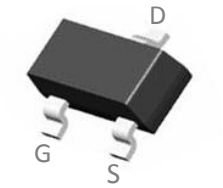
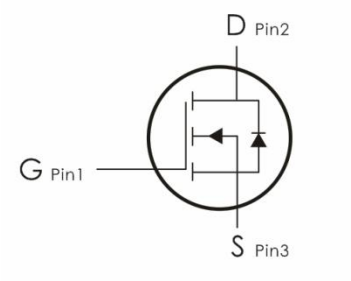
SDescription：

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=3A,$R_{DS(ON)}$<42mΩ @V_{GS}=4.5V（Typ：35mΩ）
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity 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
DO2302D-Q	2302D	SOT-23	3000 pcs/Reel

Absolute Maximum Ratings：(T_A=25℃ 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]	3	A
	Continuous Drain Current-T_A=100℃[1]	2.1	
I_{DM}	Pulsed Drain Current[2]	12	
P_D	Power Dissipation	1.1	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	113.5	℃/W

Electrical Characteristics: (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	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}=±12V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	0.5	0.7	1	V
$R_{DS(ON)}$	Drain-Source On Resistance[3]	V_{GS}=4.5V,I_D=3A	---	35	42	mΩ
		V_{GS}=2.5V,I_D=2A	---	46	60	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	---	190	---	pF
C_{oss}	Output Capacitance		---	34	--	
C_{rss}	Reverse Transfer Capacitance		---	26	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=10V, R_{ENG}=3Ω ,V_{GS}=10V	---	6.8	---	ns
t_r	Rise Time		---	57	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	14	---	ns
t_f	Fall Time		---	53	---	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=10V, I_D=3A	---	3.5	---	nC
Q_{gs}	Gate-Source Charge		---	0.8	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	0.7	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=3A	---	---	1.2	V
I_S	Continuous Drain Current	V_D=V_G=0V	---	---	2.5	A
I_{SM}	Pulsed Drain Current		---	---	10	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≤300μs, Duty Cycle≤0.5%

Typical Characteristics: (T_A=25℃ unless otherwise noted)

