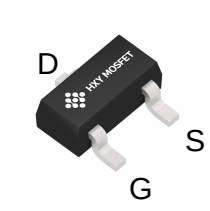
## Description

The AO3404A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.




SOT-23-3L

## General Features

$V_{DS}$ = 30V $I_D$ =5.8A

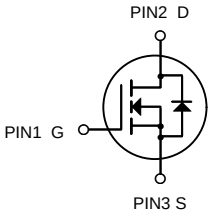
$R_{DS(ON)}$ < 28mΩ@ $V_{GS}$=10V

## Application

Battery protection

Load switch

Uninterruptible power supply




N-Channel MOSFET

## Package Marking and Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|---|---|---|---|
| AO3404A | SOT-23-3L | HXY MOSFET | 3000 |

## Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

| symbol | parameter | limit | unit |
|---|---|---|---|
| $V_{DS}$ | Drain-source voltage | 30 | V |
| $V_{GS}$ | Gate-source voltage | ±20 | V |
| $I_D$ | Drain current-continuous[a]@Tj=125℃ | 5.8 | A |
| IDM | -pulse [b] | 20 | A |
| Is | Drain-source Diode forward current | 5.8 | A |
| $P_D$ | Maximum power dissipation | 1.4 | W |
| Tj | Operating junction Temperature range | -55—150 | ℃ |
| Rth JA | Thermal Resistance junction-to ambient | 100 | ℃/W |

## Electrical Characteristics (TA=25℃ unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-source breakdown voltage | $BV_{DSS}$ | $V_{GS}$=0V, $I_D$=250μA | 30 | - | - | V |
| Zero gate voltage drain current | IDSS | $V_{DS}$=30V, $V_{GS}$=0V | - | - | 1 | μA |
| Gate-body leakage | IGSS | $V_{DS}$=0V, $V_{GS}$=±20V | - | - | ±100 | nA |
| Gate threshold voltage | VGS(th) | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 0.8 | 1.4 | 2.2 | V |
| Drain-source on-state resistance | RDS(ON) | $V_{GS}$=10V, $I_D$=5A | - | 24 | 28 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=4A | | 26 | 32 | |
| Forward transconductance | gfs | $V_{GS}$=5V, $I_D$=5A | - | 33 | - | S |
| Input capacitance | $C_{ISS}$ | $V_{DS}$=15V ,$V_{GS}$=0V f=1.0MHz | | 255 | | pF |
| Output capacitance | COSS | | | 45 | | |
| Reverse transfer capacitance | CRSS | | | 35 | | |
| Turn-on delay time | tD(ON) | $V_{DS}$=15V $V_{GS}$=10V $R_L$=2.6 ohm $R_{GEN}$=3ohm | - | 4.5 | - | ns |
| Rise time | tr | | - | 2.5 | - | |
| Turn-off delay time | tD(OFF) | | - | 14.5 | - | |
| Fall time | tf | | - | 3.5 | - | |
| Total gate charge | Qg | $V_{DS}$=15V,$I_D$=5.8A $V_{GS}$=10V | - | 5.2 | - | nC |
| Gate-source charge | Qgs | | - | 0.85 | - | |
| Gate-drain charge | Qgd | | - | 1.3 | - | |
| Diode forward voltage | $V_{SD}$ | $V_{GS}$=0V,Is=1A | - | 0.76 | 1.16 | V |

