

SI2300

N-Channel MOSFET

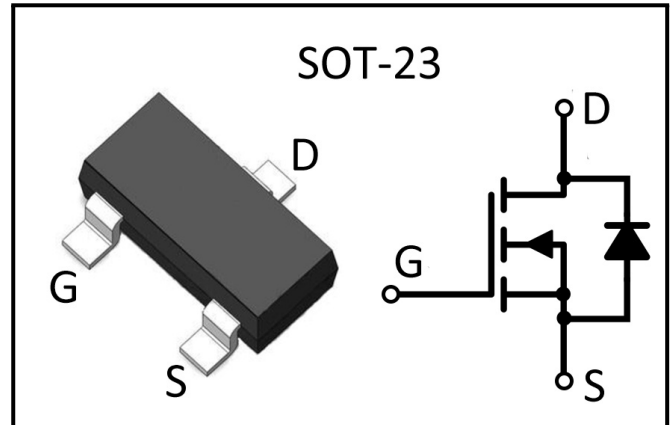
Features

- $V_{DS}=20V$
- $I_D=3.6A$
- $R_{DS(ON)}@V_{GS}=4.5V$, TYP=30m Ω
- $R_{DS(ON)}@V_{GS}=2.5V$, TYP=35m Ω

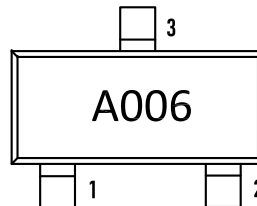
Description

- Super High dense cell design for extremely low $R_{DS(ON)}$
- Reliable and Rugged.
- SOT-23 for Surface Mount Package.

Package



Marking



Ordering information

Order code	Package	Marking	Base qty	Delivery mode
SI2300	SOT-23	A006	3K	Tape and reel

Absolute Maximum Ratings (@ $T_A=25^{\circ}C$ 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		3.6	A
I _{DM}	Pulsed Drain Current ⁽¹⁾		8	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 _{θJA}	Junction-to-Ambient Thermal Resistance (PCB mounted) ⁽²⁾		78	°C/W

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

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



SI2300

N-Channel MOSFET

Electrical Characteristics @T_A=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static ⁽³⁾						
BV _{DS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250uA	20	–	–	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} = 2.5V, I _D = 3.1A	–	35.0	60.0	mΩ
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} = 4.5V, I _D = 3.6A	–	30.0	55.0	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	0.4	0.65	1.5	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 20V, V _{GS} = 0V	–	–	1	uA
I _{GSS}	Gate Body Leakage	V _{GS} = ±12V, V _{DS} = 0V	–	–	±100	nA
g _{fs}	Forward Transconductance	V _{DS} = 5V, I _D = 4.2A	–	5	–	S
Dynamic ⁽⁴⁾						
Q _g	Total Gate Charge	V _{DS} = 10V I _D = 3.6A, V _{GS} = 4.5V	–	5.4	–	nC
Q _{gs}	Gate-Source Charge		–	0.65	–	
Q _{gd}	Gate-Drain Charge		–	1.5	–	
t _{d(on)}	Turn-On Delay Time	V _{DD} = 10V, R _G = 6Ω, I _D = 1A, V _{GS} = 4.5V, R _L = 5.5Ω	–	12	–	ns
t _r	Turn-On Rise Time		–	36	–	
t _{d(off)}	Turn-Off Delay Time		–	34	–	
t _f	Turn-Off Fall Time		–	10	–	
C _{iss}	Input Capacitance	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHZ	–	340	–	pF
C _{oss}	Output Capacitance		–	115	–	
C _{rss}	Reverse Transfer Capacitance		–	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:(3)Short duration test pulse used to minimize self-heating effect.

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



Typical Performance Characteristics($T_J = 25^\circ\text{C}$, unless otherwise noted)

