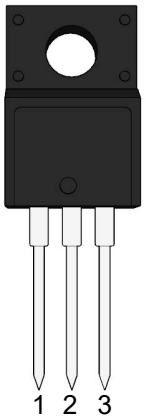
TN70H18NTF

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 700V,I_D= 18A
- $R_{DS(on)}$< 0.6Ω @V_{GS}= 10V

TO-220F



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

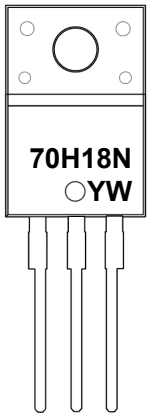
Features

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

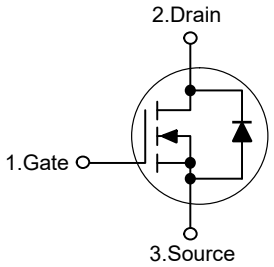
Application

- 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	18	A
Drain Current-Pulsed Note1	I_{DM}	36	A
Maximum Power Dissipation	P_D	46	W
Single Pulse Avalanche Energy Note2	E_{AS}	297	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.7	°C/W

Electrical Characteristics

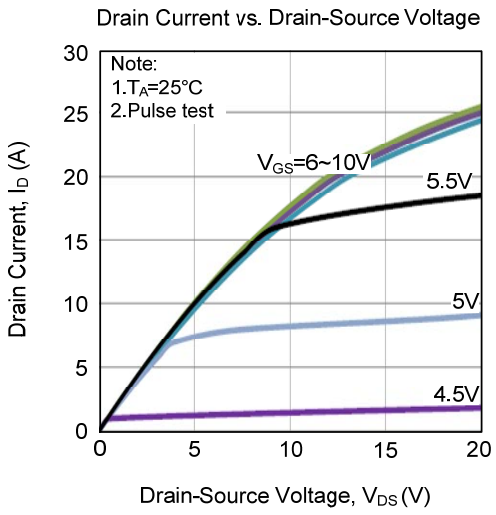
(T_J=25℃ unless o therwise s pecified)

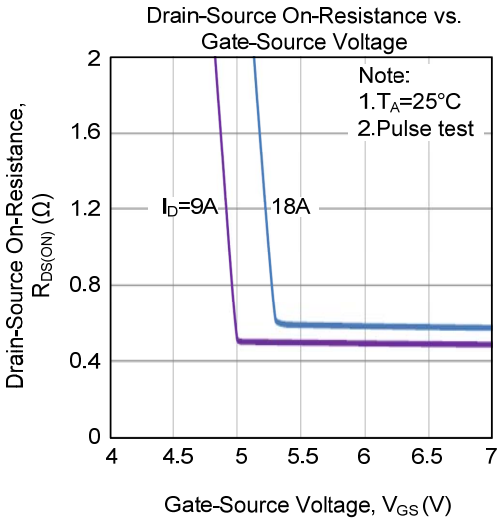
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	700			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=700V, V_{GS}=0V			10	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+30V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-30V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	2.0		4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=9.0A		0.5	0.6	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz		2901		pF
Output Capacitance		C_{OSS}			241		pF
Reverse Transfer Capacitance		C_{RSS}			22		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{DS}=560V, V_{GS}=10V, I_D=18A I_G=1mA (Note 1, 2)		69		nC
Gate to Source Charge		Q_{GS}			21		nC
Gate to Drain Charge		Q_{GD}			23		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=100V, V_{GS}=10V, I_D=18A, R_G=25Ω (Note 1, 2)		42		ns
Rise Time		t_R			32		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			188		ns
Fall-Time		t_F			49		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I_S				18	A
Maximum Body-Diode Pulsed Current		I_{SM}				36	A
Drain-Source Diode Forward Voltage		V_{SD}	I_S=18A, V_{GS}=0V			1.4	V
Body Diode Reverse Recovery Time		t_{rr}	I_S=18A, V_{GS}=0V, dI_F/dt=100A/μs (Note 1)		525		ns
Reverse Recovery Charge		Q_{rr}			10		μC

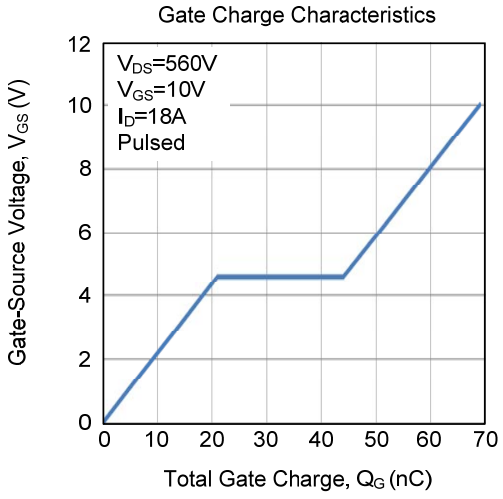
Notes: 1. Pulse Test: Pulse width ≤ 700μs, Duty cycle ≤ 2%.

