

Single N-channel MOSFET

ELM34402AA-N

■ General description

ELM34402AA-N uses advanced trench technology to provide excellent $R_{ds(on)}$, low gate charge and low gate resistance.

■ Features

- $V_{ds}=30V$
- $I_d=8A$
- $R_{ds(on)} < 20m\Omega$ ($V_{gs}=10V$)
- $R_{ds(on)} < 32m\Omega$ ($V_{gs}=4.5V$)

■ Maximum absolute ratings

$T_a=25^\circ C$. Unless otherwise noted.

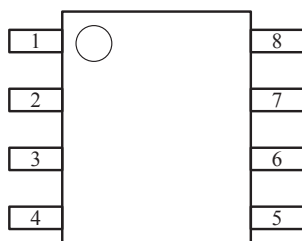
| Parameter | Symbol | Limit | Unit | Note |
|--|----------------|------------------|------------|------|
| Drain-source voltage | V_{ds} | 30 | V | |
| Gate-source voltage | V_{gs} | ± 20 | V | |
| Continuous drain current | I_d | $T_a=25^\circ C$ | 8 | A |
| | | $T_a=70^\circ C$ | 6 | |
| Pulsed drain current | I_{dm} | 32 | A | 3 |
| Power dissipation | P_d | $T_c=25^\circ C$ | 2.5 | W |
| | | $T_c=70^\circ C$ | 1.6 | |
| Junction and storage temperature range | T_j, T_{stg} | -55 to 150 | $^\circ C$ | |

■ Thermal characteristics

| Parameter | Symbol | Typ. | Max. | Unit | Note |
|-----------------------------|----------------|------|------|--------------|------|
| Maximum junction-to-ambient | $R\theta_{ja}$ | | 50 | $^\circ C/W$ | |

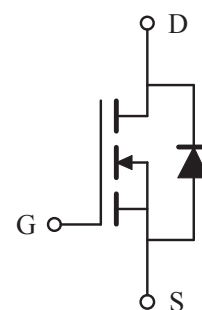
■ Pin configuration

SOP-8(TOP VIEW)



| Pin No. | Pin name |
|---------|----------|
| 1 | SOURCE |
| 2 | SOURCE |
| 3 | SOURCE |
| 4 | GATE |
| 5 | DRAIN |
| 6 | DRAIN |
| 7 | DRAIN |
| 8 | DRAIN |

■ Circuit



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■ Electrical characteristics

Ta=25°C. Unless otherwise noted.

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit | Note |
|------------------------------------|---------|--------------------------------------|------|------|------|------|------|
| 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 | |
| | | Vds=20V, Vgs=0V, Ta=55°C | | | 10 | | |
| Gate-body leakage current | Igss | Vds=0V, Vgs=±20V | | | ±100 | nA | |
| Gate threshold voltage | Vgs(th) | Vds=Vgs, Id=250μA | 1.0 | 1.5 | 2.5 | V | |
| On state drain current | Id(on) | Vgs=10V, Vds=5V | 8 | | | A | 1 |
| Static drain-source on-resistance | Rds(on) | Vgs=10V, Id=8A | | 17 | 20 | mΩ | 1 |
| | | Vgs=4.5V, Id=6A | | 26 | 32 | mΩ | |
| Forward transconductance | Gfs | Vds=15V, Id=8A | | 16 | | S | 1 |
| Diode forward voltage | Vsd | If=1A, Vgs=0V | | | 1.1 | V | 1 |
| Max. body-diode continuous current | Is | | | | 2.3 | A | |
| Pulsed body-diode current | Ism | | | | 4.6 | A | 3 |
| DYNAMIC PARAMETERS | | | | | | | |
| Input capacitance | Ciss | Vgs=0V, Vds=15V, f=1MHz | | 1200 | | pF | |
| Output capacitance | Coss | | | 220 | | pF | |
| Reverse transfer capacitance | Crss | | | 100 | | pF | |
| SWITCHING PARAMETERS | | | | | | | |
| Total gate charge | Qg | Vgs=4.5V, Vds=15V, Id=2A | | 15.0 | 20.0 | nC | 2 |
| Gate-source charge | Qgs | | | 5.8 | | nC | 2 |
| Gate-drain charge | Qgd | | | 3.8 | | nC | 2 |
| Turn-on delay time | td(on) | Vgs=10V, Vds=15V, Id=1A Rgen=0.2Ω | | 11 | 18 | ns | 2 |
| Turn-on rise time | tr | | | 17 | 26 | ns | 2 |
| Turn-off delay time | td(off) | | | 37 | 54 | ns | 2 |
| Turn-off fall time | tf | | | 20 | 30 | ns | 2 |
| Body diode reverse recovery time | trr | If=2.3A, dIf/dt=100A/μs | | 50 | 80 | ns | |