Figure 1 :Output Characteristics

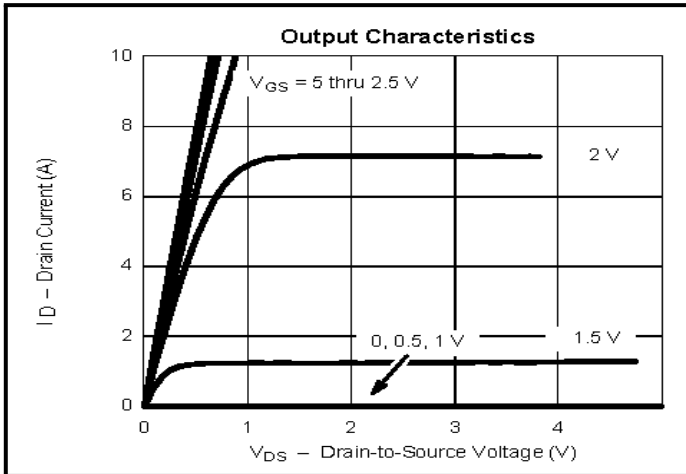


Figure 2 :Transfer Characteristics

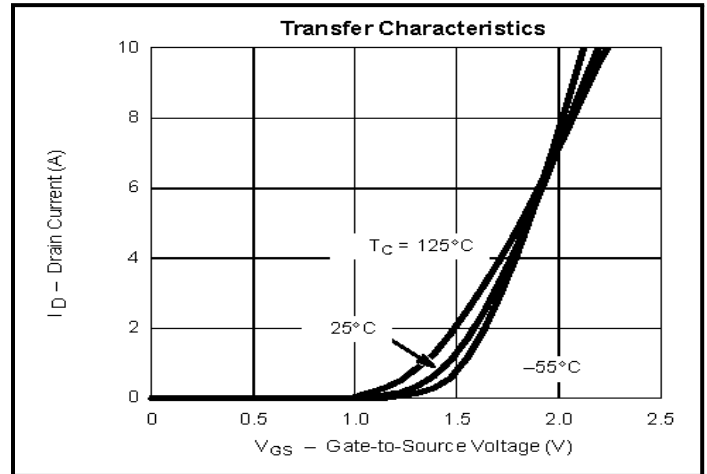


Figure 3 :On-Resistance vs. Drain Current

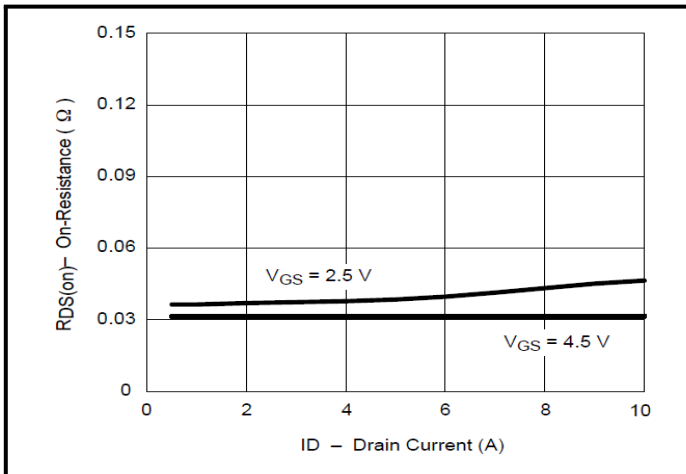


Figure 4 :Capacitance

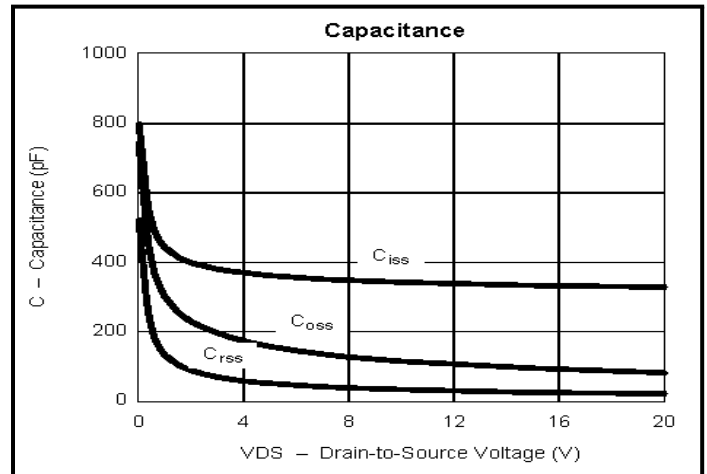


Figure 5 :Gate Charge

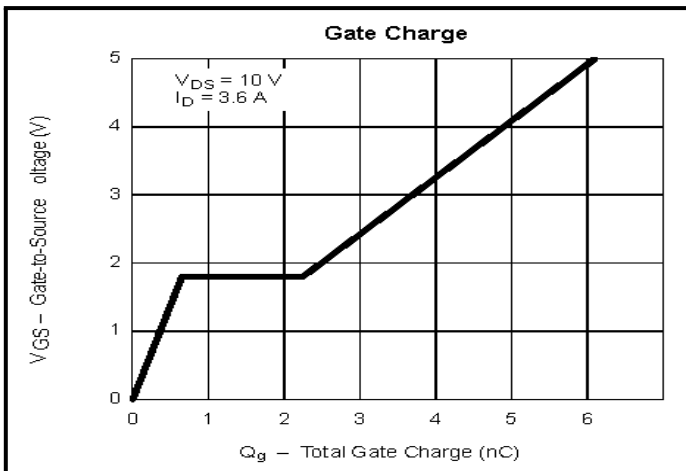
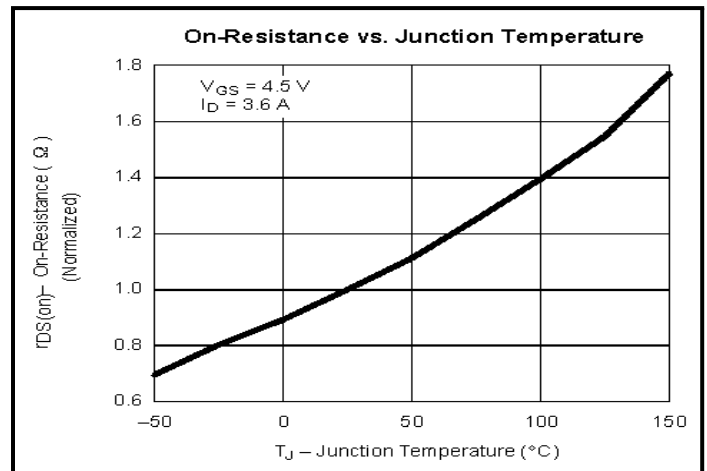


