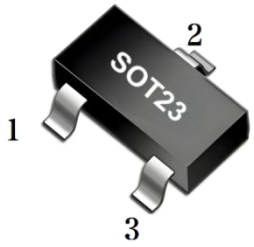
5A, 20V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

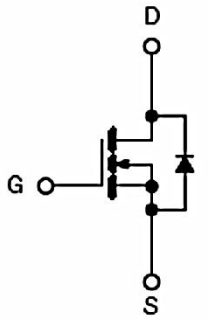
■ DESCRIPTION

The HY2312 uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

The HY2312 meet the ROHS and Green Product requirement with full function reliability approved.



Equivalent Circuit



■ FEATURE

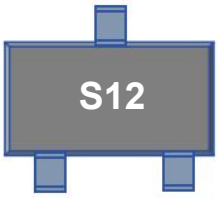
* TrenchFET Power MOSFET

■ PPLICATION

* DC/DC Converters
* Load Switching for Portable Applications

■ MARKING

Type Code: Marking: S12



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

SYMBOL	PARAMETER	VALUE	UNIT
VDS	Drain-Source Voltage	20	V
VGS	Gate Source Voltage	±8	V
ID	Continuous Drain Current (t=5s)	5	A
IDM	Pulsed Drain Current	20	A
IS	Continuous Source-Drain Diode Current	1.04	A
PD	Maximum Power Dissipation (t=5s)	0.35	W
TJ	Junction Temperature	150	°C
TSTG	Storage Temperature	-55~150	°C
RθJA	Thermal Resistance From Junction To Ambient	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.

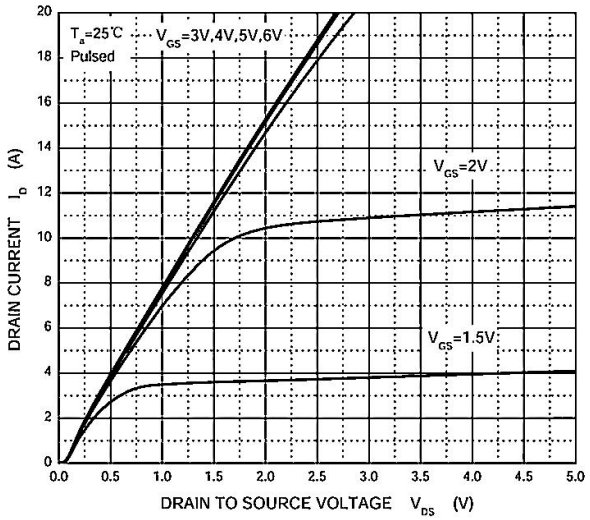
■ ELECTRICAL CHARACTERISTICS (TA=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	IN	TYP	MAX	UNIT
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20			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
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.45	0.7	1	V
Drain-source on-state resistance(Note 1)	$R_{DS(ON)}$	V_{GS}=4.5V,I_D=5A		18	31.8	mΩ
		V_{GS}=2.5V,I_D=4.7A		23	35.6	
		V_{GS}=1.8V,I_D=4.3A		30	41.4	
Forward tranconductance(Note 1)	g_{FS}	V_{DS} =10V, I_D=5A		6		S
DYNAMIC CHARACTERISTICS(Note 2)						
Input Capacitance	C_{ISS}	V_{GS}=0V,V_{DS}=10V,f=1MHz		865		pF
Output Capacitance	C_{OSS}			105		
Reverse Transfer Capacitance	C_{RSS}			55		
Gate resistance	Rg	f =1MHz	0.5		4.8	Ω
Turn-On Delay Time	td(on)	V_{GEN}=5V, R_L=2.2Ω, V_{DD}=10V,R_G=1Ω,I_D=4A			10	ns
Rise Time	tr				20	
Turn-Off Delay Time	td(off)				32	
Fall Time	tf				12	
Drain-source body diode characteristics						
Forward diode voltage	V_{SD}	V_{GS} =0V,I_S=4A		0.75	1.2	V

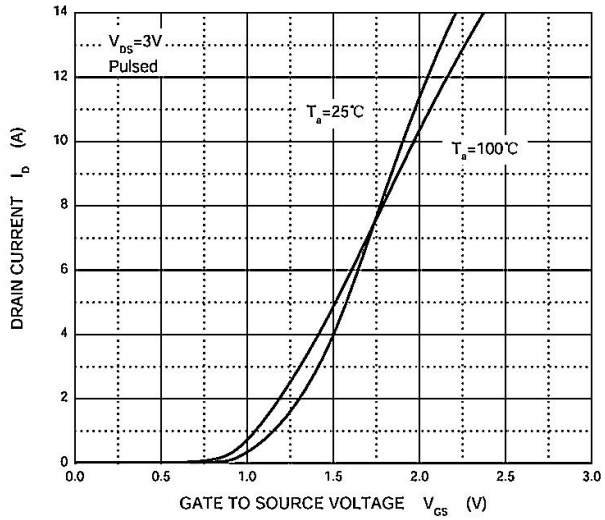
Notes: 1.Pulse Test : pulse width ≤300μs, duty cycle ≤2%
2.These parameters have no way to verify.

