TM002N05I3

N-Channel Enhancement Mosfet

General Description

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

Applications

- Load switch
- PWM

General Features

V_{DS} = 50V I_D = 0.2A

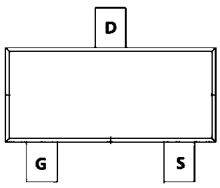
$R_{DS(ON)}$ = 2000mΩ@ V_{GS} =10V

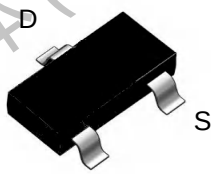
100% UIS Tested

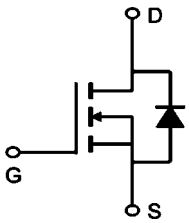
100% R_g Tested

Green Product

I3:SOT-323







Marking: SS

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	50	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Continuous Drain Current, V_{GS} @ 10V	0.2	A
P_D@T_A=25℃	Total Power Dissipation	0.3	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	417	℃/ W
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	---	℃/ W

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
V_{DS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250μA	50	---	---	V
I_{GSS}	Gate -Source leakage current	V_{GS}=±20V, V_{DS}=0V	---	---	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=50V,V_{GS}= 0V	---	---	0.5	μA
		V_{DS}=30V,V_{GS}= 0V	---	---	100	nA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate-threshold voltage (note)	V_{DS}=V_{GS}, I_D=1mA	0.8	1.2	1.6	V
$R_{DS(on)}$	Drain-Source On-Resistance(note)	V_{GS}= 10V, I_D=0.34A	---	2000	3500	mΩ
		V_{GS}= 4.5V, I_D=0.34A	---	3500	6000	
gFS	Forward transconductance (note)	V_{DS}=10V, I_D=0.34A	0.12	---	---	S
Dynamic characteristics (note)						
C_{iss}	Input Capacitance	V_{DS}=25V,V_{GS}=0V,f=1MHz	---	27	---	pF
C_{oss}	Output Capacitance		---	13	---	
C_{rss}	Reverse Transfer Capacitance		---	6	---	
SWITCHING CHARACTERISTICS						
$T_{d(on)}$	Turn-on delay time (note)	V_{DD}=30V, VDS=10V, I_D=0.29A,R_{GEN}=6Ω	---	---	5	ns
T_r	Rise time (note)		---	---	18	
$T_{d(off)}$	Turn-off delay time (note)		---	---	36	
T_f	Fall time (note)		---	---	14	
Drain-source body diode characteristics						
V_{SD}	Body diode forward voltage (note)	I_S=0.44A, V_{GS}= 0V	---	---	1.4	V

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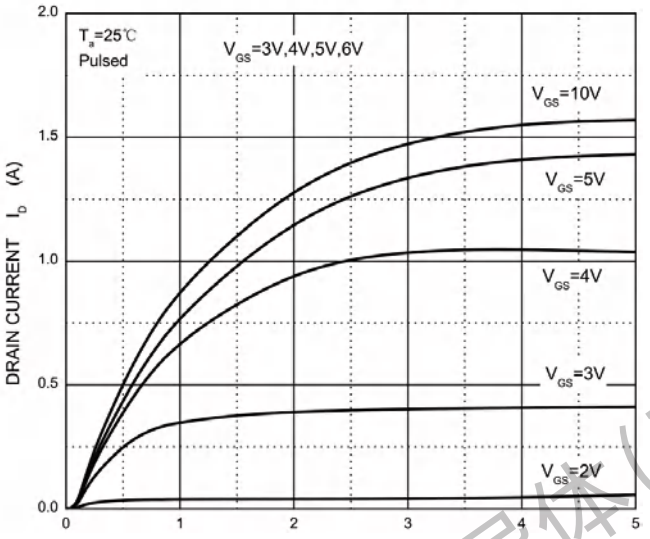
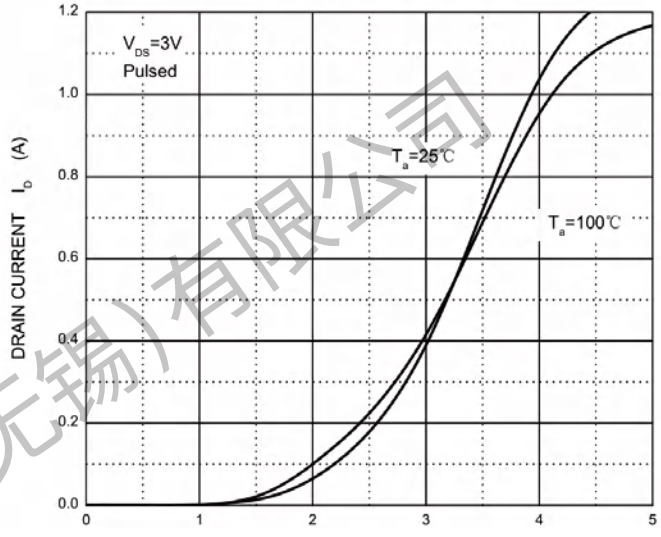
Output Characteristics



