

Product Summary

- $V_{DS} = 500V, I_D = 20A$
- $R_{DS(on)} < 0.28\Omega$ @ $V_{GS} = 10V$

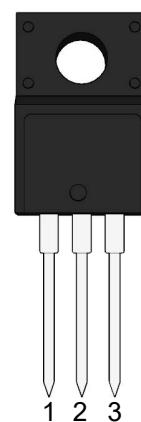
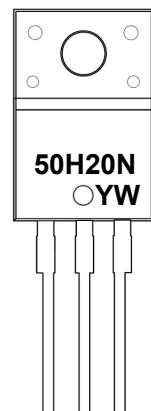
Features

- 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 Ballasts

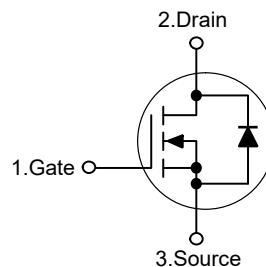
Marking Code



(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}	500	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	20	A
Drain Current-Pulsed ^{Note1}	I_{DM}	80	A
Maximum Power Dissipation	P_D	38.5	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	1620	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	R_{eJC}	3.25	°C/W
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Electrical Characteristics

(T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	500	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =10A	---	0.25	0.28	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	3	---	5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =500V, V _{GS} =0V	---	---	1	uA
		V _{DS} =400V, V _{GS} =0V, T _C =125°C	---	---	10	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±30V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =15V, I _D =10A	---	14	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	2	---	Ω
Q _g	Total Gate Charge	I _D =20A	---	52	---	nC
Q _{gs}	Gate-Source Charge	V _{DS} =400V	---	14	---	
Q _{gd}	Gate-Drain Charge	V _{GS} =10V (Note 3)	---	20	---	
T _{d(on)}	Turn-On Delay Time	V _{DS} =250V I _D =20A R _G =25Ω (Note 3)	---	28	---	ns
T _r	Rise Time		---	54	---	
T _{d(off)}	Turn-Off Delay Time		---	68	---	
T _f	Fall Time		---	37	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	2700	---	pF
C _{oss}	Output Capacitance		---	260	---	
C _{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _{GS} =V _{DS} =0V, Force Current	---	---	20	A
I _{SM}	Pulsed Source Current		---	---	80	A
V _{SD}	Diode Forward Voltage ³	V _{GS} =0V, I _F =10A, T _j =25°C	---	0.82	1.5	V
t _{rr}	Reverse Recovery Time	V _{GS} =0V, T _j =25°C I _r =20A, dI/dt=100A/μs (Note 3)	---	520	---	ns
Q _{rr}	Reverse Recovery Charge		---	5.2	---	uC

Note :

1.Repetitive rating: Pulse width limited by maximum junction temperature

2.The EAS data shows Max. rating .The test condition is V_{DS}=80V, V_{GS}=10V, L=10mH, I_{AS}=18A.