■ TYPICAL CHARACTERISTICS

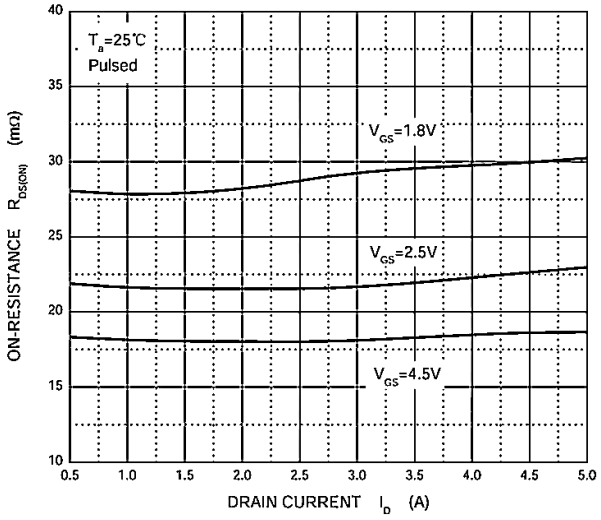
Output Characteristics



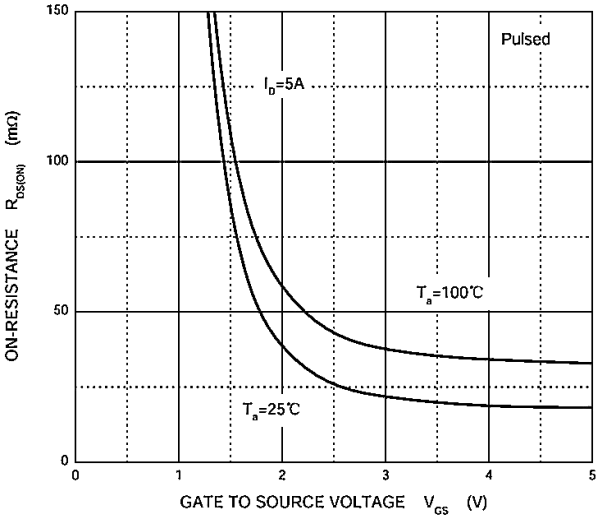
Transfer Characteristics



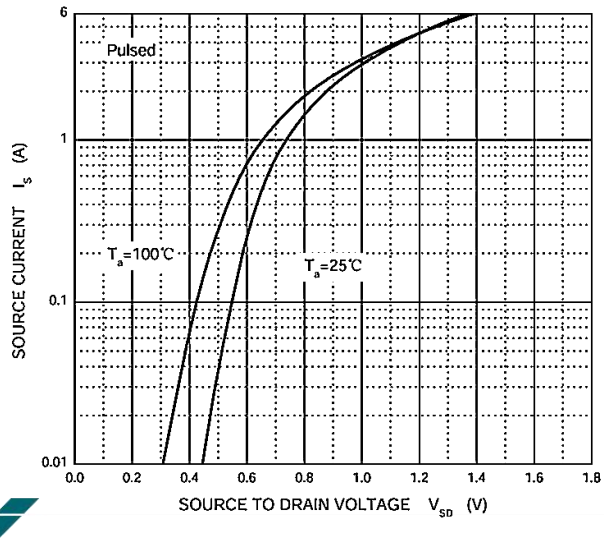
$R_{DS(ON)}$ —— I_D



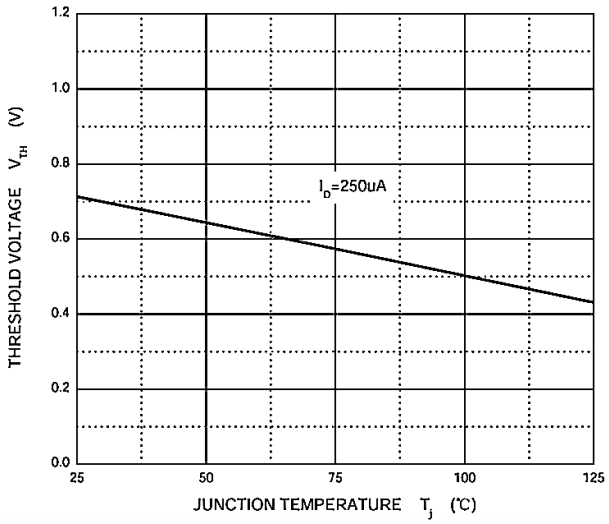
$R_{DS(ON)}$ —— V_{GS}



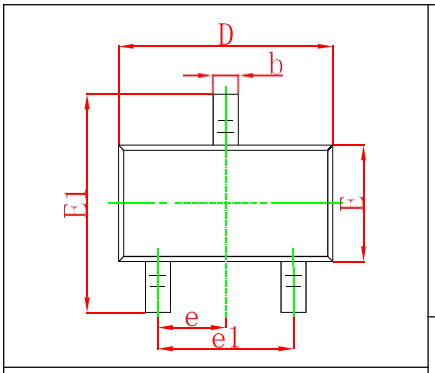
I_S —— V_{SD}

