



## Description

The HXY2300AI 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.

## General Features

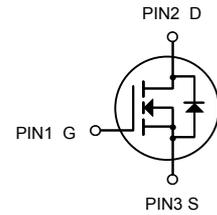
$V_{DS} = 20V$   $I_D = 6.0A$   
 $R_{DS(ON)} < 27m\Omega @ V_{GS}=4.5V$

## Application

Battery protection  
Load switch  
Uninterruptible power supply



SOT-23



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HXY2300AI	SOT-23	2300	3000

## Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current-Continuous	6	A
$I_{DM}$	Drain Current-Pulsed (Note 1)	25	A
$P_D$	Maximum Power Dissipation	0.35	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	100	$^\circ C/W$



$T_a=25^{\circ}\text{C}$  unless otherwise specified

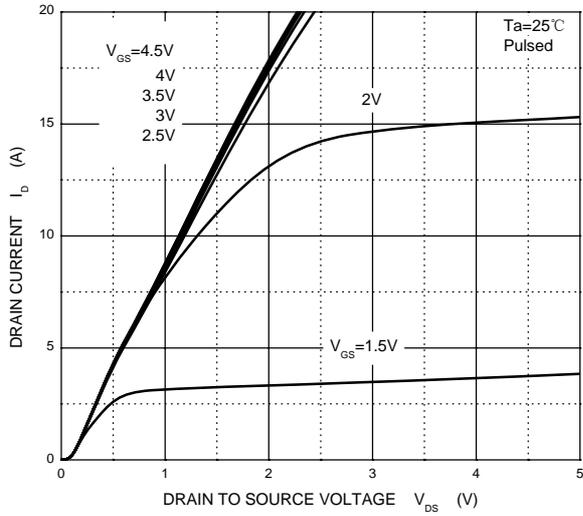
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Gate-source leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 12V$			$\pm 100$	nA
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 16V, V_{GS} = 0V$			1.0	$\mu A$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	1.0	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$		22	27	m $\Omega$
		$V_{GS} = 2.5V, I_D = 4.0A$		35	42	
		$V_{GS} = 1.8V, I_D = 2.0A$			73	
Diode forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 1A$		0.75	1	V
Forward transconductance	$g_{fs}$	$V_{DS} = 5V, I_D = 3.8A$	4			S
<b>DYNAMIC PARAMETERS*</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		630		pF
Output capacitance	$C_{oss}$			164		
Reverse transfer capacitance	$C_{rss}$			137		
Gate resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.5		$\Omega$
<b>SWITCHING PARAMETERS*</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 5V, V_{DS} = 10V,$ $R_L = 1.7\Omega, R_{GEN} = 6\Omega$		5.5		ns
Rise time	$t_r$			14		
Turn-off delay time	$t_{d(off)}$			29		
Fall time	$t_f$			10.2		

\*These parameters have no way to verify.

