

Silicon P-Channel Power MOSFET

Description

The MPG30P10P uses advanced technology and design to provide excellent RDS(ON) . It can be used in a wide variety of applications.

General Features

- ① VDS=-100V, ID=-30A
- ② Low ON Resistance
- ③ Low Reverse transfer capacitances
- ④ 100% Single Pulse avalanche energy Test

Application

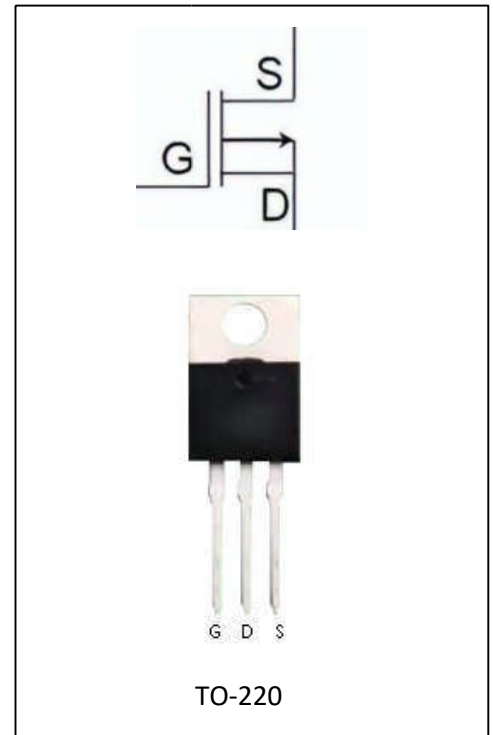
- ① Power switching application
- ② Adapter and charger

Electrical Characteristics

@ Ta=25°C (unless otherwise specified)

Absolute Maximum Ratings:

| Symbol | Parameter | Value | Units |
|------------------|---------------------------------------|-------|-------|
| V _{DSS} | Drain-to-Source Breakdown Voltage | -100 | V |
| I _D | Drain Current (continuous) at Tc=25°C | -30 | A |
| I _{DM} | Drain Current (pulsed) | -120 | A |
| V _{GS} | Gate to Source Voltage | +/-20 | V |
| P _{tot} | Total Dissipation at Tc=25°C | 180 | W |
| T _j | Max. Operating Junction Temperature | 175 | °C |
| E _{AS} | Single Pulse Avalanche Energy | 700 | mJ |





Electrical Parameters:

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|--------------|--------------------------------------|---|------|------|------|------|
| V_{DS} | Drain-source Voltage | $V_{GS} = 0V, I_D = -250\mu A$ | -100 | | | V |
| $R_{DS(on)}$ | Static Drain-to-Source on-Resistance | $V_{GS} = -10V, I_D = -15A$ | | 26 | 32 | mΩ |
| $V_{GS(th)}$ | Gated Threshold Voltage | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -1.0 | -2.0 | -3.0 | V |
| I_{DSS} | Drain to Source leakage Current | $V_{DS} = -100V, V_{GS} = 0V$ | | | -1.0 | μA |
| $I_{GSS(F)}$ | Gated Body Forward Leakage | $V_{GS} = +20V$ | | | 100 | nA |
| $I_{GSS(R)}$ | Gated Body Reverse Leakage | $V_{GS} = -20V$ | | | -100 | nA |
| C_{iss} | Input Capacitance | $V_{GS} = 0V, V_{DS} = 25V, f = 1.0MHz$ | | 2315 | | pF |
| C_{oss} | Output Capacitance | | | 190 | | pF |
| C_{rss} | Reverse Transfer Capacitance | | | 11 | | pF |

