BORN SEMICONDUCTOR

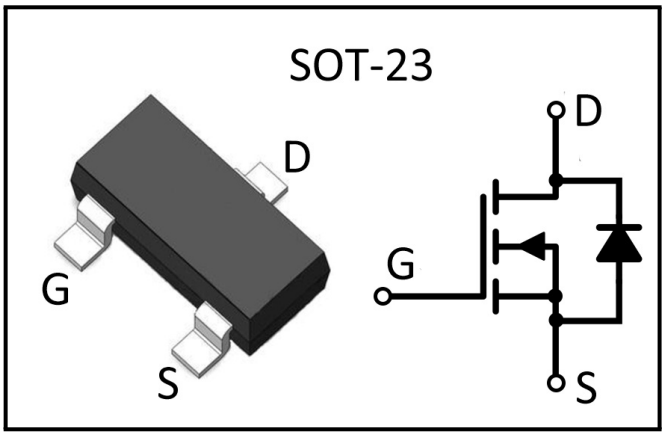
SI2302

N-Channel MOSFET

Features

- V_{DS}=20V
- I_D=3A
- $R_{DS(ON)}$ @V_{GS}=4.5V, TYP=37mΩ
- $R_{DS(ON)}$ @V_{GS}=2.5V, TYP=51mΩ

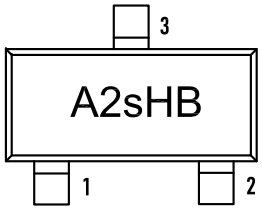
Package



Description

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- SOT-23 for Surface Mount Package.

Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
SI2302	SOT-23	A2sHB	3K	Tape and reel

Absolute Maximum Ratings (@T_A=25°C unless otherwise noted)

Symbol	Parameter		Value	Unit
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current		3	A
I_{DM}	Pulsed Drain Current (1)		12	A
P_D	Maximum Power Dissipation	T_A = 25°C	1	W
		T_A = 75°C	0.8	W
T_J,T_{stg}	Operating Junction and Storage Temperature Range		-55 to + 150	°C
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance (PCB mounted) (2)		100	°C/W
	Junction-to-Ambient Thermal Resistance (PCB mounted) (2)		166	°C/W

Notes:(1)Pulse width limited by maximum junction temperature.

(2)Surface Mounted on FR4 Board, t≤5 sec.

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Revision: 2022-Jan-1-A

SI2302

N-Channel MOSFET

Electrical Characteristics @T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static						
BV_{DS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250uA	20	–	–	V
$R_{DS(on)}$	Drain-Source On-State Resistance (1)	V_{GS} = 4.5V, I_D = 3A	–	37.0	50.0	mΩ
		V_{GS} = 2.5V, I_D = 2.5A	–	51.0	65.0	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	0.45	0.8	1.2	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 16V, V_{GS} = 0V	–	–	1	uA
		V_{DS} = 16V, V_{GS} = 0V, T_J=55°C	–	–	10	
I_{GSS}	Gate Body Leakage	V_{GS} = ±10V, V_{DS} = 0V	–	–	±100	nA
g_{fs}	Forward Transconductance	V_{DS} = 5V, I_D = 3A	–	10	–	S
Dynamic						
Q_g	Total Gate Charge	V_{DS} = 10V	–	5.4	–	nC
Q_{gs}	Gate-Source Charge	I_D = 3A,	–	0.65	–	
Q_{gd}	Gate-Drain Charge	V_{GS} = 4.5V	–	1.6	–	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 10V, R_L = 5.5Ω,	–	12	–	ns
t_r	Turn-On Rise Time	I_D = 3A,	–	36	–	
$t_{d(off)}$	Turn-Off Delay Time	V_{GEN} = 4.5V,	–	34	–	
t_f	Turn-Off Fall Time	R_G = 6Ω	–	10	–	
C_{iss}	Input Capacitance	V_{DS} = 10V,	–	340	–	pF
C_{oss}	Output Capacitance	V_{GS} = 0V,	–	115	–	
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHZ	–	33	–	
Source-Drain Diode						
I_S	Max. Diode Forward Current		–	–	1.6	A
V_{SD}	Diode Forward Voltage	I_S = 1.0A,V_{GS} = 0V,	–	–	1.0	V

Notes:(1)Pulse test pulse width <=300us,duty cycle <= 2%.

