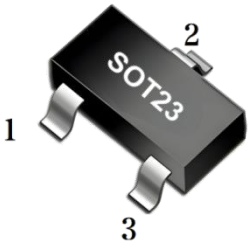
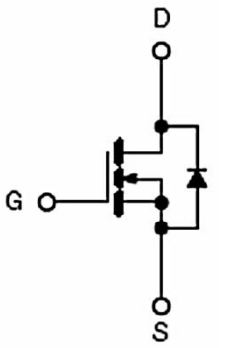
2.3A, 20V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

■ DESCRIPTION

The HY2302 meet the ROHS and Green Product requirement with full function reliability approved.



Equivalent Circuit



■ FEATURE

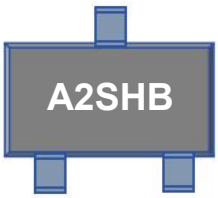
*TrenchFET Power MOSFET

■ APPLICATION

* Load Switch for Portable Devices
* DC/DC Converter

■ MARKING

Type Code: Marking: A2SHB



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

SYMBOL	PARAMETER	VALUE	UNIT
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate Source Voltage	±10	V
I_D	Continuous Drain Current	2.3	A
I_{DM}	Pulsed Drain Current	10	A
I_S	Continuous Source-Drain Diode Current(Diode Conduction)	0.6	A
P_D	Power Dissipation	0.35	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55~150	°C
$R_{\theta JA}$	Thermal Resistance fromJunction to Ambient(t≤5s)	357	°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.

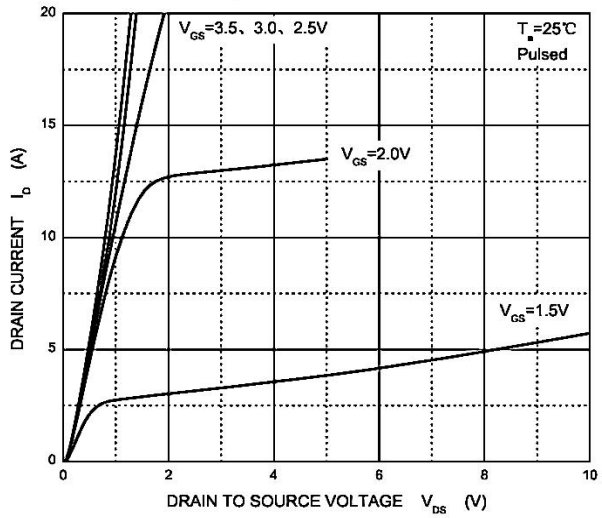
■ ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=10μA	20			V
Gate-Source Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS},I_D=250μA	0.45	0.7	1.1	V
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Drain-source on-state resistance(Note1)	$R_{DS(ON)}$	V_{GS}=6V, I_D=2.5A	42	50	65	mΩ
		V_{GS}=4.5V, I_D=2.5A	35	48	46.5	
		V_{GS}=2.5V, I_D=2.5A		73	105	
Forward transconductance(Note1)	gfs	V_{DS}=5V,I_D=3.6A		8.0		S
Diode forward voltage	V_{SD}	I_S=0.94A,V_{GS}=0V		0.76	1.2	V
DYNAMIC						
Input Capacitance	C_{ISS}	V_{GS}=0V,V_{DS}=10V,f=1.0MHz		300		pF
Output Capacitance	C_{OSS}			120		pF
Reverse Transfer Capacitance	C_{RSS}			80		pF
Total gate charge	Qg	V_{DS}=10V,V_{GS}=4.5V,I_D=3.6A		4	10	nC
Gate-source charge	Qgs			0.65		
Gate-drain charge	Qgd			1.5		
SWITCHING						
Turn-On Delay Time	td(on)	V_{DD}=10V, R_L=5.5Ω, I_D≈3.6A V_{GEN}=4.5V, R_G=6Ω		7	15	nS
Rise time	tr			55	80	
Turn-Off Delay Time	td(off)			16	60	
Fall time	tf			10	25	

