ALPHA & OMEGA SEMICONDUCTOR

# AOSS62934

## 100V N-Channel AlphaSGT™

## General Description

- Trench Power AlphaSGT™ technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Optimized for fast-switching applications
- RoHS and Halogen-Free Compliant

## Applications

- Synchronous Rectification in DC/DC and AC/DC Converters
- Isolated DC/DC Converters in Telecom and Industrial

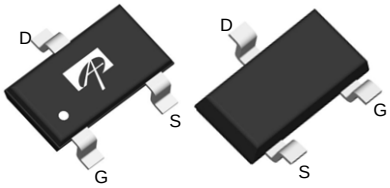
## Product Summary

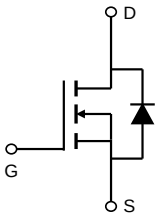
| | |
|---|---|
| $V_{DS}$ | 100V |
| $I_D$ (at $V_{GS}$=10V) | 2A |
| $R_{DS(ON)}$ (at $V_{GS}$=10V) | < 140mΩ |
| $R_{DS(ON)}$ (at $V_{GS}$=4.5V) | < 180mΩ |

Green Product

SOT23

Top View Bottom View




| Orderable Part Number | Package Type | Form | Minimum Order Quantity |
|---|---|---|---|
| AOSS62934 | SOT23 | Tape & Reel | 3000 |

**Absolute Maximum Ratings $T_A$=25°C unless otherwise noted**

| Parameter | | Symbol | Maximum | Units |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current | $T_A$=25°C | $I_D$ | 2.0 | A |
| | $T_A$=70°C | | 1.5 | |
| Pulsed Drain Current [C] | | $I_{DM}$ | 8 | |
| Power Dissipation [B] | $T_A$=25°C | $P_D$ | 1.4 | W |
| | $T_A$=70°C | | 0.9 | |
| Junction and Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to 150 | °C |

**Thermal Characteristics**

| Parameter | | Symbol | Typ | Max | Units |
|---|---|---|---|---|---|
| Maximum Junction-to-Ambient [A] | t ≤ 10s | $R_{\theta JA}$ | 70 | 90 | °C/W |
| Maximum Junction-to-Ambient [A D] | Steady-State | | 100 | 125 | °C/W |
| Maximum Junction-to-Lead | Steady-State | $R_{\theta JL}$ | 63 | 80 | °C/W |

**Electrical Characteristics ($T_J$=25°C unless otherwise noted)**

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **STATIC PARAMETERS** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $I_D$=250µA, $V_{GS}$=0V | 100 | | | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{DS}$=100V, $V_{GS}$=0V | | | 1 | µA |
| | | $T_J$=55°C | | | 5 | |
| $I_{GSS}$ | Gate-Body leakage current | $V_{DS}$=0V, $V_{GS}$=±20V | | | ±100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS,}$ $I_D$=250µA | 1.7 | 2.2 | 2.7 | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=10V, $I_D$=2A | | 117 | 140 | mΩ |
| | | $T_J$=125°C | | 210 | 252 | |
| | | $V_{GS}$=4.5V, $I_D$=1A | | 140 | 180 | mΩ |
| $g_{FS}$ | Forward Transconductance | $V_{DS}$=5V, $I_D$=2A | | 5 | | S |
| $V_{SD}$ | Diode Forward Voltage | $I_S$=1A, $V_{GS}$=0V | | 0.8 | 1.1 | V |
| $I_S$ | Maximum Body-Diode Continuous Current | | | | 2 | A |
| **DYNAMIC PARAMETERS** | | | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$=0V, $V_{DS}$=50V, f=1MHz | | 250 | | pF |
| $C_{oss}$ | Output Capacitance | | | 19 | | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 2.5 | | pF |
| $R_g$ | Gate resistance | f=1MHz | | 10.5 | | Ω |
| **SWITCHING PARAMETERS** | | | | | | |
| $Q_g$(10V) | Total Gate Charge | $V_{GS}$=10V, $V_{DS}$=50V, $I_D$=2A | | 3.8 | | nC |
| $Q_g$(4.5V) | Total Gate Charge | | | 1.8 | | nC |
| $Q_{gs}$ | Gate Source Charge | | | 0.8 | | nC |
| $Q_{gd}$ | Gate Drain Charge | | | 0.8 | | nC |
| $Q_{oss}$ | Output Charge | $V_{GS}$=0V, $V_{DS}$=50V | | 3 | | nC |
| $t_{D(on)}$ | Turn-On DelayTime | $V_{GS}$=10V, $V_{DS}$=50V, $R_L$=25Ω, $R_{GEN}$=3Ω | | 5 | | ns |
| $t_r$ | Turn-On Rise Time | | | 3 | | ns |
| $t_{D(off)}$ | Turn-Off DelayTime | | | 19 | | ns |
| $t_f$ | Turn-Off Fall Time | | | 3 | | ns |
| $t_{rr}$ | Body Diode Reverse Recovery Time | $I_F$=2A, di/dt=500A/µs | | 12 | | ns |
| $Q_{rr}$ | Body Diode Reverse Recovery Charge | $I_F$=2A, di/dt=500A/µs | | 27 | | nC |

