TM002N10I

N-Channel Enhancement Mosfet

General Description

- Low $R_{DS(ON)}$
- RoHS and Halogen-Free Compliant

Applications

- Load switch
- PWM

General Features

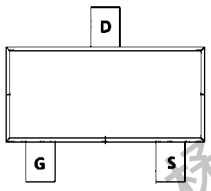
V_{DS} = 100V I_D = 0.2A

$R_{DS(ON)}$= 3000mΩ(typ.) @V_{GS}= 10V

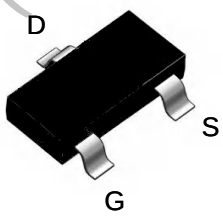
100% UIS Tested
100% R_g Tested

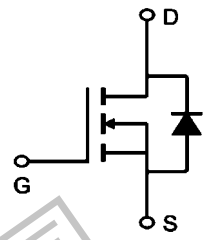
Green Product

I:SOT-23



Marking:SA





Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 10V	0.2	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 10V	0.12	A
I_{DM}	Pulsed Drain Current	0.74	A
P_D@T_A=25°C	Total Power Dissipation	0.35	W
T_{STG}	Storage Temperature Range	-55 to 175	°C
T_J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	162	°C/W
$R_{\theta JC}$	Thermal Resistance Junction Case	---	---	°C/W

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

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =80V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage[1]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	2	3	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =10V, I_D =0.17A		3000	5000	mΩ
		V_{GS} =4.5V, I_D =0.17A		---	---	
Forward tranconductance[1]	g_{FS}	V_{DS} =10V, I_D =0.17A		0.45		S
Diode forward voltage[1]	V_{SD}	I_S =0.17A, V_{GS} = 0V		0.8	1.3	V
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		32		pF
Output Capacitance	C_{oss}			8		
Reverse Transfer Capacitance	C_{rss}			2.6		
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	V_{GS} =10V,V_{DD} =30V, I_D =0.28A,R_{GEN} =50Ω		7		ns
Turn-on rise time	t_r			6		
Turn-off delay time	$t_{d(off)}$			10		
Turn-off fall time	t_f			9		
Total Gate Charge	Q_g	V_{DS} =10V,I_D =0.22A,V_{GS} =10V		1.5		nC
Gate-Source Charge	Q_{gs}			0.16		
Gate-Drain Charge	Q_{gd}			0.2		

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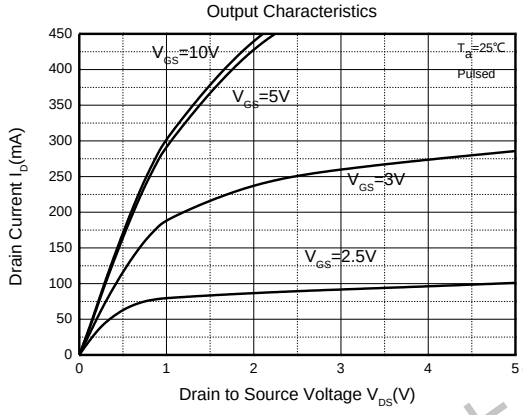
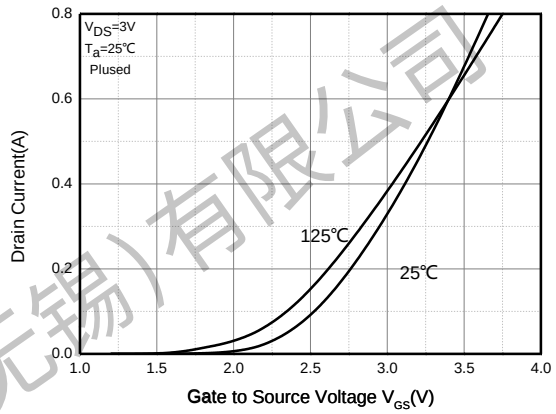
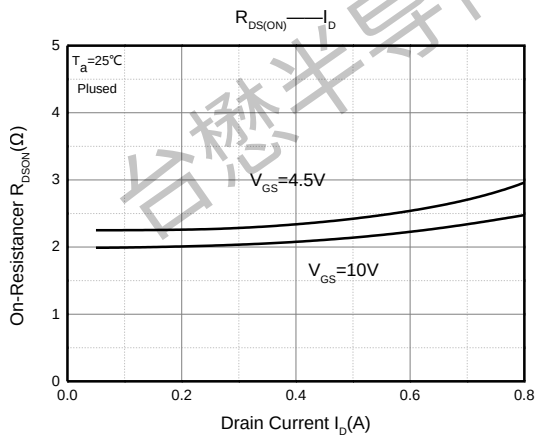
Output Characteristics



