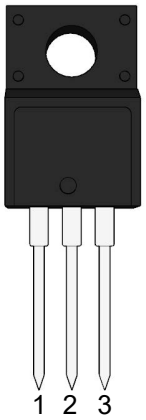
TN70H07NTF

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 700V,I_D= 07A
- $R_{DS(on)}$< 1.55Ω @V_{GS}= 10V

TO-220F



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

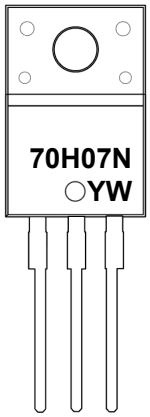
Features

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

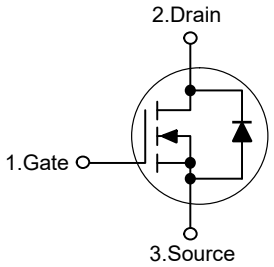
Application

- High Efficiency Switch Mode Power Supplies
- Electronic Ballasts
- UPS

Marking Code



Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	700	V
Gate-Source Voltage	V_{GS}	±30	V
Drain Current-Continuous	I_D	07	A
Drain Current-Pulsed Note1	I_{DM}	28	A
Maximum Power Dissipation	P_D	41	W
Single Pulse Avalanche Energy Note2	E_{AS}	530	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.99	°C/W

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Electrical Characteristics

(T_J=25℃ unless o therwise s pecified)

PARAMETER		Symbols	TEST CONDITIONS	Min	Typ	Max	Units
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V,I_D=250uA	700			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=700V,V_{GS}=0V			1	uA
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=30V,V_{DS}=0V			100	nA
	Reverse		V_{GS}=-30V,V_{DS}=0V			-100	
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V,I_D=3.5A		1.18	1.4	Ω
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	V_{DS}=25V,		497		pF
Output Capacitance		C_{OSS}	V_{GS}=0V,		27		pF
Reverse Transfer Capacitance		C_{RSS}	f=1.0MHz		3.5		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note 1)		Q_G	V_{DS}=560V,V_{GS}=10V,		18		nC
Gate-Source Charge		Q_{GS}	I_D=7A,I_G=1mA		3.9		nC
Gate-Drain Charge		Q_{GD}	(NOTE1,2)		9.3		nC
Turn-On Delay Time (Note 1)		$t_{D(ON)}$	V_{DS}=100V,V_{GS}=10V,		10		ns
Turn-On Rise Time		t_R	I_D=7A,R_G=25Ω		28		ns
Turn-Off Delay Time		$t_{D(OFF)}$	(NOTE1,2)		53		ns
Turn-Off Fall Time		t_F			26		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Maximum Body-Diode Continuous Current		I_S				7	A
Maximum Body-Diode Pulsed Current		I_{SM}				28	A
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_S=7A,V_{GS}=0V			1.4	V
Reverse Recovery Time (Note 1)		trr	I_S=7A,V_{GS}=0V,		317		ns
Reverse Recovery Charge		Qrr	di/dt=100A/us		2.4		uC

Notes:
1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

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Typical Characteristic Curves

