BORN SEMICONDUCTOR

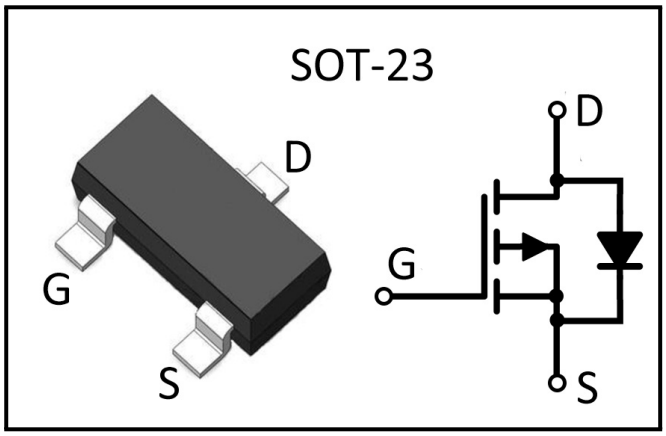
SI2301

P-Channel MOSFET

Features

- V_{DS}=-20V
- I_D=-3A
- $R_{DS(ON)}$ @V_{GS}=-4.5V, TYP=85mΩ
- $R_{DS(ON)}$ @V_{GS}=-2.5V, TYP=110mΩ

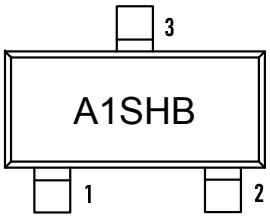
Package



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
SI2301	SOT-23	A1SHB	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		±12	V
I_D	Continuous Drain Current		-3	A
I_{DM}	Pulsed Drain Current (1)		-10	A
P_D	Maximum Power Dissipation	T_A = 25°C	1.25	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) (3)		166	°C/W

Notes:(1) Pulse width limited by maximum junction temperature.
(2) Surface Mounted on FR4 Board, t≤5 sec.
(3) Surface Mounted on FR4 Board.

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SI2301

P-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 = -3.0A	–	85.0	110.0	mΩ
		V_{GS} = -2.5V, I_D = -2.0A	–	110	140.0	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250uA	-0.4	-0.65	-1	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -20V, 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 = -2.8A	–	6.5	–	S
Dynamic						
Q_g	Total Gate Charge	V_{DS} = -6V	–	5.8	10	nC
Q_{gs}	Gate-Source Charge	I_D = -2.3A,	–	0.85	–	
Q_{gd}	Gate-Drain Charge	V_{GS} = -4.5V	–	1.7	–	
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = -6V, R_L = 6Ω,	–	13	25	ns
t_r	Turn-On Rise Time	I_D = -1A,	–	36	60	
$t_{d(off)}$	Turn-Off Delay Time	V_{GEN} = -4.5V,	–	42	70	
t_f	Turn-Off Fall Time	R_G = 6Ω	–	34	60	
C_{iss}	Input Capacitance	V_{DS} = -6V,	–	415	–	pF
C_{oss}	Output Capacitance	V_{GS} = 0V,	–	223	–	
C_{rss}	Reverse Transfer Capacitance	f = 1.0MHZ	–	87	–	
Source-Drain Diode						
I_S	Max. Diode Forward Current		–	–	-1.6	A
V_{SD}	Diode Forward Voltage	I_S = -1.0A,V_{GS} = 0V,	–	-0.8	-1.2	V