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SI2302

N-Channel MOSFET

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

Figure 1 :Power Dissipation

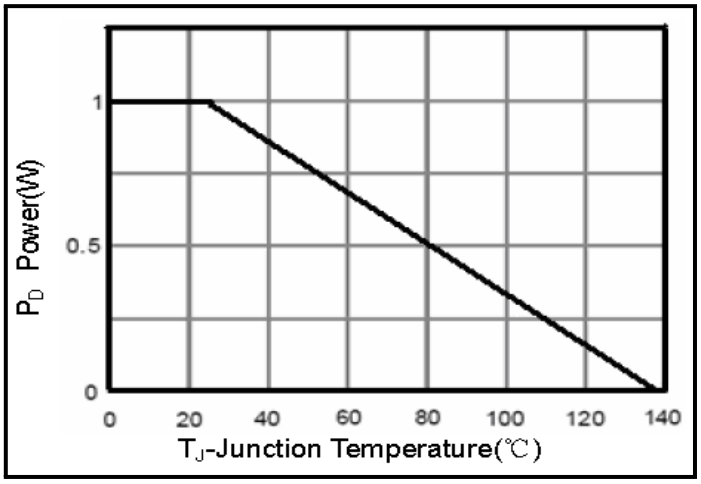


Figure 2 :Drain Current

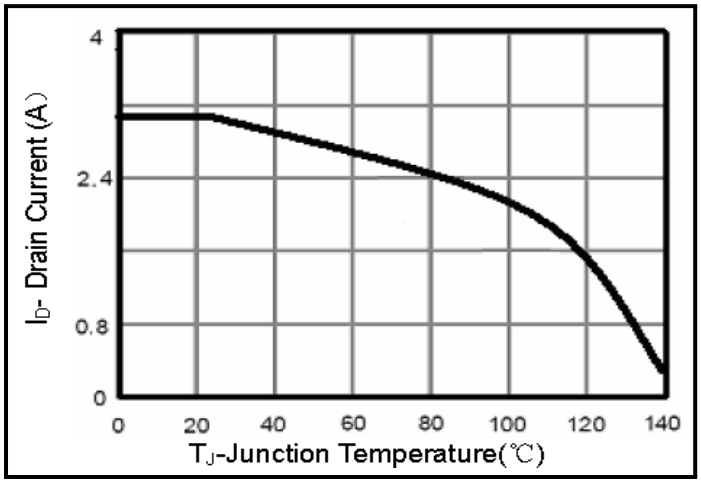


Figure 3 :Output Characteristics

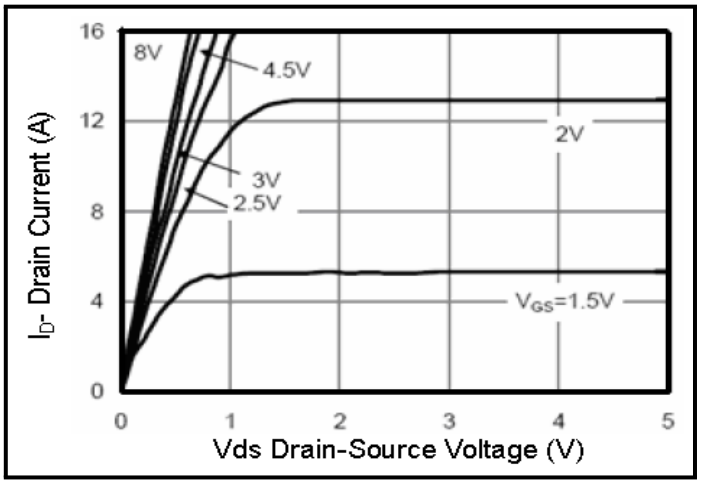


Figure 4 :Drain-Source On-Resistance