Fig.1 Drain Current vs. Gate-Source Voltage

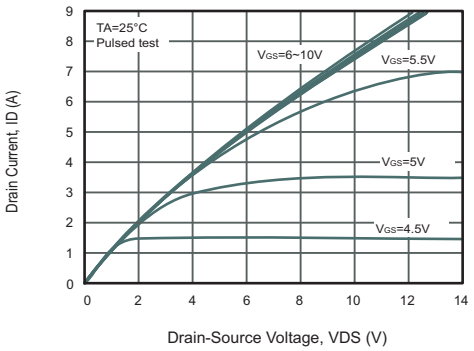

Fig.2 Drain-Source On-Resistance vs. Gate-Source Voltage

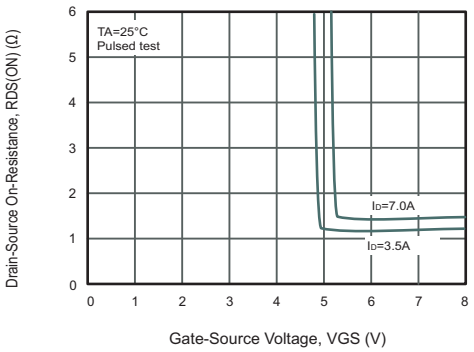

Fig.3 Gate Charge Characteristics

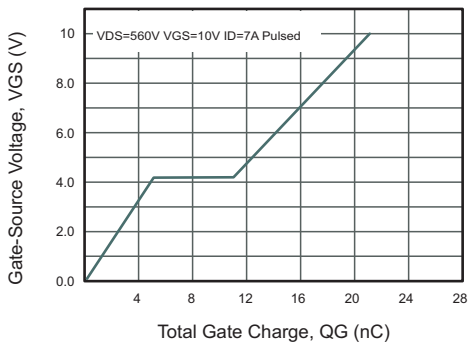

Fig.4 Capacitance Characteristics

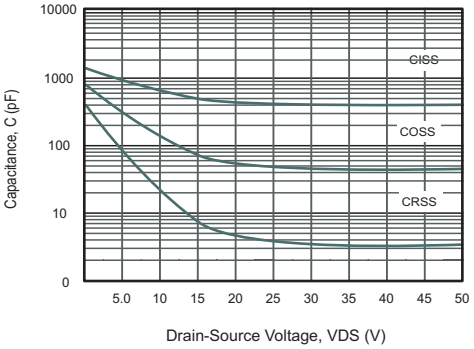

Fig.5 Drain-Source On-Resistance vs. Junction Temperature

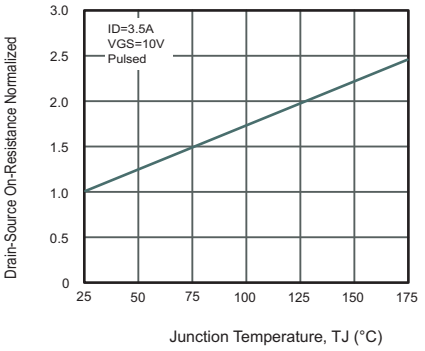

Fig.6 Breakdown Voltage vs. Junction Temperature

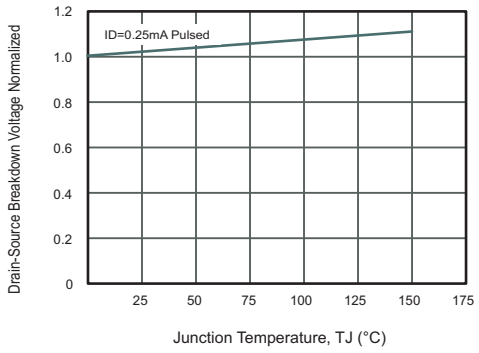

Fig.7 Gate Threshold Voltage vs. Junction Temperature

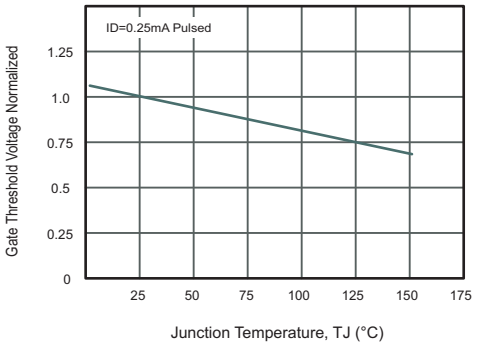

Fig.8 Source Current vs. Source-Drain Voltage

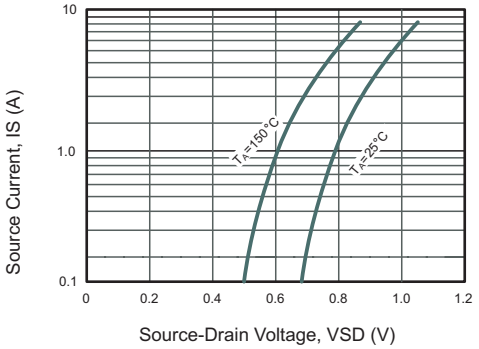

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Fig.9 Drain Current vs. Gate-Source Voltage

