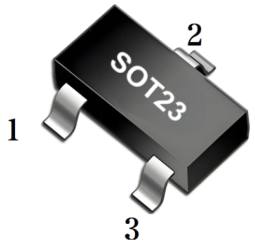
3.16A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

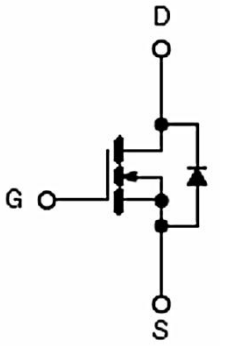
■ DESCRIPTION

The HY2306 is N-channel power MOSFET, designed with high density cell, with fast switching speed, ultra low on-resistance and excellent thermal and electrical capabilities. Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

The HY2306 meet the ROHS and Green Product requirement with full function reliability approved.



Equivalent Circuit



■ FEATURE

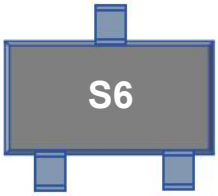
*TrenchFET Power MOSFET

■ APPLICATION

* Load Switch for Portable Devices
* DC/DC Converter

■ MARKING

Type Code: Marking: S6



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

SYMBOL	PARAMETER	VALUE	UNIT
VDS	Drain-Source Voltage	30	V
VGS	Gate Source Voltage	±20	V
ID	Continuous Drain Current (TJ=150℃)(Note 1 2)	3.16	A
IDM	Pulsed Drain Current	20	A
IS	Continuous Source Current(Diode Conduction)(Note 1 2)	0.62	A
PD	Maximum Power Dissipation(Note 1 2)	0.75	W
TJ	Junction Temperature	150	°C
TSTG	Storage Temperature	-55~150	°C
RθJA	Thermal Resistance From Junction To Ambient(t≤5s)	100	°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=250μA	30			V
Gate-Source Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS},I_D=250μA	1		3	V
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			0.5	μA
Drain-source on-state resistance(Note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=-3.5A		38	47	mΩ
		V_{GS}=4.5V, I_D=2.8A		52	65	
Forward transconductance(Note 3)	gfs	V_{DS}=4.5V,I_D=2.5A		7.0		S
Diode Forward Voltage	V_{SD}	I_S=1.25A,V_{GS}=0V		0.8	1.2	V
DYNAMIC						
Input Capacitance	C_{ISS}	V_{GS}=0V,V_{DS}=15V,f=1MHz		305		pF
Output Capacitance	C_{OSS}			65		
Reverse Transfer Capacitance	C_{RSS}			29		
Gate Charge	Qg	V_{DS}=15V,V_{GS}=5V,I_D=2.5A		3	4.5	nC
Total Gate Charge	Qgt	V_{DS}=15V,V_{GS}=10V,I_D=2.5A		6	9	
Gate-source charge	Qgs			1.6		
Gate-drain charge	Qgd			0.6		
Gate Resistance	Rg	f =1MHz	2.5	5	7.5	Ω
DRAIN-SOURCE BODY DIODE CHARACTERISTICS						
Turn-On Delay Time	td(on)	V_{DD}=15V, R_L=15Ω, I_D≈1A, V_{GEN}=10V, Rg=6Ω		7	11	ns
Rise Time	tr			12	18	
Turn-Off Delay Time	td(off)			14	25	
Fall Time	tf			6	10	

Notes:

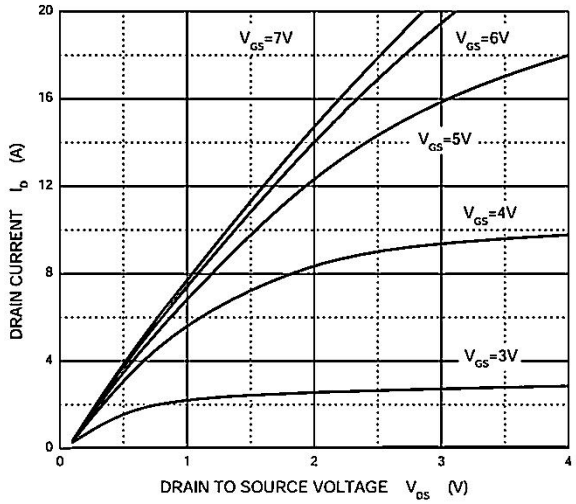
1.Surface Mounted on 1" ×1" FR4 board, t≤5s.

2.Pulse width limited by maximum junction temperature.

