

Product Summary

- $V_{DS} = 800V, I_D = 10A$
- $R_{DS(on)} < 1.1\Omega$ @ $V_{GS} = 10V$

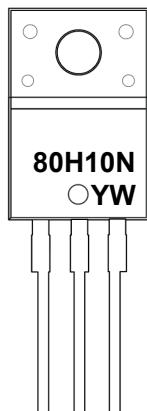
Features

- Advanced Planar Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Application

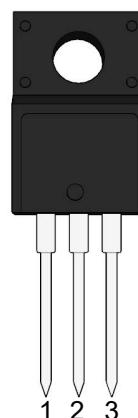
- Uninterruptible Power Supply
- High Frequency Switching Mode Power Supply
- Electronic Ballast

Marking Code



N-Channel Enhancement Mode Power MOSFET

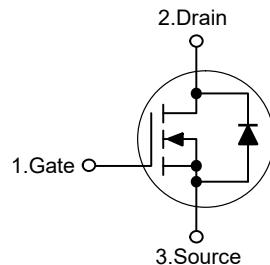
TO-220F



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	10	A
Drain Current-Pulsed ^{Note1}	I_{DM}	40	A
Maximum Power Dissipation	P_D	240	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	920	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	R_{JC}	0.52	°C/W
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Electrical Characteristics

(T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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On Characteristics

V _{GS}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	3.0	--	5.0	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 5.0A	--	0.93	1.10	Ω

Off Characteristics

BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	800	--	--	V
△BV _{DSS} / △T _J	Breakdown Voltage Temperature Coefficient	I _D = 250 μA, Referenced to 25°C	--	0.99	--	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 800 V, V _{GS} = 0 V	--	--	1	μA
		V _{DS} = 640 V, T _C = 125°C	--	--	10	μA
I _{GSSF}	Gate-Body Leakage Current,Forward	V _{GS} = 30 V, V _{DS} = 0 V	--	--	100	nA
I _{GSSR}	Gate-Body Leakage Current,Reverse	V _{GS} = -30 V, V _{DS} = 0 V	--	--	-100	nA

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz	--	3500	--	pF
C _{oss}	Output Capacitance		--	180	--	pF
C _{rss}	Reverse Transfer Capacitance		--	15	--	pF

Switching Characteristics

t _{d(on)}	Turn-On Time	V _{DS} = 400 V, I _D = 10.0A, R _G = 25 Ω (Note 4,5)	--	50	--	ns
t _r	Turn-On Rise Time		--	130	--	ns
t _{d(off)}	Turn-Off Delay Time		--	100	--	ns
t _f	Turn-Off Fall Time		--	80	--	ns
Q _g	Total Gate Charge	V _{DS} = 640 V, I _D = 10.0A, V _{GS} = 10 V (Note 4,5)	--	45	--	nC
Q _{gs}	Gate-Source Charge		--	14	--	nC
Q _{gd}	Gate-Drain Charge		--	18	--	nC

Source-Drain Diode Maximum Ratings and Characteristics

I _S	Continuous Source-Drain Diode Forward Current	--	--	10.0	A	
I _{SM}	Pulsed Source-Drain Diode Forward Current	--	--	40.0		
V _{SD}	Source-Drain Diode Forward Voltage	I _S = 10.0A, V _{GS} = 0 V	--	--	1.5	V
t _{rr}	Reverse Recovery Time	I _S = 10.0A, V _{GS} = 0 V dI _F /dt = 100 A/μs (Note 4)	--	730	--	ns
Q _{rr}	Reverse Recovery Charge		--	11	--	uC

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L=17.5mH, I_{AS}=10.0A, V_{DD}=50V, R_G=25 Ω, Starting T_J=25 °C
3. I_{SD}≤10.0A, dI/dt≤200A/μs, V_{DD}≤BV_{DSS}, Starting T_J=25 °C
4. Pulse Test: Pulse width≤300μs, Duty cycle≤2%
5. Essentially Independent of Operating Temperature Typical Characteristics

