

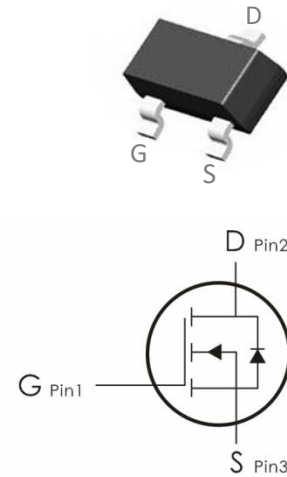
SDescription:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=20V, I_D=5.2A, R_{DS(ON)}<30m\ \Omega @V_{GS}=4.5V$ (Typ: $24m\ \Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.
- 6) MSL3



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DO2300B	2300B	SOT-23	3000 pcs/Reel

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current ¹	5.2	A
	Continuous Drain Current- $T_A=100^\circ\text{C}$ ¹	3.6	
I_{DM}	Pulsed Drain Current ²	20.8	
P_D	Power Dissipation	0.93	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	135	$^\circ\text{C}/\text{W}$

Electrical Characteristics: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	20	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=20V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	0.5	0.6	1	V
$R_{DS(on)}$	Drain-Source On Resistance ³	$V_{GS}=4.5V, I_D=6A$	---	24	30	$\text{m}\Omega$
		$V_{GS}=2.5V, I_D=2.5A$	---	29	35	$\text{m}\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1\text{MHz}$	---	400	---	pF
C_{oss}	Output Capacitance		---	150	--	
C_{rss}	Reverse Transfer Capacitance		---	60	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=10V, I_D=1A,$ $R_{ENG}=6\ \Omega, V_{GS}=4.5V$	---	14.5	---	ns
t_r	Rise Time		---	46	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	52	---	ns
t_f	Fall Time		---	39	---	ns
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=10V,$ $I_D=2.8A$	---	11	---	nC
Q_{gs}	Gate-Source Charge		---	1.6	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	2.7	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=2.8A$	---	---	1.3	V
I_S	Continuous Drain Current	$V_D=V_G=0V$	---	---	5.2	A
I_{SM}	Pulsed Drain Current		---	---	20.8	A

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

Typical Characteristics: ($T_A=25^\circ\text{C}$ unless otherwise noted)