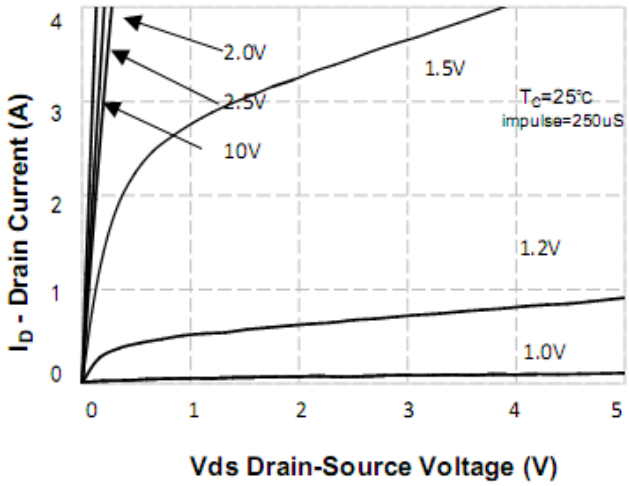


Figure 1. On-Region Characteristics

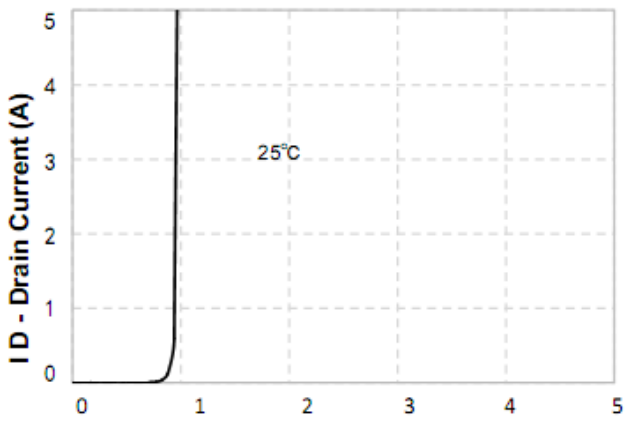


Figure 2. Transfer Characteristics

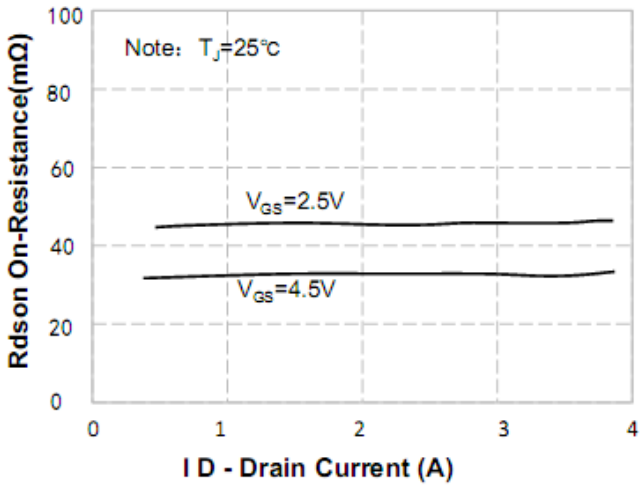


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

