

AP09T10GH-HF

Preliminary

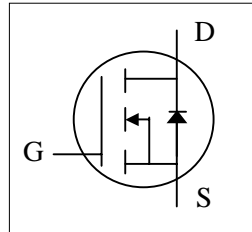


Advanced Power
Electronics Corp.

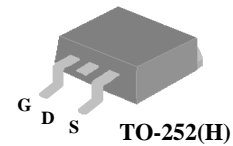
N-CHANNEL ENHANCEMENT MODE

POWER MOSFET

- ▼ Simple Drive Requirement
- ▼ Lower Gate Chage
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free



| | |
|--------------|---------------|
| BV_{DSS} | 100V |
| $R_{DS(ON)}$ | 300m Ω |
| I_D | 5A |



Description

Advanced Power MOSFETs from APEC provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The TO-252 package is widely preferred for commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|-----------------------------|--|------------|------------------|
| V_{DS} | Drain-Source Voltage | 100 | V |
| V_{GS} | Gate-Source Voltage | +20 | V |
| $I_D@T_C=25^\circ\text{C}$ | Continuous Drain Current, V_{GS} @ 10V | 5 | A |
| $I_D@T_C=100^\circ\text{C}$ | Continuous Drain Current, V_{GS} @ 10V | 3 | A |
| I_{DM} | Pulsed Drain Current ¹ | 12 | A |
| $P_D@T_C=25^\circ\text{C}$ | Total Power Dissipation | 12.5 | W |
| $P_D@T_A=25^\circ\text{C}$ | Total Power Dissipation ³ | 2 | W |
| T_{STG} | Storage Temperature Range | -55 to 150 | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature Range | -55 to 150 | $^\circ\text{C}$ |

Thermal Data

| Symbol | Parameter | Value | Units |
|--------|---|-------|---------------------------|
| Rthj-c | Maximum Thermal Resistance, Junction-case | 10 | $^\circ\text{C}/\text{W}$ |
| Rthj-a | Maximum Thermal Resistance, Junction-ambient (PCB mount) ³ | 62.5 | $^\circ\text{C}/\text{W}$ |



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Electrical Characteristics @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 | 100 | - | - | V |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =10V, I _D =3A | - | - | 300 | mΩ |
| | | V _{GS} =4.5V, I _D =1A | - | - | 450 | mΩ |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250uA | 1 | - | 3 | V |
| g _{fs} | Forward Transconductance | V _{DS} =10V, I _D =3A | - | 4 | - | S |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =80V, V _{GS} =0V | - | - | 25 | uA |
| I _{GSS} | Gate-Source Leakage | V _{GS} =±20V, V _{DS} =0V | - | - | ±100 | nA |
| Q _g | Total Gate Charge | I _D =3A | - | 8 | - | nC |
| Q _{gs} | Gate-Source Charge | V _{DS} =80V | - | 1.5 | - | nC |
| Q _{gd} | Gate-Drain ("Miller") Charge | V _{GS} =10V | - | 2.5 | - | nC |
| t _{d(on)} | Turn-on Delay Time | V _{DS} =50V | - | 5 | - | ns |
| t _r | Rise Time | I _D =3A | - | 12 | - | ns |
| t _{d(off)} | Turn-off Delay Time | R _G =3.3Ω | - | 12 | - | ns |
| t _f | Fall Time | V _{GS} =10V | - | 3 | - | ns |
| C _{iss} | Input Capacitance | V _{GS} =0V | - | 250 | - | pF |
| C _{oss} | Output Capacitance | V _{DS} =25V | - | 50 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | f=1.0MHz | - | 30 | - | pF |

Source-Drain Diode

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|-----------------|---------------------------------|--|------|------|------|-------|
| V _{SD} | Forward On Voltage ² | I _S =3A, V _{GS} =0V | - | - | 1.3 | V |
| t _{rr} | Reverse Recovery Time | I _S =3A, V _{GS} =0V, | - | 25 | - | ns |
| Q _{rr} | Reverse Recovery Charge | di/dt=100A/μs | - | 20 | - | nC |

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse test
3. Surface mounted on 1 in² copper pad of FR4 board

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

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