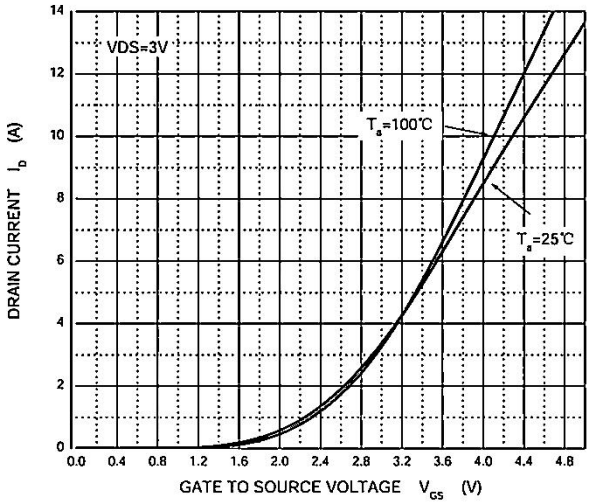
3..Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤2%.

■ TYPICAL CHARACTERISTICS

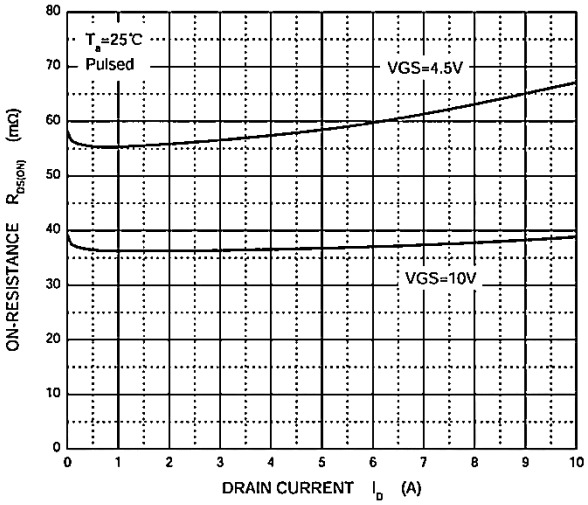
Output Characteristics



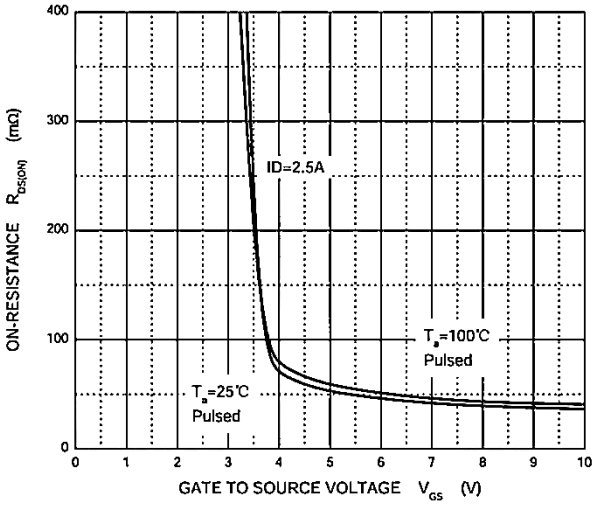
Transfer Characteristics



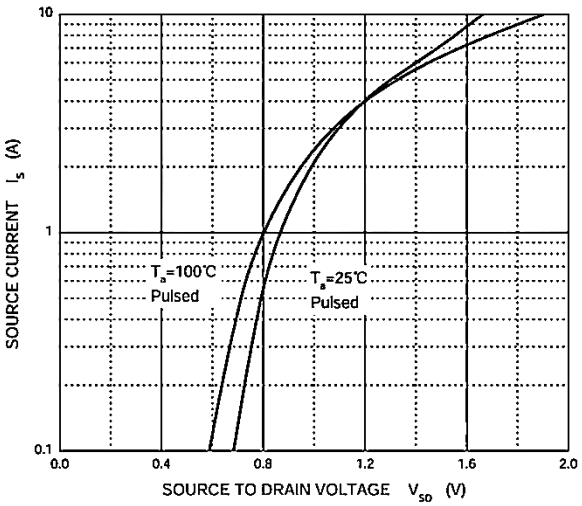
$R_{DS(ON)}$ —— I_D



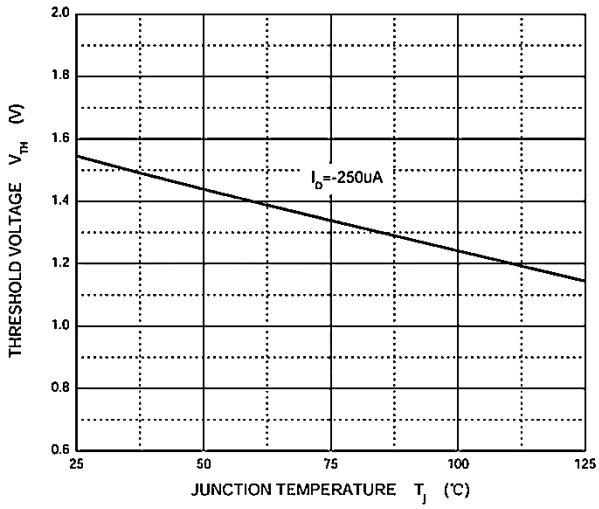
$R_{DS(ON)}$ —— V_{GS}