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A$ =25° C. The value in any given application depends on the user's specific board design.
B. The power dissipation $P_D$ is based on $T_{J(MAX)}$=150° C, using ≤ 10s junction-to-ambient thermal resistance.
C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150° C. Ratings are based on low frequency and duty cycles to keep initial$T_J$=25° C.
D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to lead $R_{\theta JL}$ and lead to ambient.
E. The static characteristics in Figures 1 to 6 are obtained using <300µs pulses, duty cycle 0.5% max.
F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, assuming a maximum junction temperature of $T_{J(MAX)}$=150° C. The SOA curve provides a single pulse rating.

APPLICATIONS OR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO IMPROVE PRODUCT DESIGN,FUNCTIONS AND RELIABILITY WITHOUT NOTICE.

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

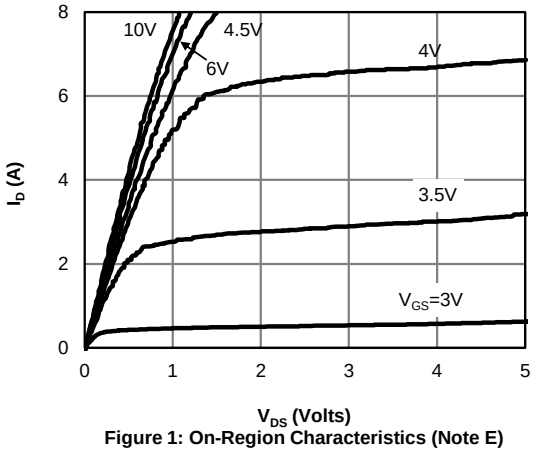



**Figure 1: On-Region Characteristics (Note E)**

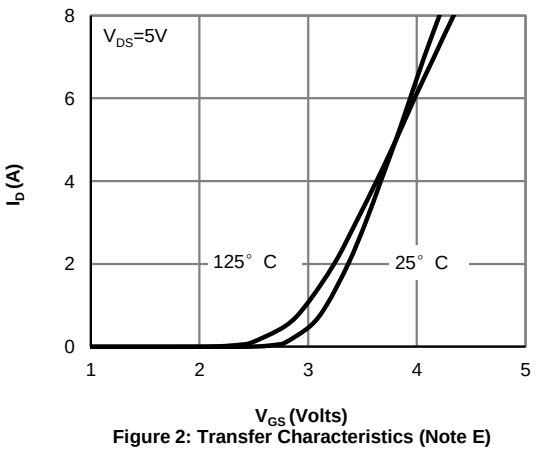



**Figure 2: Transfer Characteristics (Note E)**

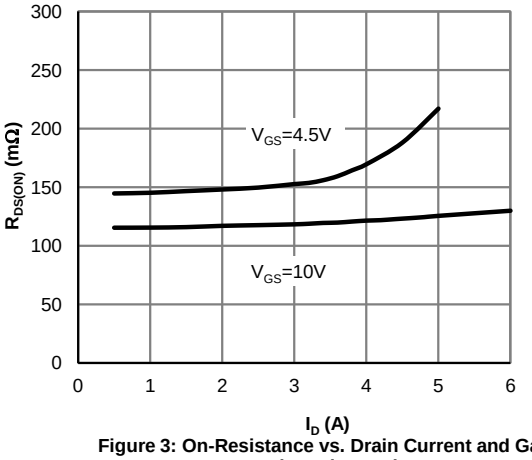



**Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)**

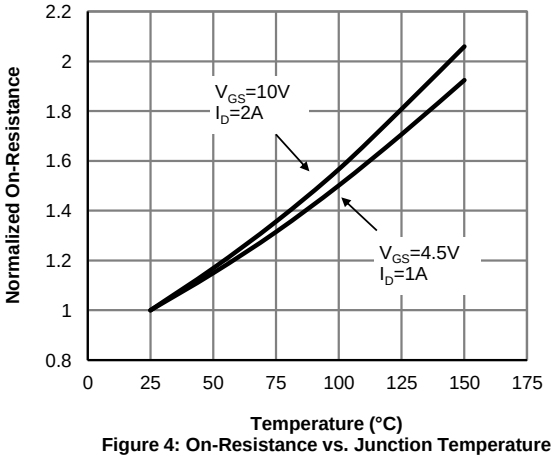



**Figure 4: On-Resistance vs. Junction Temperature (Note E)**

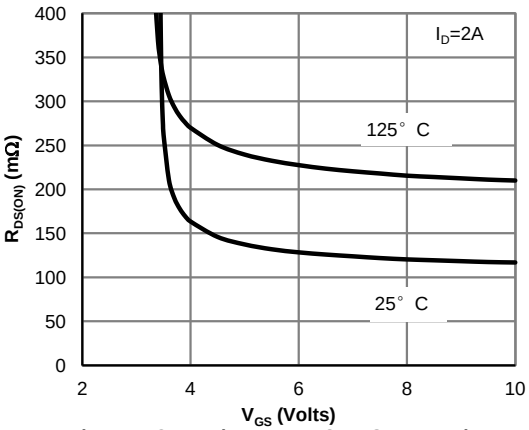



**Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)**

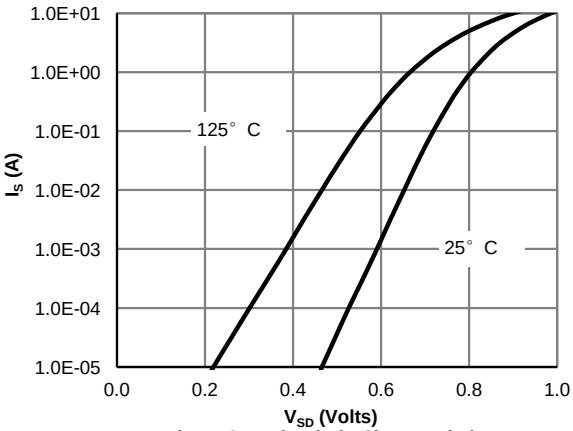



