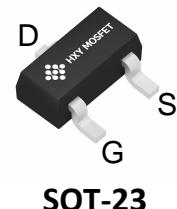




Description

The HXY2302I-A 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-23

General Features

$V_{DS} = 20V$ $I_D = 2.8A$

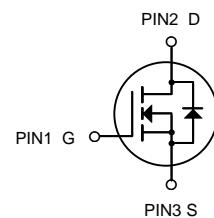
$R_{DS(ON)} < 40m\Omega$ @ $V_{GS}=4.5V$

Application

Battery protection

Load switch

Uninterruptible power supply



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HXY2302I-A	SOT-23	HXY MOSFET	3000

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	2.8	A
Drain Current-Pulsed (Note 1)	I_{DM}	16	A
Maximum Power Dissipation	P_D	0.9	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	139	°C/W



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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	20	22	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.75	1.2	V
Drain-Source On-State Resistance	R _{DSS(ON)}	V _{GS} =2.5V, I _D =2A	-	44	56	mΩ
		V _{GS} =4.5V, I _D =2.8A	-	35	40	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =3A	-	8	-	S
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, F=1.0MHz	-	260	-	PF
Output Capacitance	C _{oss}		-	48	-	PF
Reverse Transfer Capacitance	C _{rss}		-	27	-	PF
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, R _L =3.3Ω V _{GS} =4.5V, R _{GEN} =6Ω	-	2.5	-	nS
Turn-on Rise Time	t _r		-	3.2	-	nS
Turn-Off Delay Time	t _{d(off)}		-	21	-	nS
Turn-Off Fall Time	t _f		-	3	-	nS
Total Gate Charge	Q _g	V _{DS} =10V, I _D =3A, V _{GS} =4.5V	-	2.9	5	nC
Gate-Source Charge	Q _{gs}		-	0.4	-	nC
Gate-Drain Charge	Q _{gd}		-	0.6	-	nC
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =3.3A	-	0.75	1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	3.3	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production