Typical Characteristic Curves

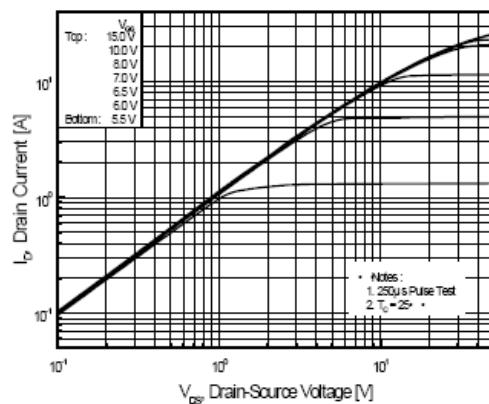


Figure 1. On-Region Characteristics

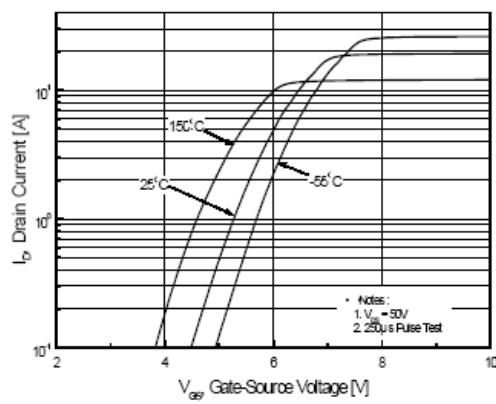


Figure 2. Transfer Characteristics

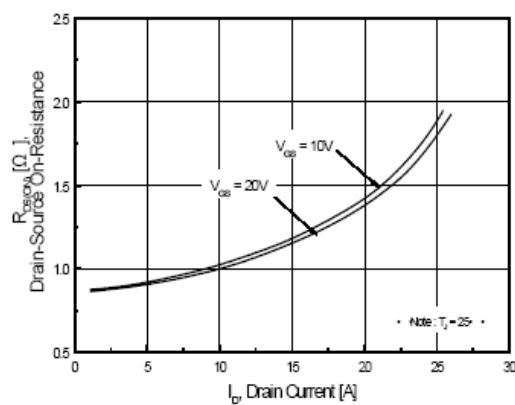


Figure 3. On-Resistance Variation

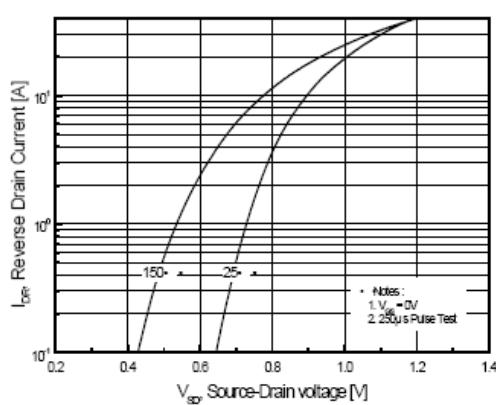


Figure 4. Body Diode Forward Voltage

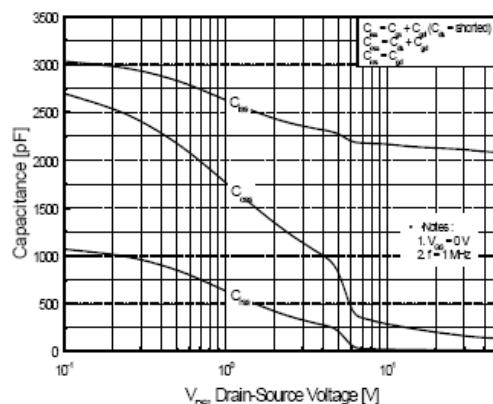


Figure 5. Capacitance Characteristics