**Notes:**

1、surface mounted on FR4 board,t≤10sec

2、pulse test: pulse width≤300μs,duty≤2%

3、guaranteed by design, not subject to production testing

## Typical Performance Characteristics

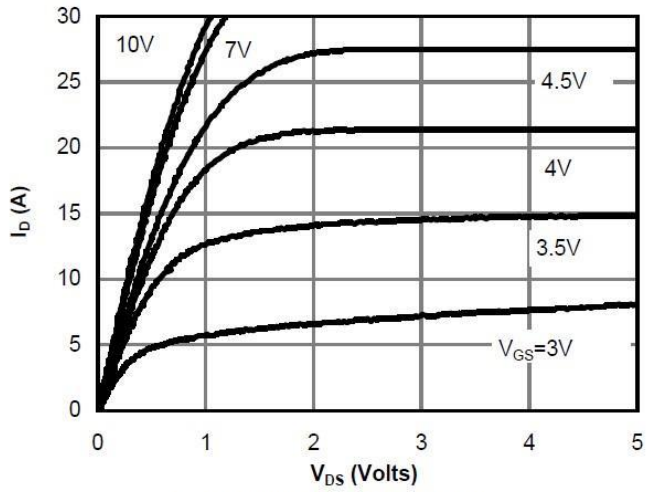



Fig 1: On-Region Characteristics

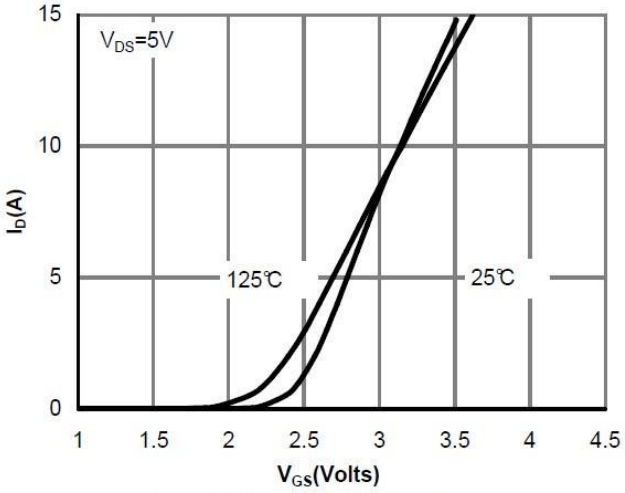