Typical Electrical and Thermal Characteristics

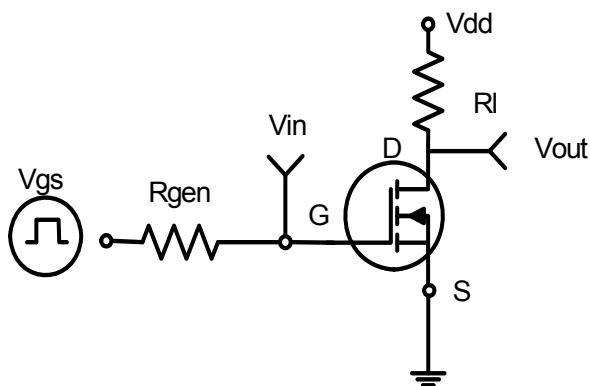


Figure 1:Switching Test Circuit

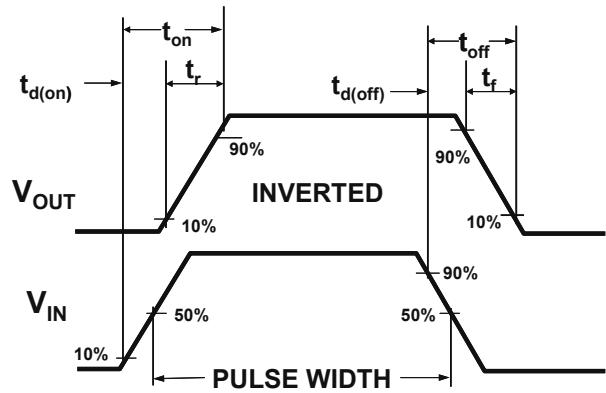


Figure 2:Switching Waveforms

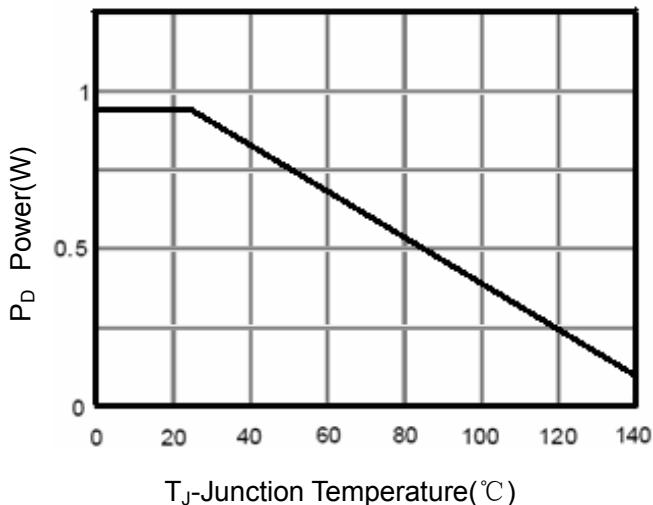


Figure 3 Power Dissipation

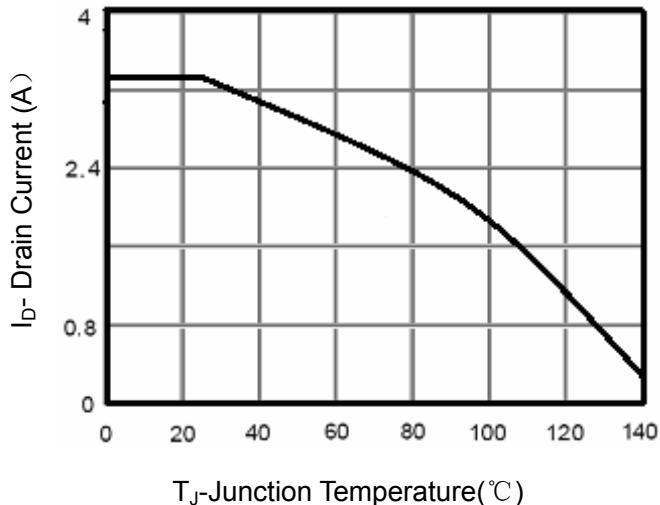


Figure 4 Drain Current

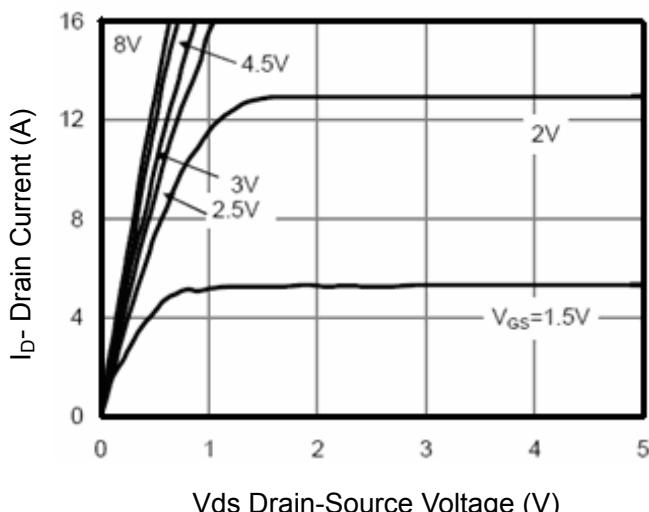


