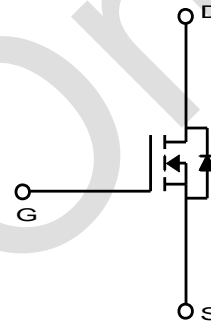
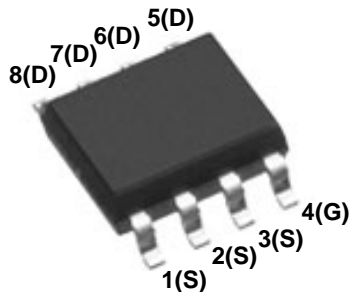


General Description

The MDS1528 uses advanced MagnaChip's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. MDS1528 is suitable for DC/DC converter and general purpose applications.

Features

- $V_{DS} = 30V$
- $I_D = 11.9A$ @ $V_{GS} = 10V$
- $R_{DS(ON)} < 18.8m\Omega$ @ $V_{GS} = 10V$
 $< 27.8m\Omega$ @ $V_{GS} = 4.5V$
- 100% UIL Tested
- 100% Rg Tested



Absolute Maximum Ratings (Ta = 25°C)

| Characteristics | | Symbol | Rating | Unit |
|--|------------------|----------------|--------------------|------|
| Drain-Source Voltage | | V_{DSS} | 30 | V |
| Gate-Source Voltage | | V_{GSS} | ± 20 | V |
| Continuous Drain Current ⁽¹⁾ | $T_C=25^\circ C$ | I_D | 11.9 | A |
| | $T_C=70^\circ C$ | | 9.5 | |
| | $T_A=25^\circ C$ | | 8.7 ⁽³⁾ | |
| | $T_A=70^\circ C$ | | 6.9 ⁽³⁾ | |
| Pulsed Drain Current | | I_{DM} | 40 | A |
| Power Dissipation | $T_C=25^\circ C$ | P_D | 4.7 | W |
| | $T_C=70^\circ C$ | | 3.0 | |
| | $T_A=25^\circ C$ | | 2.5 ⁽³⁾ | |
| | $T_A=70^\circ C$ | | 1.6 ⁽³⁾ | |
| Single Pulse Avalanche Energy ⁽²⁾ | | E_{AS} | 20 | mJ |
| Junction and Storage Temperature Range | | T_J, T_{stg} | -55~150 | °C |

Thermal Characteristics

| Characteristics | Symbol | Rating | Unit |
|--|-----------------|--------|------|
| Thermal Resistance, Junction-to-Ambient ⁽¹⁾ | $R_{\theta JA}$ | 50 | °C/W |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 26.4 | |

Ordering Information

| Part Number | Temp. Range | Package | Packing | Quantity | Rohs Status |
|-------------|-------------|---------|-------------|------------|--------------|
| MDS1528URH | -55~150°C | SOIC-8 | Tape & Reel | 3000 units | Halogen Free |

Electrical Characteristics (T_J = 25°C)

| Characteristics | Symbol | Test Condition | Min | Typ | Max | Unit |
|--|----------------------|---|-----|--------------|--------------|------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | I _D = 250μA, V _{GS} = 0V | 30 | - | - | V |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.3 | 1.9 | 2.7 | |
| Drain Cut-Off Current | I _{DSS} | V _{DS} = 30V, V _{GS} = 0V T _J =55°C | - | - | 1 5 | μA |
| Gate Leakage Current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | - | - | ±0.1 | |
| Drain-Source ON Resistance | R _{DS(ON)} | V _{GS} = 10V, I _D = 6A T _J =125°C | - | 16.3 23.6 | 18.8 27.3 | mΩ |
| Forward Transconductance | g _{fs} | V _{DS} = 5V, I _D = 6A | - | 20 | - | S |
| Dynamic Characteristics | | | | | | |
| Total Gate Charge | Q _{g(10V)} | V _{DS} = 15.0V, I _D = 6A, V _{GS} = 10V | 5.1 | 7.3 | 9.5 | nC |
| Total Gate Charge | Q _{g(4.5V)} | | 2.5 | 3.6 | 4.6 | |
| Gate-Source Charge | Q _{gs} | | - | 1.6 | - | |
| Gate-Drain Charge | Q _{gd} | | - | 1.3 | - | |
| Input Capacitance | C _{iss} | V _{DS} = 15.0V, V _{GS} = 0V, f = 1.0MHz | 317 | 453 | 589 | pF |
| Reverse Transfer Capacitance | C _{rss} | | 30 | 43 | 56 | |
| Output Capacitance | C _{oss} | | 62 | 88 | 115 | |
| Turn-On Delay Time | t _{d(on)} | V _{GS} = 10V, V _{DS} = 15.0V, I _D = 6A, R _G = 3.0Ω | - | 5.5 | - | ns |
| Rise Time | t _r | | - | 3.1 | - | |
| Turn-Off Delay Time | t _{d(off)} | | - | 14.0 | - | |
| Fall Time | t _f | | - | 2.8 | - | |
| Gate Resistance | R _g | f=1 MHz | 1.0 | 3.0 | 4.0 | Ω |
| Drain-Source Body Diode Characteristics | | | | | | |
| Source-Drain Diode Forward Voltage | V _{SD} | I _S = 6A, V _{GS} = 0V | - | 0.84 | 1.1 | V |
| Body Diode Reverse Recovery Time | t _{rr} | I _F = 6A, di/dt = 100A/μs | - | 15.9 | 23.8 | ns |
| Body Diode Reverse Recovery Charge | Q _{rr} | | - | 8.7 | 13.1 | nC |