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

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SI2301

P-Channel MOSFET

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

Figure 1 :Output Characteristics

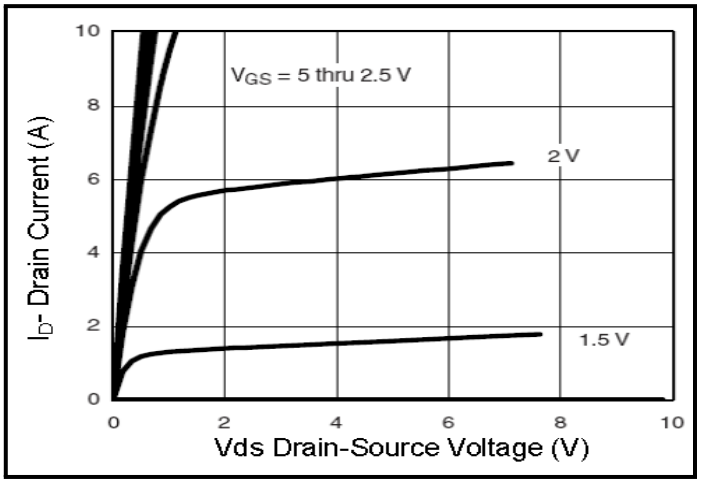


Figure 2 :Drain-Source On-Resistance

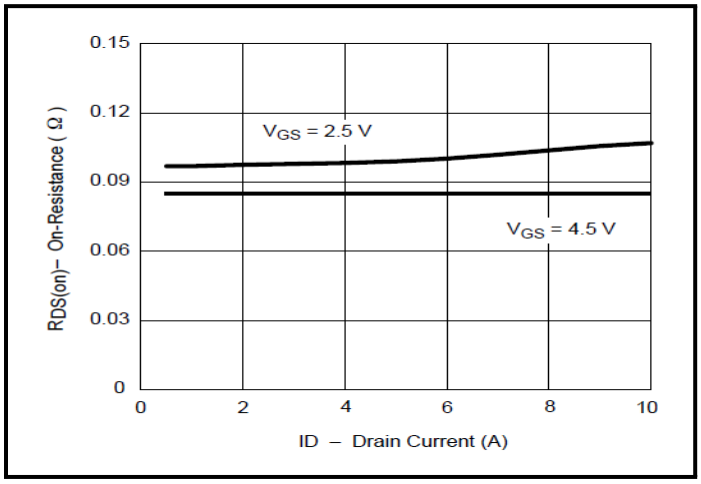


Figure 3 :Transfer Characteristics

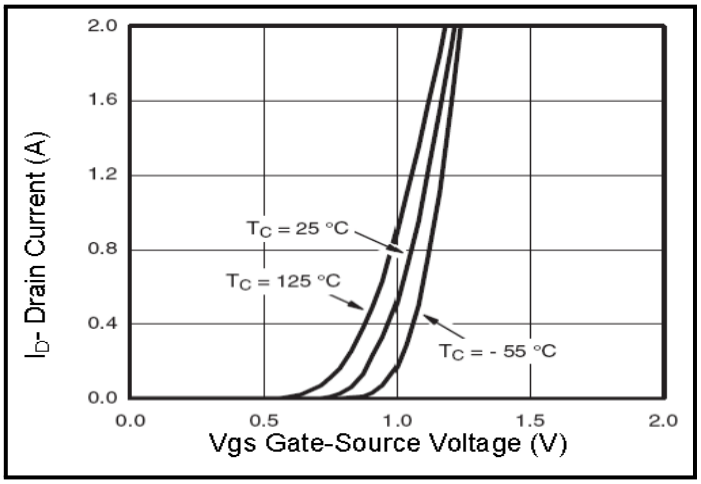