Figure 5 Output Characteristics

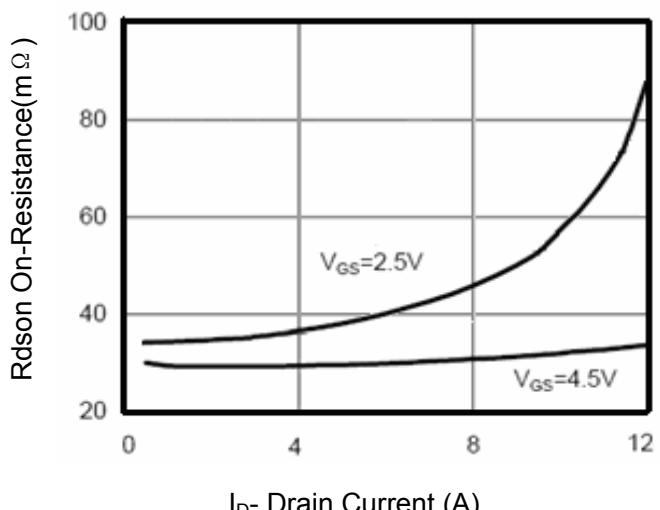
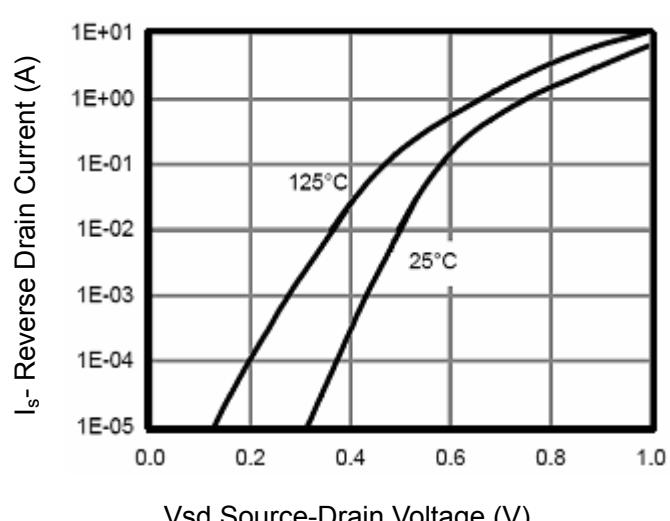
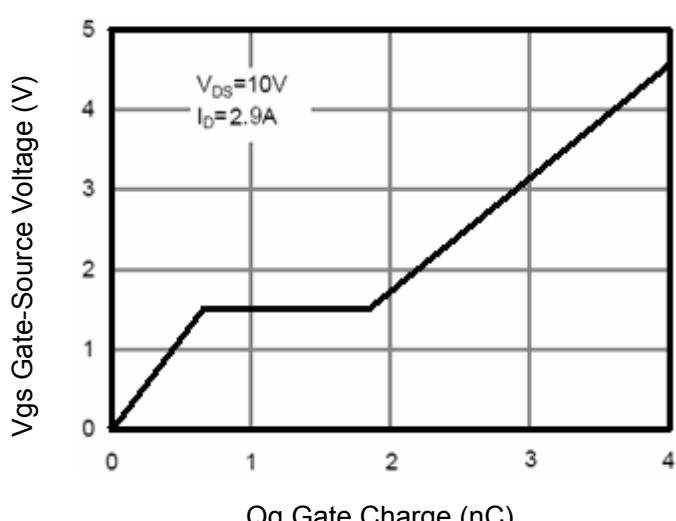
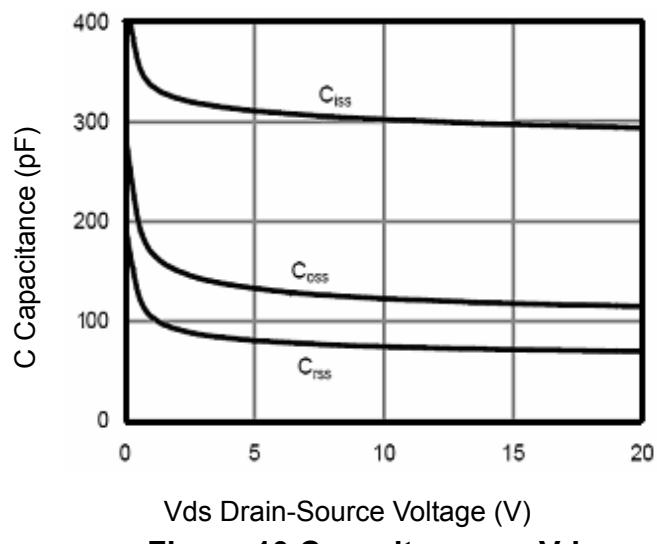
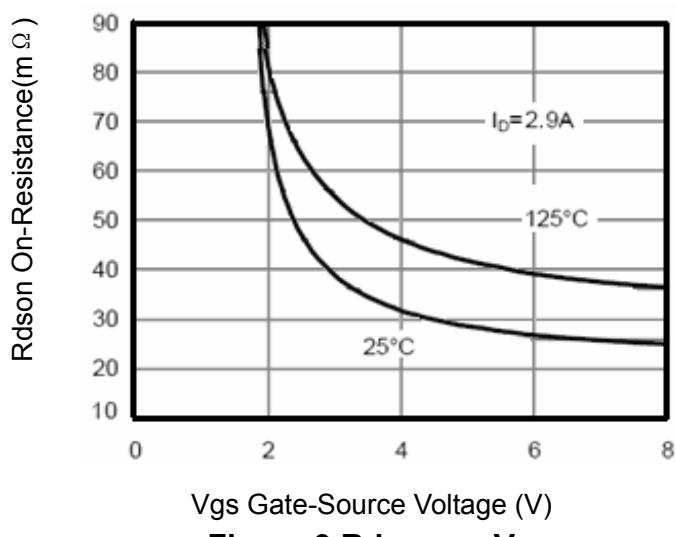
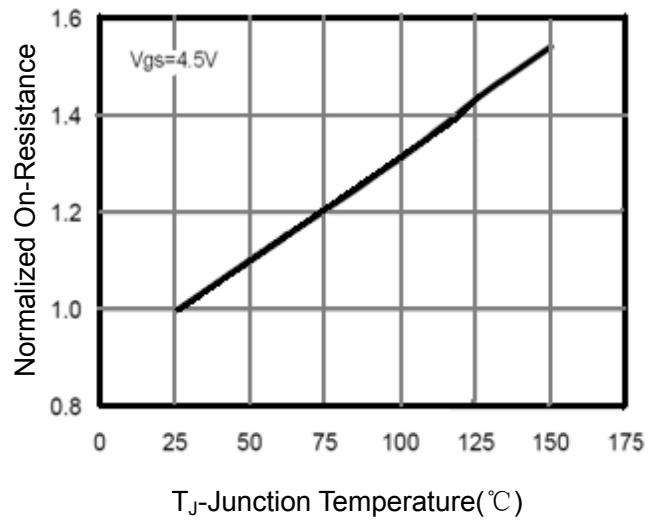
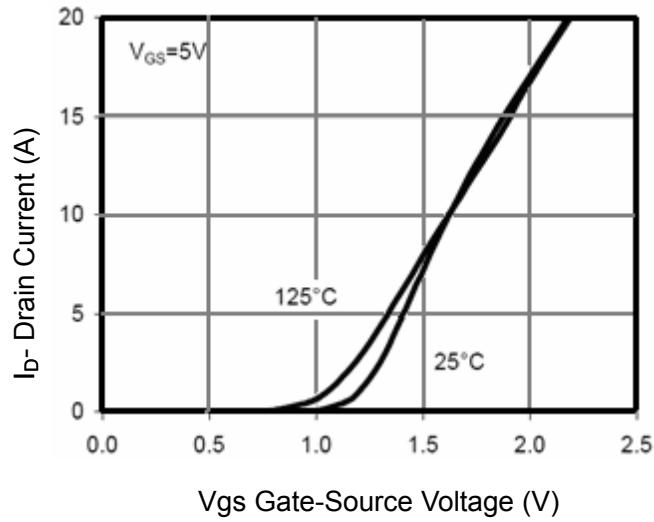
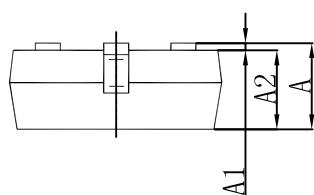
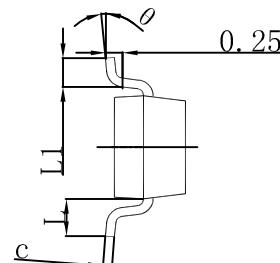
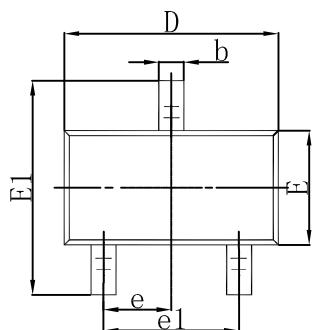


Figure 6 Drain-Source On-Resistance



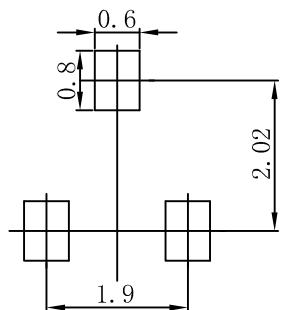


SOT-23 Package Outline Dimensions



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: ± 0.05 mm.
3. The pad layout is for reference purposes only.



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