Switching Characteristics

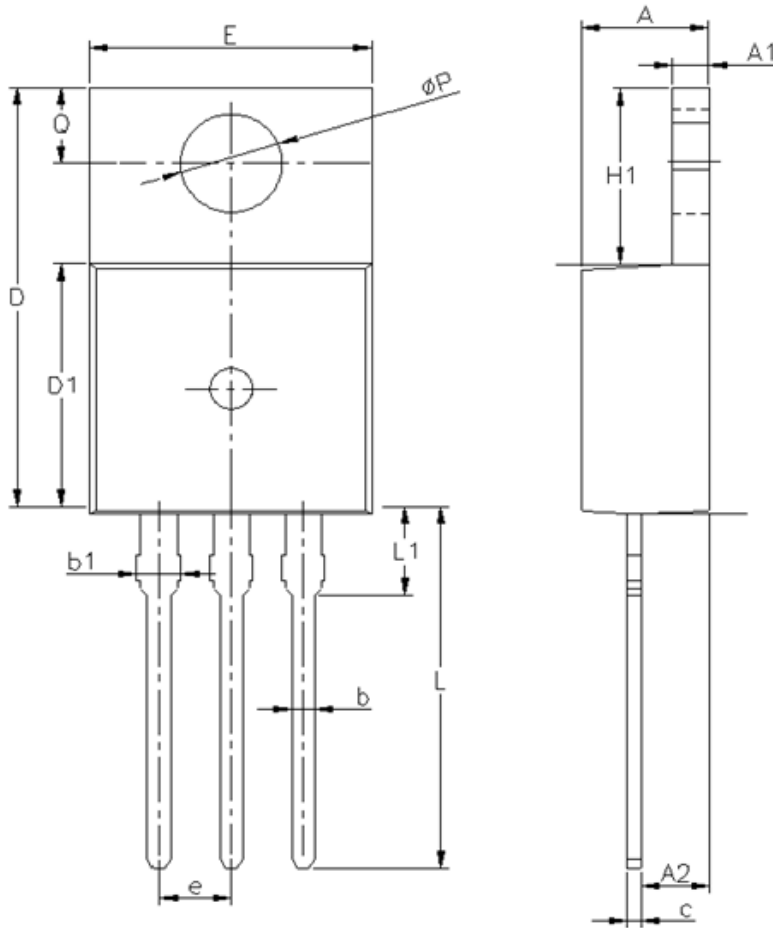
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|--------------|---------------------|---|-----|-----|-----|------|
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD} = -20V, I_D = -16A, R_G = 10\Omega$ | | 28 | | nS |
| t_r | Turn-on Rise Time | | | 21 | | nS |
| $t_{d(off)}$ | Turn-off Delay Time | | | 62 | | nS |
| t_f | Turn-off Fall Time | | | 32 | | nS |
| Q_g | Total Gate Charge | $V_{DS} = -20V, I_D = -16A, V_{GS} = -10V$ | | 40 | | nC |
| Q_{gs} | Gate-Source Charge | | | 9.2 | | nC |
| Q_{gd} | Gate-Drain Charge | | | 14 | | nC |

Source-Drain Diode Characteristics

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Unit |
|---|--------------------------------|--|-----|-----|------|------|
| I_{SD} | S-D Current(Body Diode) | | | | -35 | A |
| I_{SDM} | Pulsed S-D Current(Body Diode) | | | | -140 | A |
| V_{SD} | Diode Forward Voltage | $V_{GS} = 0V, I_{DS} = -35A$ | | | -1.5 | V |
| t_{rr} | Reverse Recovery Time | $T_J = 25^\circ C, I_F = -35A, di/dt = 100A/\mu s$ | | | 555 | nS |
| Q_{rr} | Reverse Recovery Charge | | | | 4550 | μC |
| *Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2% | | | | | | |

| Symbol | Parameter | Typ | Units |
|-----------------|------------------|-----|-------|
| $R_{\theta JC}$ | Junction-to-Case | 2.5 | °C/W |

Package Information



| SYMBOL | MIN | NOM | MAX |
|----------|----------|-------|-------|
| A | 4.30 | 4.50 | 4.77 |
| A1 | 1.25 | 1.27 | 1.42 |
| A2 | 1.80 | 2.50 | 2.89 |
| b | 0.70 | 0.80 | 0.96 |
| b1 | 1.22 | 1.33 | 1.50 |
| c | 0.33 | 0.38 | 0.48 |
| D | 15.10 | 15.70 | 16.10 |
| D1 | 8.80 | 9.15 | 9.40 |
| E | 9.60 | 10.20 | 10.40 |
| e | 2.54 BSC | | |
| H1 | 6.10 | 6.50 | 7.00 |
| L | 12.60 | 13.10 | 14.30 |
| L1 | — | — | 3.50 |
| Q | 2.54 | — | 2.94 |
| ϕP | 3.66 | 3.86 | 4.06 |

TO-220 PACKAGE



NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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