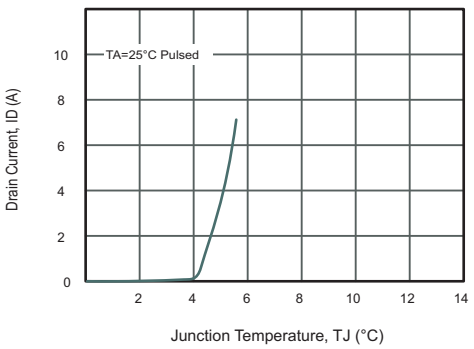


Fig.10 Drain-Source On-Resistance vs. Drain Current

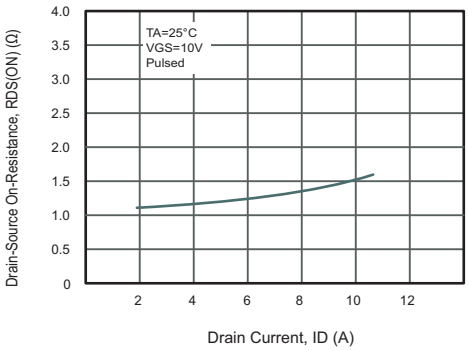


Fig.11 Power Dissipation vs. Junction Temperature

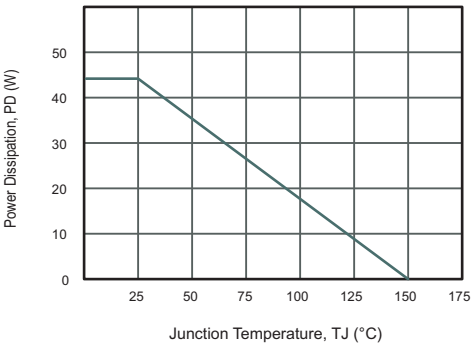


Fig.12 Drain Current vs. Junction Temperature

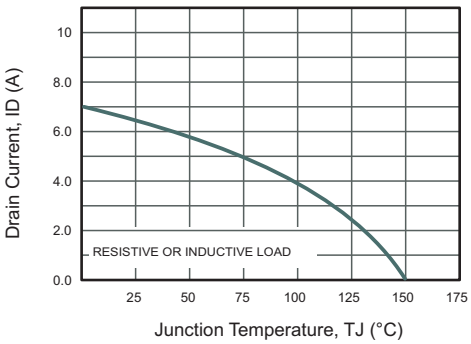
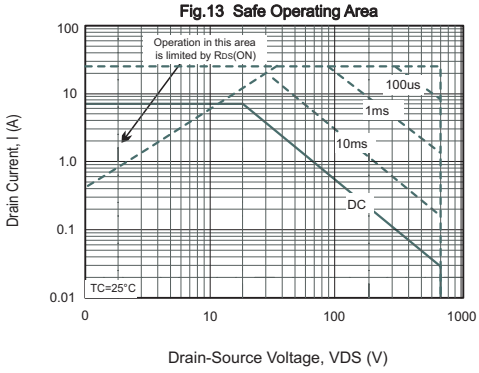