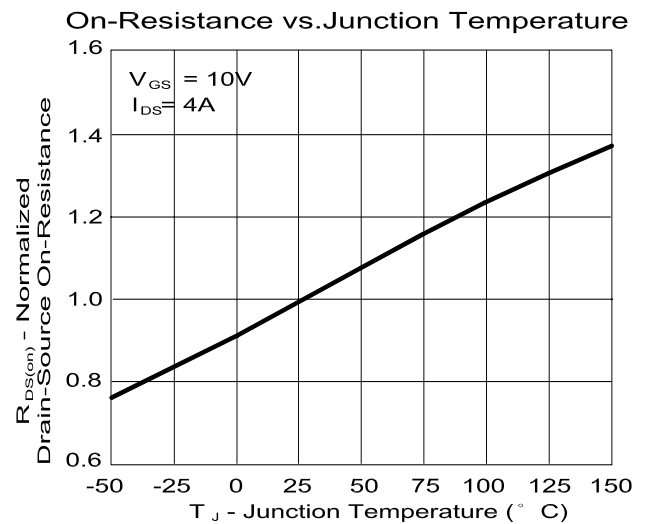
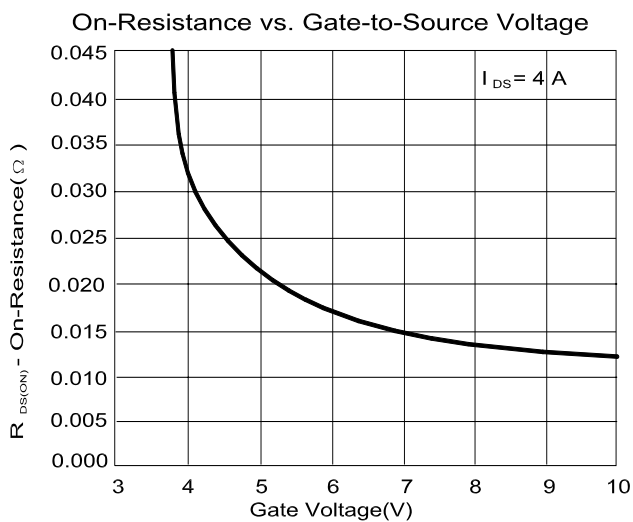
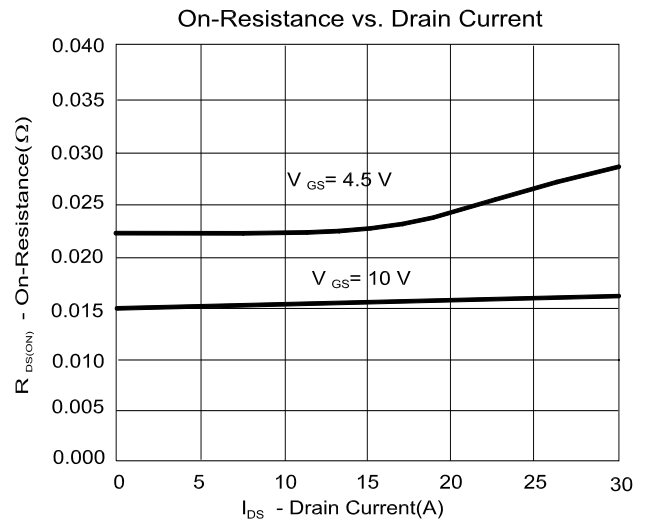
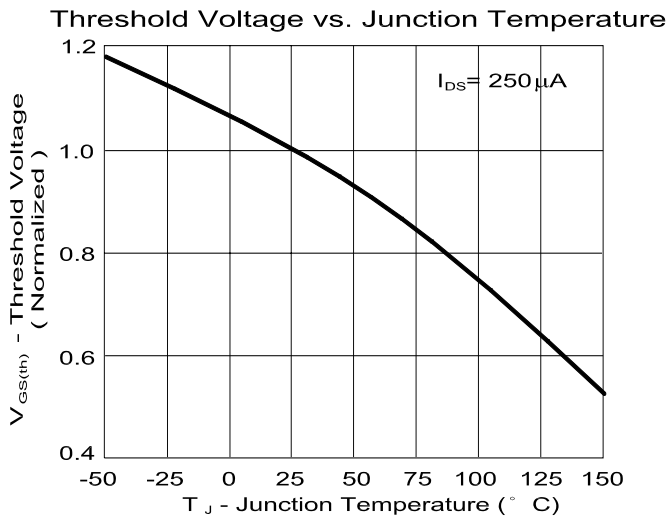
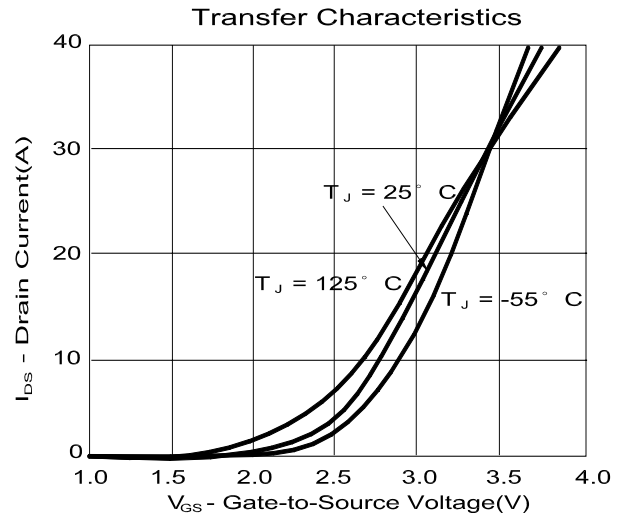
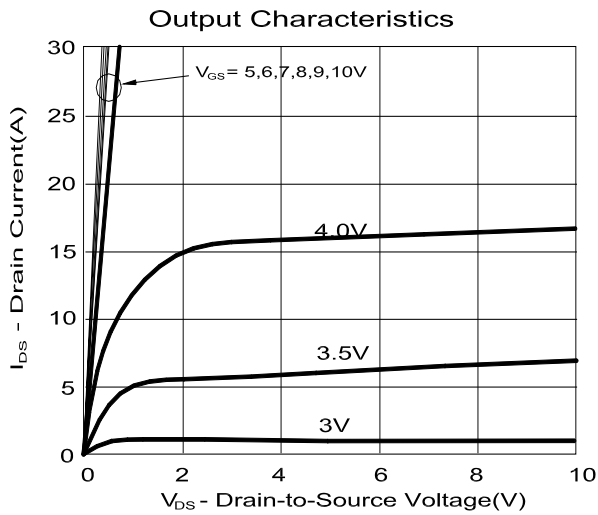
NOTE :

1. Pulsed width ≤ 300μsec and Duty cycle ≤ 2%;
2. Independent of operating temperature;
3. Pulsed width limited by maximum junction temperature.
4. Duty cycle ≤ 1%.

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■ Typical electrical and thermal characteristics



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