**Figure 6: Body-Diode Characteristics (Note E)**

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

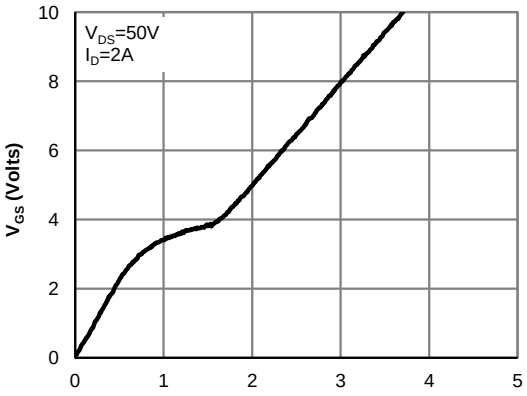



**Figure 7: Gate-Charge Characteristics**

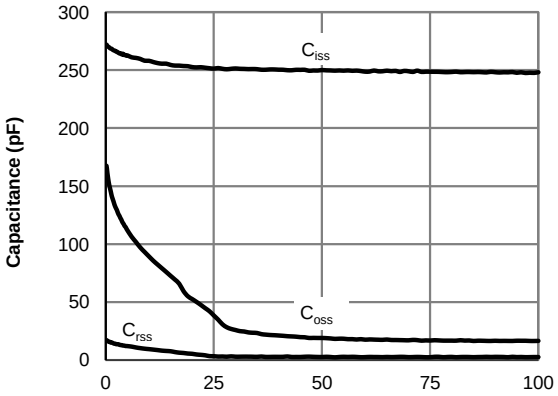



**Figure 8: Capacitance Characteristics**

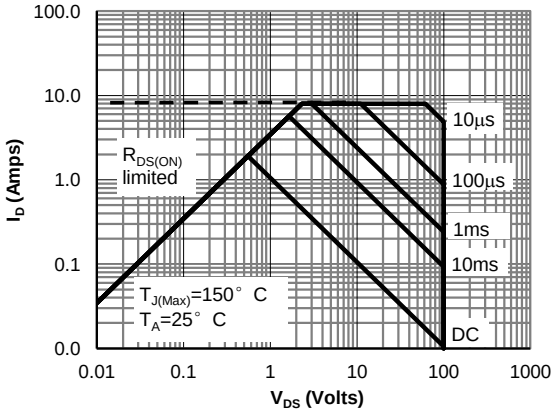



**Figure 9: Maximum Forward Biased Safe Operating Area (Note F)**

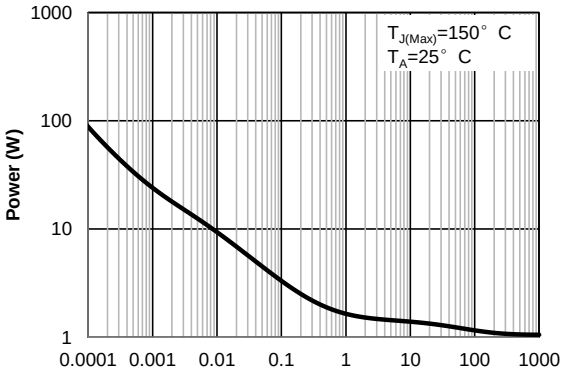



**Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)**

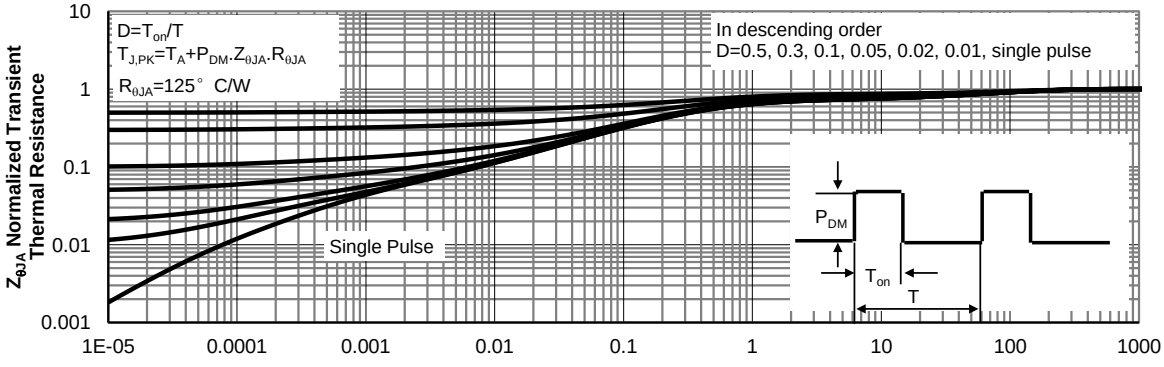



**Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)**

Figure A: Gate Charge Test Circuit & Waveforms

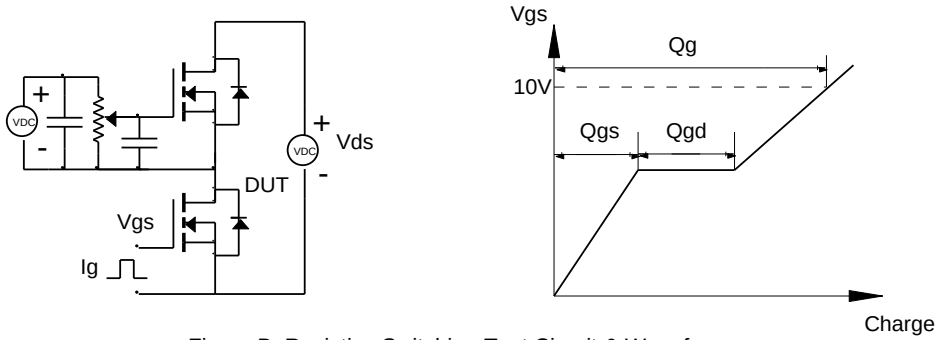



Figure B: Resistive Switching Test Circuit & Waveforms