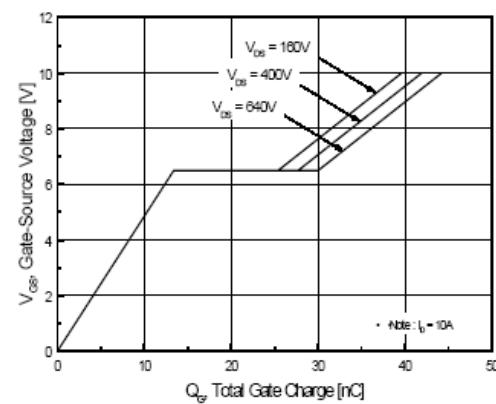


Figure 6. Gate Charge Characteristics

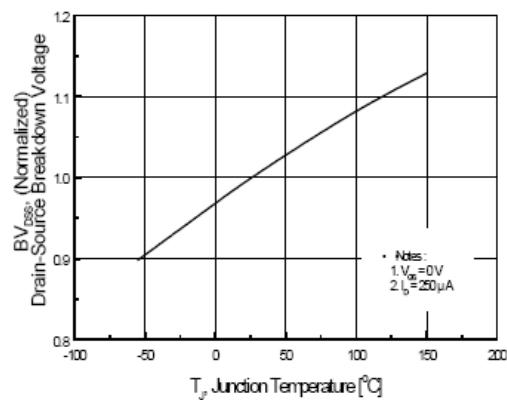


Figure 7. Breakdown Voltage Variation vs Temperature

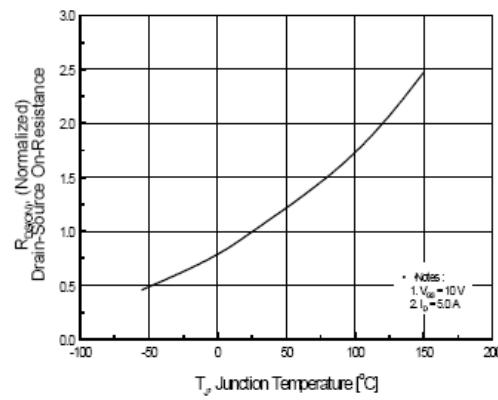


Figure 8. On-Resistance Variation vs Temperature

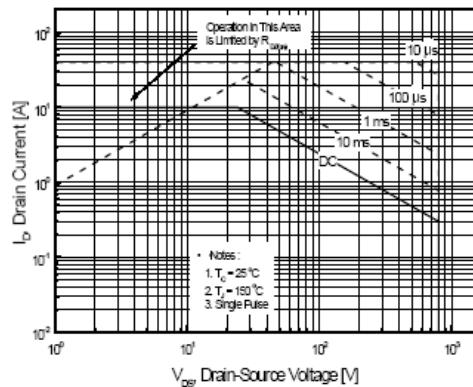


Figure 9. Maximum Safe Operating Area

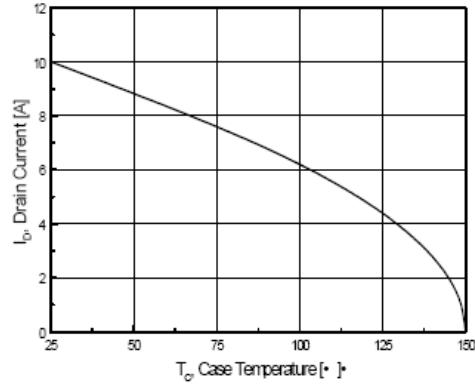


