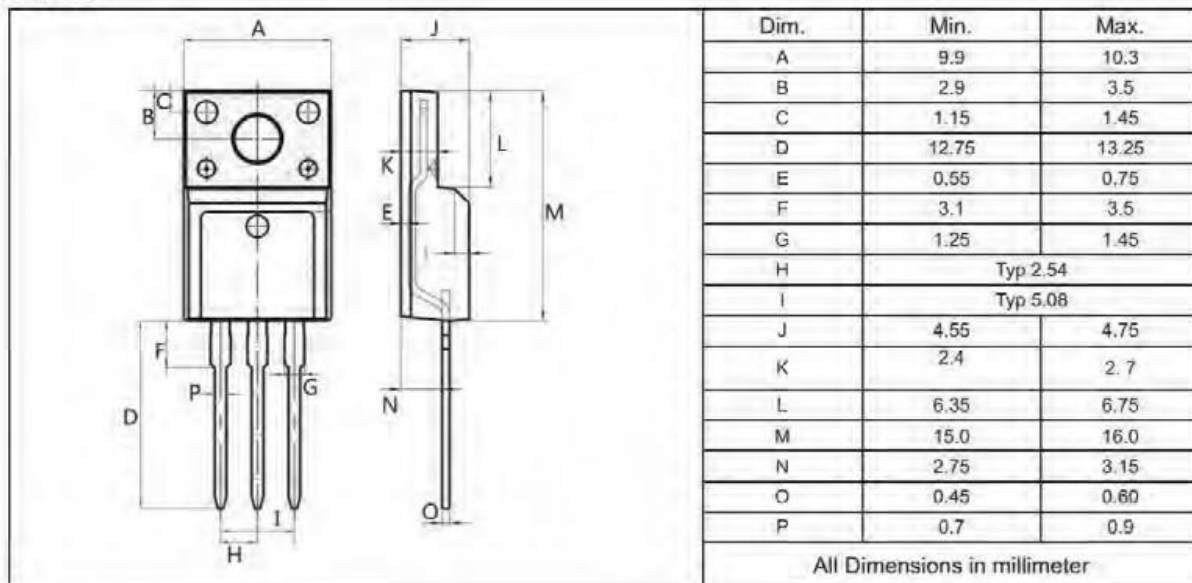
Fig 12. Normalized BV_{DS(s)} v.s. Junction Temperature

800V N-Plance Enhancement Mode MOSFET

TO-220AB



TO-220F



800V N-Plane Enhancement Mode MOSFET Attention

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