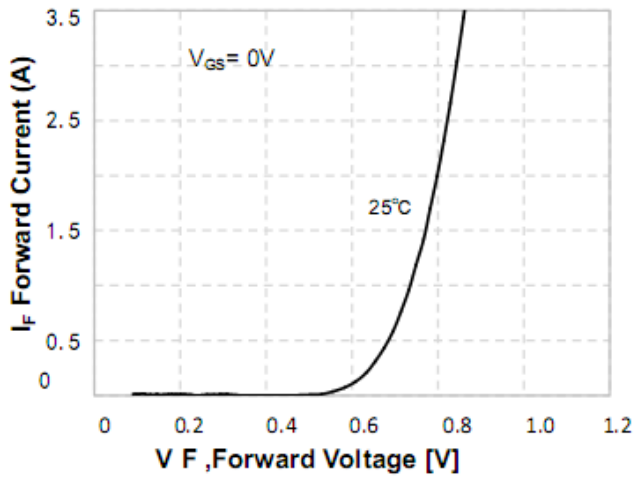


Figure 4. Body Diode Forward Voltage Variation with Source Current

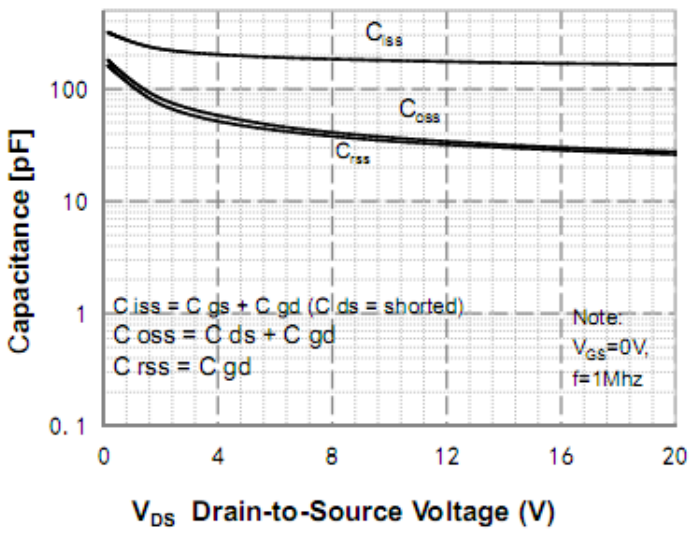


Figure 5. Capacitance Characteristics

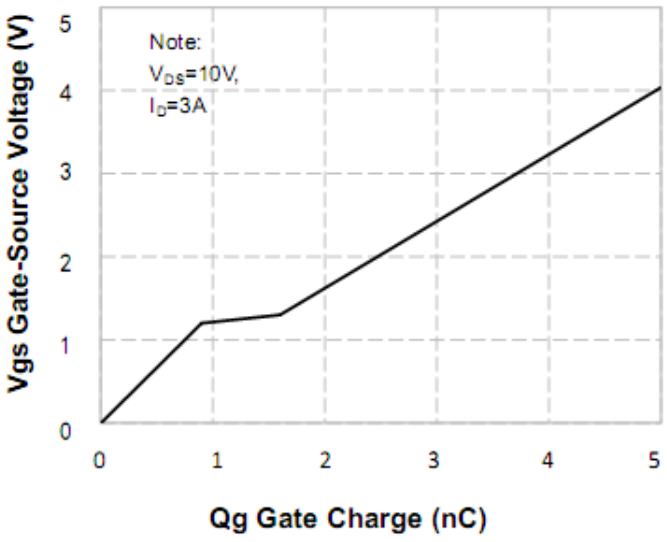


Figure 6. Gate Charge Characteristics