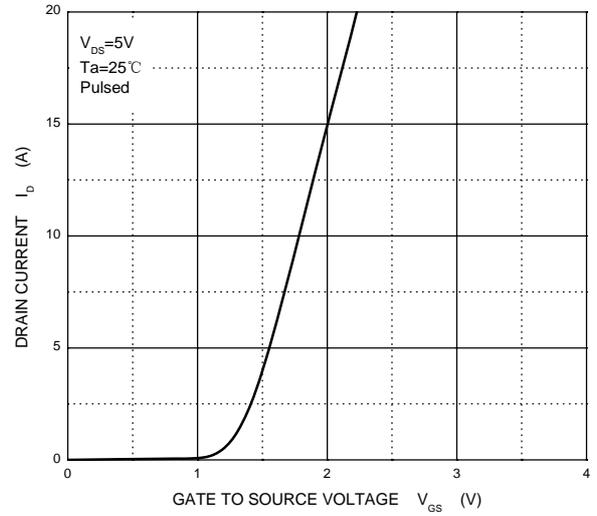


### Typical Characteristics

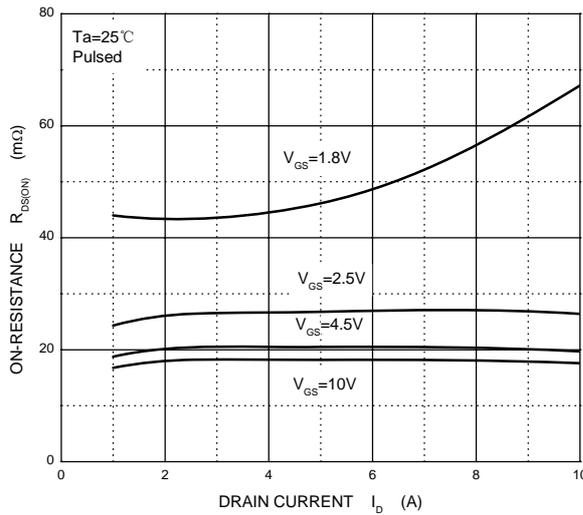
#### Output Characteristics



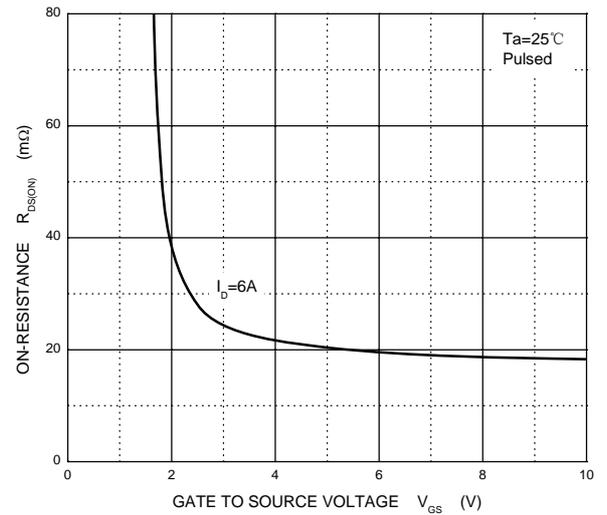
#### Transfer Characteristics



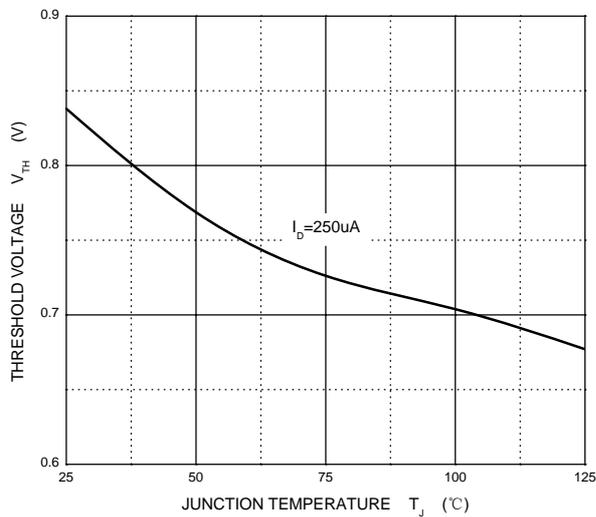
#### $R_{DS(ON)}$ — $I_D$



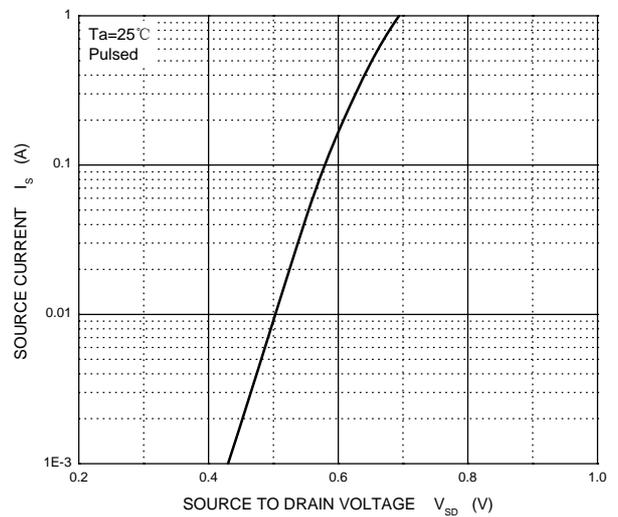
#### $R_{DS(ON)}$ — $V_{GS}$



#### Threshold Voltage

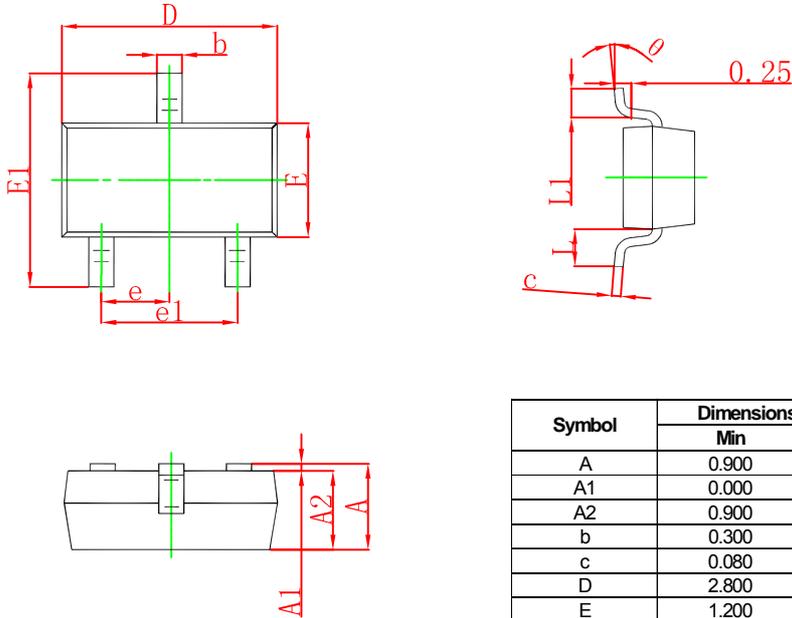


#### $I_S$ — $V_{SD}$



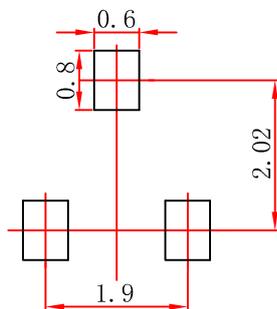


### SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### SOT-23 Suggested Pad Layout



**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.



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