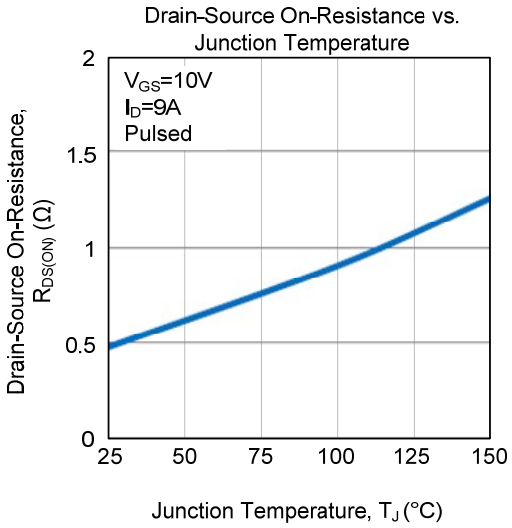
2. Essenti ly independent of operating temperature.

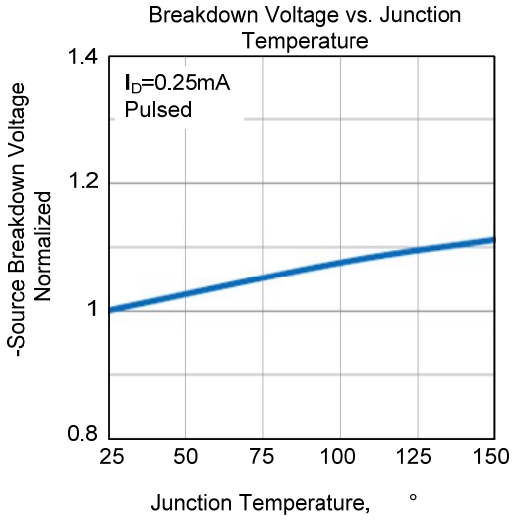
Typical Characteristic Curves

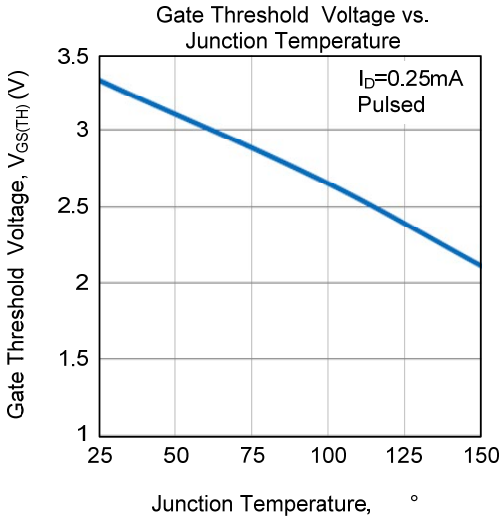




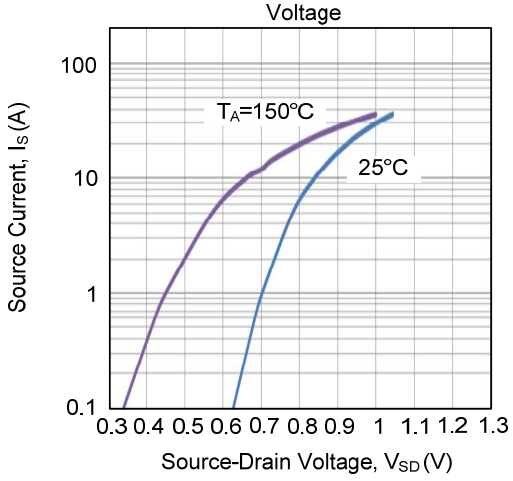




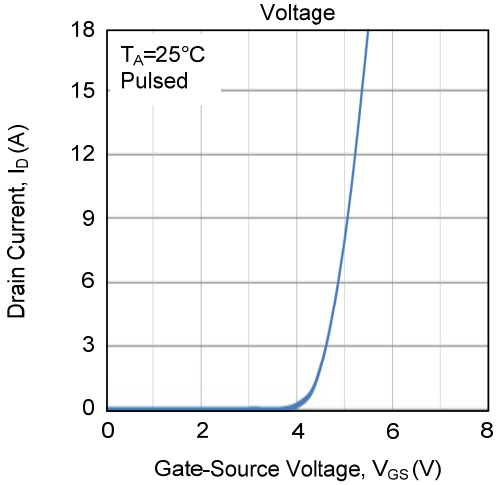




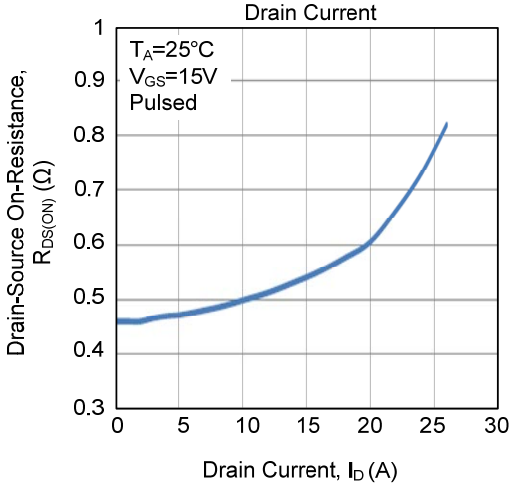
