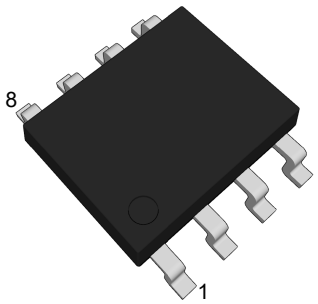
TN9926CNPA

Dual N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 20V,I_D= 4A
- $R_{DS(on)}$< 55mΩ @V_{GS}= 4.5V
- $R_{DS(on)}$< 85mΩ @V_{GS}= 2.5V

SOP-8



(Top View)

Features

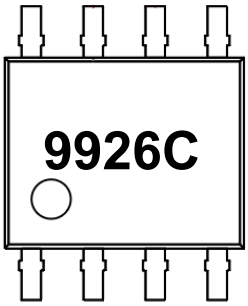
- Advanced Trench Technology
- RoHS and Reach Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

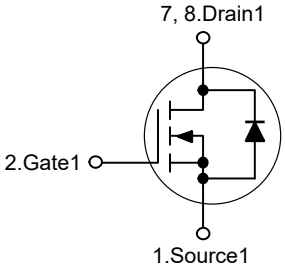
- Power Switching Application
- Hard Switched and High Frequency Circuits
- Uninterruptible Power Supply

Pin	Description	Pin	Description
1	Source1	4	Gate2
2	Gate1	5,6	Drain2
3	Source2	7,8	Drain1

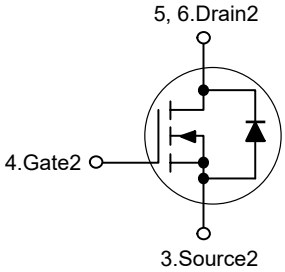
Marking Code



Schematic Diagram



N-Channel



N-Channel

Absolute Maximum Ratings

Ratings at 25℃ ambient temperature unless otherwise specified.

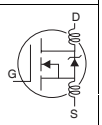
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	4	A
Drain Current-Pulsed Note1	I_{DM}	21	A
Maximum Power Dissipation	P_D	2.0	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

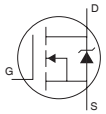
Thermal Resistance,Junction-to-Ambient Note2	$R_{\theta JA}$	62.5	°C/W

Electrical Characteristics

(T_J=25℃ unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source Breakdown Voltage	20	——	——	V	V_{GS} = 0V, I_D = 250μA
$\Delta V_{(BR)DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	——	0.044	——	V/°C	Reference to 25°C, I_D = 1mA
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	——	——	0.050	Ω	V_{GS} = 4.5V, I_D = 2.6A ③
		——	——	0.070		V_{GS} = 2.7V, I_D = 2.2A ③
$V_{GS(th)}$	Gate Threshold Voltage	0.70	——	——	V	V_{DS} = V_{GS}, I_D = 250μA
g_{fs}	Forward Transconductance	8.3	——	——	S	V_{DS} = 15V, I_D = 2.6A
I_{DSS}	Drain-to-Source Leakage Current	——	——	1.0	μA	V_{DS} = 16V, V_{GS} = 0V
		——	——	25		V_{DS} = 16V, V_{GS} = 0V, T_J = 125 °C
I_{GSS}	Gate-to-Source Forward Leakage	——	——	100	nA	V_{GS} = 12V
	Gate-to-Source Reverse Leakage	——	——	-100		V_{GS} = - 12V
Q_g	Total Gate Charge	——	——	20	nC	I_D = 2.6A
Q_{gs}	Gate-to-Source Charge	——	——	2.2		V_{DS} = 16V
Q_{gd}	Gate-to-Drain ("Miller") Charge	——	——	8.0		V_{GS} = 4.5V, See Fig. 6 and 12 ③
$t_{d(on)}$	Turn-On Delay Time	——	9.0	——	ns	V_{DD} = 10V
t_r	Rise Time	——	42	——		I_D = 2.6A
$t_{d(off)}$	Turn-Off Delay Time	——	32	——		R_G = 6.0Ω
t_f	Fall Time	——	51	——		R_D = 3.8Ω, See Fig. 10 ③
L_D	Internal Drain Inductance	——	4.0	——	nH	Between lead tip and center of die contact 
L_S	Internal Source Inductance	——	6.0	——		
C_{iss}	Input Capacitance	——	660	——	pF	V_{GS} = 0V
C_{oss}	Output Capacitance	——	280	——		V_{DS} = 15V
C_{rss}	Reverse Transfer Capacitance	——	140	——		f = 1.0MHz, See Fig. 5

