# Dual P-channel MOSFET

## ELM14805AA-N

### ■General description

ELM14805AA-N uses advanced trench technology to provide excellent Rds(on) and low gate charge.

### ■Features

- Vds=-30V
- Id=-8A (Vgs=-20V)
- Rds(on) < 18mΩ (Vgs=-20V)
- Rds(on) < 19mΩ (Vgs=-10V)

### ■Maximum absolute ratings

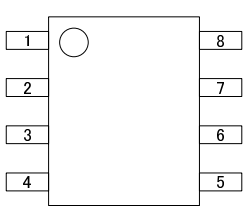
| Parameter | | Symbol | Limit | Unit | Note |
|---|---|---|---|---|---|
| Drain-source voltage | | Vds | -30 | V | |
| Gate-source voltage | | Vgs | ±25 | V | |
| Continuous drain current | Ta=25℃ | Id | -8.0 | A | 1 |
| | Ta=70℃ | | -6.9 | | |
| Pulsed drain current | | Idm | -40 | A | 2 |
| Power dissipation | Ta=25℃ | Pd | 2.00 | W | 1 |
| | Ta=70℃ | | 1.44 | | |
| Junction and storage temperature range | | Tj, Tstg | -55 to 150 | ℃ | |

### ■Thermal characteristics

| Parameter | | Symbol | Typ. | Max. | Unit | Note |
|---|---|---|---|---|---|---|
| Maximum junction-to-ambient | t≤10s | Rθja | 50.0 | 62.5 | ℃/W | 1 |
| Maximum junction-to-ambient | Steady-state | | 73.0 | 110.0 | ℃/W | |
| Maximum junction-to-lead | Steady-state | Rθjl | 31.0 | 40.0 | ℃/W | 3 |

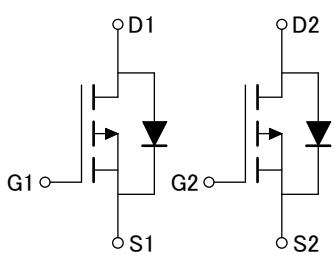
### ■Pin configuration

SOP-8 (TOP VIEW)




| Pin No. | Pin name |
|---|---|
| 1 | SOURCE2 |
| 2 | GATE2 |
| 3 | SOURCE1 |
| 4 | GATE1 |
| 5 | DRAIN1 |
| 6 | DRAIN1 |
| 7 | DRAIN2 |
| 8 | DRAIN2 |

### ■Circuit



## ■Electrical characteristics

Ta=25℃

| Parameter | Symbol | Condition | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| STATIC PARAMETERS | | | | | | | |
| Drain-source breakdown voltage | BVdss | Id=-250μA, Vgs=0V | | -30 | | | V |
| Zero gate voltage drain current | Idss | Vds=-24V, Vgs=0V | | | | -1 | μA |
| | | | Tj=55℃ | | | -5 | |
| Gate-body leakage current | Igss | Vds=0V, Vgs=±25V | | | | ±100 | nA |
| Gate threshold voltage | Vgs(th) | Vds=Vgs, Id=-250μA | | -1.7 | -2.5 | -3.0 | V |
| On state drain current | Id(on) | Vgs=-10V, Vds=-5V | | -40 | | | A |
| Static drain-source on-resistance | Rds(on) | Vgs=-10V, Id=-8A | | | 16.0 | 19.0 | mΩ |
| | | | Tj=125℃ | | 20.5 | 25.0 | |
| | | Vgs=-20V, Id=-8A | | | 15.0 | 18.0 | mΩ |
| | | Vgs=-4.5V, Id=-5A | | | 33.0 | | mΩ |
| Forward transconductance | Gfs | Vds=-5V, Id=-8A | | 16 | 21 | | S |
| Diode forward voltage | Vsd | Is=-1A, Vgs=0V | | | -0.75 | -1.00 | V |
| Max. body-diode continuous current | Is | | | | | -2.6 | A |
| DYNAMIC PARAMETERS | | | | | | | |
| Input capacitance | Ciss | Vgs=0V, Vds=-15V, f=1MHz | | | 2076 | 2500 | pF |
| Output capacitance | Coss | | | | 503 | | pF |
| Reverse transfer capacitance | Crss | | | | 302 | | pF |
| Gate resistance | Rg | Vgs=0V, Vds=0V, f=1MHz | | | 2 | 3 | Ω |
| SWITCHING PARAMETERS | | | | | | | |
| Total gate charge | Qg | Vgs=-10V, Vds=-15V, Id=-8A | | | 39.0 | 45.0 | nC |
| Gate-source charge | Qgs | | | | 8.0 | | nC |
| Gate-drain charge | Qgd | | | | 11.4 | | nC |
| Turn-on delay time | td(on) | Vgs=-10V, Vds=-15V, Rl=1.8Ω, Rgen=3Ω | | | 12.7 | | ns |
| Turn-on rise time | tr | | | | 7.0 | | ns |
| Turn-off delay time | td(off) | | | | 25.2 | | ns |
| Turn-off fall time | tf | | | | 12.0 | | ns |
| Body diode reverse recovery time | trr | If=-8A, dI/dt=100A/μs | | | 32 | 40 | ns |
| Body diode reverse recovery charge | Qrr | If=-8A, dI/dt=100A/μs | | | 26 | | nC |