Source Current vs. Source-Drain Voltage



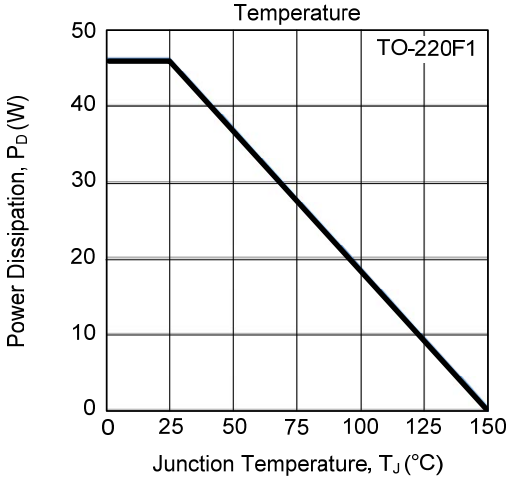
Drain Current vs. Gate-Source Voltage



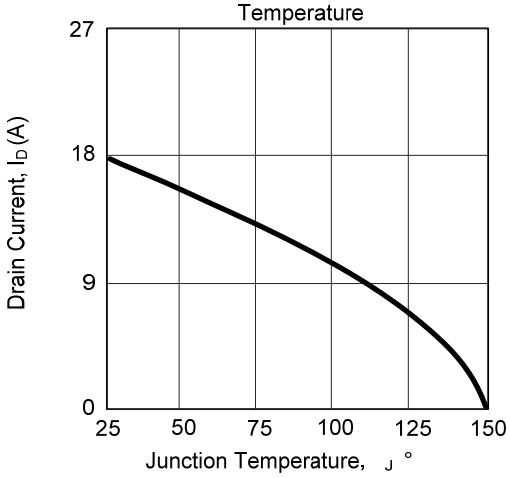
Drain-Source On-Resistance vs. Drain Current



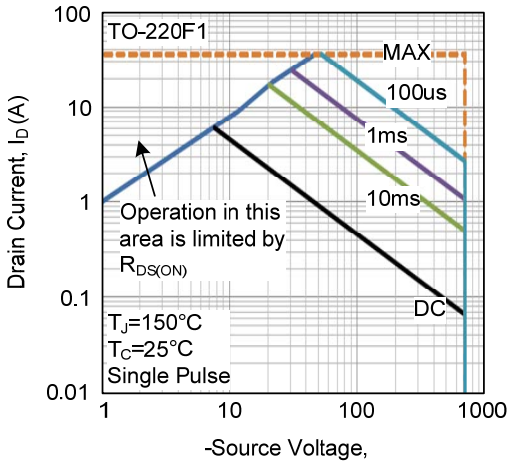
Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



