



## HY2310

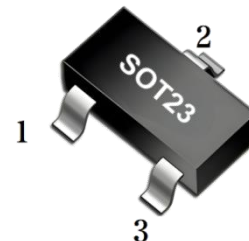
## N-CHANNEL MOSFET

### 3A, 60V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

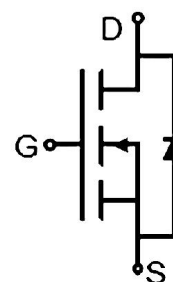
#### DESCRIPTION

The HY2310 uses advanced technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation gate voltage as low as 2.5V. This device is suitable for use as a Battery protection or in other switching application.

The HY2310 meet the ROHS and Green Product requirement with full function reliability approved.



Equivalent Circuit



#### FEATURE

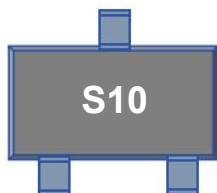
- \*High power and current handing capability
- \*Lead free product is acquired
- \*Surface mount package

#### APPLICATION

- \* Battery Switch
- \* DC/DC Conerter

#### MARKING

Type Code: Marking: S10



#### ABSOLUTE MAXIMUM RATINGS(TA=25°C, unless otherwise specified.)

| SYMBOL | PARAMETER                                           | VALUE   | UNIT |
|--------|-----------------------------------------------------|---------|------|
| VDS    | Drain-Source Voltage                                | 60      | V    |
| VGS    | Gate Source Voltage                                 | ±20     | V    |
| ID     | Continuous Drain Current                            | 3       | A    |
| IDM    | Pulsed Drain Current(note 1)                        | 10      | A    |
| PD     | Power Dissipation(Note 5)                           | 3.1     | W    |
| TJ     | Junction Temperature                                | 150     | °C   |
| TSTG   | Storage Temperature                                 | -55~150 | °C   |
| RθJA   | Thermal Resistance From Junction To Ambient(Note 2) | 207     | °C/W |
| RθJC   | Thermal Resistance From Junction To Case(Note 5)    | 40      | °C/W |

Notes: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.



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■ ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

| PARAMETER                                | SYMBOL              | TEST CONDITIONS                                                                           | MIN | TYP  | MAX  | UNIT |
|------------------------------------------|---------------------|-------------------------------------------------------------------------------------------|-----|------|------|------|
| STATIC CHARACTERISTICS                   |                     |                                                                                           |     |      |      |      |
| Drain-Source Breakdown Voltage           | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                                | 60  |      |      | V    |
| Gate Threshold Voltage(Note 3)           | V <sub>GS(TH)</sub> | V <sub>GS</sub> =V <sub>DS</sub> ,I <sub>D</sub> =250μA                                   | 0.5 |      | 2    | V    |
| Gate-Source Leakage Current              | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                                |     |      | ±100 | nA   |
| Zero Gate Voltage Drain Current          | I <sub>DSS</sub>    | V <sub>DS</sub> =60V, V <sub>GS</sub> =0V                                                 |     |      | 1    | μA   |
| Drain-source on-state resistance(Note 3) | R <sub>DS(ON)</sub> | V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A                                                 |     | 91   | 125  | mΩ   |
|                                          |                     | V <sub>GS</sub> =10V,I <sub>D</sub> =3A                                                   |     | 82   | 105  |      |
| Forward Transconductance(Note 3)         | g <sub>fs</sub>     | V <sub>DS</sub> =15V,I <sub>D</sub> =2A                                                   | 1.4 |      |      | S    |
| Diode forward voltage (note 3)           | V <sub>SD</sub>     | I <sub>S</sub> =3A, V <sub>GS</sub> = 0V                                                  |     |      | 1.2  | V    |
| DYNAMIC CHARACTERISTICS(Note 4)          |                     |                                                                                           |     |      |      |      |
| Input Capacitance                        | C <sub>ISS</sub>    | V <sub>GS</sub> =0V,V <sub>DS</sub> =30V,f=1MHz                                           |     | 247  |      | pF   |
| Output Capacitance                       | C <sub>OSS</sub>    |                                                                                           |     | 34   |      |      |
| Reverse Transfer Capacitance             | C <sub>RSS</sub>    |                                                                                           |     | 19.5 |      |      |
| SWITCHING CHARACTERISTICS (Note 4)       |                     |                                                                                           |     |      |      |      |
| Total gate charge                        | Q <sub>g</sub>      | V <sub>DS</sub> =30V,V <sub>GS</sub> =4.5V,I <sub>D</sub> =3A                             |     | 6    |      | nC   |
| Gate-source charge                       | Q <sub>gs</sub>     |                                                                                           |     | 1    |      |      |
| Gate-drain charge                        | Q <sub>gd</sub>     |                                                                                           |     | 1.3  |      |      |
| Turn-On Delay Time                       | td(on)              | V <sub>GS</sub> =10V, I <sub>D</sub> =1.5A,<br>V <sub>DD</sub> =30V, R <sub>GEN</sub> =1Ω |     | 6    |      | ns   |
| Turn-On Rise Time                        | tr                  |                                                                                           |     | 15   |      |      |
| Turn-Off Delay Time                      | td(off)             |                                                                                           |     | 15   |      |      |
| Turn-Off Fall Time                       | tf                  |                                                                                           |     | 10   |      |      |