Figure 2: Transfer Characteristics

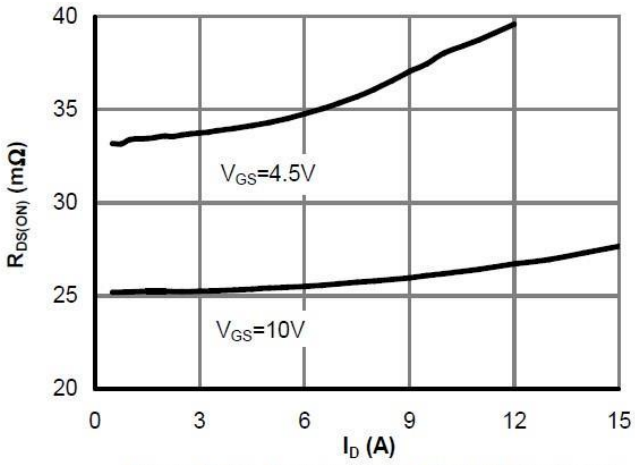



Figure 3: On-Resistance vs. Drain Current and Gate Voltage

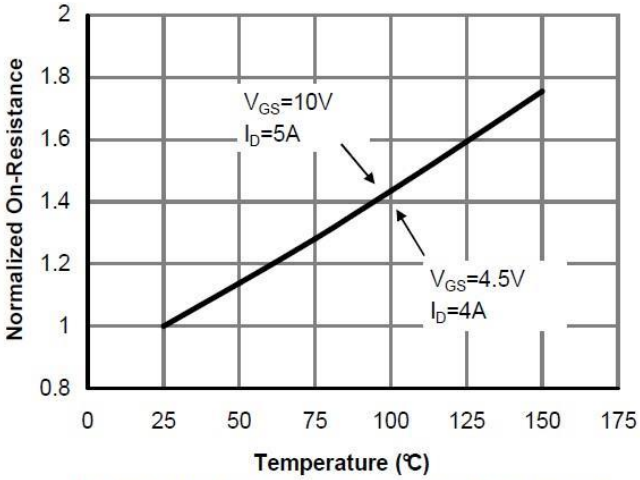



Figure 4: On-Resistance vs. Junction Temperature

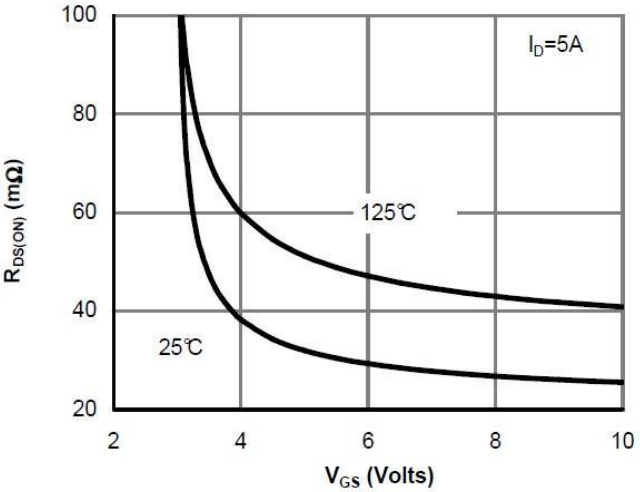