Figure 10. Maximum Drain Current vs Case Temperature

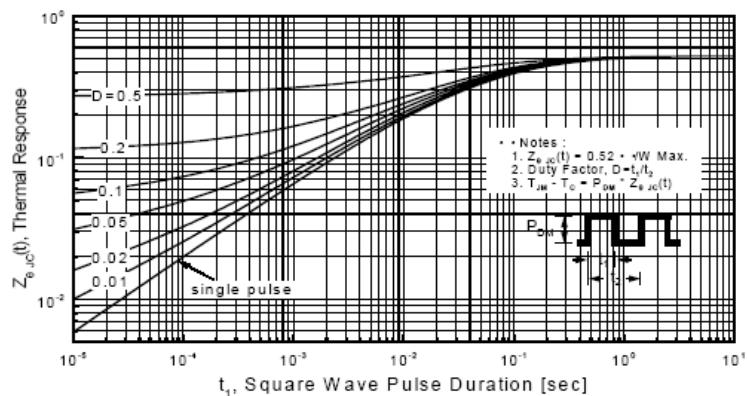
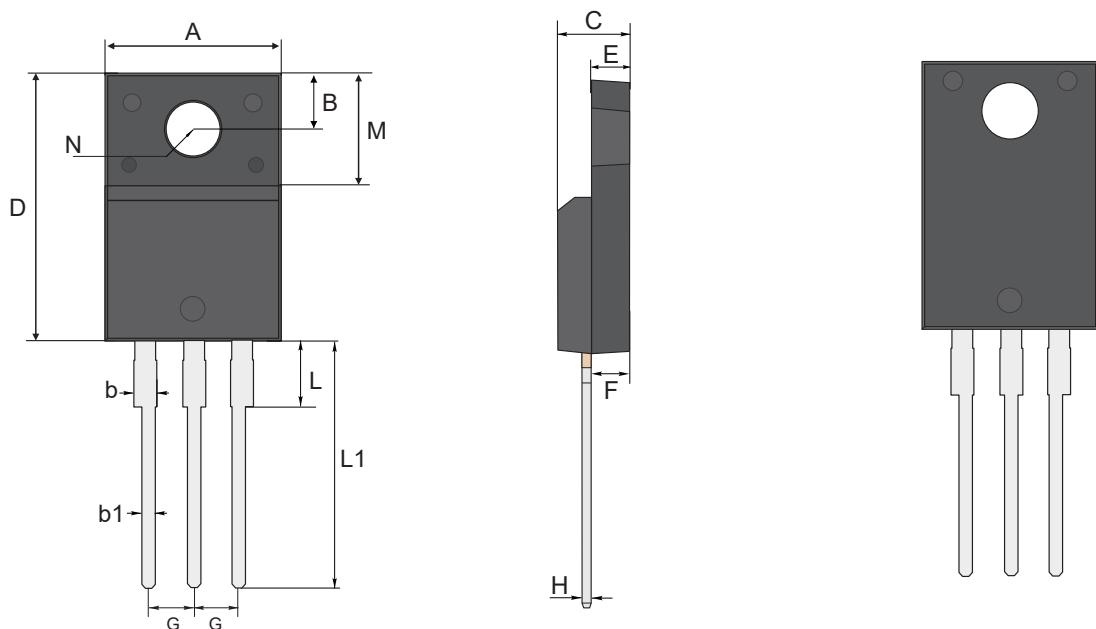


Figure 11. Transient Thermal Response Curve

Package Outline

TO-220F

Dimensions in mm



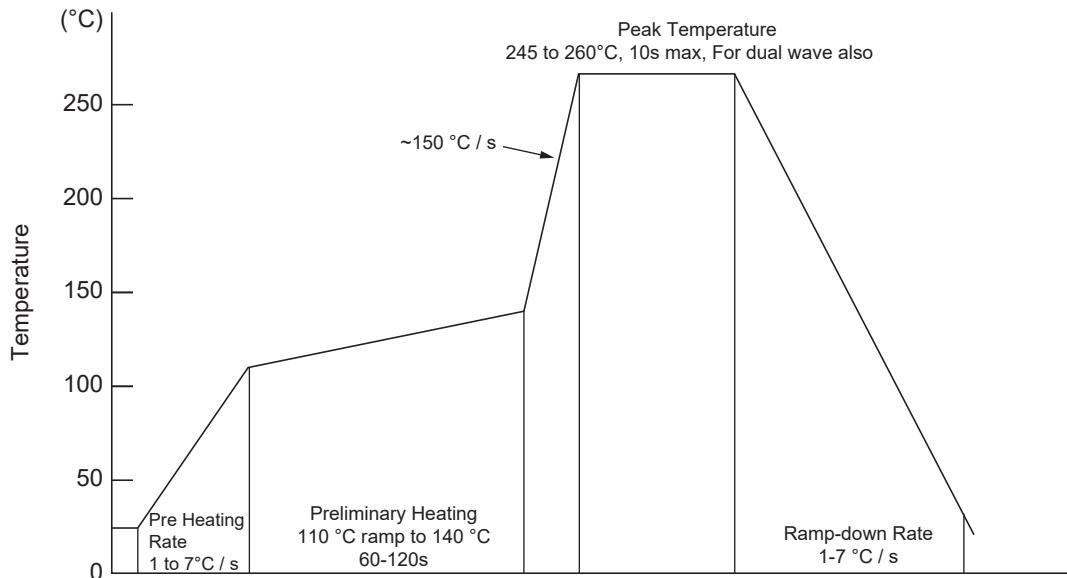
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	112	539	271	125 typ.
	typ	401	129	53	31	185	625	100	100	100	20	104	531	263	
	min	397	125	49	28	177	617	92	92	96	16	96	524	255	