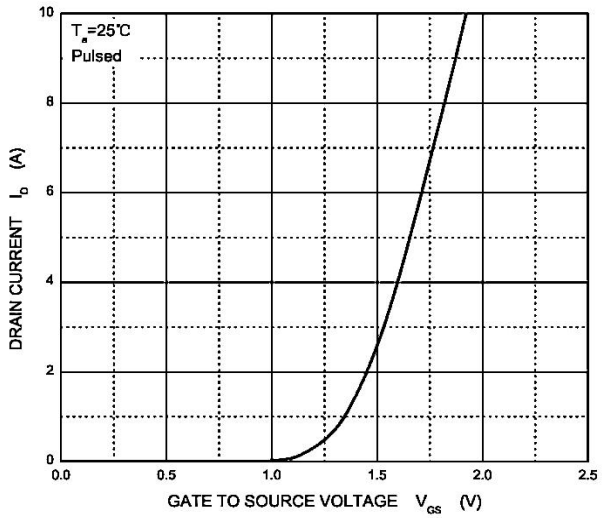
Notes: 1. Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

■ TYPICAL CHARACTERISTICS

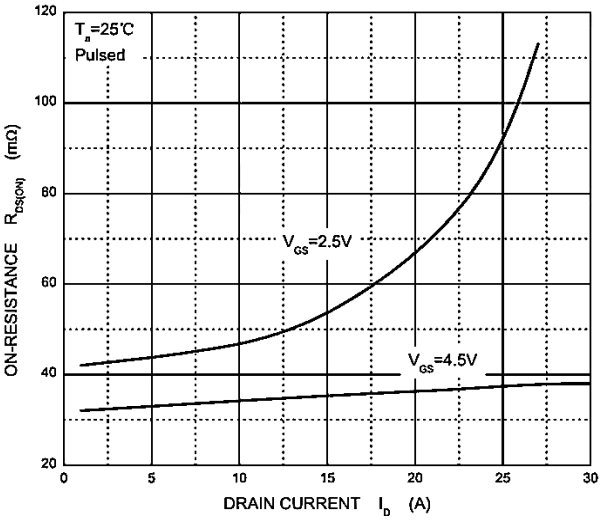
Output Characteristics



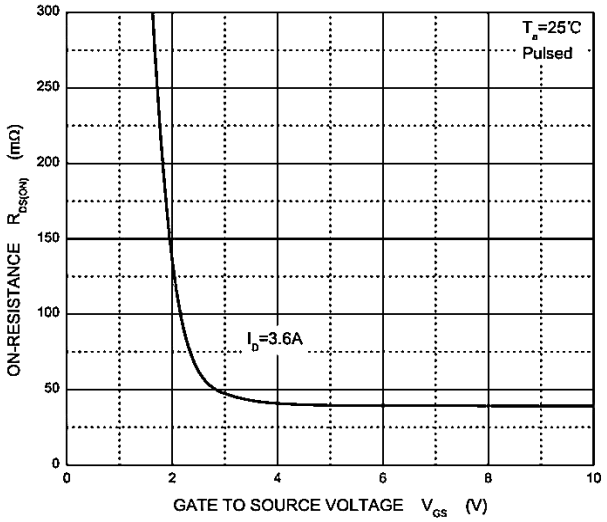
Transfer Characteristics



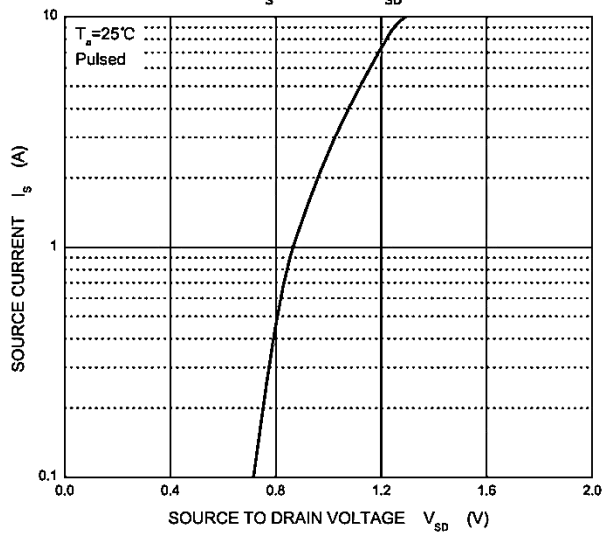
$R_{DS(ON)}$ — I_D



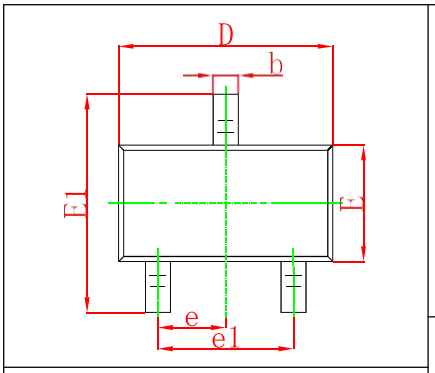
$R_{DS(ON)}$ — V_{GS}

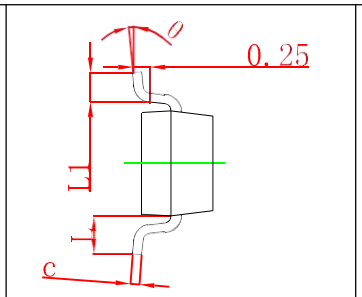


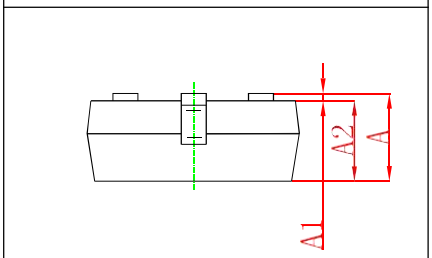
I_S — V_{SD}

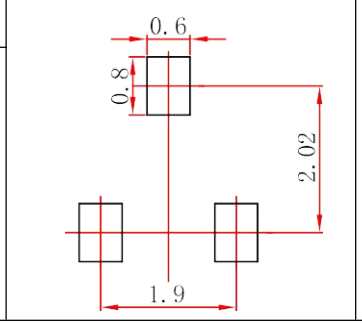


■ SOT23 PACKAGE OUTLINE DIMENSIONS









