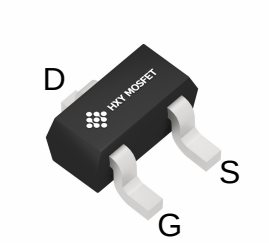
## Description

The FDY301NZ uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.



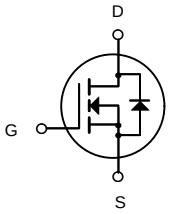

SOT-523
(SC-89)

## General Features

$V_{DS}$ = 20V $I_D$ =0.8A

$R_{DS(ON)}$ < 250 mΩ@ $V_{GS}$=4.5V

$R_{DS(ON)}$ < 360 mΩ@ $V_{GS}$=2.5V




N-Channel MOSFET

## Application

Battery protection

Load switch

Uninterruptible power supply

### Package Marking and Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|---|---|---|---|
| FDY301NZ | SOT-523(SC-89) | HXY MOSFET | 3000 |

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

| Symbol | Parameter | Limit | Unit |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 20 | V |
| $V_{GS}$ | Gate-Source Voltage | ±8 | V |
| $I_D$ | Drain Current-Continuous | 0.8 | A |
| $P_D$ | Maximum Power Dissipation | 0.15 | W |
| $T_J$,$T_{STG}$ | Operating Junction and Storage Temperature Range | -55 To 150 | ℃ |
| $R_{\theta JA}$ | Thermal Resistance,Junction-to-Ambient (Note 2) | 850 | ℃/W |

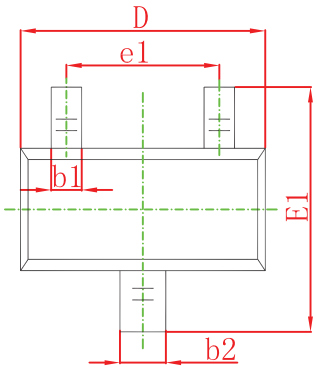
## Electrical Characteristics ($T_J$=25 ˚C, unless otherwise noted)

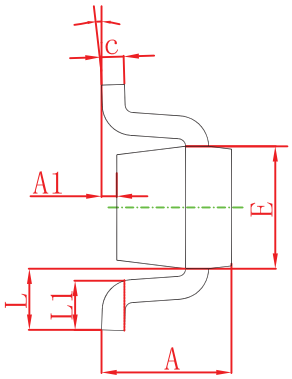
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICE** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 20 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =20V,$V_{GS}$ = 0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±8V, $V_{DS}$ = 0V | | | ±10 | μA |
| Gate threshold voltage (note2) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 0.5 | 0.7 | 1.0 | V |
| Drain-source on-resistance (note2) | $R_{DS(on)}$ | $V_{GS}$ =4.5V, $I_D$ =0.5A | | 0.18 | 0.25 | Ω |
| | | $V_{GS}$ =2.5V, $I_D$ =0.5A | | 0.27 | 0.36 | Ω |
| Maximum Continuous Drain to Source Diode Forward Current | $I_S$ | -- | | | 0.8 | A |
| Maximum Pulsed Drain to Source Diode Forward Current | $I_{SM}$ | -- | | | 1.2 | A |
| Diode forward voltage | $V_{SD}$ | $I_S$=0.5A, $V_{GS}$ =0V | | | 1.2 | V |
| **DYNAMIC CHARACTERISTICS** (note4) | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =16V,$V_{GS}$ =0V, f =1MHz | | 50 | | pF |
| Output capacitance | $C_{oss}$ | | | 7 | | pF |
| Reverse transfer capacitance | $C_{rss}$ | | | 4.5 | | pF |
| **SWITCHING CHARACTERISTICS** (note4) | | | | | | |
| Turn-on delay time (note3) | $t_{d(on)}$ | $V_{GS}$=4.5V,$V_{DS}$=10V, $R_L$=10Ω | | 2 | | nS |
| Turn-on rise time (note3) | $t_r$ | | | 32 | | nS |
| Turn-off delay time (note3) | $t_{d(off)}$ | | | 47 | | nS |
| Turn-off fall time (note3) | $t_f$ | | | 22 | | nS |

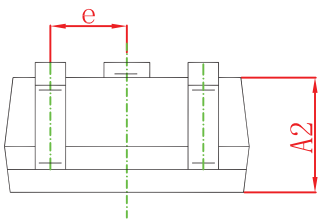
Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300μs, Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

## SOT-523(SC-89) Package Information

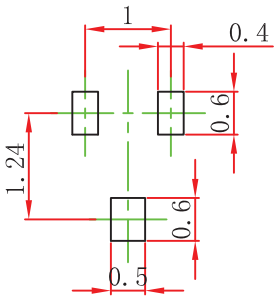



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP. | | 0.020 TYP. | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF. | | 0.016 REF. | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-523(SC-89) Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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## HXY MOSFET:

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