Notes:

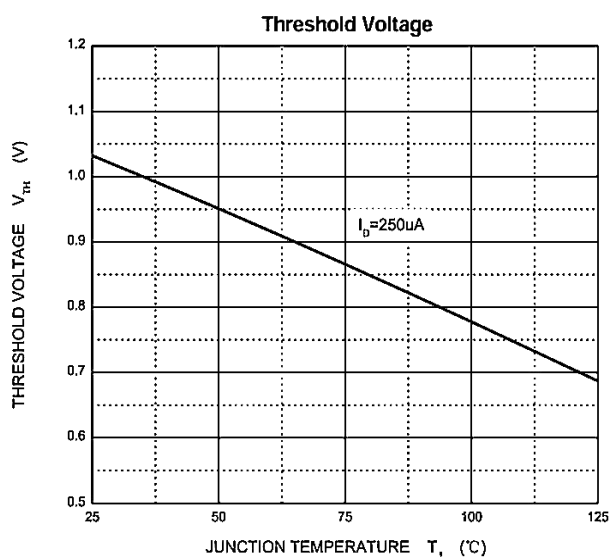
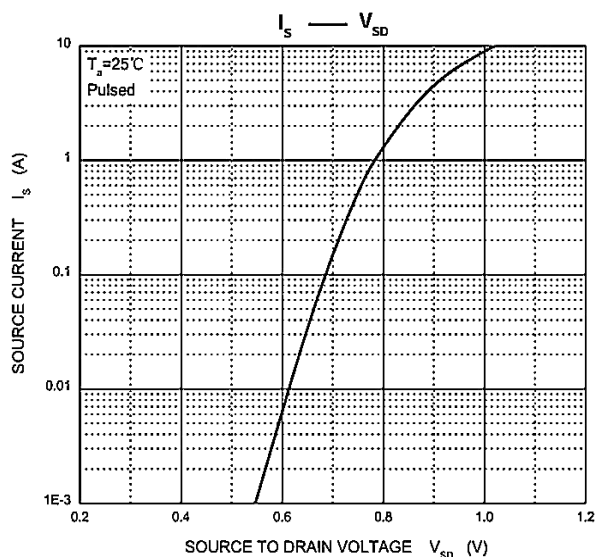
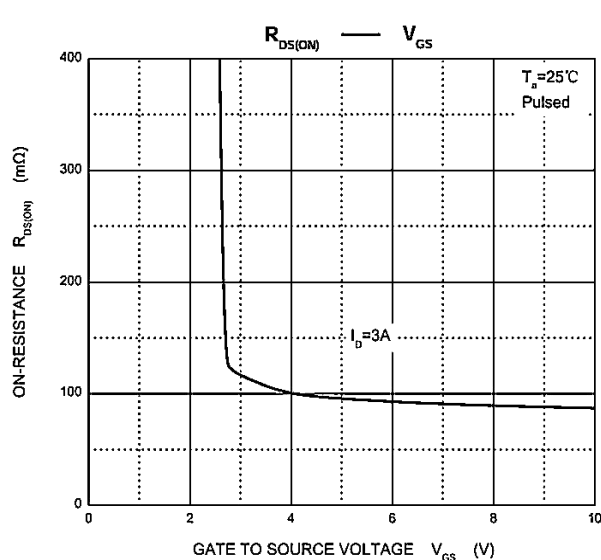
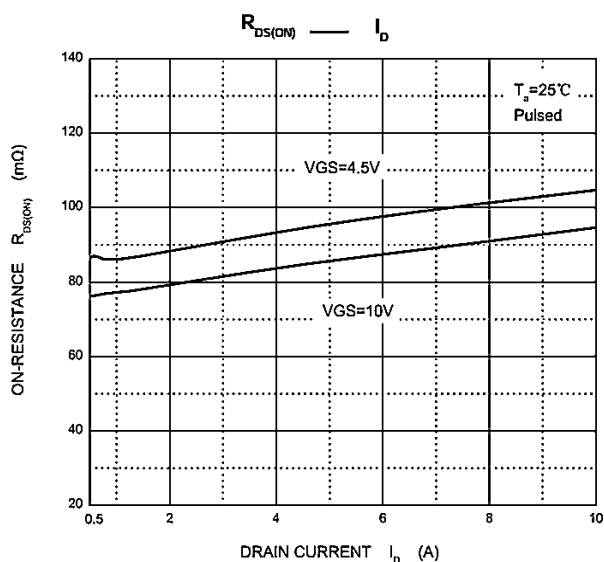
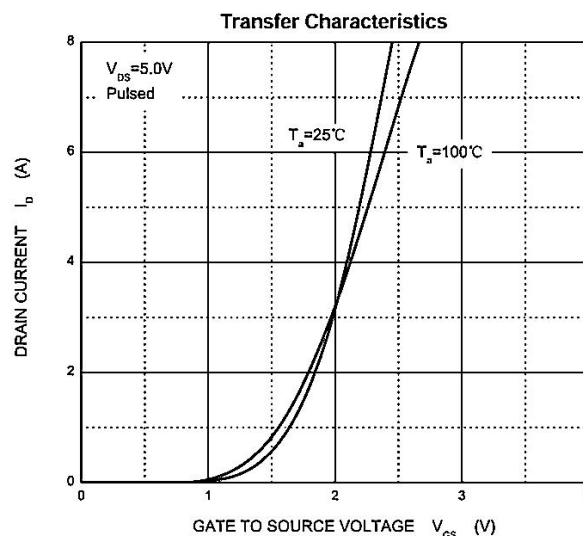
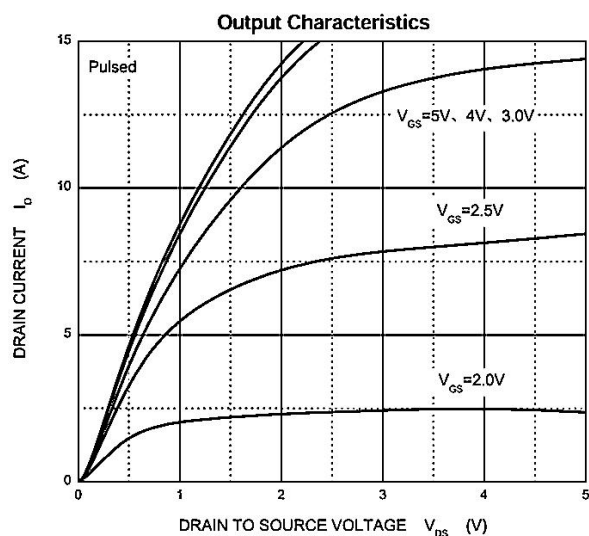
1. Repetitive rating : Pulse width limited by junction temperature.
2. Mounted on 1 in<sup>2</sup> FR-4 board with 2oz. Copper, single--sided, in a still air environment with TA=25°C.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.
4. Guaranteed by design, not subject to production.
5. Tc=25°C