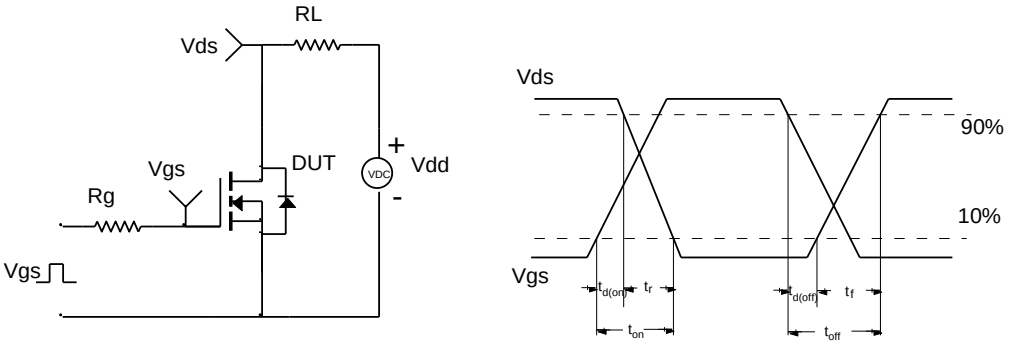



Figure C: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

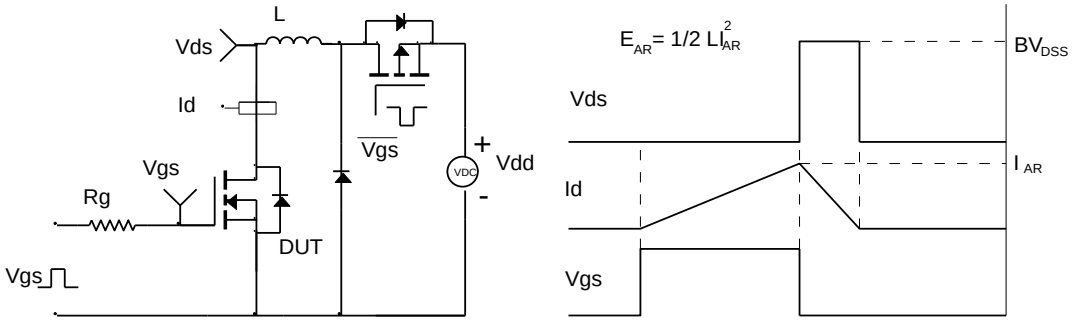
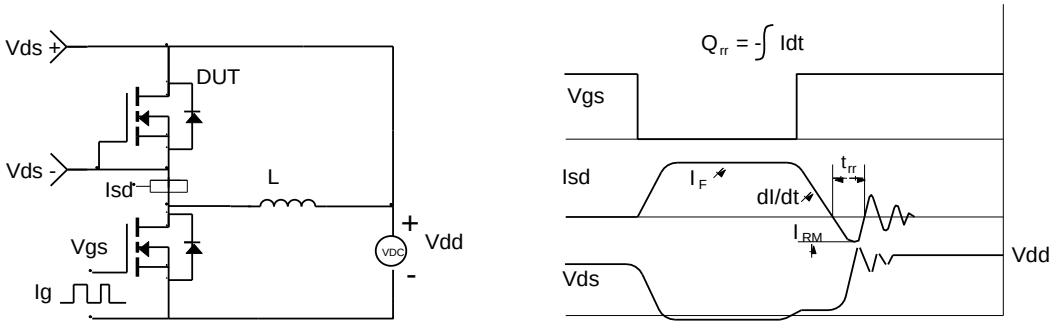



Figure D: Diode Recovery Test Circuit & Waveforms



ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

# Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

### Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

**www.entegreci.com**

### Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

**Kategorilere göz atın**

### Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

**Üreticileri görün**

### Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

**Teklif isteyin**

**www.entegreci.com** | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.