Figure 5: On-Resistance vs. Gate-Source Voltage

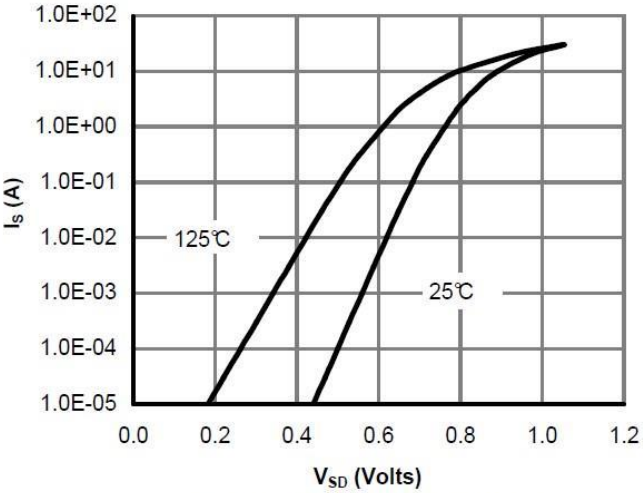



Figure 6: Body-Diode Characteristics

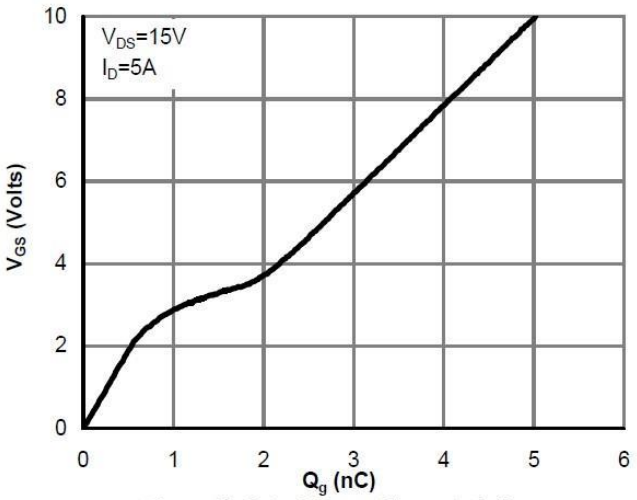



Figure 7: Gate-Charge Characteristics

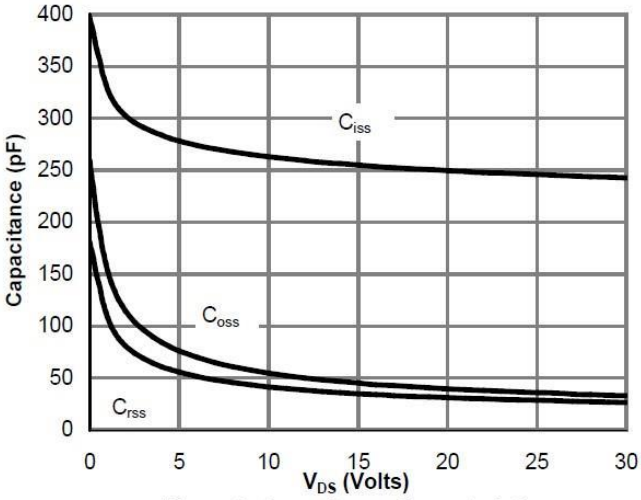



Figure 8: Capacitance Characteristics

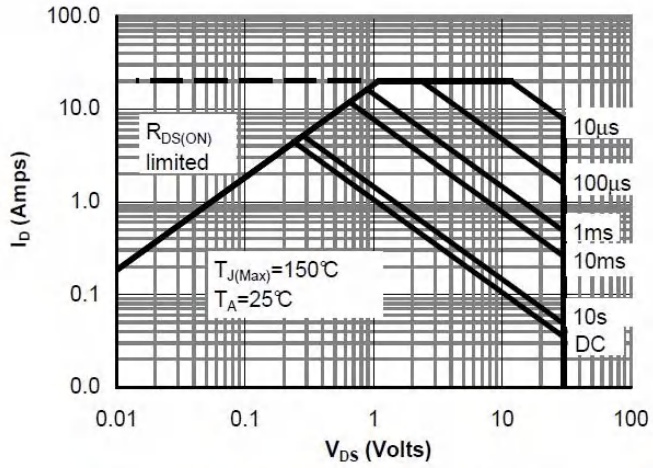