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°

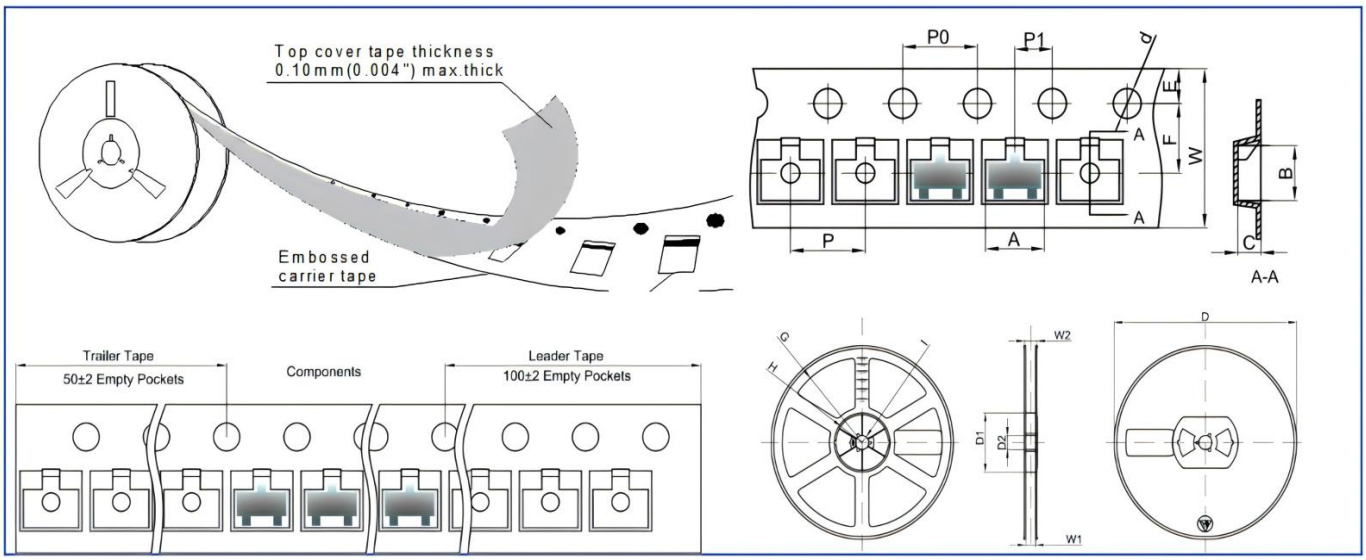
Note:

1.Controlling dimension:in millimeters.

2.General tolerance:±0.05mm.

3.The pad layout is for reference purposes only.

■ REEL PACKING



Dimensions are in millimeter										
PKG TYPE	A	B	C	d	E	F	Po	P	P1	W
SOT-23	3.15	2.77	1.22	Φ1.50	1.75	3.50	4.00	4.00	2.00	8.00
Reel Optiom	D	D1	D2	G	H	I	W1	W2	Q.TY PER REEL	
7" Dia	Φ178.0	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30	3000PCS	
13"Dia	φ330.0	/	13.00	/	/	R6.50	9.50	12.30	10000PCS	