

MDD1903

Single N-channel Trench MOSFET 100V, 11A, 120mΩ

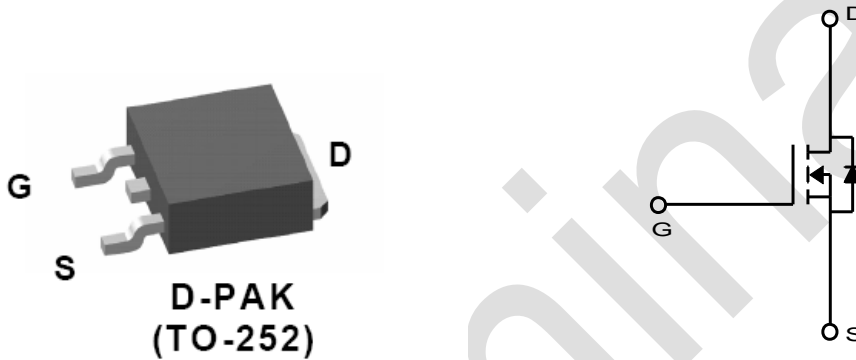
MDD1903 – Single N-Channel Trench MOSFET 100V

General Description

The MDD1903 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDD1903 is suitable device for DC/DC Converters and general purpose applications.

Features

- $V_{DS} = 100V$
- $I_D = 11A$ @ $V_{GS} = 10V$
- $R_{DS(ON)} < 120m\Omega$ @ $V_{GS} = 10V$
 $< 135m\Omega$ @ $V_{GS} = 6.0V$



Absolute Maximum Ratings (Tc = 25°C)

| Characteristics | Symbol | Rating | Unit | |
|---|----------------|-------------------|------|---|
| Drain-Source Voltage | V_{DSS} | 100 | V | |
| Gate-Source Voltage | V_{GSS} | ±20 | V | |
| Continuous Drain Current ⁽¹⁾ | I_D | $T_C=25^\circ C$ | 11 | A |
| | | $T_C=100^\circ C$ | 7.3 | A |
| Pulsed Drain Current | I_{DM} | 30 | A | |
| Power Dissipation | P_D | $T_C=25^\circ C$ | 39 | W |
| | | $T_C=100^\circ C$ | 15 | |
| Junction and Storage Temperature Range | T_J, T_{stg} | -55~150 | °C | |

Thermal Characteristics

| Characteristics | Symbol | Rating | Unit |
|---|-----------------|--------|------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 52 | °C/W |
| Thermal Resistance, Junction-to-Case ⁽¹⁾ | $R_{\theta JC}$ | 3.2 | |

Ordering Information

| Part Number | Temp. Range | Package | Packing | Rohs Status |
|-------------|-------------|---------|-------------|--------------|
| MDD1903RH | -55~150°C | D-PAK | Tape & Reel | Halogen Free |

Electrical Characteristics (Tc =25°C)

| Characteristics | Symbol | Test Condition | Min | Typ | Max | Unit |
|--|--------------|--|-----|------|-----------|-----------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $I_D = 250\mu A, V_{GS} = 0V$ | 100 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 1.0 | 2.0 | 3.0 | |
| Drain Cut-Off Current | I_{DSS} | $V_{DS} = 80V, V_{GS} = 0V$ | - | - | 1 | μA |
| Gate Leakage Current | I_{GSS} | $V_{GS} = \pm 20V, V_{DS} = 0V$ | - | - | ± 0.1 | |
| Drain-Source ON Resistance | $R_{DS(on)}$ | $V_{GS} = 10V, I_D = 10A$ | - | - | 120 | $m\Omega$ |
| | | $V_{GS} = 6.0V, I_D = 10A$ | - | - | 135 | |
| Forward Transconductance | g_{fs} | $V_{DS} = 10V, I_D = 10A$ | - | 18 | - | S |
| Dynamic Characteristics | | | | | | |
| Total Gate Charge | Q_g | $V_{DS} = 80V, I_D = 10A, V_{GS} = 10V$ | - | 11.7 | 20 | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.6 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 5.3 | - | |
| Input Capacitance | C_{iss} | $V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$ | - | 525 | 830 | pF |
| Reverse Transfer Capacitance | C_{riss} | | - | 27 | - | |
| Output Capacitance | C_{oss} | | - | 63 | - | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{DS}=50V, V_{GS}=10V, R_L=5\Omega, R_{GEN}=3.3\Omega$ | - | 8.4 | | ns |
| Rise Time | t_r | | - | 11.6 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 42.6 | | |
| Fall Time | t_f | | - | 16.6 | | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Source-Drain Diode Forward Voltage | V_{SD} | $I_S = 10A, V_{GS} = 0V$ | - | 0.7 | 1.2 | V |
| Body Diode Reverse Recovery Time | t_{rr} | $I_F = 10A, di/dt = 100A/\mu s$ | - | 50 | | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | | - | 77 | | nC |