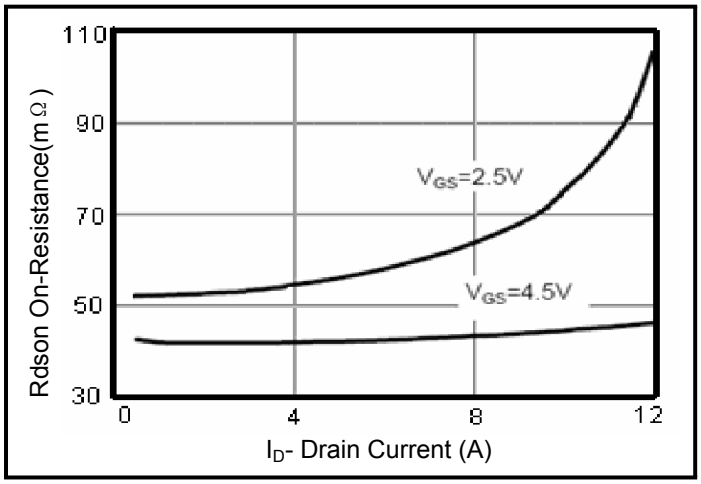


Figure 5 :Transfer Characteristics

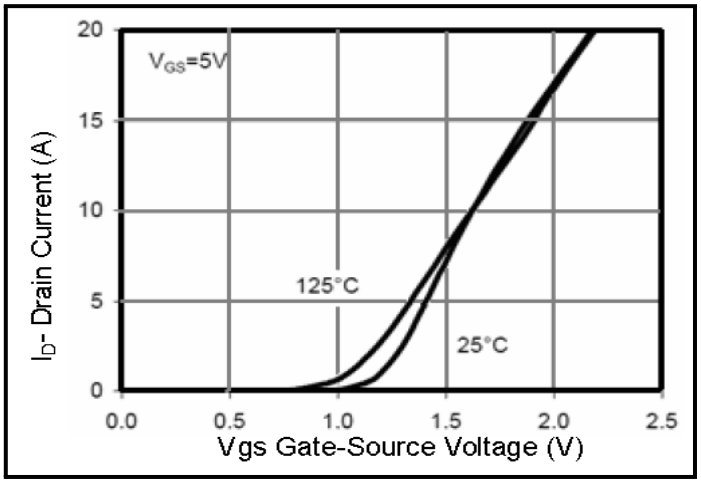
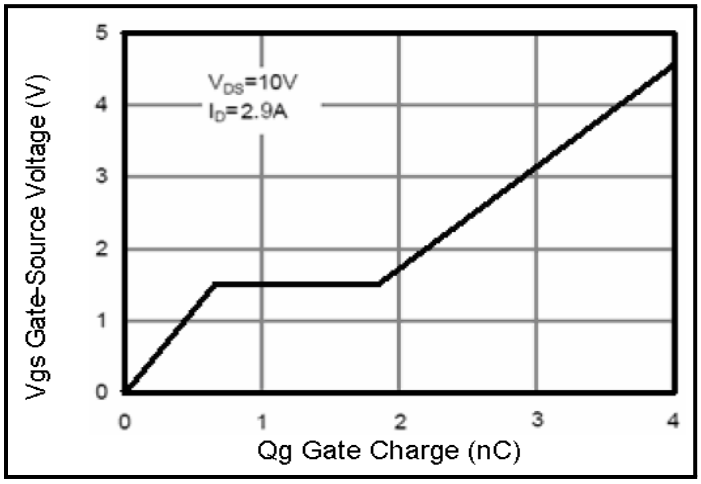


Figure 6 :Gate Charge



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Figure 7 :Rdson vs V_{gs}

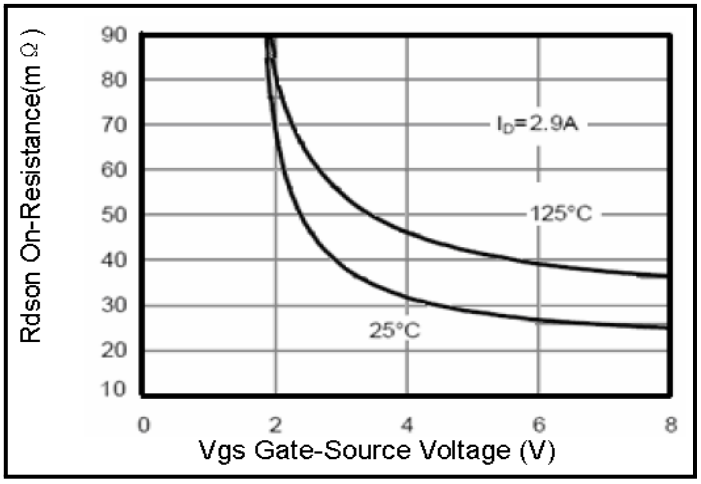
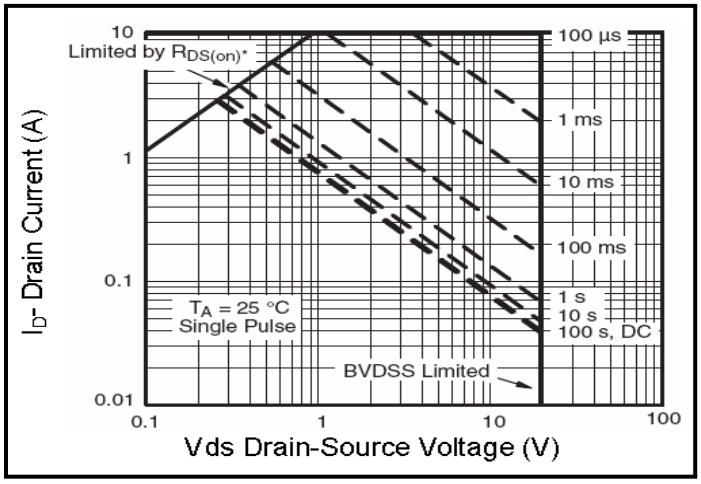