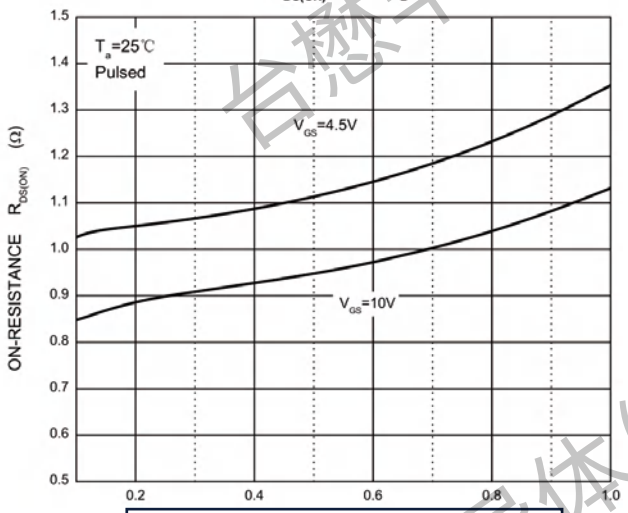
DRAIN TO SOURCE VOLTAGE VDS(V)

Transfer Characteristics



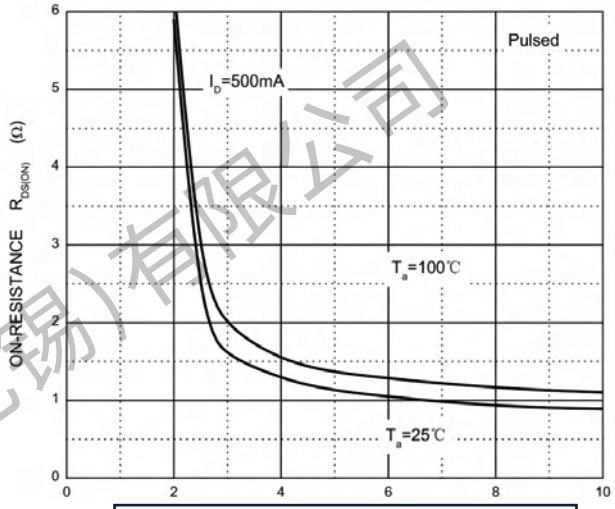
GATE TO SOURCE VOLTAGE VGS(V)

$R_{DS(ON)}$ — I_D



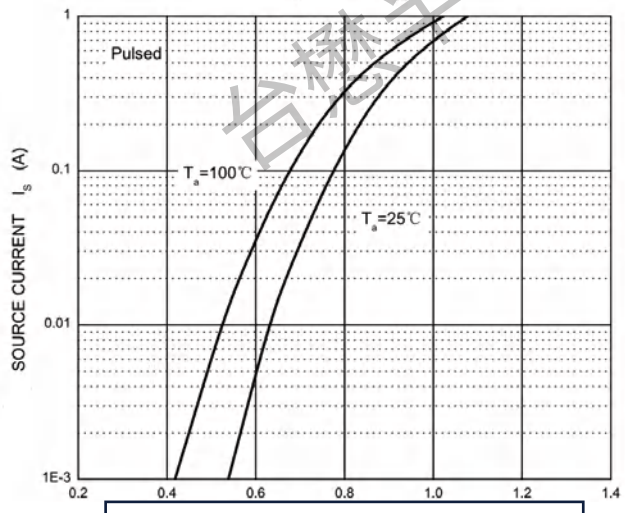
DRAIN CURRENT ID(A)