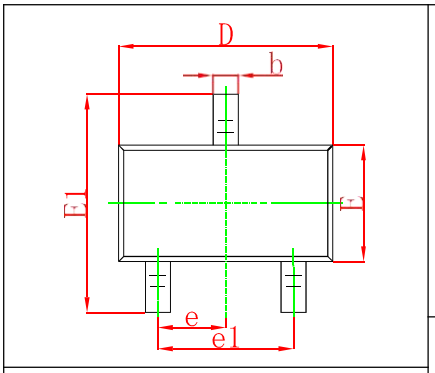
I_S —— V_{SD}

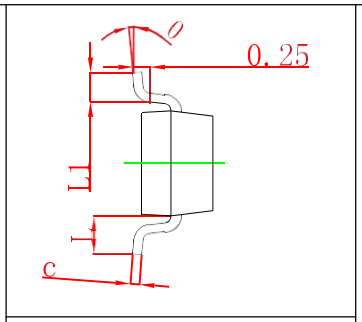


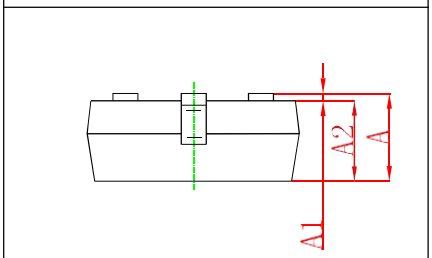
Threshold Voltage

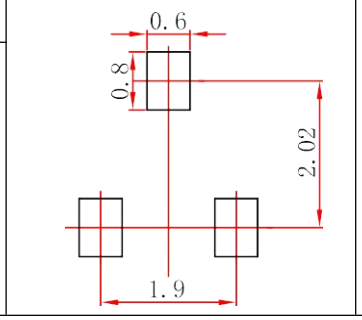


■ SOT23 PACKAGE OUTLINE DIMENSIONS









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°

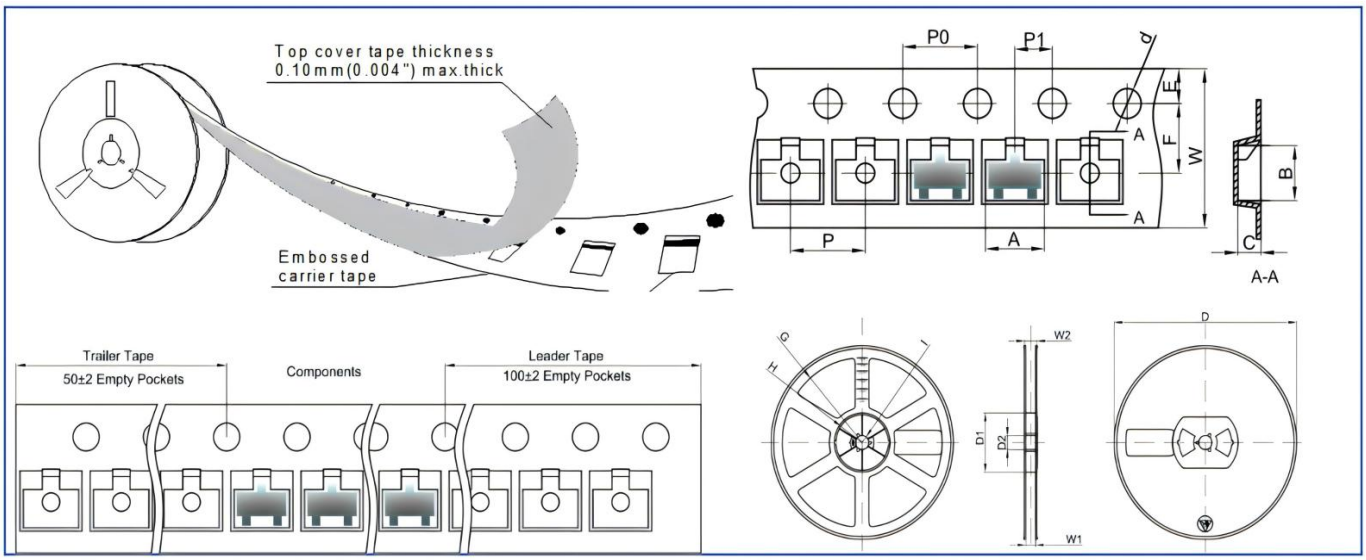
Note:

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	