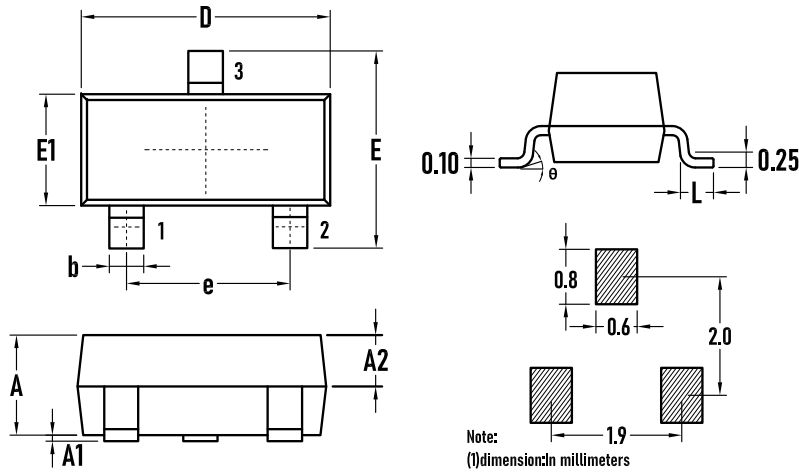
Figure 6 : On-Resistance vs. Junction Temperature



SI2300

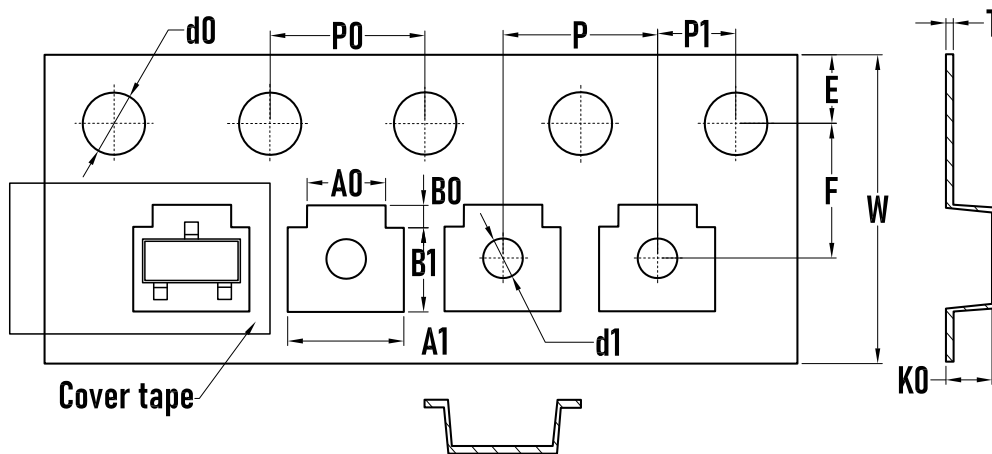
N-Channel MOSFET

Outline Drawing - SOT-23



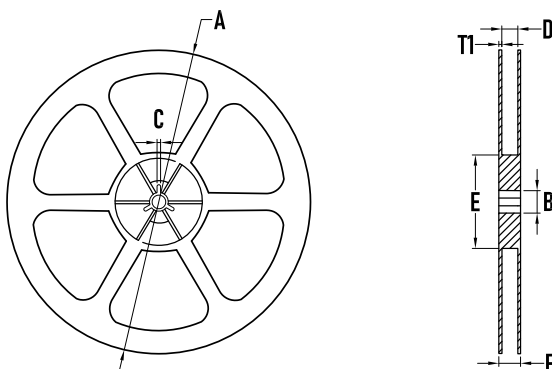
SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.90	1.00	1.10
A1	0.01	—	0.10
A2	0.50	0.60	0.70
D	2.80	2.90	3.00
b	0.25	0.35	0.45
E	2.10	2.30	2.50
E1	1.20	1.30	1.40
e	1.80	1.90	2.00
L	0.25	0.35	0.45
θ	0	—	8°

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

**BORN SEMICONDUCTOR, INC. ALL
RIGHT RESERVED**

Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information.

Revision: 2022-Jan-1-A

