



HY2304

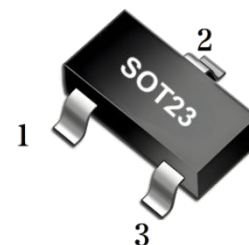
N-CHANNE MOSFET

3.3A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET

DESCRIPTION

The HY2304 is an N-Channel Power MOSFET that can achieve the lowest possible on-resistance, extremely and cost- effectiveness device by using advanced trench technology.

The HY2304 meet the ROHS and Green Product requirement with full function reliability approved.



FEATURE

*TrenchFET Power MOSFET

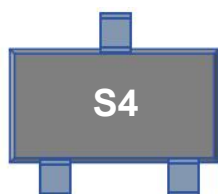
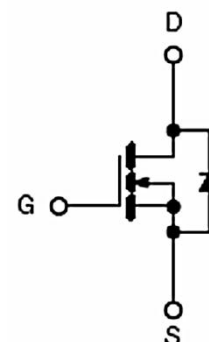
APPLICATION

- * Load Switch for Portable Devices
- * DC/DC Converter

MARKING

Type Code: Marking: S4

Equivalent Circuit



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	3.3	A
IDM	Pulsed Drain Current	15	A
IS	Continuous Source-Drain Diode Current	0.9	A
PD	Maximum Power Dissipation	0.35	W
TJ	Junction Temperature	150	°C
TSTG	Storage Temperature	-55~150	°C
RθJA	Thermal Resistance from Junction 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.



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■ **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	1.55	2.2	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			1	μA
Drain-source on-state resistance(Note1)	R _{DS(ON)}	V _{GS} =10V, I _D =3.2A		37	60	mΩ
		V _{GS} =4.5V, I _D =2.8A		57	75	
Forward transconductance(Note1)	g _{fs}	V _{DS} =4.5V, I _D =2.5A	2.5			S
DYNAMIC(Note 2)						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =15V, f=1MHz		235		pF
Output Capacitance	C _{OSS}			45		
Reverse Transfer Capacitance	C _{RSS}			17		
Total gate charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =3.4A		4.5	6.7	nC
		V _{DS} =15V, V _{GS} =4.5V, I _D =3.4A		2.1	3.2	
Gate-source charge	Q _{gs}			0.85		
Gate-drain charge	Q _{gd}			0.65		
Gate Resistance	R _g	f =1MHz	0.8	4.4	8.8	Ω
Turn-On Delay Time	td(on)	V _{DD} =15V, R _L =5.6Ω, I _D ≈2.7A, V _{GEN} =4.5V, R _g =1Ω		12	20	ns
Rise Time	tr			50	75	
Turn-Off Delay Time	td(off)			12	20	
Fall Time	tf			22	35	
Turn-On Delay Time	td(on)	V _{DD} =15V, R _L =5.6Ω, I _D ≈2.7A, V _{GEN} =10V R _g =1Ω		5	10	
Rise Time	tr			12	20	
Turn-Off Delay Time	td(off)			10	15	
Fall Time	tf			5	10	
DRAIN-SOURCE BODY DIODE CHARACTERISTICS						
Continuous Source-Drain Diode Current	I _s	T _C =25℃			1.4	A
Pulse Diode Forward Current(Note1)	I _{SM}				15	A
Body Diode Voltage	V _{SD}	I _s =2.7A, V _{GS} =0V		0.8	1.2	V

Notes: 1. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

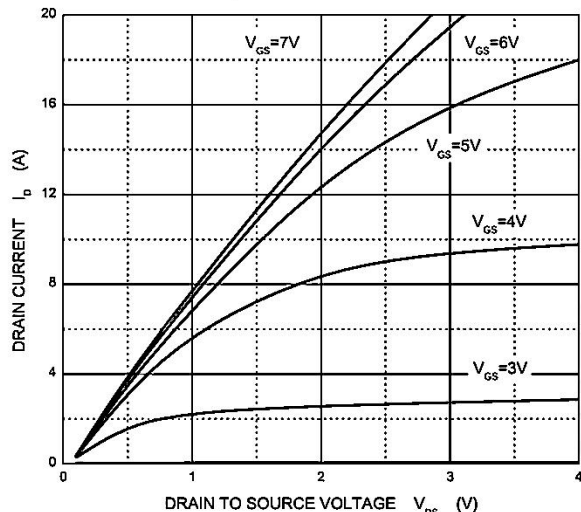


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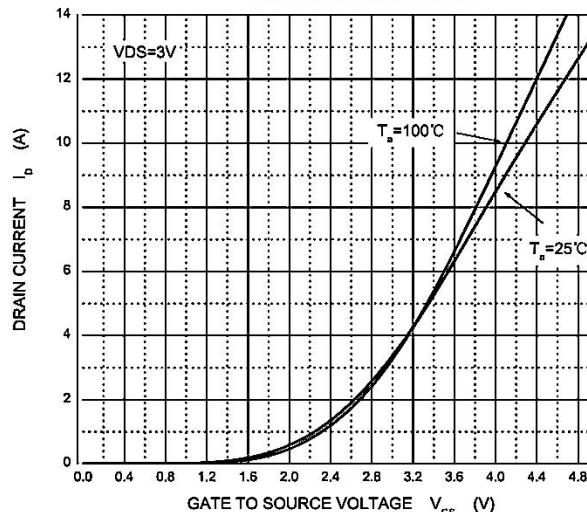
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TYPICAL CHARACTERISTICS