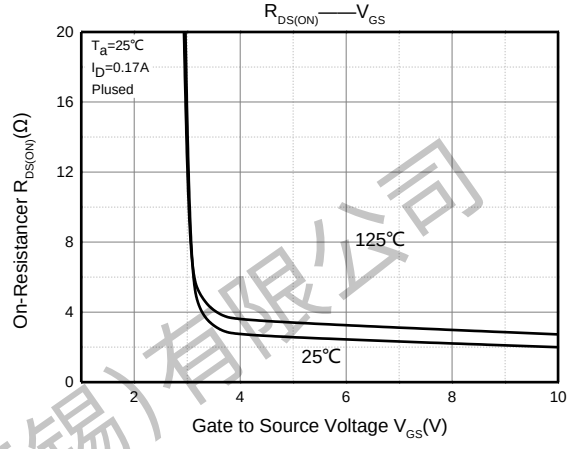
Transfer Characteristics



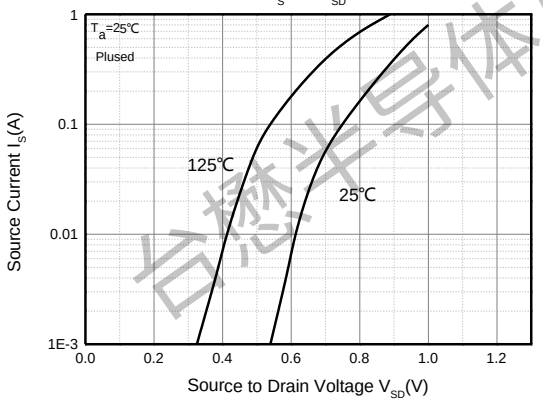
$R_{DS(ON)}$——I_D



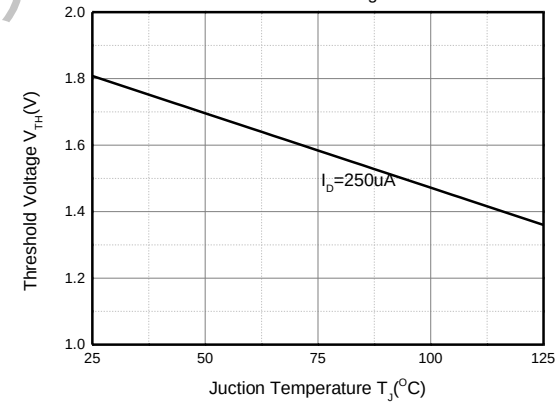
$R_{DS(ON)}$——V_{GS}



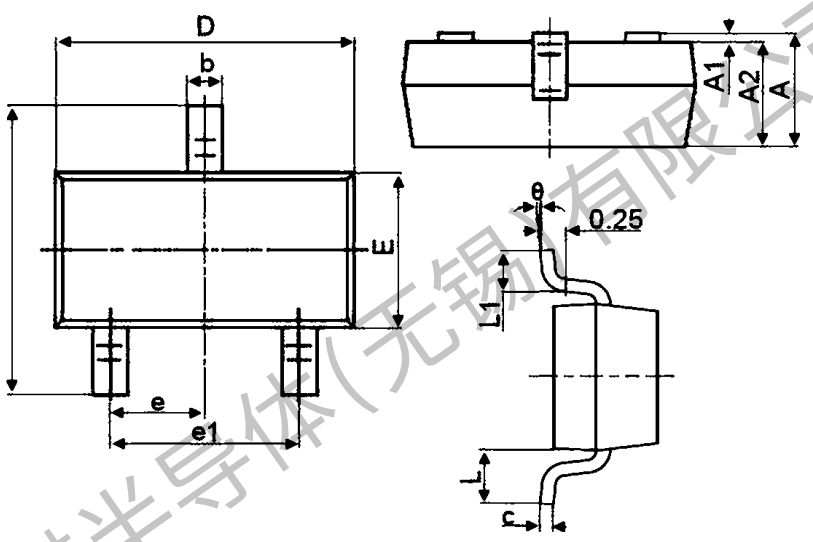
I_S——V_{SD}



Threshold Voltage



Package Mechanical Data:SOT-23



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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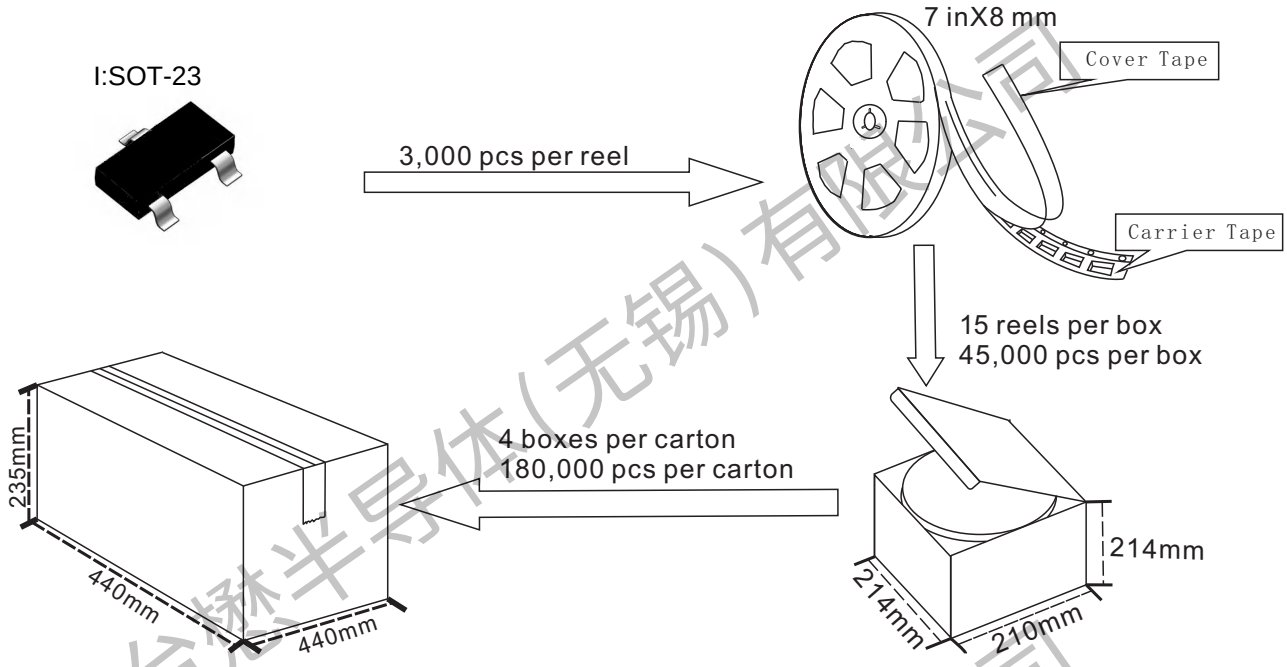