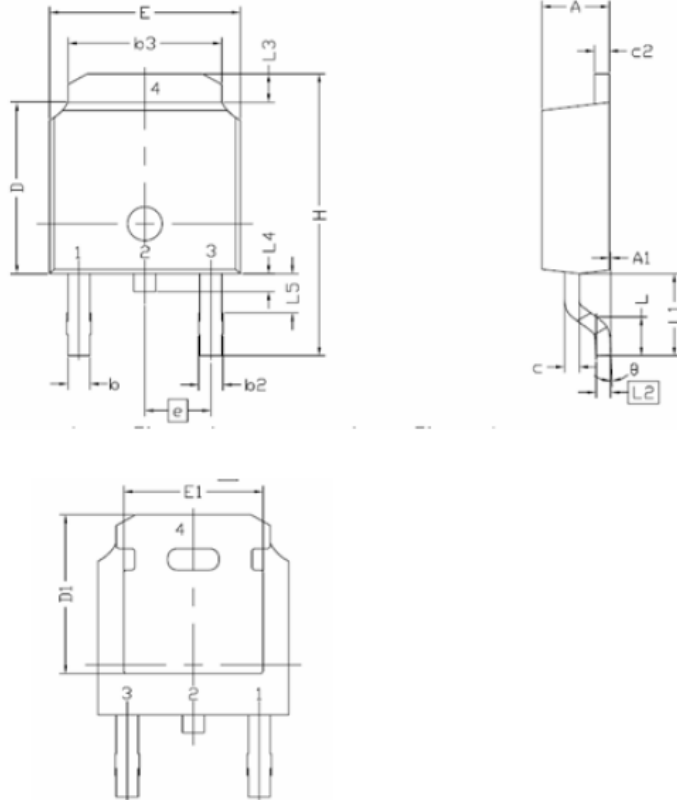
Note :

1. Surface mounted RF4 board with 2oz. Copper.

Package Dimension

D-PAK (TO-252)

Dimensions are in millimeters, unless otherwise specified



| Symbol | Min. | Nom. | Max. |
|--------|-----------|------|-------|
| E | 6.35 | - | 6.73 |
| L | 1.40 | 1.52 | 1.78 |
| L1 | 2.74 REF | | |
| L2 | 0.508 BCS | | |
| L3 | 0.89 | - | 1.27 |
| L4 | - | - | 1.02 |
| L5 | 1.14 | - | 1.52 |
| D | 5.97 | 6.10 | 6.22 |
| H | 9.40 | - | 10.41 |
| b | 0.64 | - | 0.89 |
| b2 | 0.76 | - | 1.14 |
| b3 | 4.95 | - | 5.46 |
| e | 2.286 BCS | | |
| A | 2.18 | - | 2.39 |
| A1 | - | - | 0.13 |
| c | 0.46 | - | 0.61 |
| c2 | 0.46 | - | 0.89 |
| D1 | 5.21 | - | - |
| E1 | 4.32 | - | - |
| ⌀ | 0.00 | - | 10.00 |

Preliminary

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