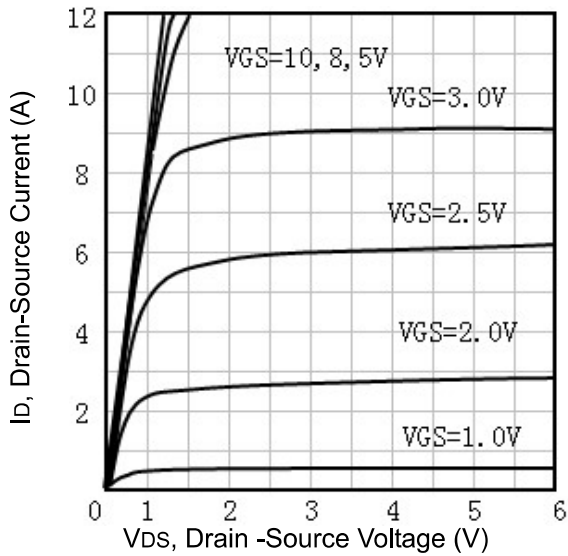


Fig1. Typical Output Characteristics

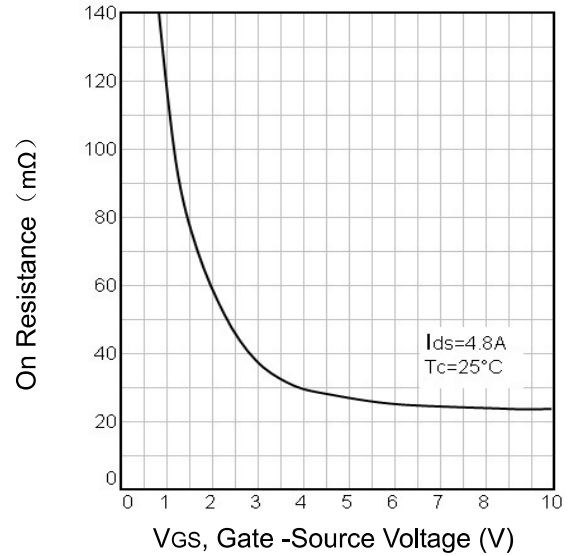


Fig2. Typical Transfer Characteristics

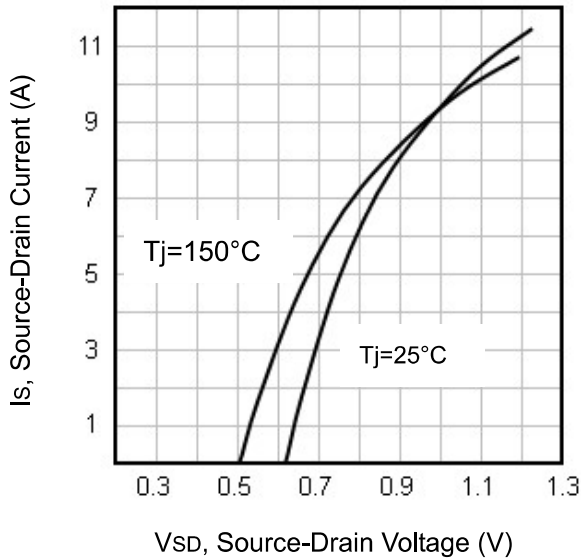


Fig7. Typical Source-Drain Diode Forward Voltage

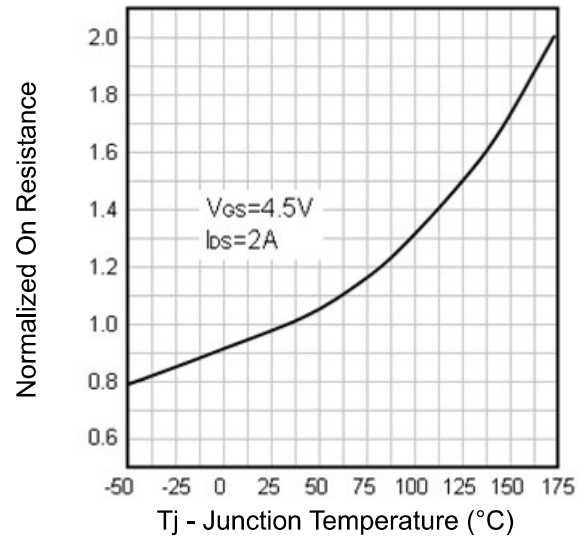