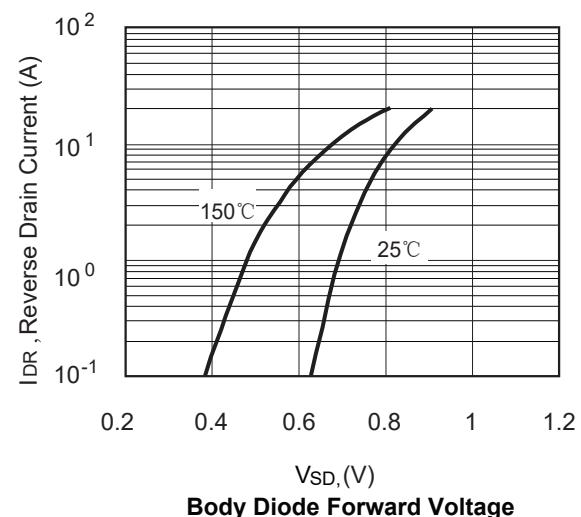
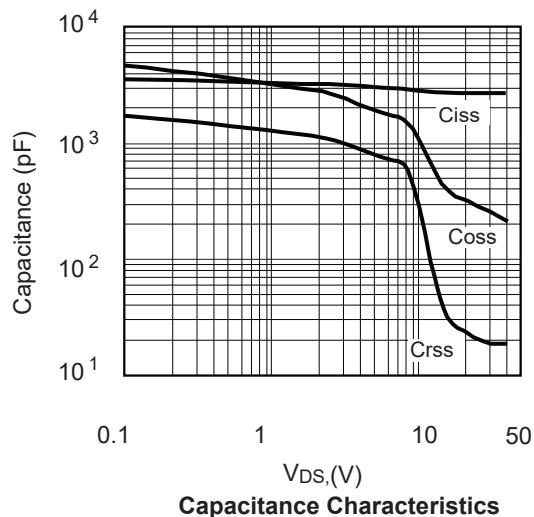
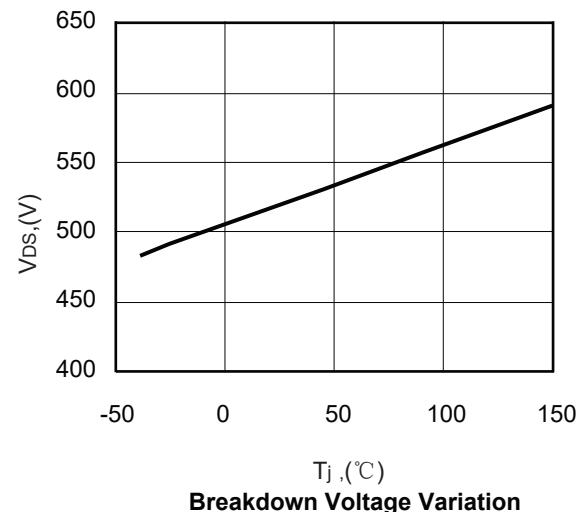
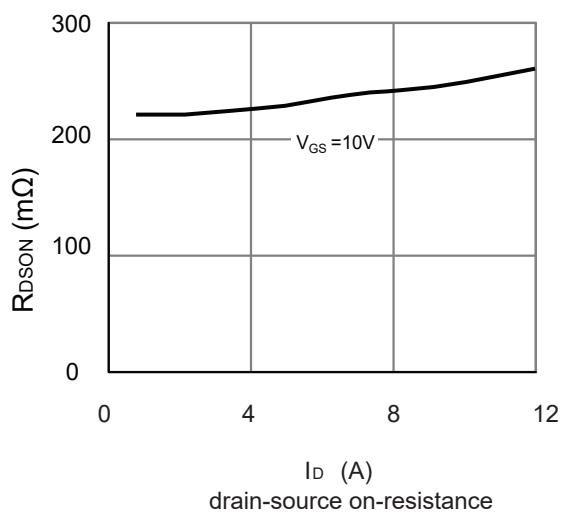
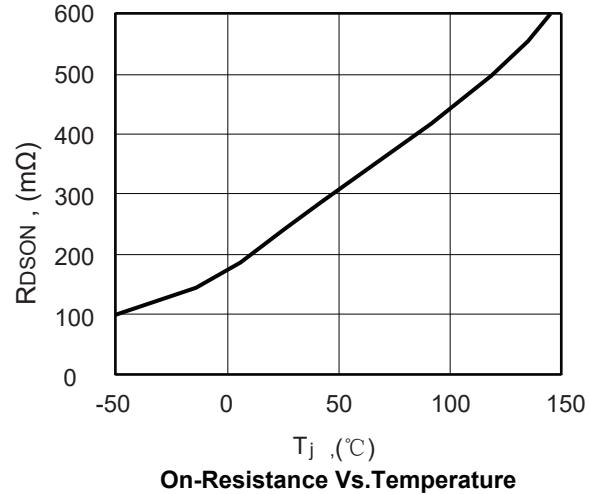
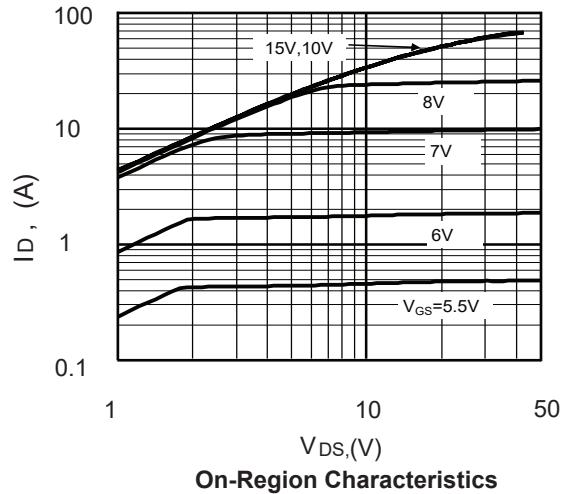
3.Pulse Test: Pulse width≤300μs, Duty Cycle≤2%

This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design, functions and reliability without notice.