Figure 10: Maximum Forward Biased Safe Operating Area

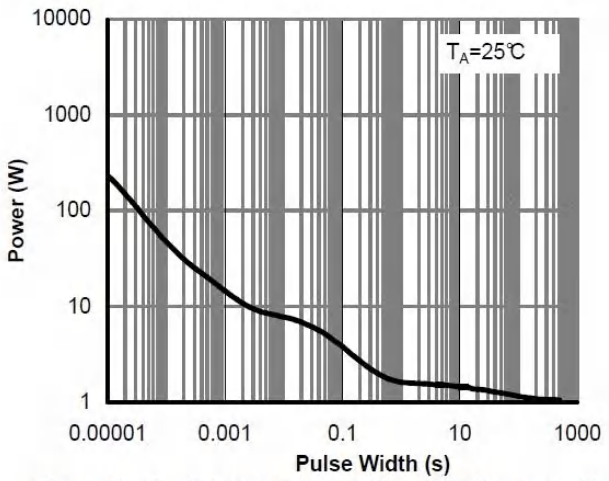



Figure 11: Single Pulse Power Rating Junction-to-Ambient

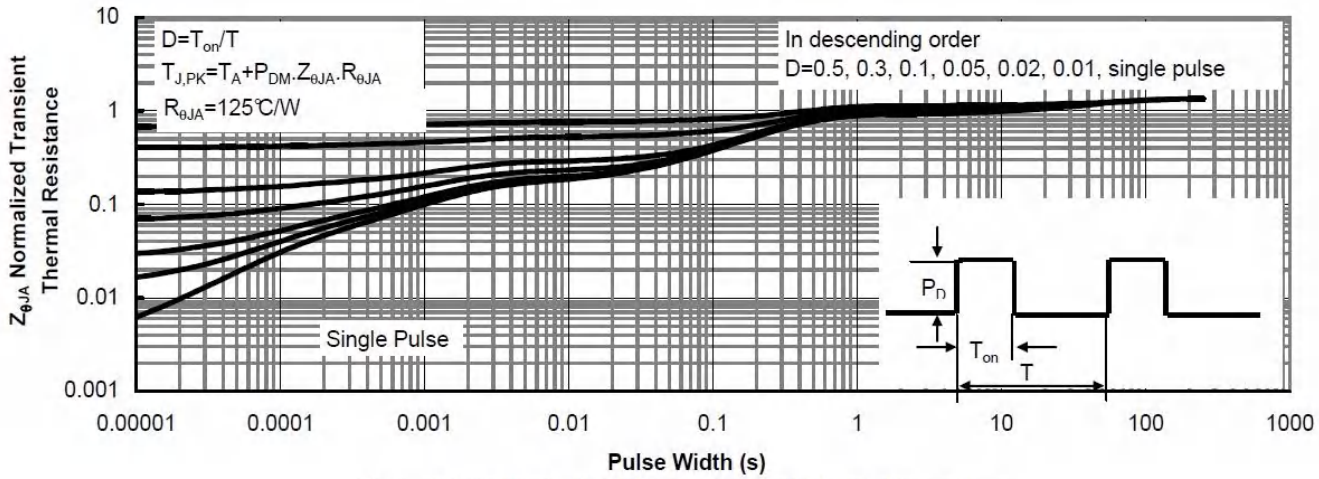
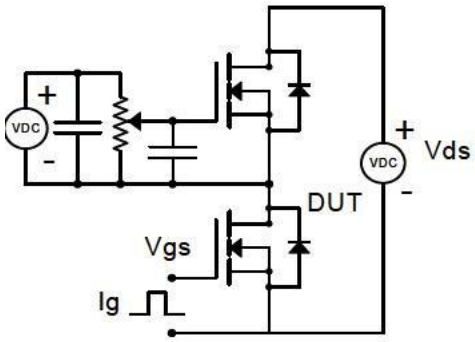
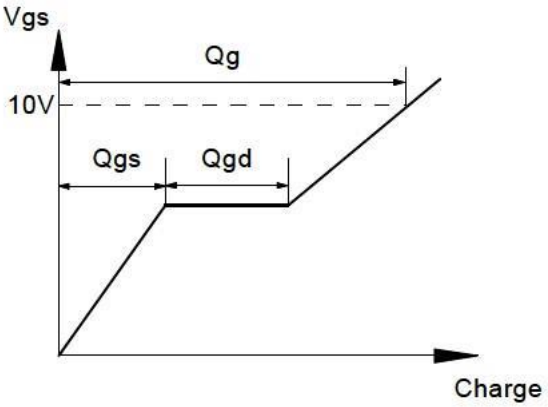



