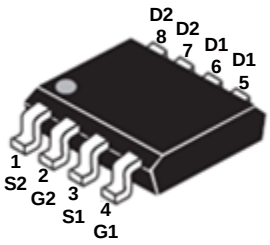
## General Description

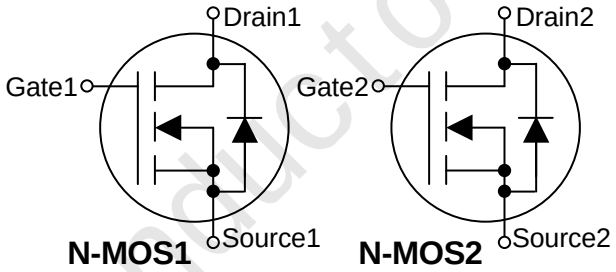
*The AO4832 30V dual N-channel enhancement mode power field transistors in one package are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. The two MOSFETs make a compact and efficient switch and synchronous rectifier combination for use in buck converters.*




1. Source 2
2. Gate 2
3. Source 1
4. Gate 1
8. Drain 2
7. Drain 2
6. Drain 1
5. Drain 1

## Features

- $V_{DS}$=30V
- $I_D$=10A@$V_{GS}$=10V
- $R_{DS(on)}$=10.5mΩ(Typ.)@$V_{GS}$=10V
- $R_{DS(on)}$=14.5mΩ(Typ.)@$V_{GS}$=4.5V
- Advanced high cell density Trench technology
- High power and current handing capability
- Fast switching
- Package: SOP-8L
- Pb-Free and Green devices are available




## Applications

- Load Switch
- PWM Applications
- Power Management
- POL Applications
- SMPS 2nd SR

## Absolute Maximum Ratings ($T_A$=25ºC unless otherwise noted)

| Parameter | | Symbol | Limit | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Drain Current [a] | $T_C$=25ºC | $I_D$ | 10 | A |
| | $T_C$=70ºC | | 5.5 | |
| Drain Current –Pulsed [a] | | $I_{DM}$ | 40 | A |
| Power Dissipation ($T_C$=25ºC) | | $P_D$ | 2.1 | W |
| Power Dissipation – Derate Above 25ºC | | | 0.017 | W/ºC |
| Storage Temperature Range | | $T_{STG}$ | -55 ~ +150 | ºC |
| Operating Junction Temperature Range | | $T_J$ | -55 ~ +150 | ºC |
| Thermal Resistance, Junction-to-Ambient | | $R_{\theta JA}$ | 62.5 | ºC/W |

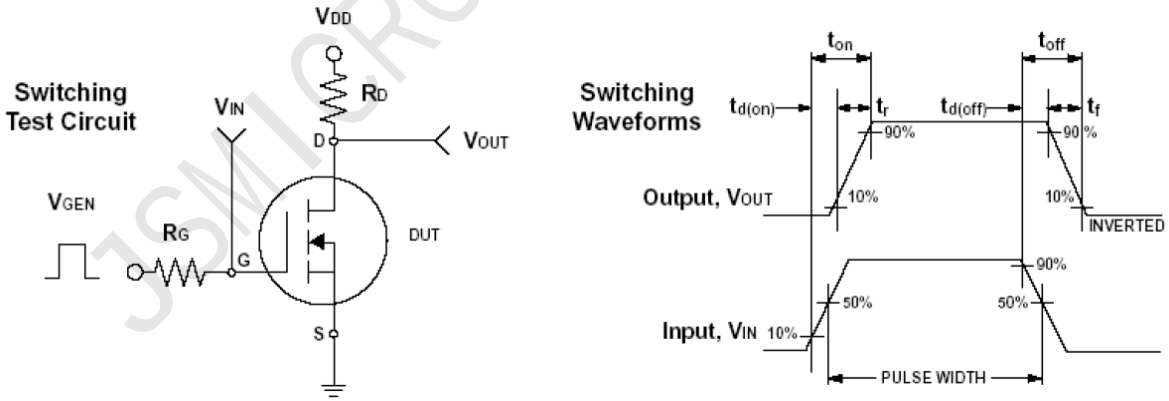
## Electrical Characteristics ($T_A$=25ºC unless otherwise noted)

| Parameter | | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | | |
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 30 | --- | --- | V |
| Zero Gate Voltage Drain Current | $T_J$=25°C | $I_{DSS}$ | $V_{DS}$=30V, $V_{GS}$=0V | --- | --- | 1 | μA |
| | $T_J$=125°C | | $V_{DS}$=24V, $V_{GS}$=0V | --- | --- | 10 | μA |
| Gate-Body Leakage | | $I_{GSS}$ | $V_{GS}$=±20V, $V_{DS}$=0V | --- | --- | ±100 | nA |