Source-Drain Ratings and Characteristics

	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	——	——	2.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	——	——	21		
V_{SD}	Diode Forward Voltage	——	——	1.0	V	T_J = 25°C, I_S = 1.8A, V_{GS} = 0V ③
t_{rr}	Reverse Recovery Time	——	29	44	ns	T_J = 25°C, I_F = 2.6A
Q_{rr}	Reverse RecoveryCharge	——	22	33	nC	di/dt = 100A/μs ③
t_{on}	Forward Turn-On Time	Intrinsic turn-on time is negligible (turn-on is dominated by L_S+L_D)				

Notes:

① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)

② I_{SD} ≤ 2.6A, di/dt ≤ 100A/μs, V_{DD} ≤ $V_{(BR)DSS}$, T_J ≤ 150°C

③ Pulse width ≤ 300μs; duty cycle ≤ 2%.

④ Surface mounted on FR-4 board, t ≤ 10sec.

Typical Characteristic Curves

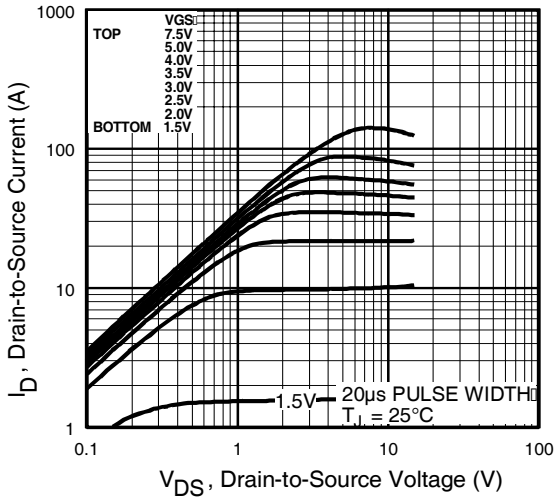


Fig 1. Typical Output Characteristics

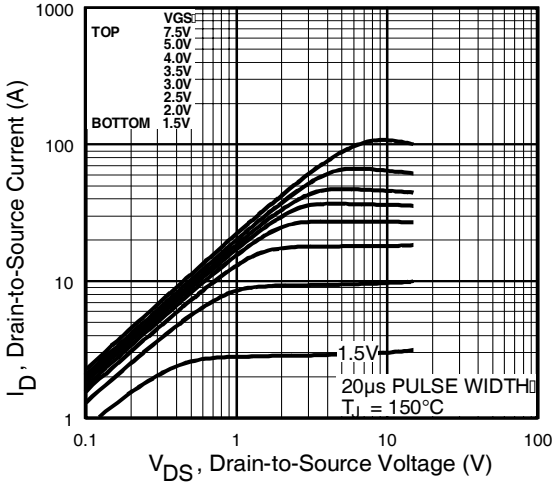


Fig 1. Typical Output Chalactllistics

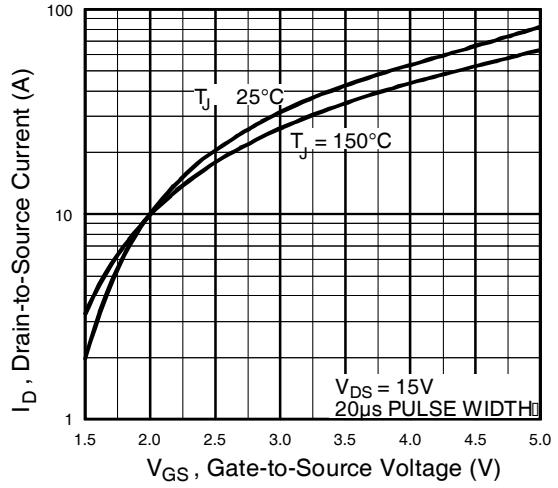


Fig 3. Typical Transfer Characteristics

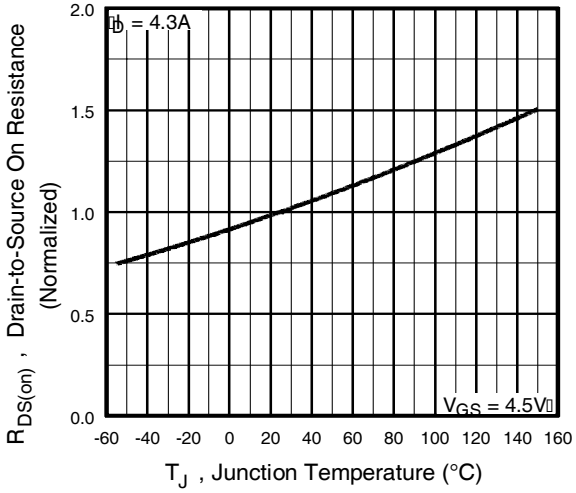


Fig 4. Normalized On-Resistance Vs. Temperature

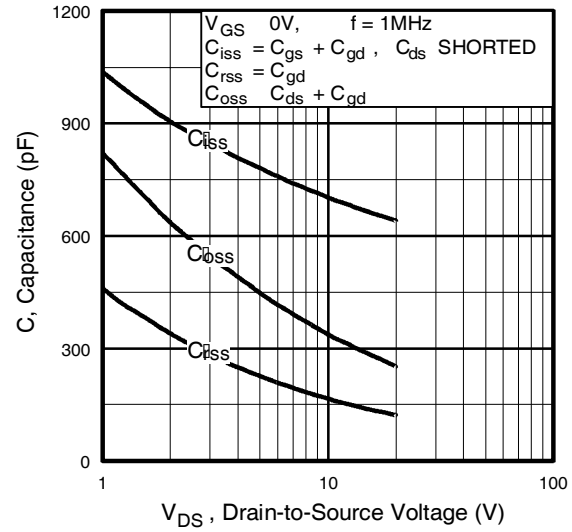


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

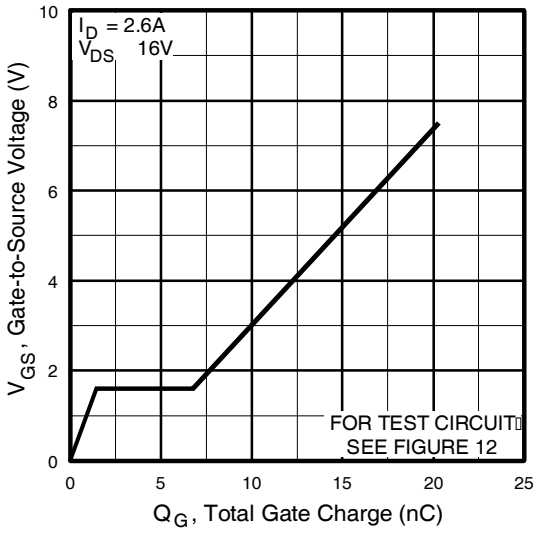


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

Typical Characteristic Curves

