

P-Channel -40V (D-S) Power MOSFET

Features

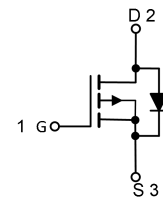
- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{ds(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



TO-252 (D-PAK)

Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|-------------------------|------------------|
| Drain Source Voltage | V_{DS} | -40 | V |
| Gate Source Voltage | V_{GS} | ± 20 | V |
| Drain Current, Continuous $V_{GS}=10\text{V}$ (Note 1) | I_D | $T_C=25^\circ\text{C}$ | -40 |
| | | $T_C=100^\circ\text{C}$ | -23 |
| Drain Current, Pulsed (Note 2) | I_{DM} | -120 | A |
| Single Avalanche Energy @ $L=0.1\text{mH}$ | E_{AS} | 125 | mJ |
| Power Dissipation (Note 3) | P_D | 25 | W |
| Operating Junction/ Storage Temperature Range | T_J / T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Note 1: Calculated continuous current based on maximum allowable junction temperature.

Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Characteristics

| Parameter | Symbol | Max | Unit |
|---|------------|-----|--------------------|
| Thermal Resistance Junction to Case (Note 3) | R_{thJC} | 5 | $^\circ\text{C/W}$ |
| Thermal Resistance Junction to Ambient (Note 4) | R_{thJA} | 62 | $^\circ\text{C/W}$ |

Note 3: The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

Note 4: The value of R_{thJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

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

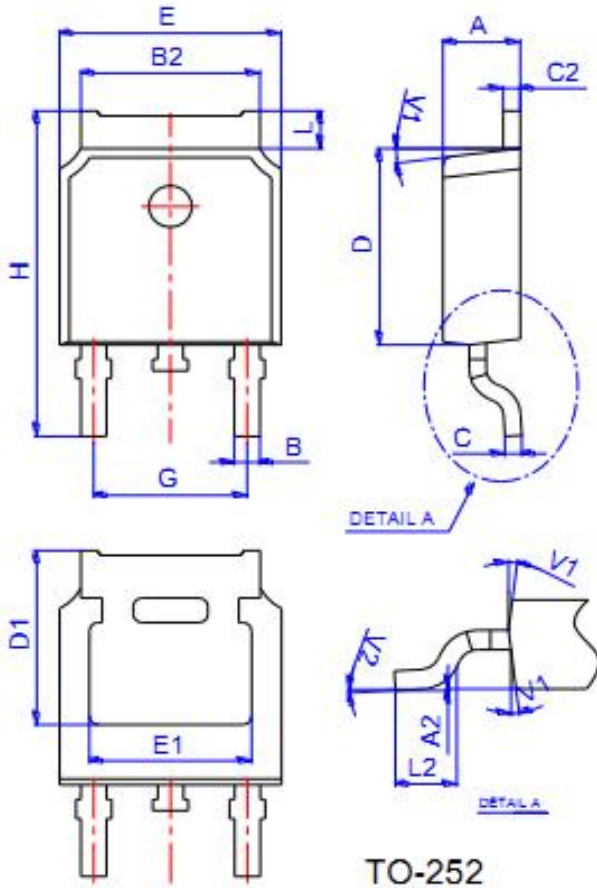
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|----------------------------------|----------------------|---|-----|------|------|------|
| Drain Source Breakdown Voltage | V _{(BR)DSS} | V _{GS} =0V, I _D =-250μA | -40 | -- | -- | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =-40V, V _{GS} =0V | -- | -- | -1 | uA |
| Gate Threshold Voltage | V _{GS(TH)} | V _{DS} =V _{GS} , I _{DS} =-250uA | -1 | -- | -2.5 | V |
| Gate Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | -- | -- | ±100 | nA |
| Drain-Source On-state Resistance | R _{DS(on)} | V _{GS} =-10V, I _D =-30A | -- | 15 | 18 | mΩ |
| | | V _{GS} =-4.5V, I _D =-20A | -- | 18 | 25 | |
| Total Gate Charge | Q _g | I _D = -12A, V _{DS} =-20V, V _{GS} = -4.5V | -- | 25 | -- | nC |
| Gate Source Charge | Q _{gs} | | -- | 11 | -- | |
| Gate Drain Charge | Q _{gd} | | -- | 9.5 | -- | |
| Turn-on Delay Time | t _{d(on)} | V _{GS} =-10V, V _{DD} =-15V, R _L =15Ω, R _{GEN} =6Ω, I _D = -1A | -- | 47 | -- | ns |
| Turn-on Rise Time | t _r | | -- | 23 | -- | |
| Turn-off Delay Time | t _{d(off)} | | -- | 86 | -- | |
| Turn-off Fall Time | t _f | | -- | 9.2 | -- | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =-20V, f=1MHz | -- | 2760 | -- | pF |
| Output Capacitance | C _{oss} | | -- | 259 | -- | |
| Reverse Transfer Capacitance | C _{rss} | | -- | 83 | -- | |

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------------|-----------------|--|-----|-----|------|------|
| Continuous Source Current | I _{SD} | T _C =25°C | -- | -- | -40 | A |
| Pulsed Source Current | I _{SM} | T _C =25°C | -- | -- | -90 | A |
| Diode Forward Voltage | V _{SD} | I _F =-1A, V _{GS} =0V | -- | -- | -1.3 | V |

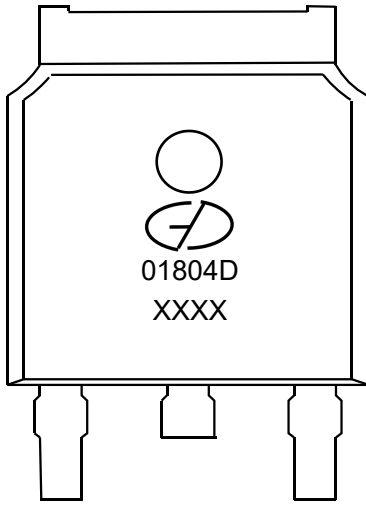
Package Outline Dimensions (Unit: millimeters)

TO-252




| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|----------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 5.48 | 0.202 | | 0.216 |
| C | 0.40 | | 0.60 | 0.016 | | 0.024 |
| C2 | 0.44 | | 0.58 | 0.017 | | 0.023 |
| D | 5.90 | | 6.30 | 0.232 | | 0.248 |
| D1 | 5.30REF | | | 0.209REF | | |
| E | 6.40 | | 6.80 | 0.252 | | 0.268 |
| E1 | 4.63 | | | 0.182 | | |
| G | 4.47 | | 4.67 | 0.176 | | 0.184 |
| H | 9.50 | | 10.70 | 0.374 | | 0.421 |
| L | 1.09 | | 1.21 | 0.043 | | 0.048 |
| L2 | 1.35 | | 1.65 | 0.053 | | 0.065 |
| V1 | | 7° | | | 7° | |
| V2 | 0° | | 6° | 0° | | 6° |

Marking Outline



Part Name: GMP01804D

1. Logo Mark : 
2. P/N Mark: 01804D
3. Date Code: XXXX

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