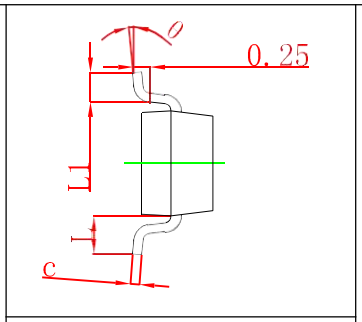


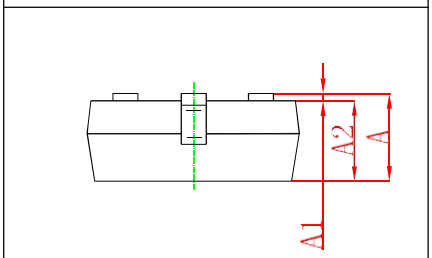
Threshold Voltage

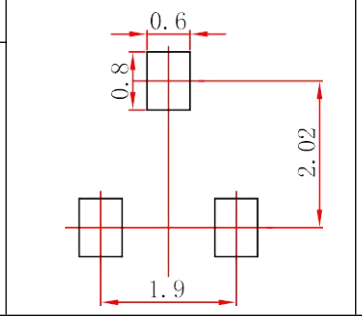


■ SOT23 PACKAGE OUTLINE DIMENSIONS









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°

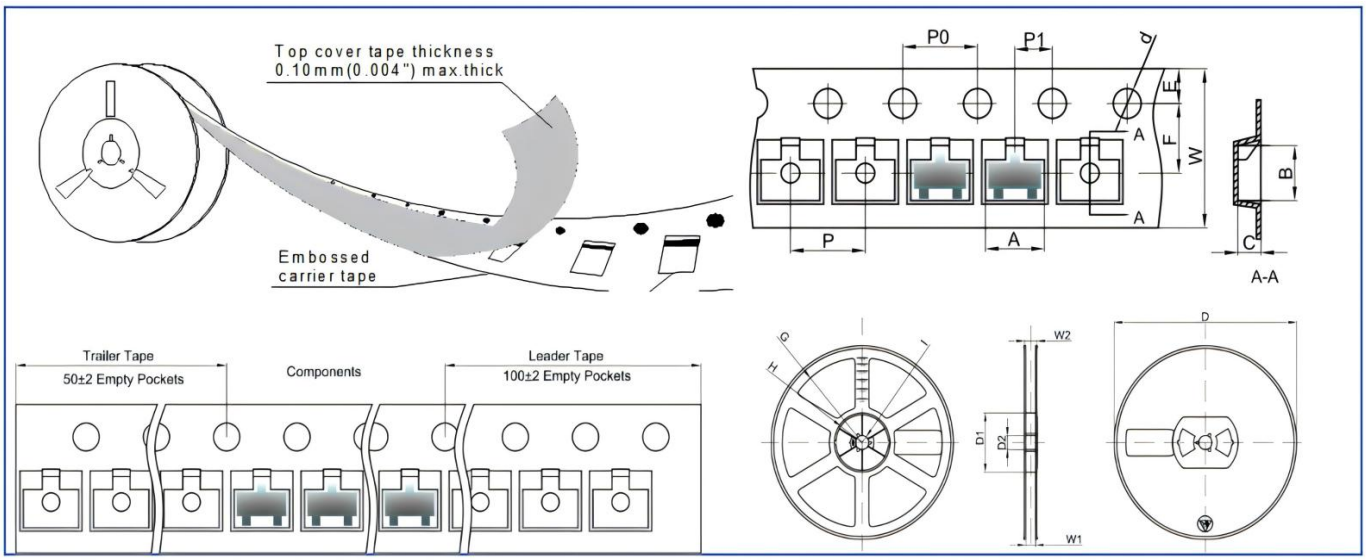
Note:

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	