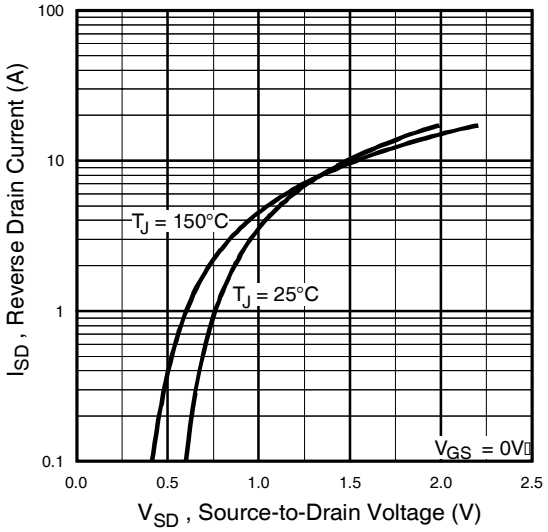


Fig 7. Typical Source-Drain Diode Forward Voltage

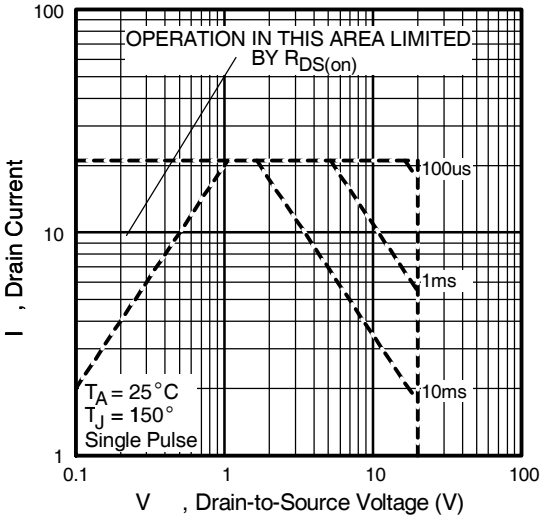


Fig 8. Maximum Safe Operating Area

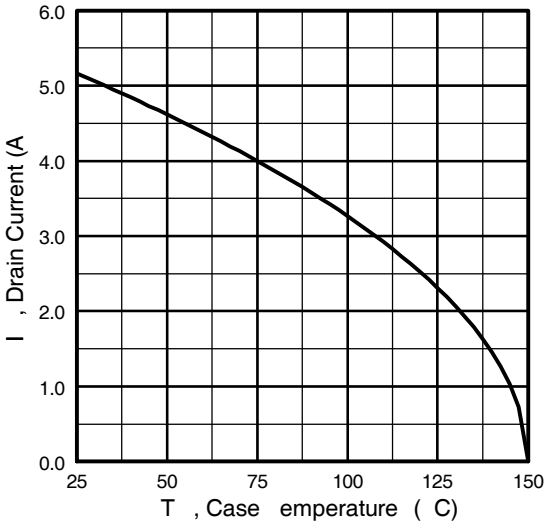


Fig 9. Maximum Drain Current Vs. Ambient Temperature

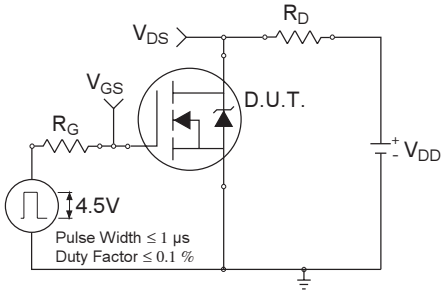


Fig 10a. Switching Time Test Circuit

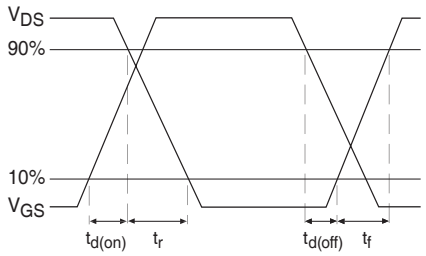


Fig 10b. Switching Time Waveforms

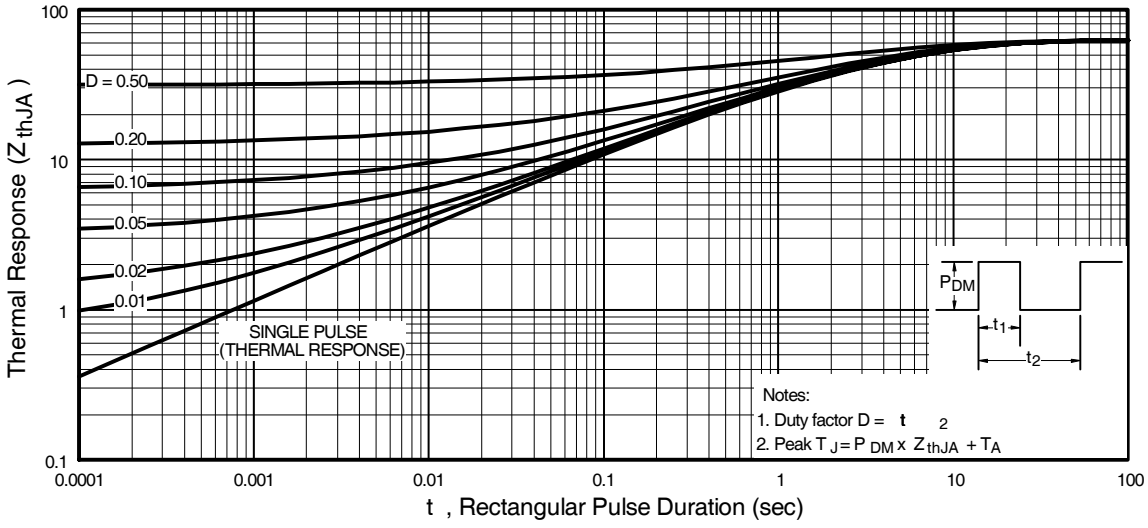
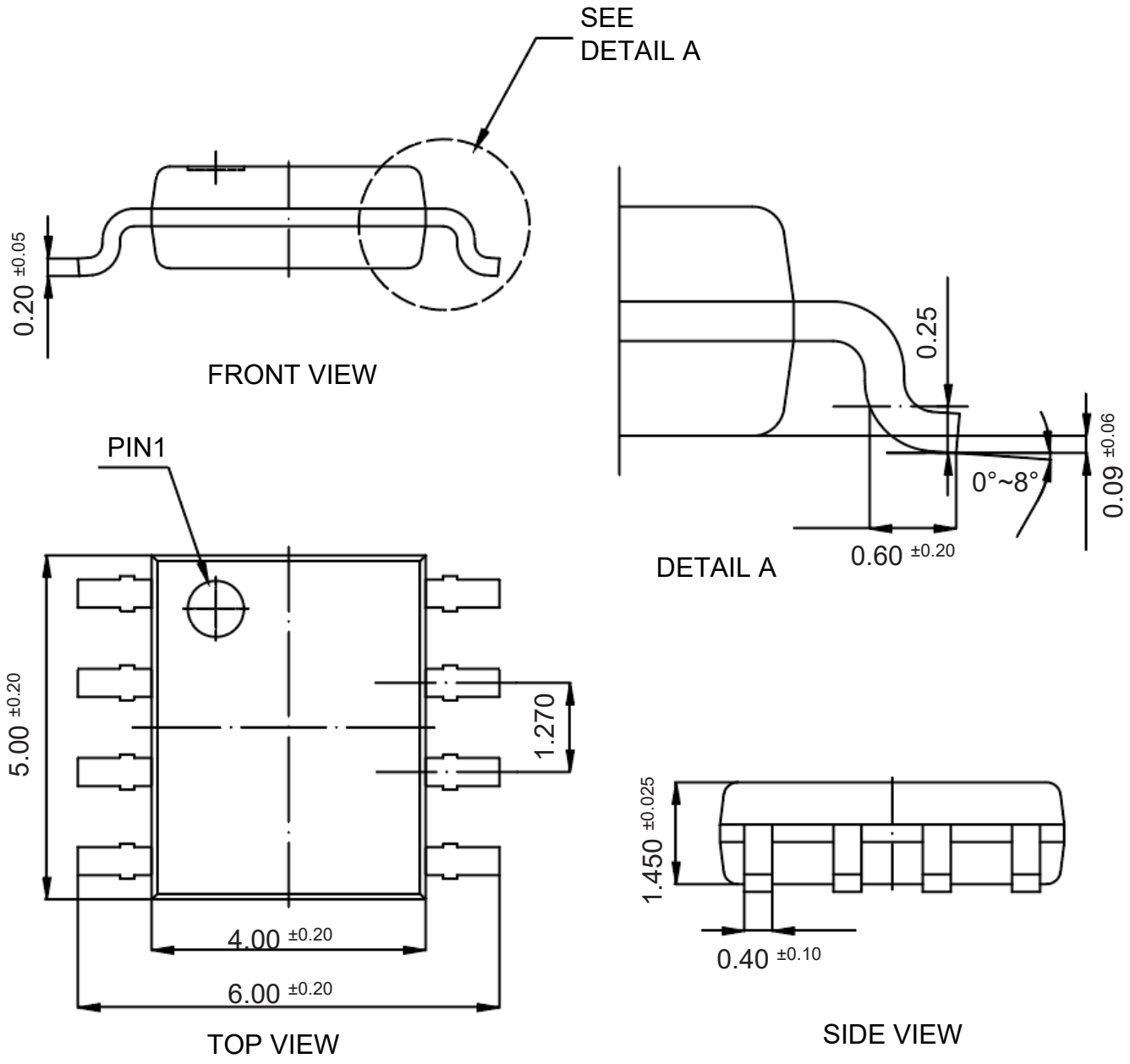


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Outline

SOP-8 Dimensions in mm



Ordering Information

Device	Package	Shipping
TN9926CNPA	SOP-8	4,000PCS/Reel&13inches

Contact Information

TANI website: **http://www.tanisemi.com** Email:tani@tanisemi.com

For additional information, please contact your local Sales Representative.

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The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up -to- date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

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The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. TANI shall assume no responsibility for any consequences resulting from such usage.

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