Figure 4 :Drain-Source On-Resistance

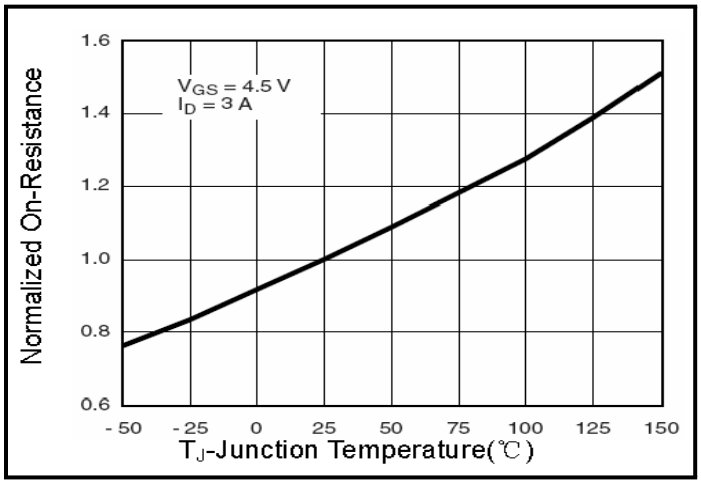


Figure 5 :Rdson vs V_{gs}

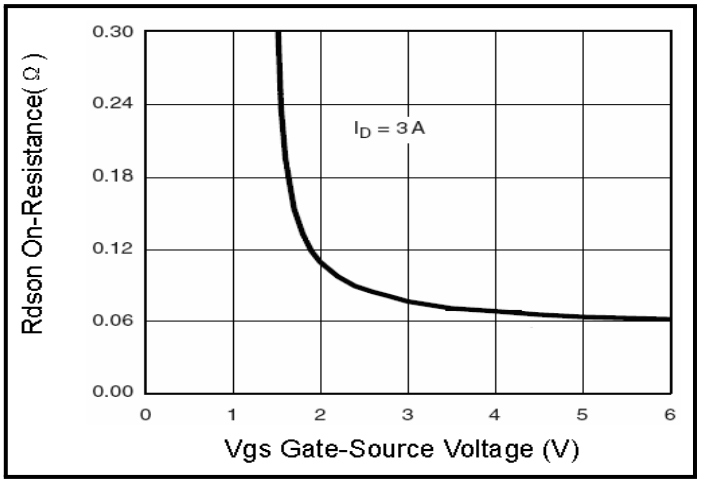
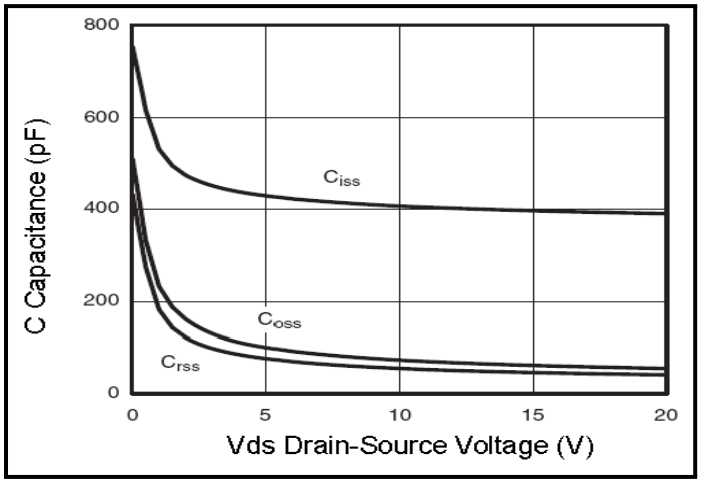


Figure 6 : Capacitance vs V_{ds}



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Figure 7 :Gate Charge

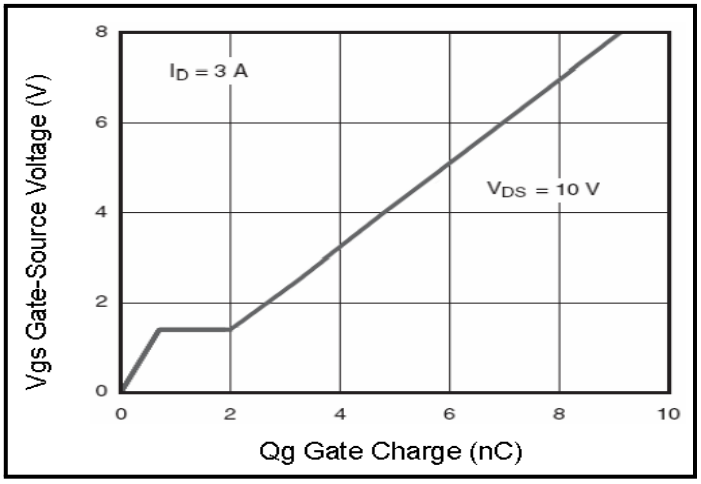
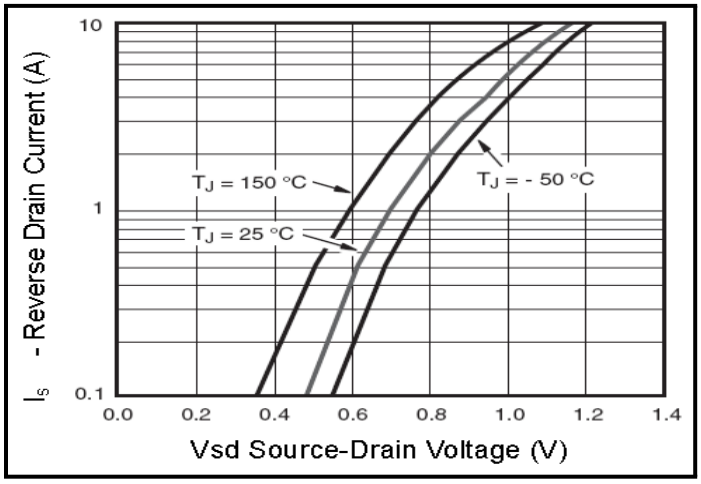