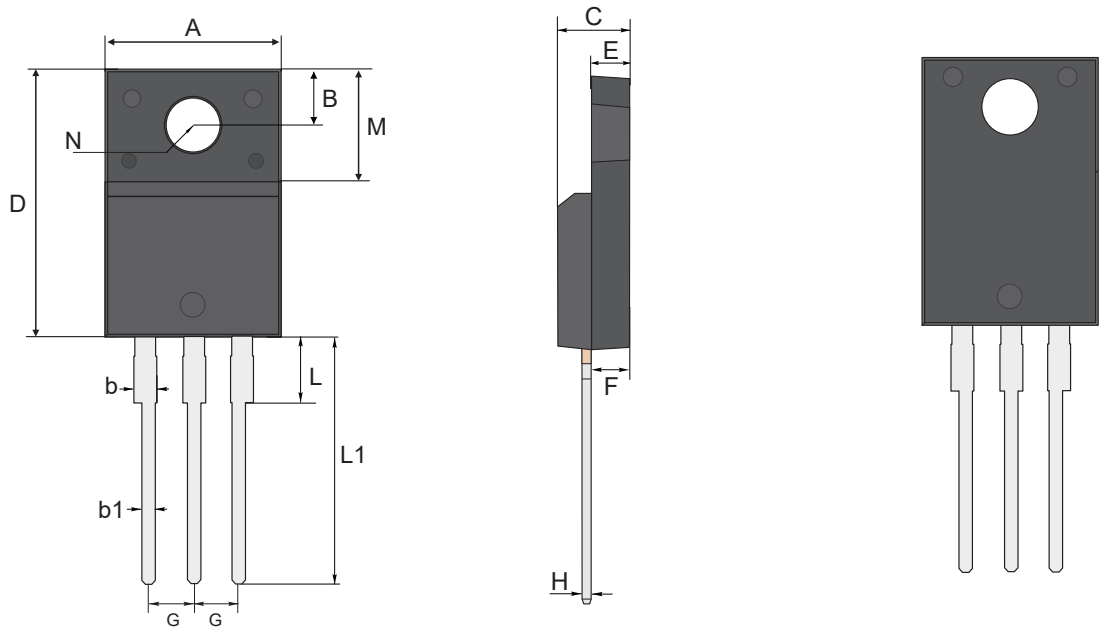
Safe Operating Area



Package Outline

TO-220F

Dimensions in mm



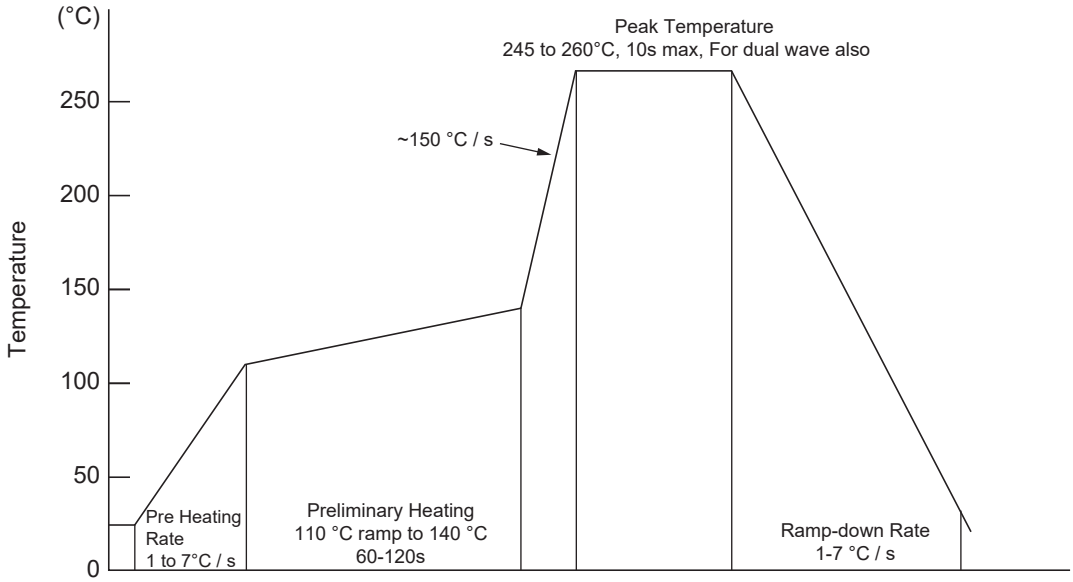
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	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
TN70H18NTF	TO-220F	50PCS/Tube