Note :

- Surface mounted FR-4 board by JEDEC (jesd51-7)
- E_{AS} is tested at starting T_J = 25°C, L = 0.1mH, I_{AS} = 10.8A, V_{DD} = 27V, V_{GS} = 10V
- T < 10sec

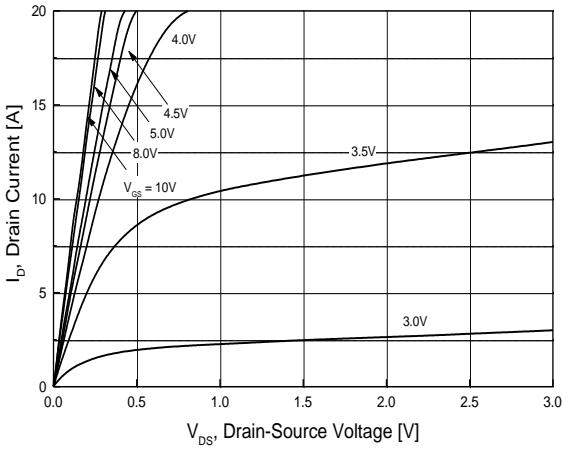


Fig.1 On-Region Characteristics

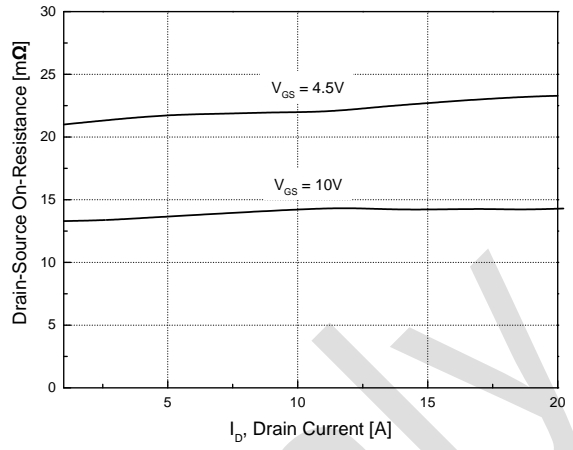


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

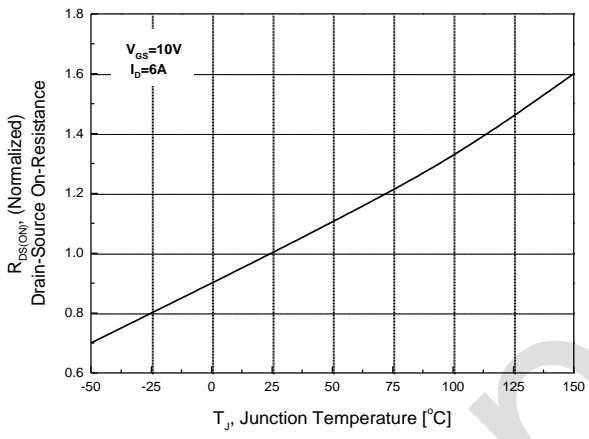


Fig.3 On-Resistance Variation with Temperature