Fig.13 Safe Operating Area



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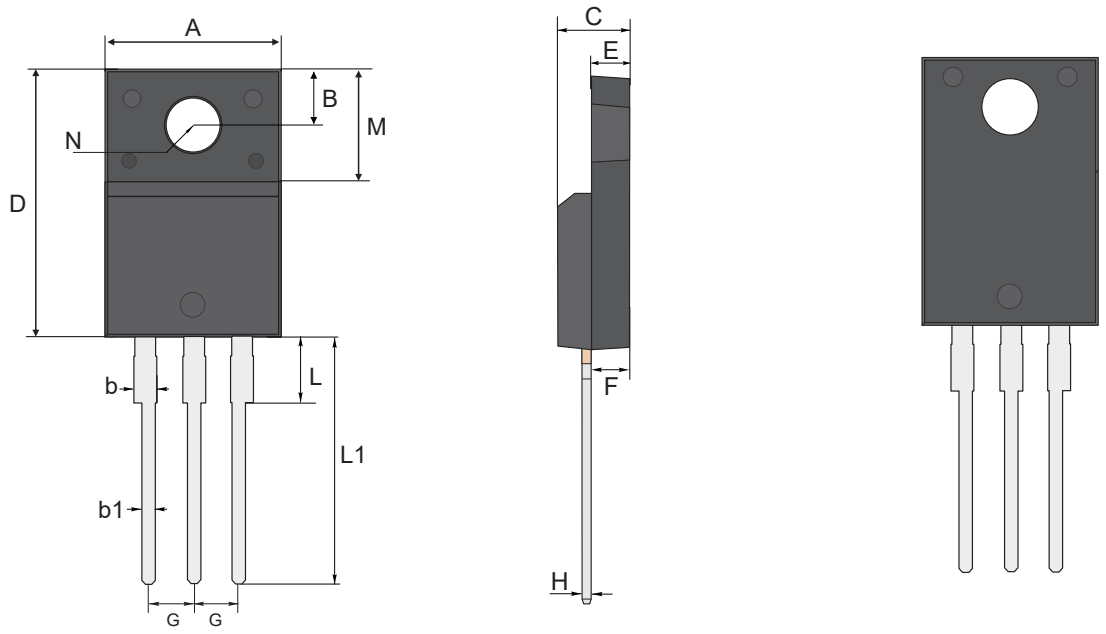
Package Outline

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
TN70H07NTF	TO-220F	50PCS/Tube

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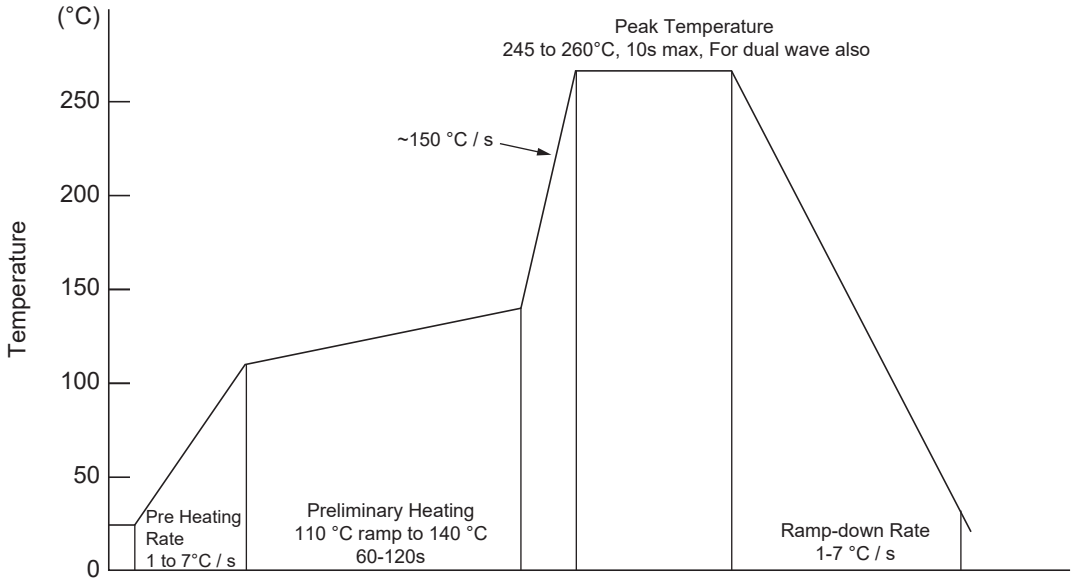
Conditions of Soldering and Storage