Ordering Information

Device	Package	Shipping
TN80H10NTF	TO-220F	50PCS/Tube

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

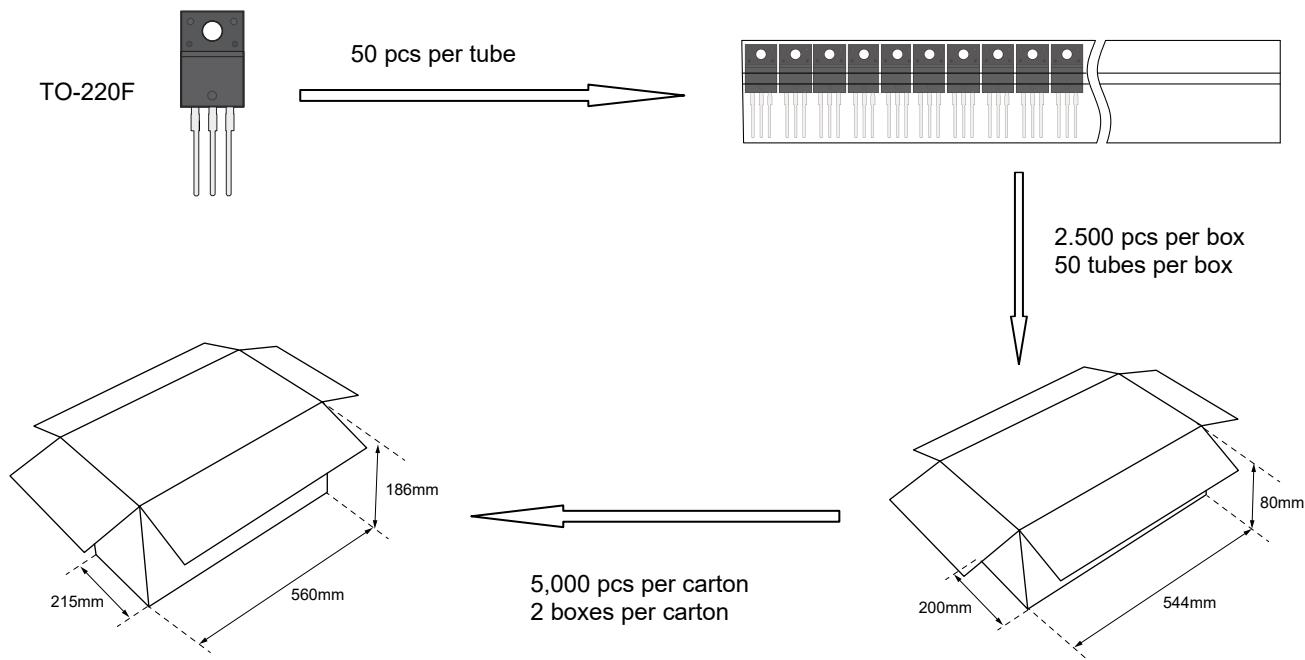
- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

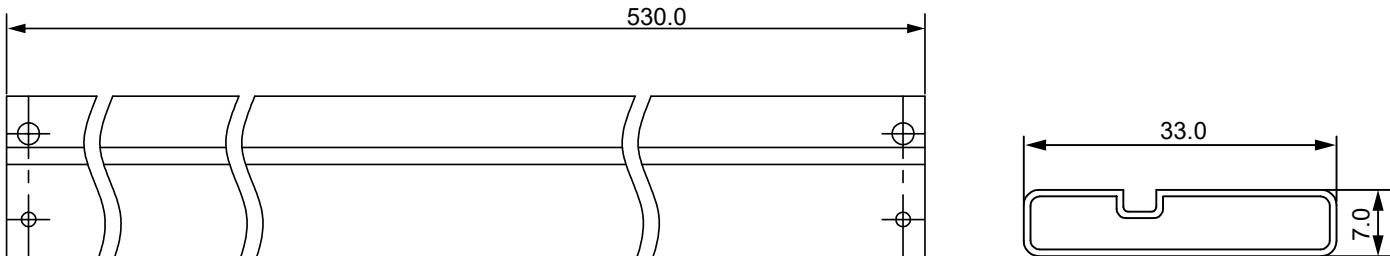
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications

- The method of packaging



◆ Tube data



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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Product Specification Statement

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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