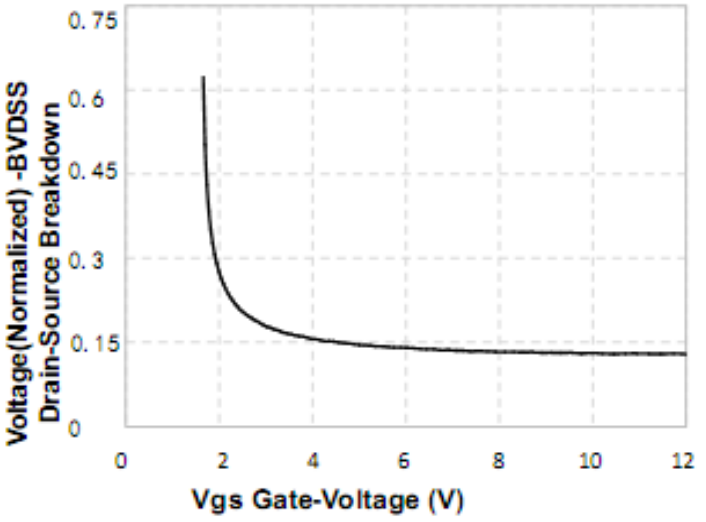


Figure 7. Breakdown Voltage Variation vs Gate-Voltage

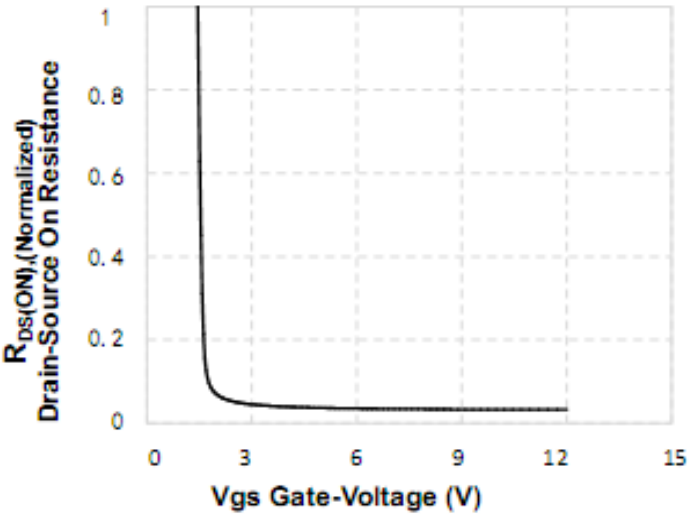


Figure 8. On-Resistance Variation vs Gate Voltage

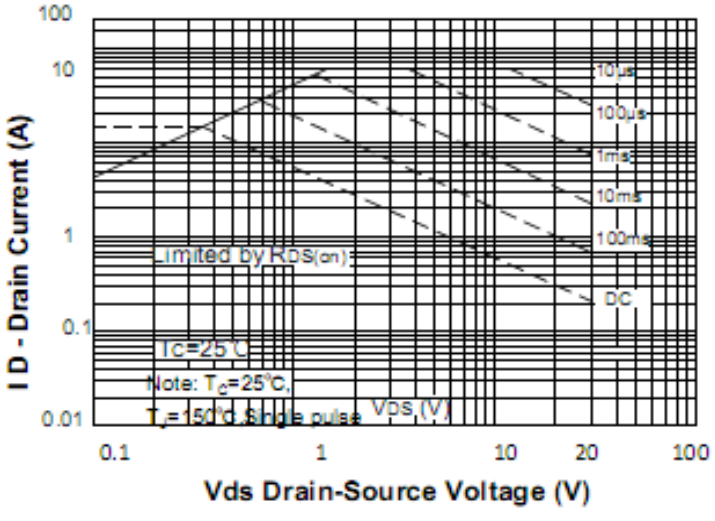