Figure 12: Normalized Maximum Transient Thermal Impedance

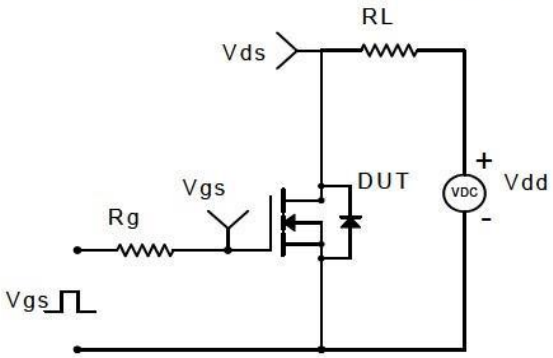
## Gate Charge Test Circuit & Waveform

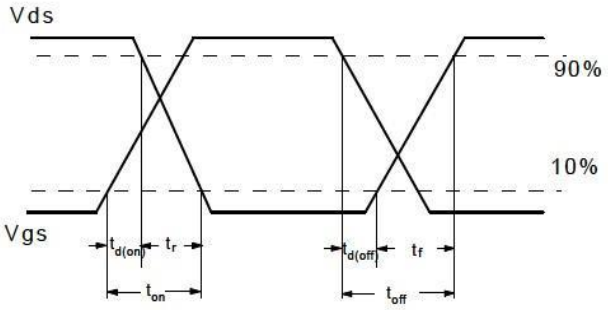


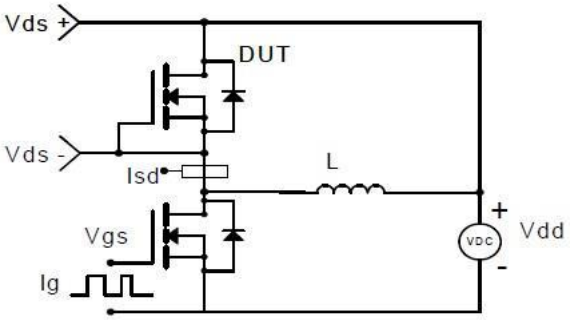

## Resistive Switching Test Circuit & Waveforms

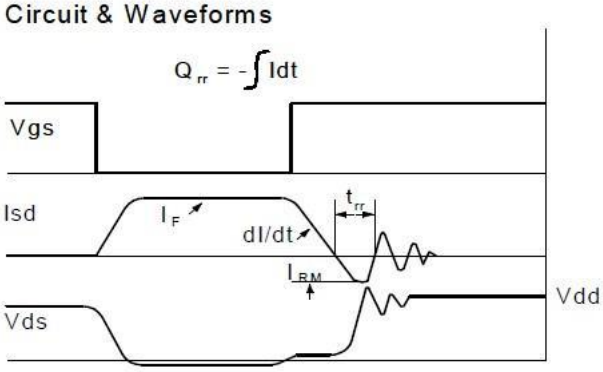
Resistive Switching Test Circuit & Waveforms



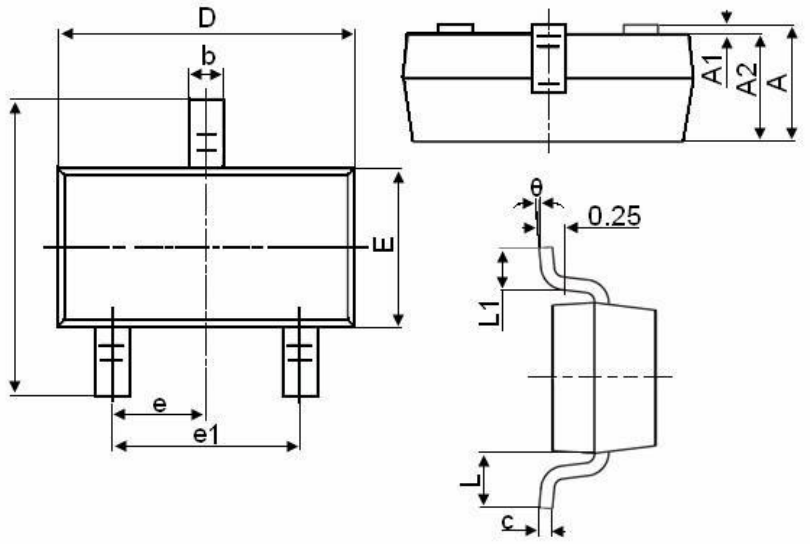




## Diode Recovery Test Circuit & Waveforms



## SOT-23-3L Package Information




| Symbol | Dimensions in Millimeters | |
|---|---|---|
| | MIN. | MAX. |
| A | 1.050 | 1.250 |
| A1 | 0.000 | 0.100 |
| A2 | 1.050 | 1.150 |
| b | 0.300 | 0.500 |
| c | 0.100 | 0.200 |
| D | 2.800 | 3.000 |
| E | 1.500 | 1.700 |
| E1 | 2.650 | 2.950 |
| e | 0.950TYP | |
| e1 | 1.800 | 2.000 |
| L | 0.550REF | |
| L1 | 0.300 | 0.600 |
| θ | 0° | 8° |

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P6SMB36CA SS5150B HT7540-1 HXY2101EI SS1045 HT7150 MAX487ESA SS10100 TPSMB100CA-VR
HC4D20120A HESDNC5VB1AF-B HOPA2340UA IRLML6246PBF BZT52C3V3S MMBT3904T