$R_{DS(ON)}$ — V_{GS}



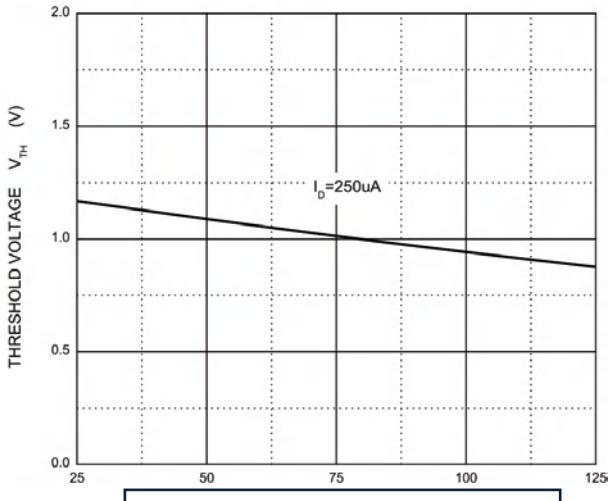
GATE TO SOURCE VOLTAGE VGS(V)

I_S — V_{SD}



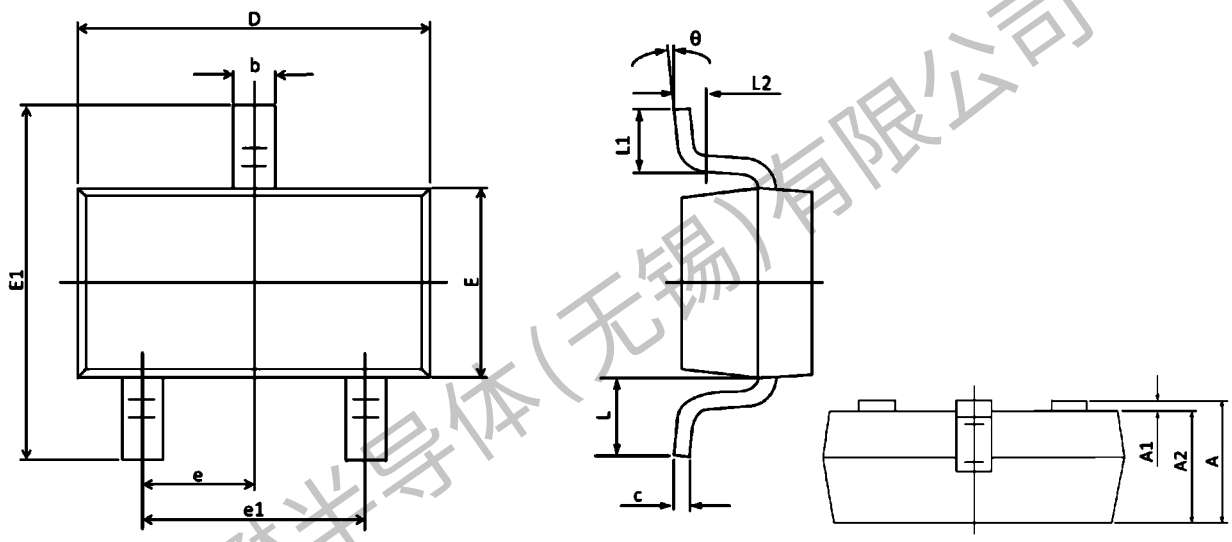
SOURCE TO DRAIN VOLTAGE VSD(V)

Threshold Voltage



JUNCTION TEMPERATURE TJ(℃)

Package Mechanical Data:SOT-323



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
A1	0.100	0.000	0.004	0.000
A2	1.000	0.800	0.039	0.031
b	0.400	0.200	0.016	0.008
c	0.250	0.080	0.010	0.003
D	2.200	1.800	0.087	0.071
E	1.350	1.150	0.053	0.045
E1	2.450	1.800	0.096	0.071
e	0.65BSC		0.026BSC	
e1	1.400	1.200	0.055	0.047
L	0.525REF.		0.021REF.	
L1	0.460	0.150	0.018	0.006
L2	0.200	0.000	0.008	0.000
θ	8°	0°	8°	0°

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Revision history:

Date	Rev	Description	Page
2023.05.15	23.05	Original	