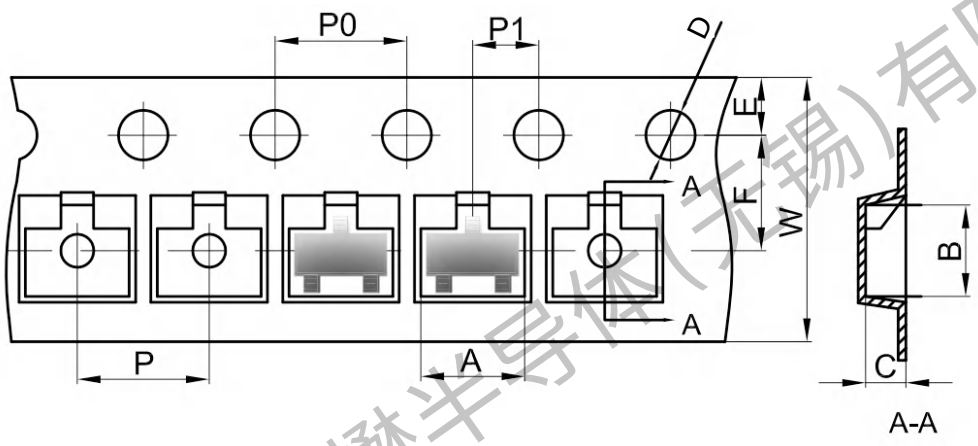
SOT-23 Packing

1.The method of packaging and dimension are shown as below figure. (Dimension in mm)

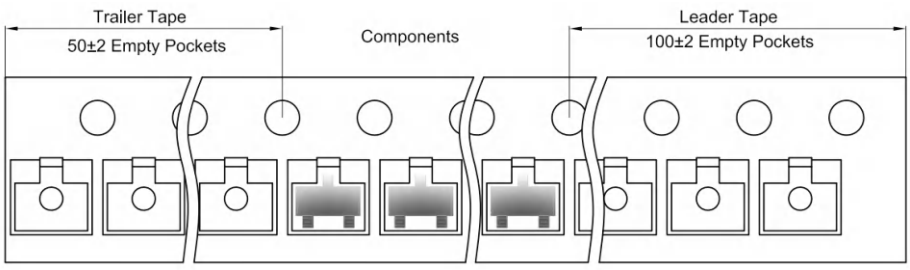


SOT-23 Embossed Carrier Tape



Dimensions are in millimeter										
Pkg type	A	B	C	D	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



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Revision history:

Date	Rev	Description	Page
2023.03.10	23.03	Original	