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

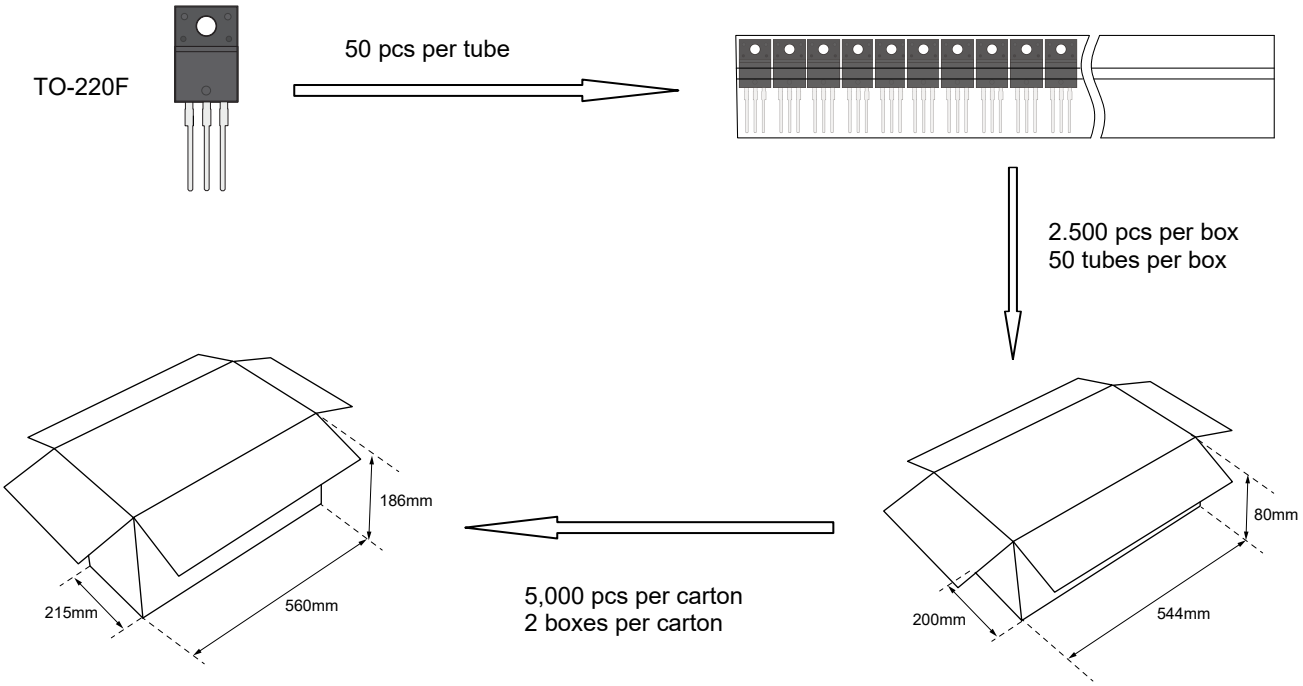
- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

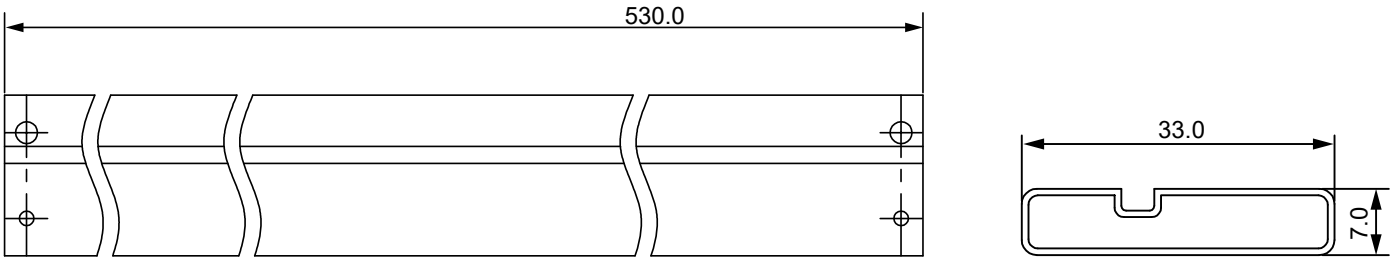
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

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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