Fig4. Normalized On-Resistance Vs. Temperature

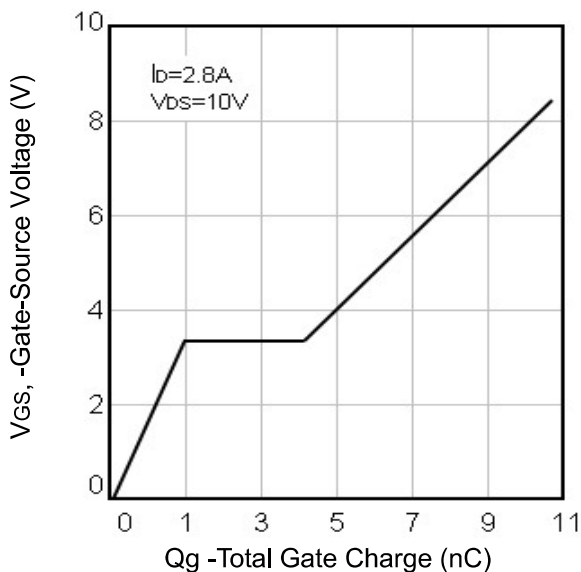


Fig5. Typical Gate Charge Vs. Gate-Source Voltage

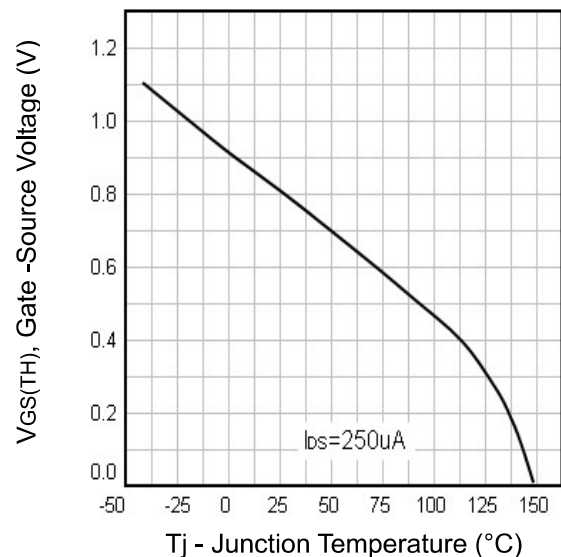
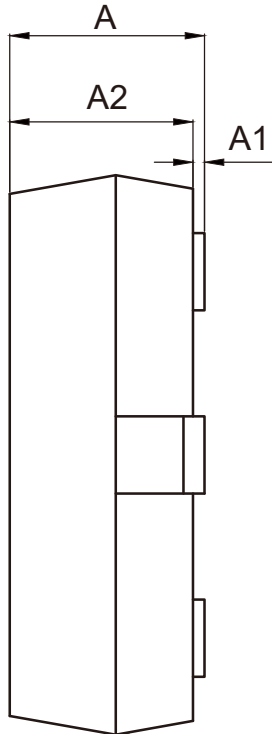
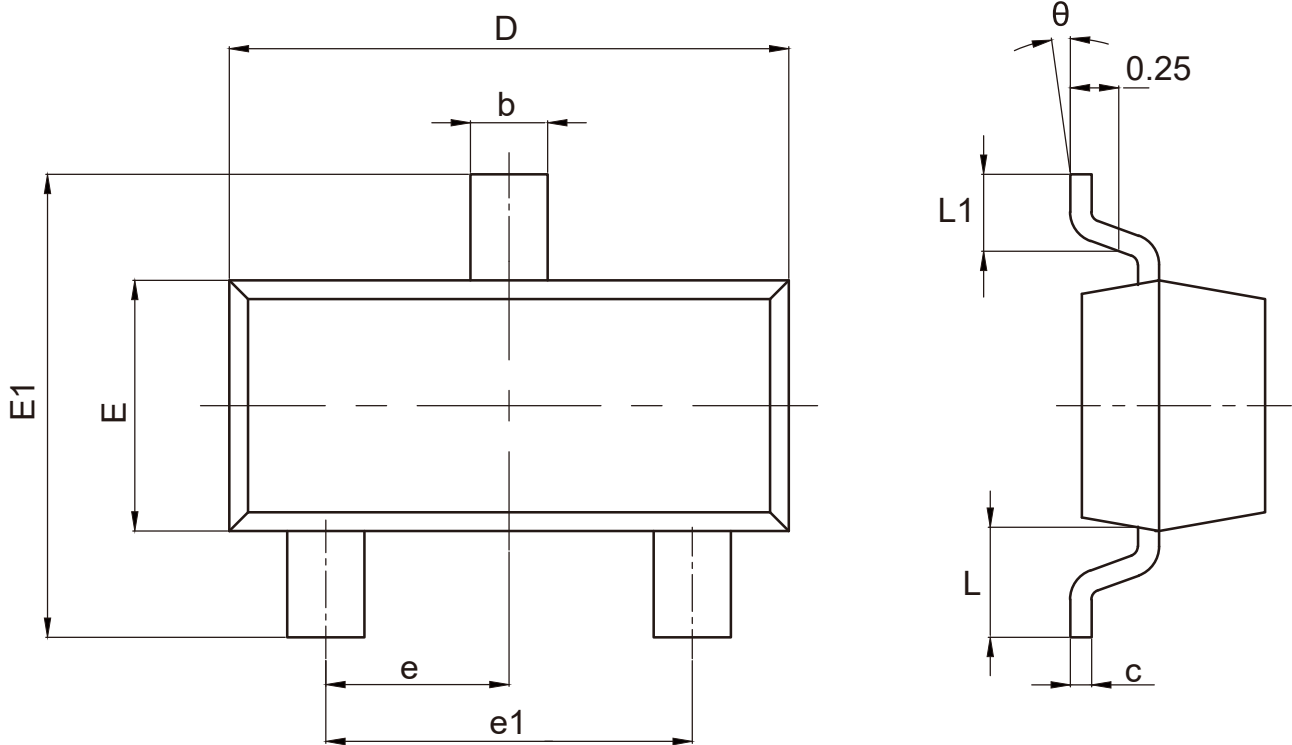