Figure 9. Maximum Safe Operating Area

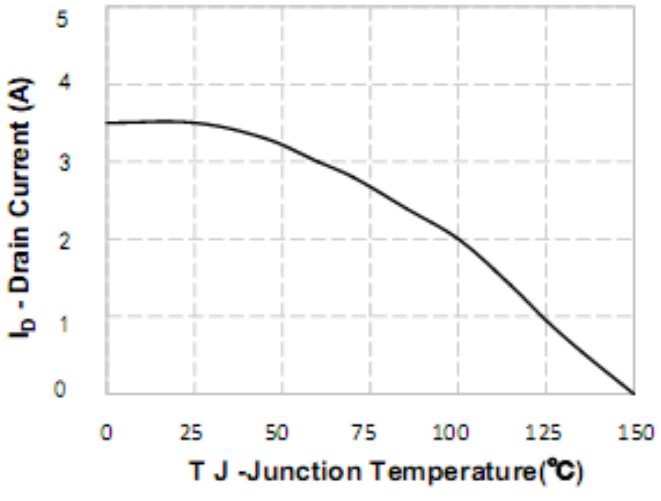


Figure 10. Maximum Continuous Drain Current vs Temperature

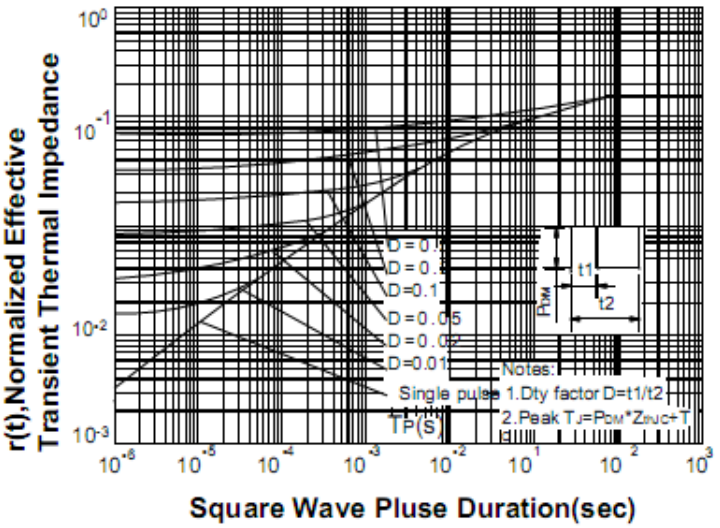
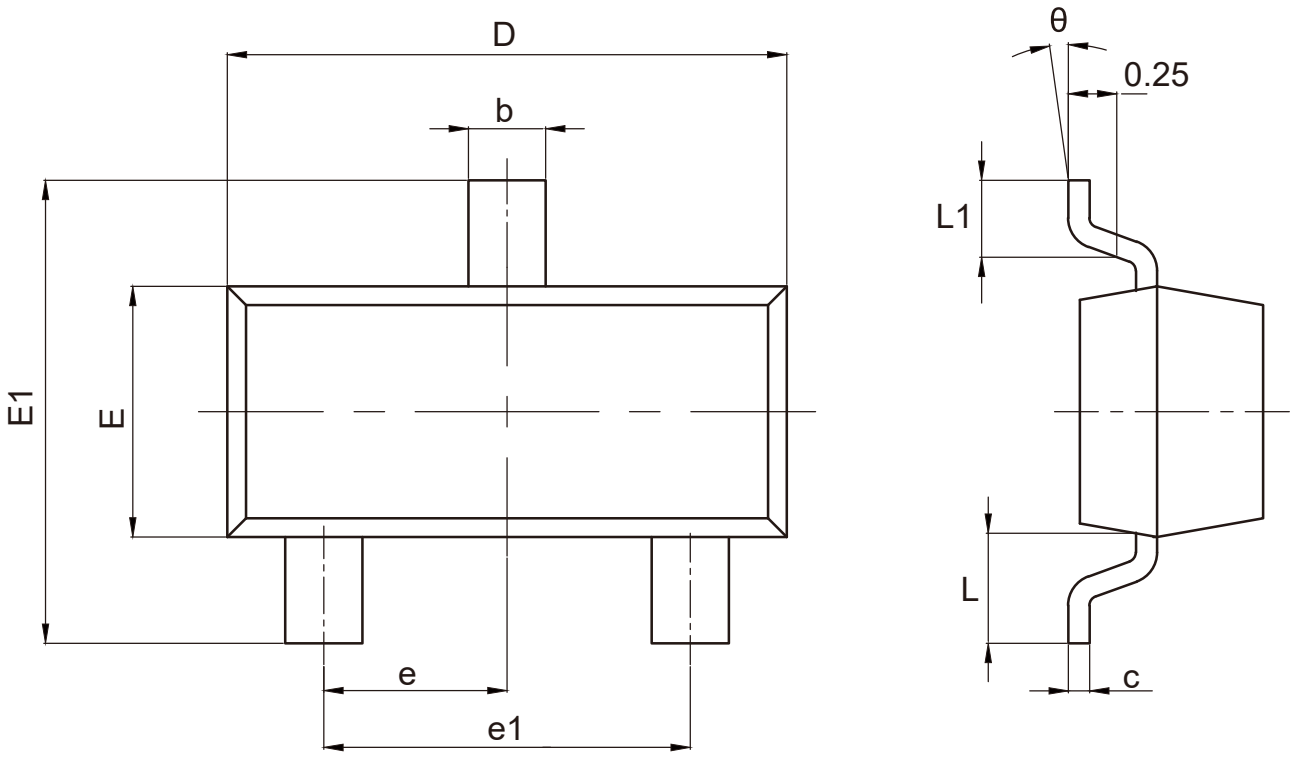
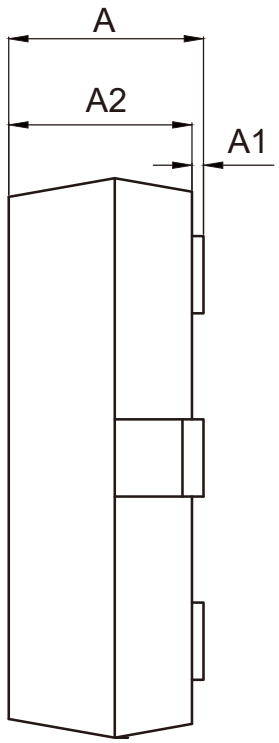


