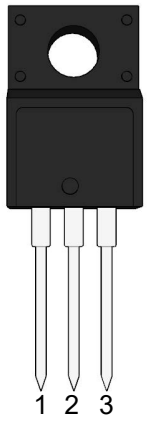
TN60H02NTF

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 600V,I_D= 02A
- $R_{DS(on)}$< 4.5Ω @V_{GS}= 10V

TO-220F



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

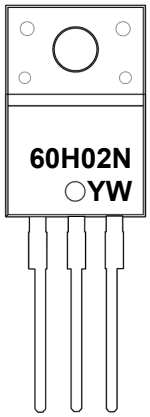
Features

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

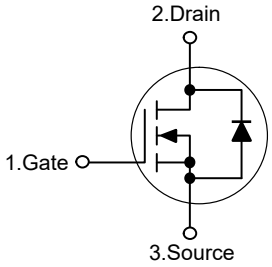
Application

- High Efficiency Switch Mode Power Supplies
- Electronic Lamp Ballasts Based on Half Bridge
- LED Power Supplies

Marking Code



Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±30	V
Drain Current-Continuous	I_D	2	A
Drain Current-Pulsed Note1	I_{DM}	8	A
Maximum Power Dissipation	P_D	41	W
Single Pulse Avalanche Energy Note2	E_{AS}	320	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	2.5	°C/W

Electrical Characteristics

(T_J=25℃ unless o therwise s pecified)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	600	650	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250uA	2.0	-	4.0	V
Gate-Body Leakage	I_{GSS}	V_{DS}=0V， V_{GS}=30V	-	0.8	100	nA
		V_{DS}=0V， V_{GS}=-30V	-	-4	-100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V V_{GS}=0V	-	0.8	20	uA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1A	-	3.8	4.5	Ω
Forward Transconductance	g_{FS}	V_{DS} =15V, I_D= 1A	-	2	10	S
Drain-Source Diode Forward Continuous Current	Is	V_{GS}=0V	-	-	2	A
Source-drain (diode forward) voltage	V_{SD}	V_{GS}=0V,I_S=2A		0.85	1.4	V
Dynamic Characteristics						
Input Capacitance	Ciss	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	-	347	-	pF
Output Capacitance	Coss		-	61	-	
Reverse Transfer Capacitance	Crss		-	16	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	V_{DD} = 300 V, R_G = 10Ω V_{GS} = 10V, I_D = 2A	-	19.4	-	ns
Rise Time	tr		-	7.74	-	
Turn-Off Delay Time	td(off)		-	28.7	-	
Fall-Time	tf		-	9.3	-	
Total Gate Charge	Qg	V_{DS} = 300V, V_{GS} = 10V, I_D = 2A		7.84	-	nc
Gate-Source Charge	Qgs		-	1.91	-	
Gate-Drain Charge	Qgd		-	3	-	

1、Repetitive rating, pulse width limited by junction temperature.

2、Pulse width <300us , duty cycle <2%.

3、I_{SD}=2.0A di/dt≤100A/us,V_{DD}≤BV_{DSS}, T_J≤=150℃.

4、L=2.2mH,V_{DD}=50V,I_D=2.0A,R_G=25Ω,Starting T_J=25℃.