NOTE :

1. The value of Rθja is measured with the device mounted on 1in² FR-4 board of 2oz. Copper, in still air environment with Ta=25℃. The value in any given applications depends on the user's specific board design, The current rating is based on the t ≤ 10s themal resistance rating.
2. Repetitive rating, pulse width limited by junction temperature.
3. The Rθja is the sum of the thermal impedance from junction to lead Rθjl and lead to ambient.
4. The static characteristics in Figures 1 to 6 are obtained using 80μs pulses, duty cycle 0.5%max.
5. These tests are performed with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with Ta=25℃. The SOA curve provides a single pulse rating.

## ■Typical electrical and thermal characteristics

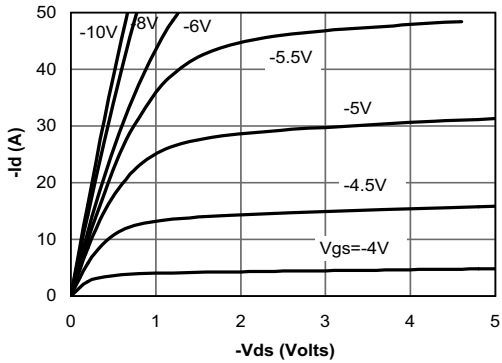



Fig 1: On-Region Characteristics

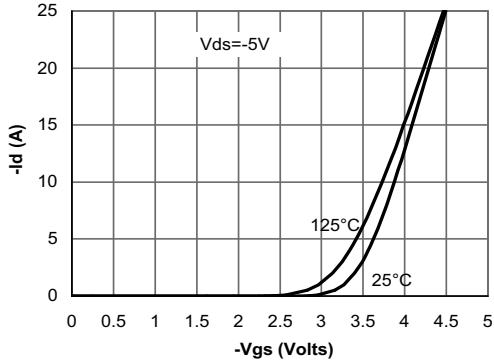