Figure 11. Transient Thermal Response Curve

SOT-23 Package Outline Data



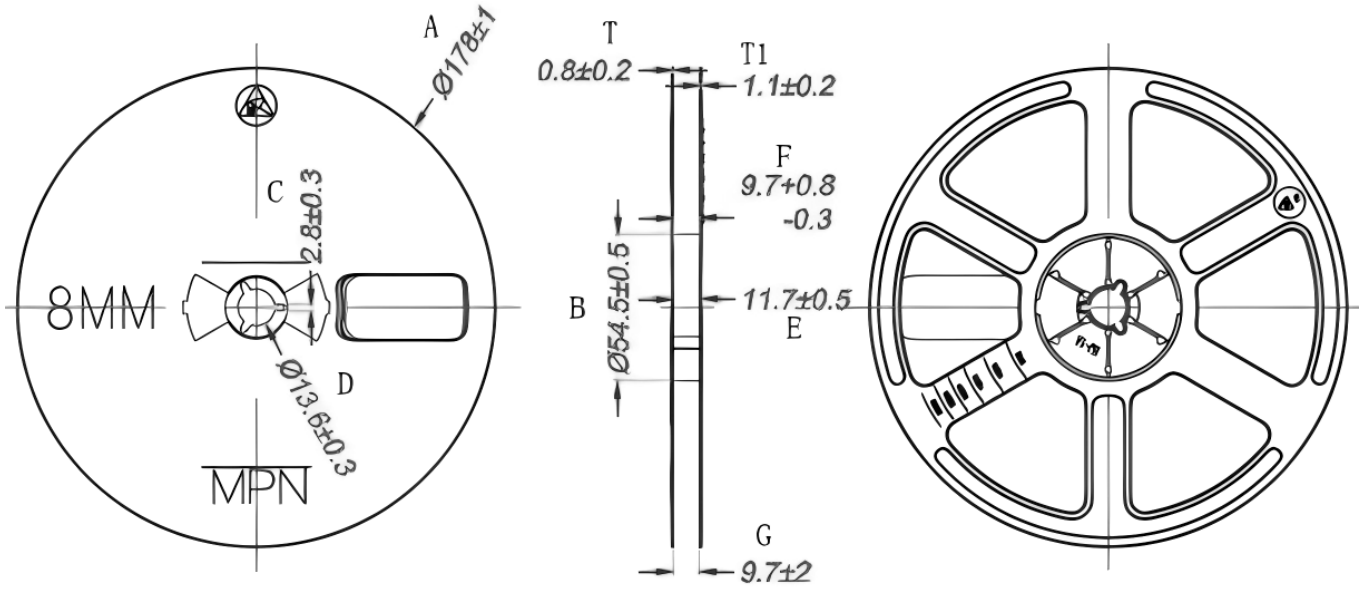


COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	0.900	--	1.150
A1	0.000	--	0.100
A2	0.900	--	1.050
c	0.100	--	0.200
b	0.300	0.400	0.500
D	2.800	2.900	3.000
E	1.200	--	1.400
E1	2.250	--	2.550
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.550REF		
L1	0.300	0.400	0.500
θ	0°	--	8°

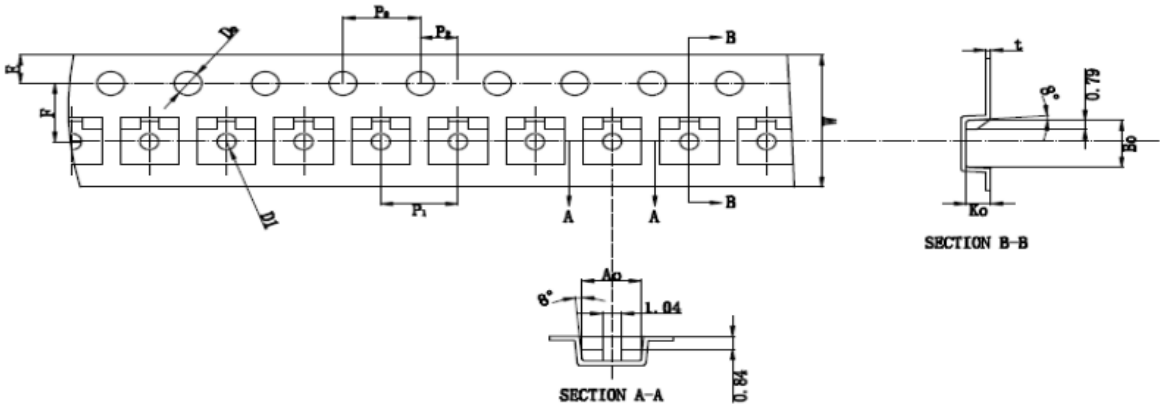
Unit:mm

Tape & Reel Information

Dimensions in mm

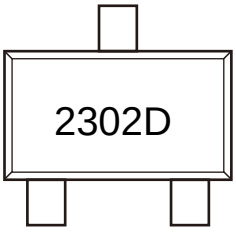


PKG TYPE	W	P	E	F	D	D1	Po	Po10	P2	A0	B0	K0	T
SOT-23	8.00	4.00	1.75	3.50	1.55	1.00	4.00	40.00	2.00	3.17	2.77	1.28	0.20
Tolerance	+0.3/-0.1	±0.1	±0.1	±0.05	±0.1	±0.1	±0.1	±0.2	±0.05	±0.1	±0.1	±0.1	±0.03



Pulling direction

Marking Information：



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2026-04-08	Release of final version

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