Figure 8 :Safe Operation Area



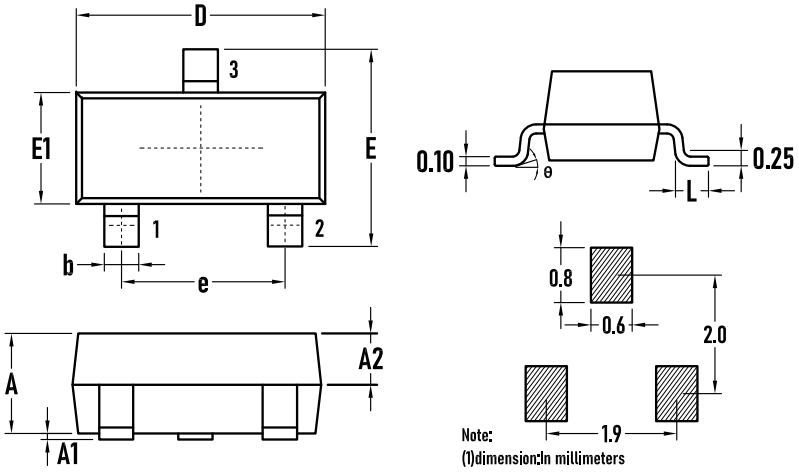
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SI2302

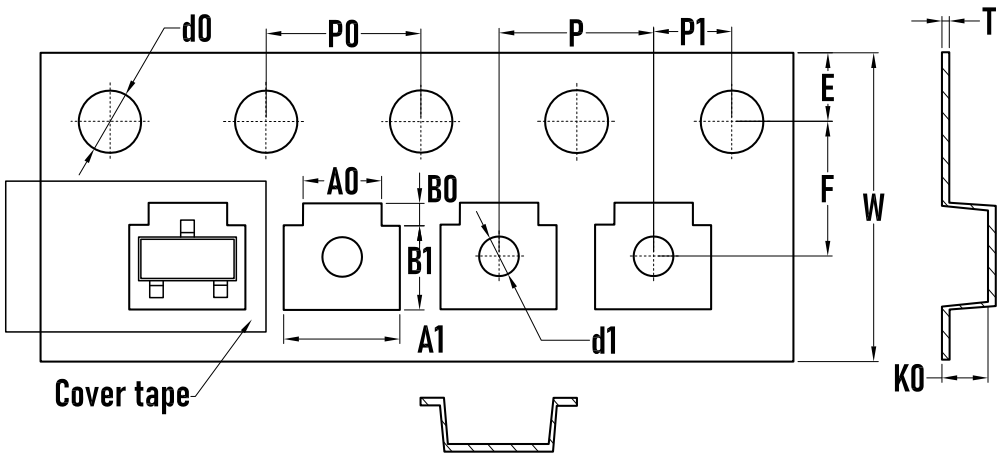
N-Channel MOSFET

Outline Drawing - SOT-23



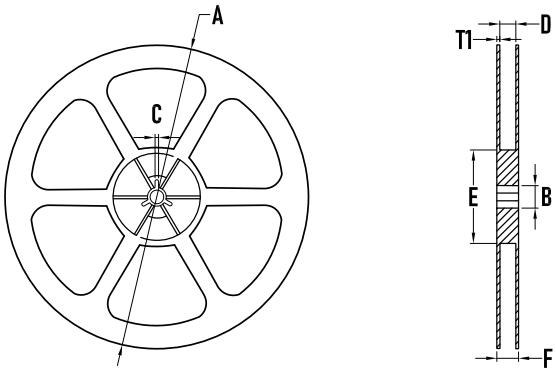
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.01	–	0.10
A2	0.50	0.60	0.70
D	2.80	2.90	3.00
b	0.25	0.35	0.45
E	2.10	2.30	2.50
E1	1.20	1.30	1.40
e	1.80	1.90	2.00
L	0.25	0.35	0.45
θ	0	–	8°

Packaging Tape - SOT-23



SYMBOL	MILLIMETER
A0	2.10±0.10
A1	3.10±0.10
B0	0.65±0.10
B1	2.75±0.10
d0	1.55±0.10
d1	1.00±0.05
E	1.75±0.10
F	3.50±0.10
K0	1.10±0.10
P	4.00±0.10
P0	4.00±0.10
P1	2.00±0.10
W	8.00±0.30
T	0.20 ±0.05

Packaging Reel



SYMBOL	MILLIMETER
A	177.8±0.2
B	3.1
C	13.50
D	9.6±0.3
E	75±0.2
F	12.3±0.3
T1	1.0±0.2
Quantity	3000PCS

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