Figure 8 :Source- Drain Diode Forward



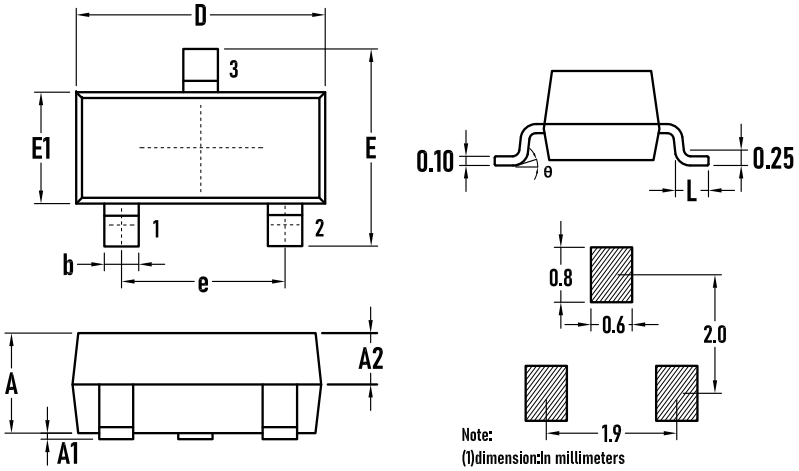
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SI2301

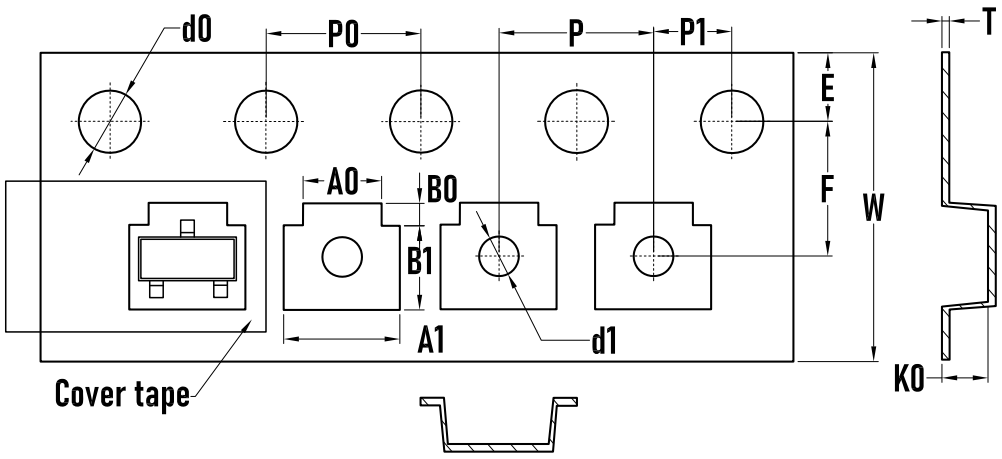
P-Channel MOSFET

Outline Drawing - SOT-23



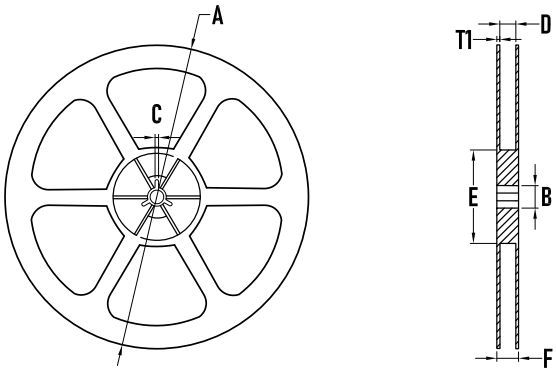
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.01	–	0.10
A2	0.50	0.60	0.70
D	2.80	2.90	3.00
b	0.25	0.35	0.45
E	2.10	2.30	2.50
E1	1.20	1.30	1.40
e	1.80	1.90	2.00
L	0.25	0.35	0.45
θ	0	–	8°

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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