Fig6. Threshold Voltage Vs. Temperature

SOT-23 Package Outline Data

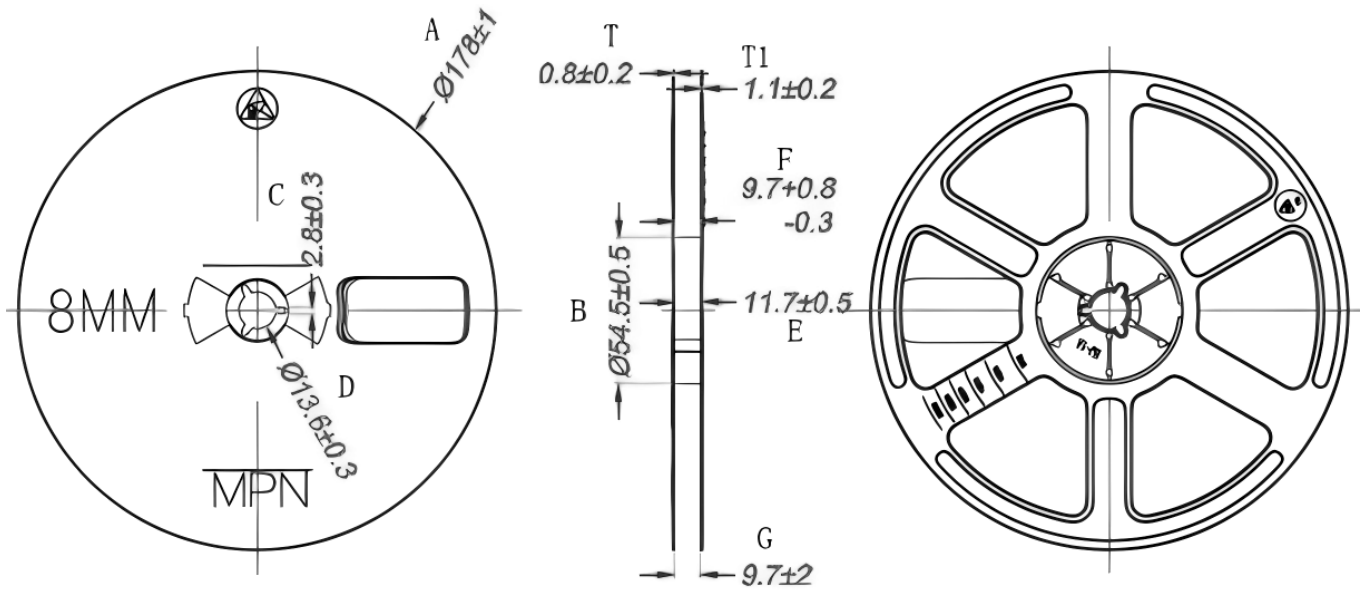


COMMON DIMENSIONS			
CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	0.900	--	1.150
A1	0.000	--	0.100
A2	0.900	--	1.050
c	0.100	--	0.200
b	0.300	0.400	0.500
D	2.800	2.900	3.000
E	1.200	--	1.400
E1	2.250	--	2.550
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.550REF		
L1	0.300	0.400	0.500
θ	0°	--	8°

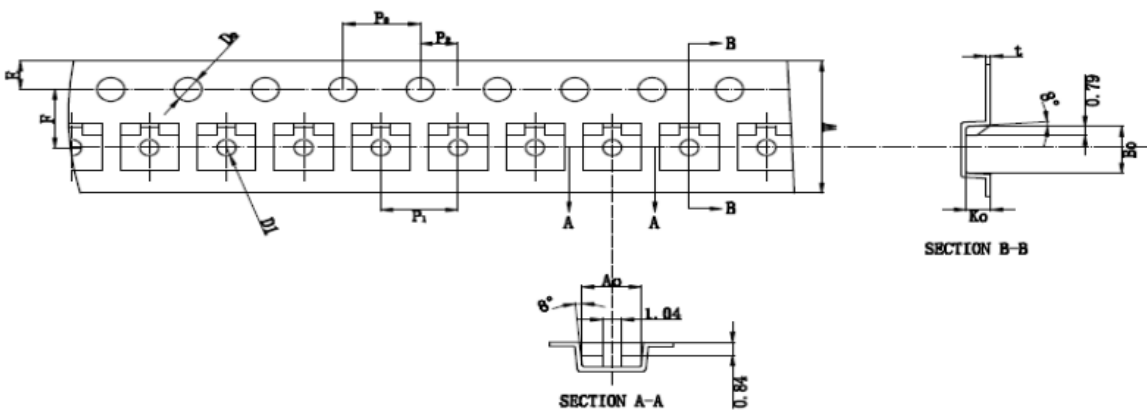
Unit:mm

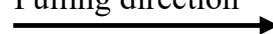
Tape & Reel Information

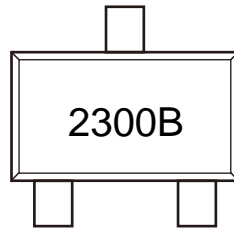
Dimensions in mm



PKG TYPE	W	P	E	F	D	D1	Po	Po10	P2	A0	B0	K0	T
SOT-23	8.00	4.00	1.75	3.50	1.55	1.00	4.00	40.00	2.00	3.17	2.77	1.28	0.20
Tolerance	+0.3/-0.1	± 0.1	± 0.1	± 0.05	± 0.1	± 0.1	± 0.1	± 0.2	± 0.05	± 0.1	± 0.1	± 0.1	± 0.03




Pulling direction 

Marking Information:**Previous Version**

Version	Date	Subjects (major changes since last revision)
2.0	2025-03-11	Release of final version

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