◆ 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

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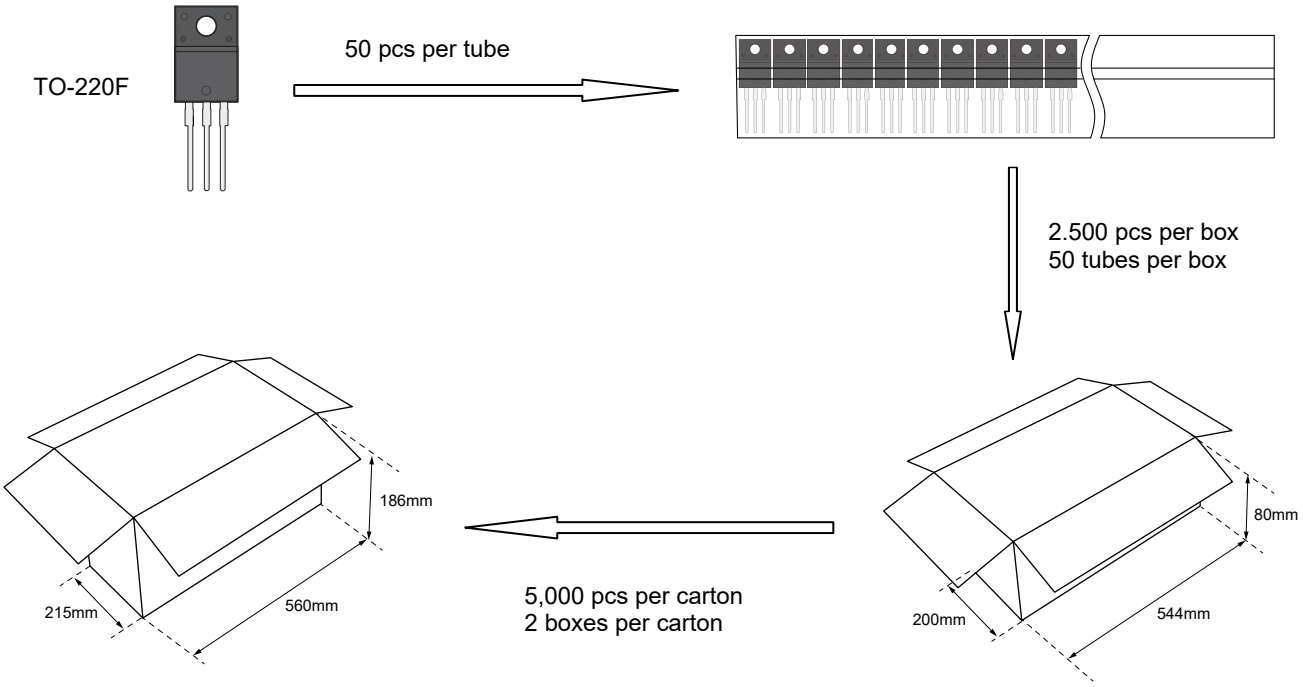
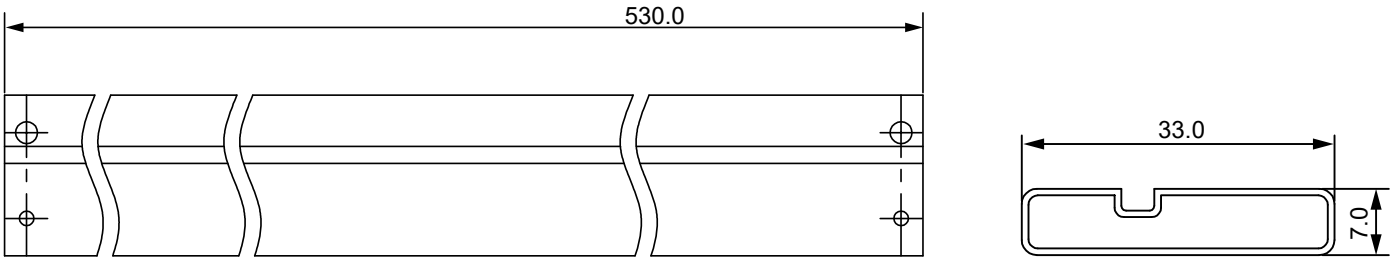
Package Specifications

- 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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