Figure 2: Transfer Characteristics

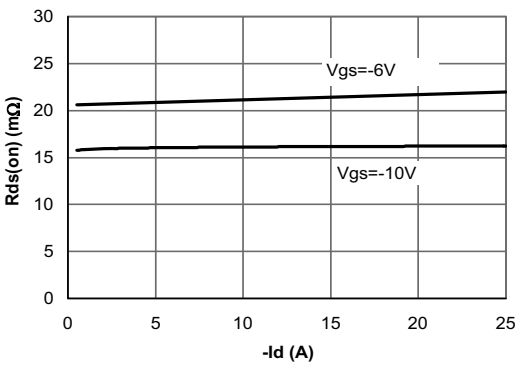



Figure 3: On-Resistance vs. Drain Current and Gate Voltage

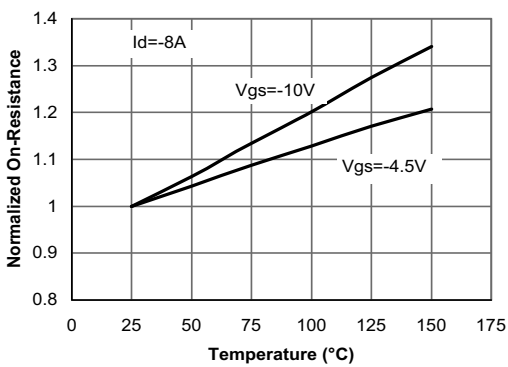



Figure 4: On-Resistance vs. Junction Temperature

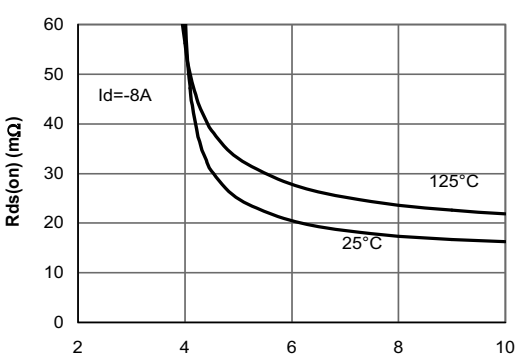



Figure 5: On-Resistance vs. Gate-Source Voltage

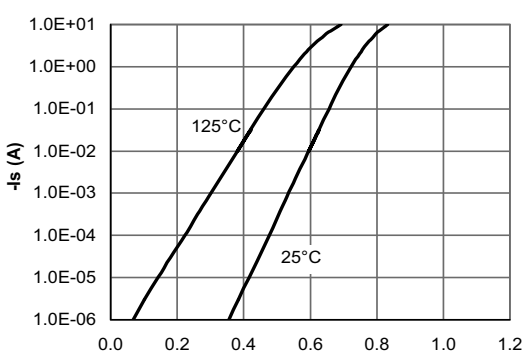



Figure 6: Body-Diode Characteristics

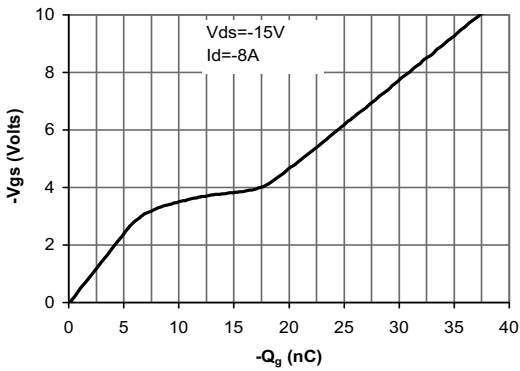



**Figure 7: Gate-Charge Characteristics**

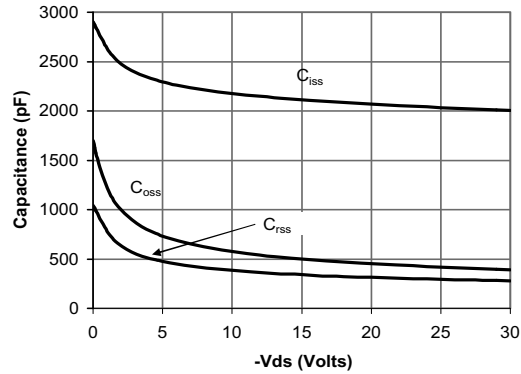



**Figure 8: Capacitance Characteristics**

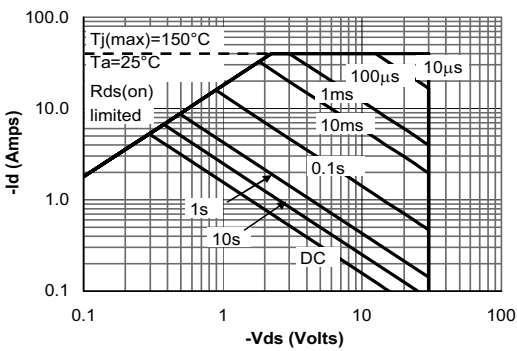



**Figure 9: Maximum Forward Biased Safe Operating Area (Note E)**

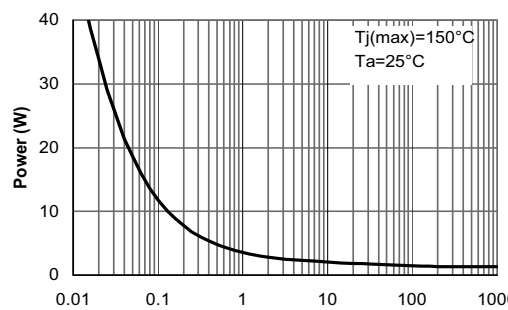



**Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)**

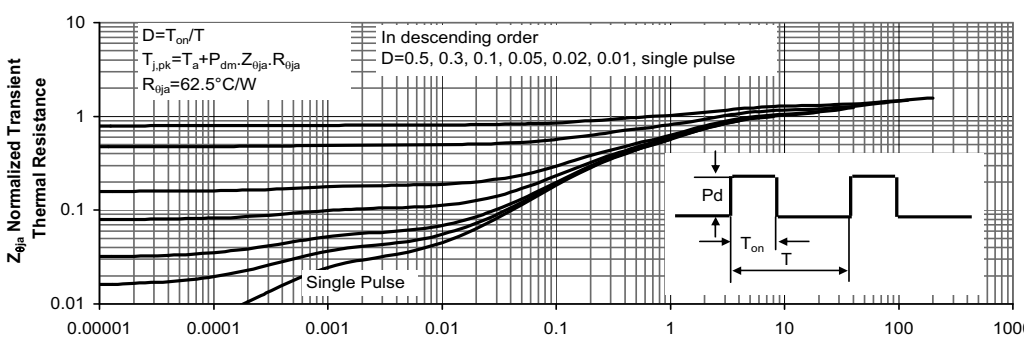



**Figure 11: Normalized Maximum Transient Thermal Impedance**