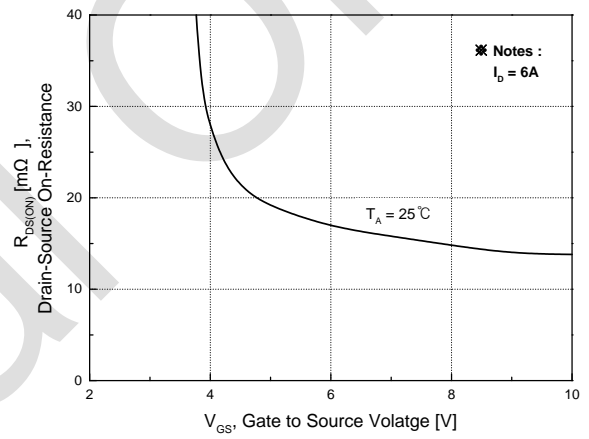


Fig.4 On-Resistance Variation with Gate to Source Voltage

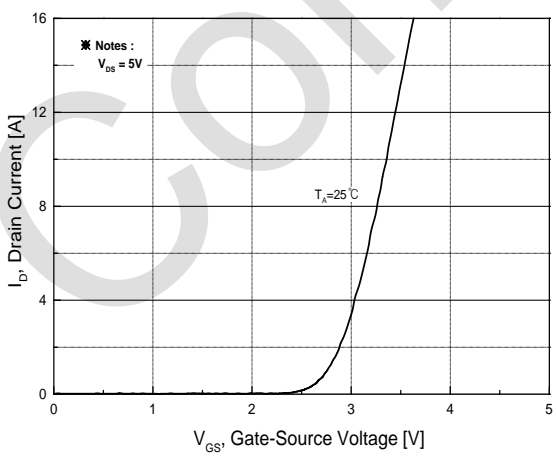


Fig.5 Transfer Characteristics

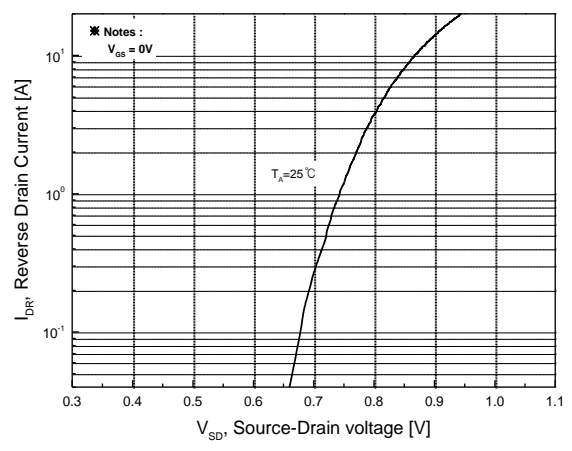
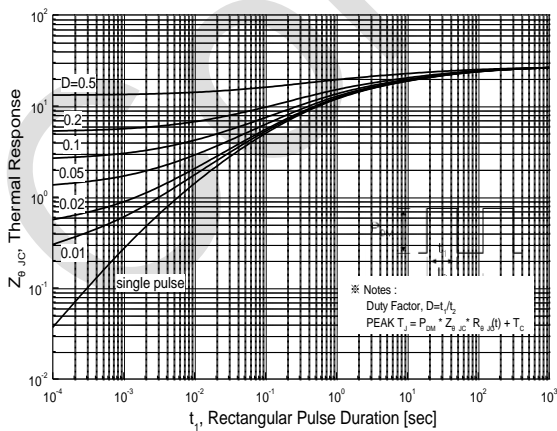
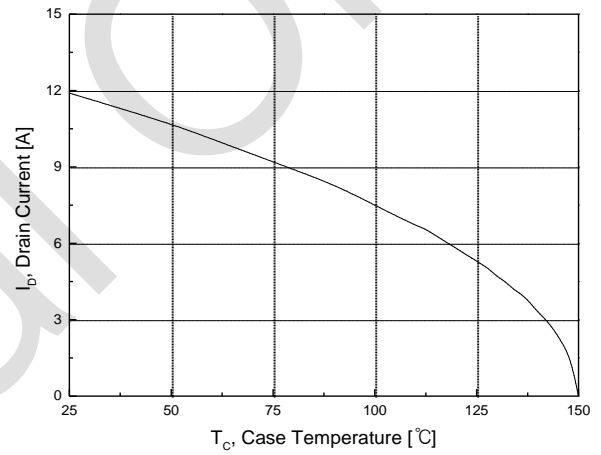
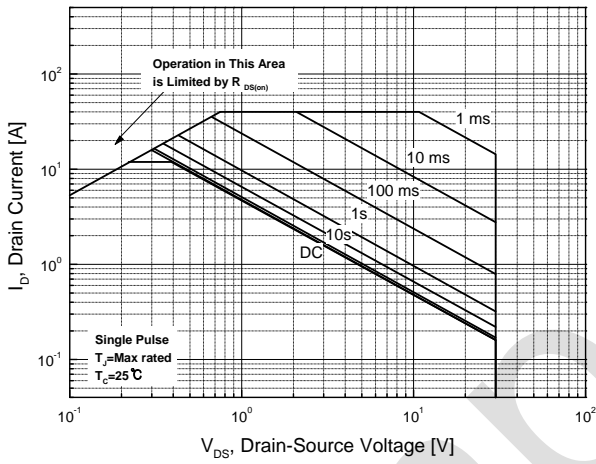
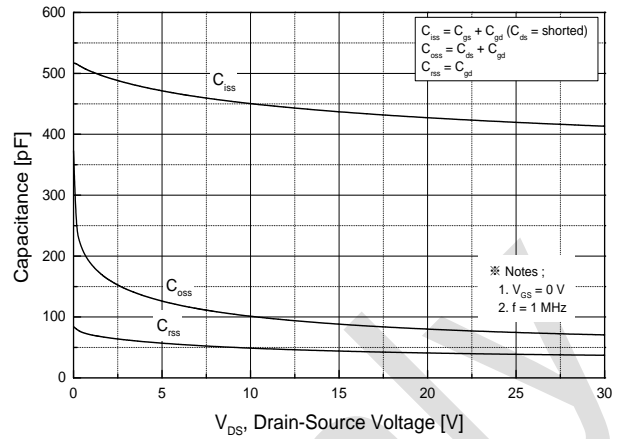
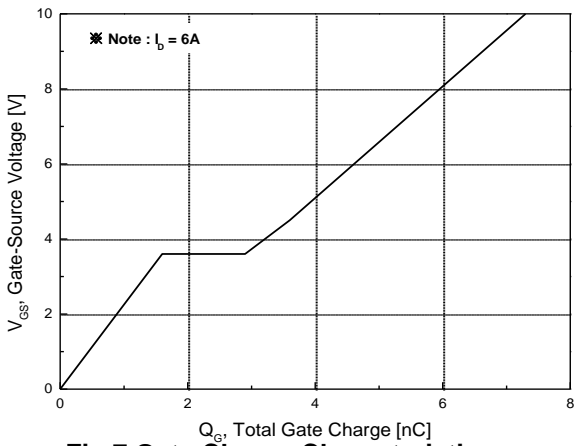