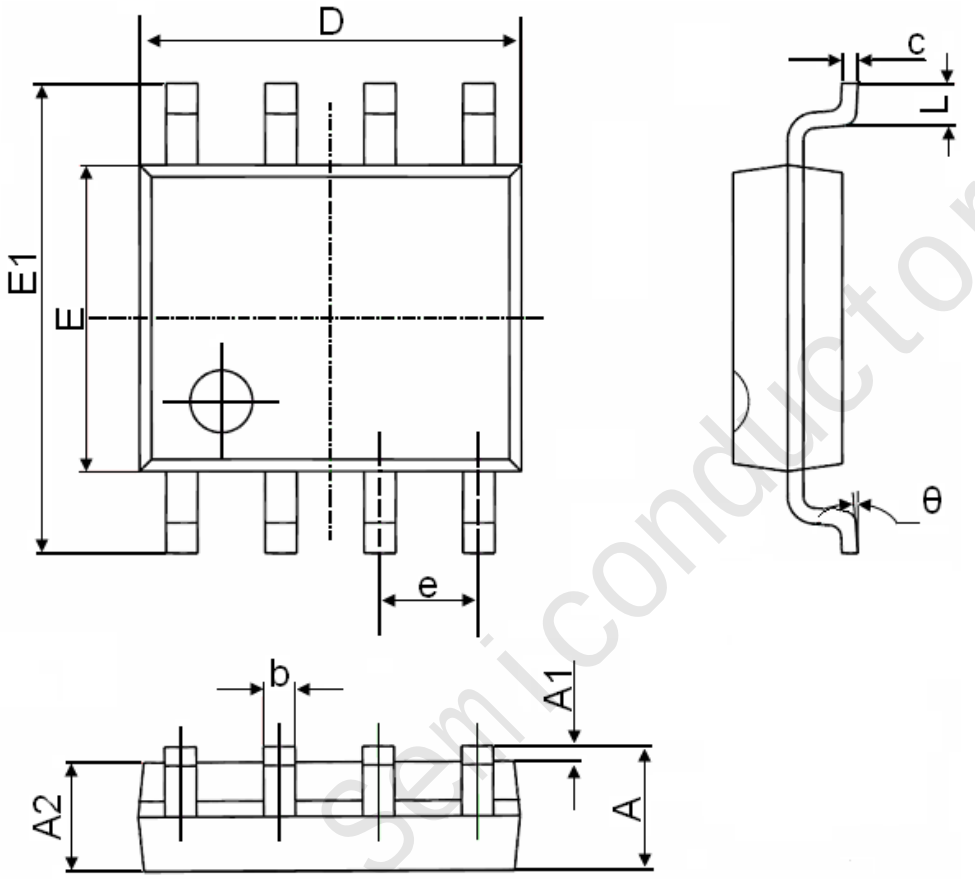
| | | | | | | |
|---|---|---|---|---|---|---|
| **On Characteristics** [a] | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 1.0 | --- | 2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=10A | --- | 10.5 | 13 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=8.0A | --- | 14.5 | 18 | |
| Forward Transconductance | gfs | $V_{DS}$=10V, $I_D$=10A | --- | 6.5 | --- | S |
| **Drain-Source Diode Characteristics** [a] | | | | | | |
| Continuous Source Current | $I_S$ | $V_G$=$V_D$=0V, Force Current | --- | --- | 10 | A |
| Pulsed Source Current | $I_{SM}$ | | --- | --- | 40 | A |
| Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V, $I_S$=1.0A, $T_J$=25℃ | --- | --- | 1.2 | V |
| Gate Resistance | $R_G$ | $V_{GS}$=0V, $V_{DS}$=0V, F=1MHz | --- | 1.15 | 3 | Ω |
| **Dynamic Characteristics** [b] | | | | | | |
| Input Capacitance | Ciss | $V_{DS}$=15V, $V_{GS}$=0V, F=1MHz | --- | 293 | 520 | pF |
| Output Capacitance | Coss | | --- | 57 | 100 | |
| Reverse Transfer Capacitance | Crss | | --- | 40 | 80 | |
| **Switching Characteristics** [b] | | | | | | |
| Total Gate Charge | Qg | $V_{DS}$=15V, $V_{GS}$=4.5V, $I_D$=10A | --- | 3.7 | 7 | nC |
| Gate-Source Charge | Qgs | | --- | 1.48 | 3 | |
| Gate-Drain Charge | Qgd | | --- | 1.56 | 3.5 | |
| Turn-On Delay Time | Td(on) | $V_{DD}$=15V, $V_{GS}$=10V, $R_G$=6Ω $I_D$=1A | --- | 2.6 | 5 | ns |
| Rise Time | Tr | | --- | 8.8 | 16 | |
| Turn-Off Delay Time | Td(off) | | --- | 18.4 | 35 | |
| Fall Time | Tf | | --- | 5.1 | 10 | |

Notes: a. Repetitive Rating: Pulsed width limited by maximum junction temperature.
b. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
c. Guaranteed by design, not subject to production testing.