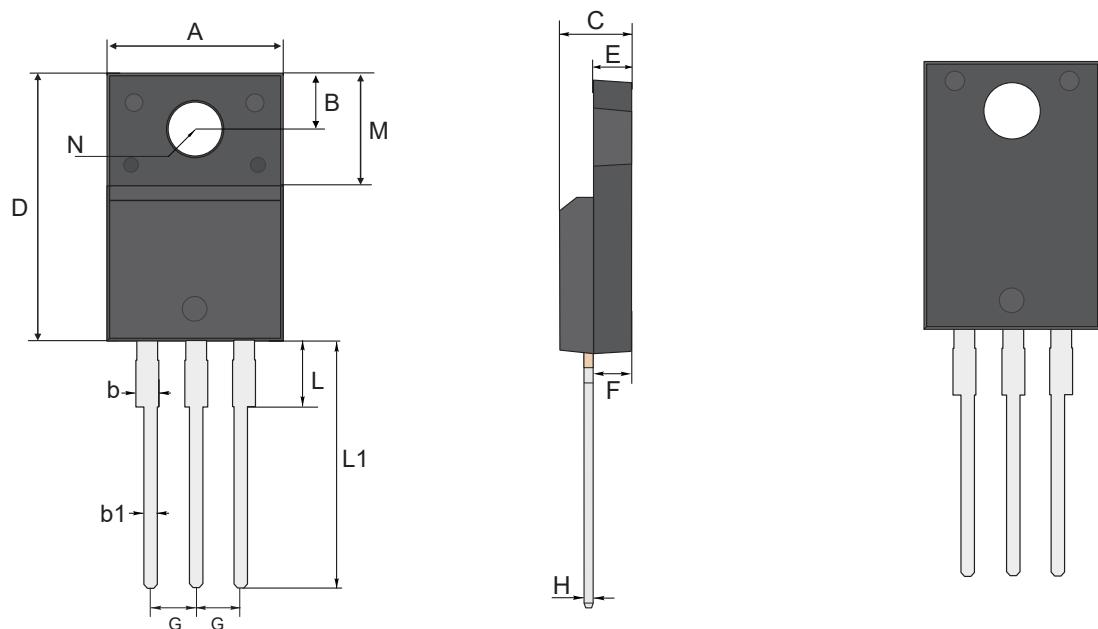
Typical Characteristic Curves



Package Outline

TO-220F

Dimensions in mm



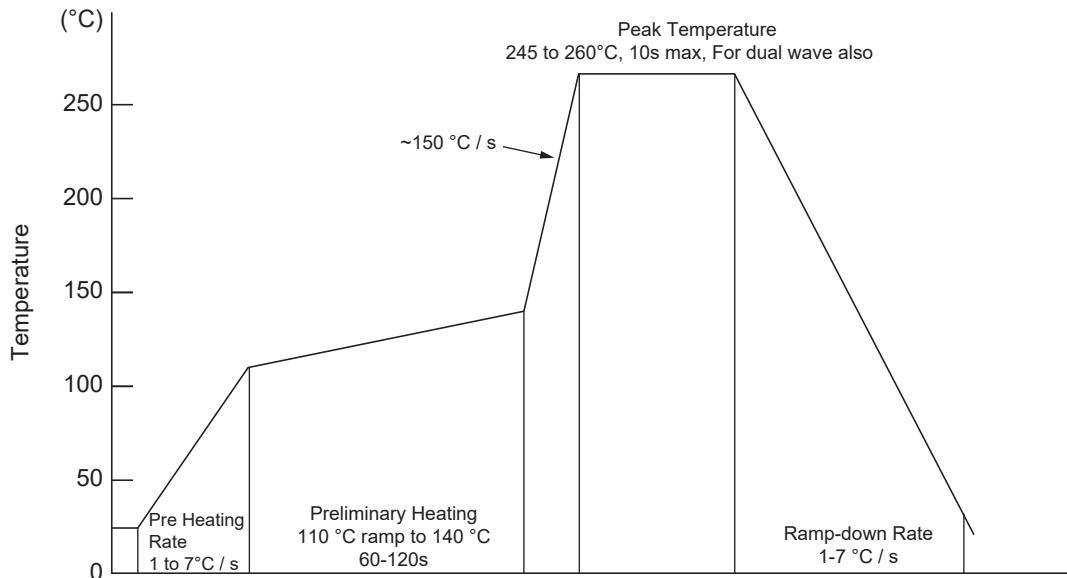
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	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
TN50H20NTF	TO-220F	50PCS/Tube