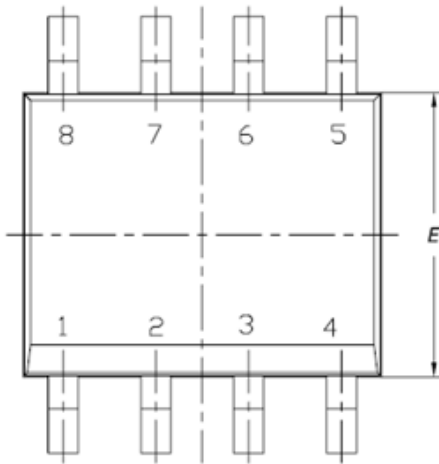
Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature



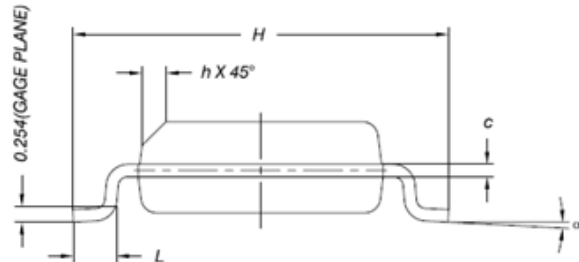
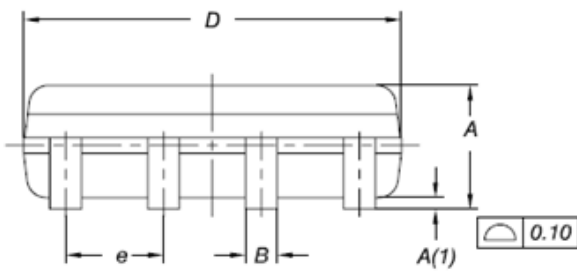
Physical Dimensions

8 Leads, SOIC

Dimensions are in millimeters unless otherwise specified



| Symbol | Min | Nom | Max |
|----------------|----------|-----|-------|
| A | - | - | 1.75 |
| A(1) | 0.10 | - | 0.25 |
| B | 0.31 | - | 0.51 |
| C | 0.10 | - | 0.25 |
| D | 4.9 BSC | | |
| E | 3.9 BSC | | |
| e | 1.27 BSC | | |
| H | 6.0 BSC | | |
| L | 0.40 | - | 1.27 |
| a | 0 | - | 8 |
| h | 0.250 | - | 0.500 |
| L2(Gage plane) | 0.25 BSC | | |



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