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## TYPICAL CHARACTERISTICS

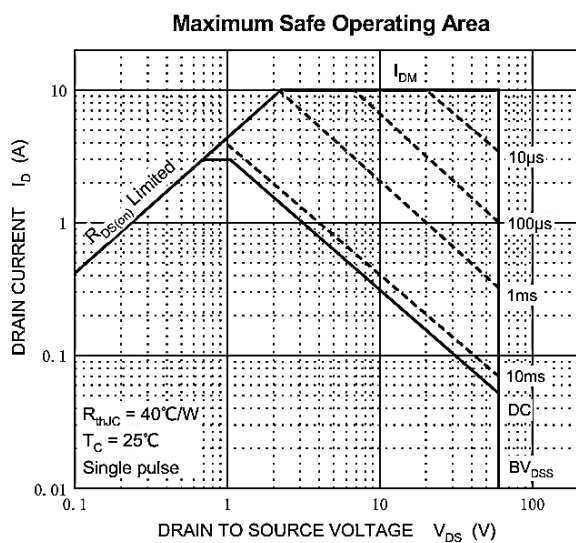
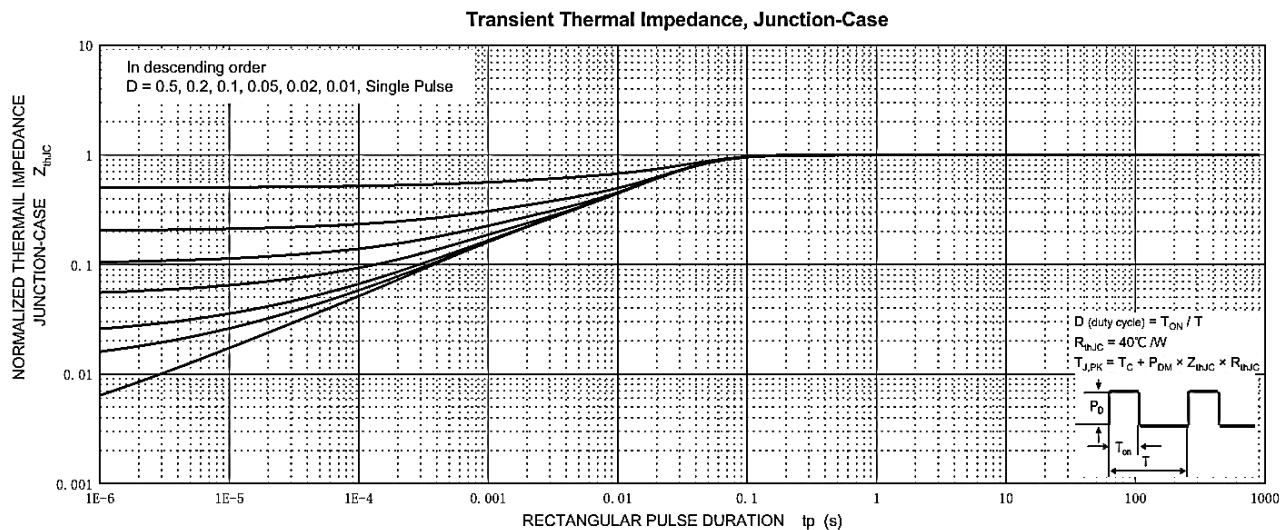




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## ■ TYPICAL CHARACTERISTICS(Con.t)

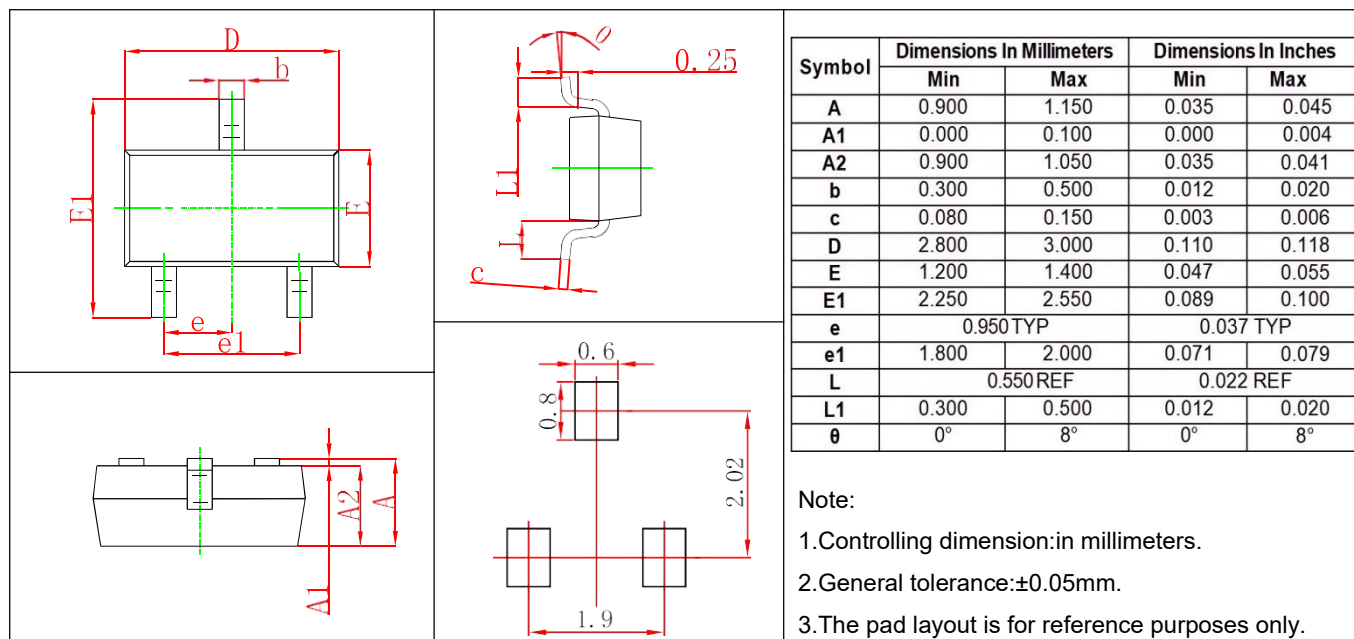




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## SOT23 PACKAGE OUTLINE DIMENSIONS



## REEL PACKING