## Switching Time Test Circuit and Waveforms



## SOP-8 Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.006 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.200 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.244 |
| e | 1.270(BSC) | | 0.050(BSC) | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |

## Soldering Methods For Products

1. Storage environment : Temperature=10ºC~35ºC, Humidity=65%±15%
2. Reflow soldering of surface mount devices

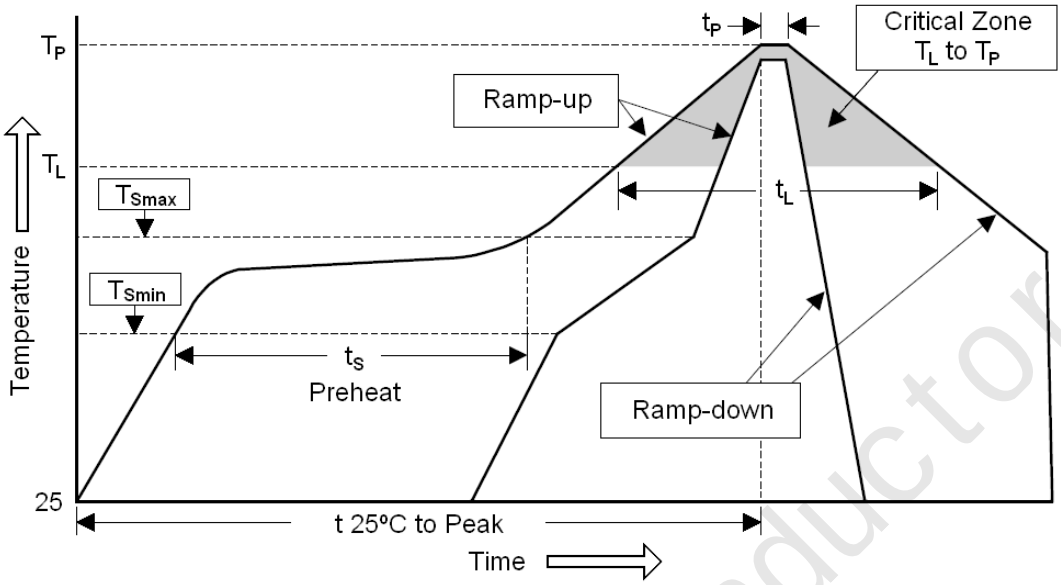



**Figure : Temperature Profile**

| Profile Feature | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|---|---|---|
| Average ramp-up rate ($T_L$ to $T_P$) | < 3ºC/sec | < 3ºC/sec |
| Preheat<br>- Temperature Min (TSmin)<br>- Temperature Max (TSmax)<br>- Time (Min to Max) (ts) | <br>100ºC<br>150ºC<br>60 ~ 120 sec | <br>100ºC<br>200ºC<br>60 ~ 180 sec |
| TSmax to $T_L$<br>- Ramp-up rate | <br>< 3ºC/sec | <br>< 3ºC/sec |
| Time maintained above:<br>- Temperature ($T_L$)<br>- Time ($t_L$) | <br>183ºC<br>60 ~ 150 sec | <br>217ºC<br>60 ~ 150 sec |
| Peak Temperature ($T_P$) | 240ºC +0/-5ºC | 260ºC +0/-5ºC |
| Time within 5ºC of actual Peak Temperature ($t_P$) | 10 ~ 30 sec | 20 ~ 40 sec |
| Ramp-down rate | < 6ºC/sec | < 6ºC/sec |
| Time 25ºC to Peak Temperature | < 6 minutes | < 8 minutes |

3. Flow (wave) soldering (solder dipping)

| Product | Peak Temperature | Dipping Time |
|---|---|---|
| Pb devices | 245ºC ±5ºC | 5sec ±1sec |
| Pb-Free devices | 260ºC +0/-5ºC | 5sec ±1sec |

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- 经锡炉或回焊炉的温度切勿超过 260 ºC。