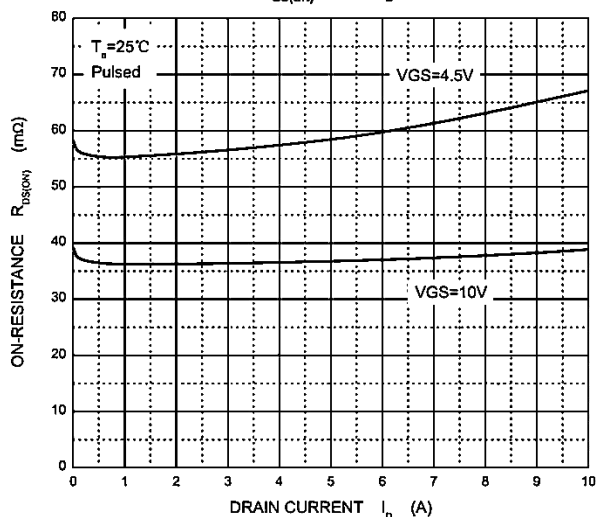
Output Characteristics



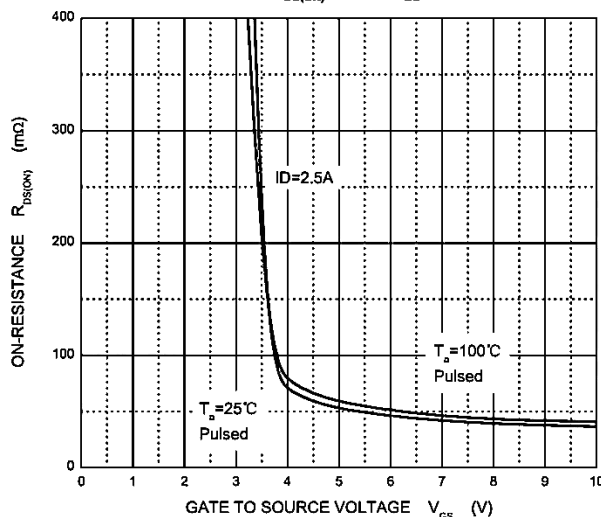
Transfer Characteristics



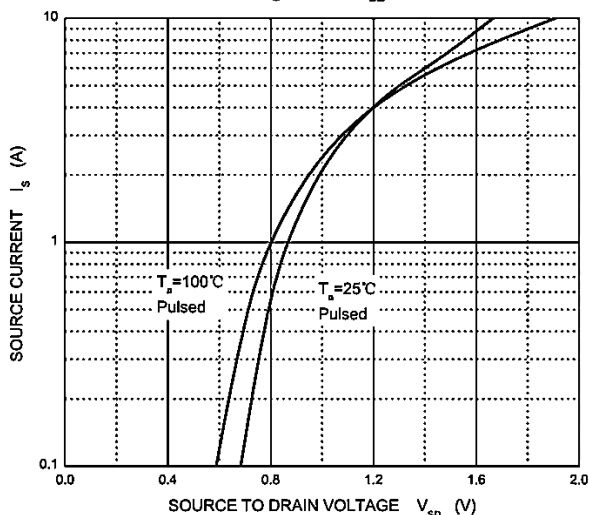
$R_{DS(ON)}$ — I_D



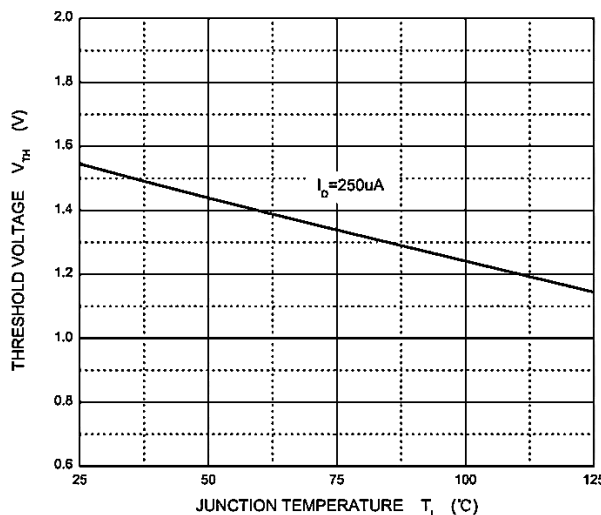
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage

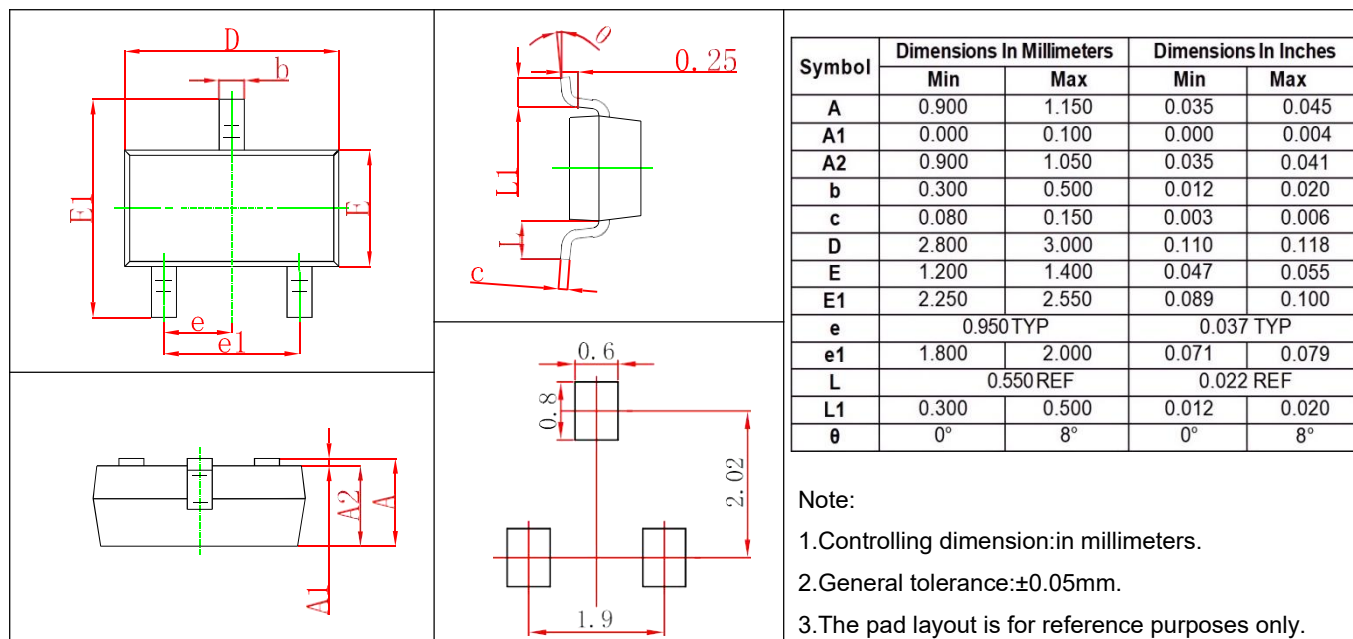




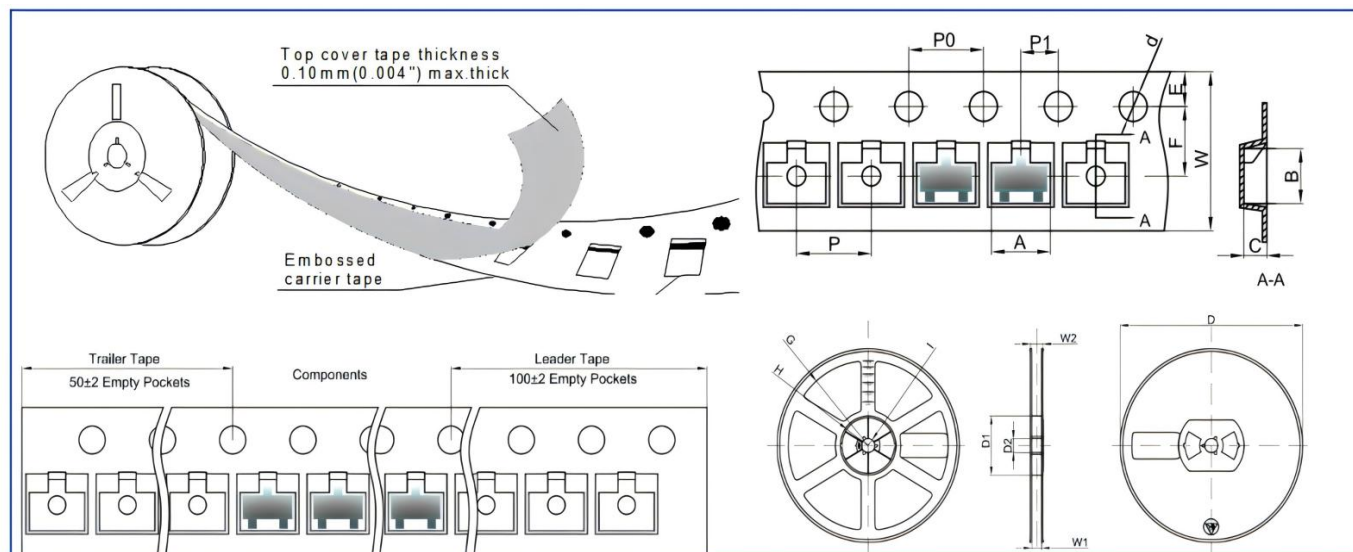
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SOT23 PACKAGE OUTLINE DIMENSIONS



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 Option	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	