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

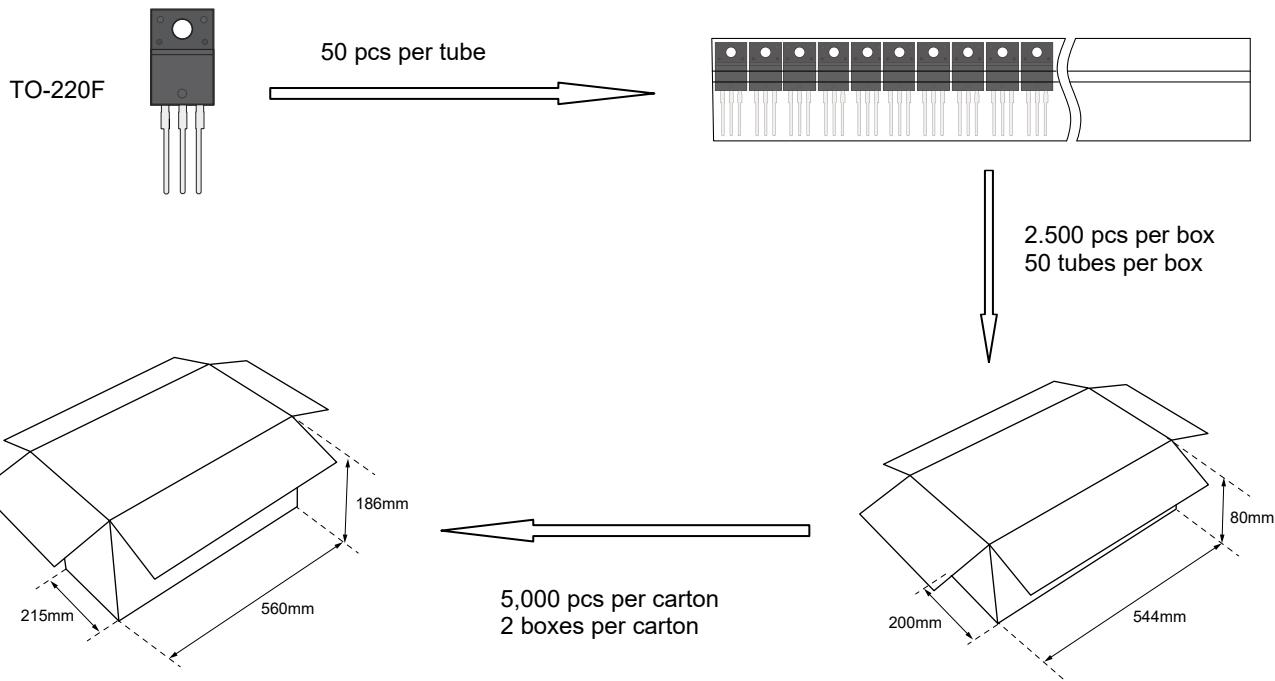
- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

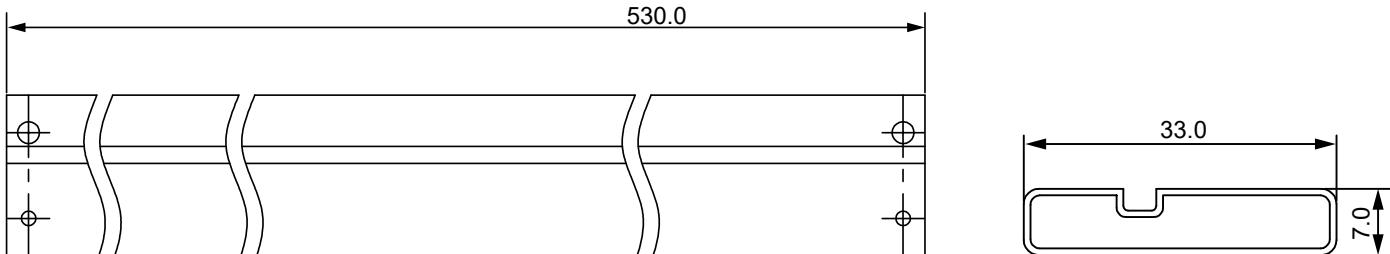
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

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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