Typical Characteristic Curves

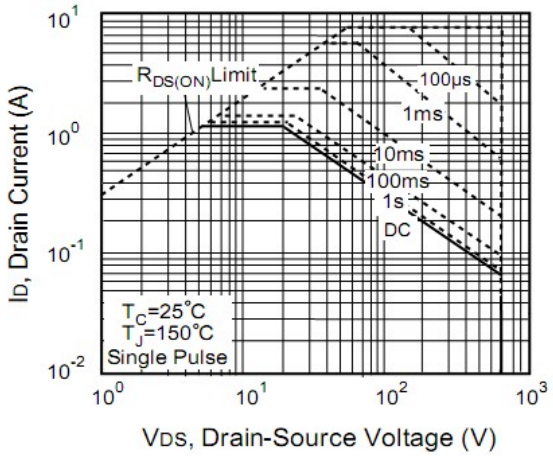


Figure 1 Maximum Safe Operating Area

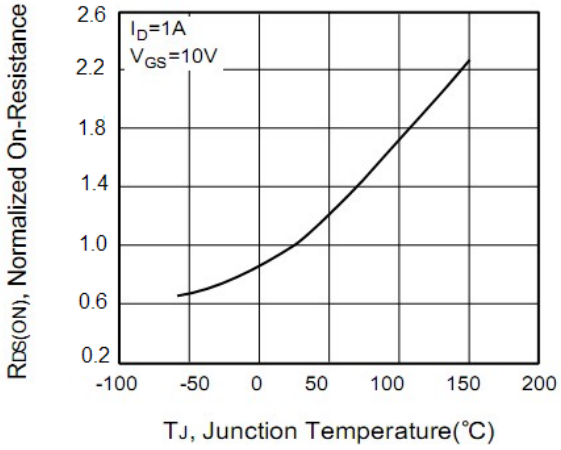


Figure 2. Normalized On-Resistance Variation with Temperature

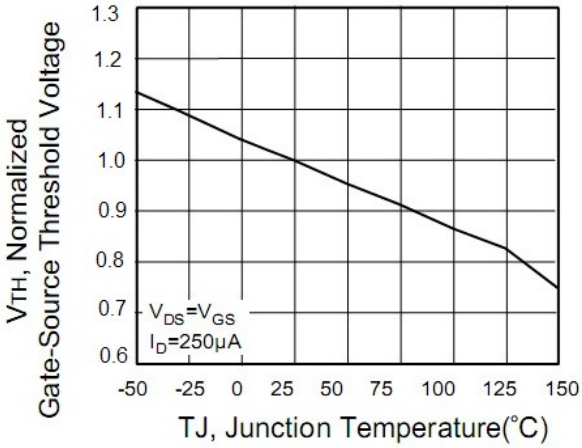


Figure 3. Gate Threshold Variation with Temperature

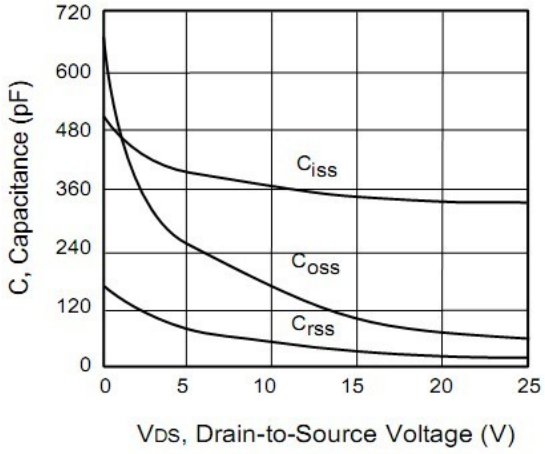


Figure 4. Capacitance Characteristics

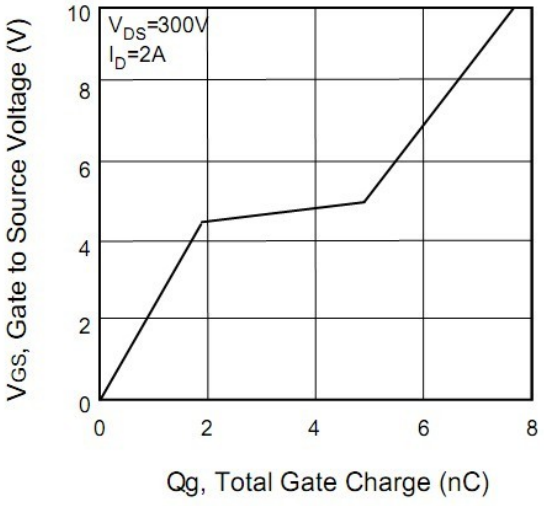


Figure 5. Gate Charge Characteristics

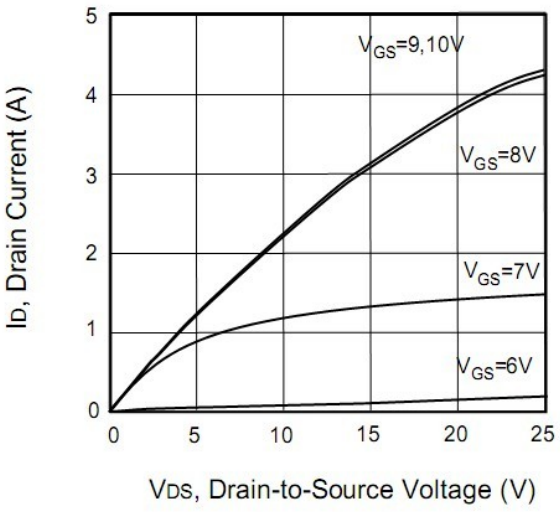


Figure 6. On-State Characteristics

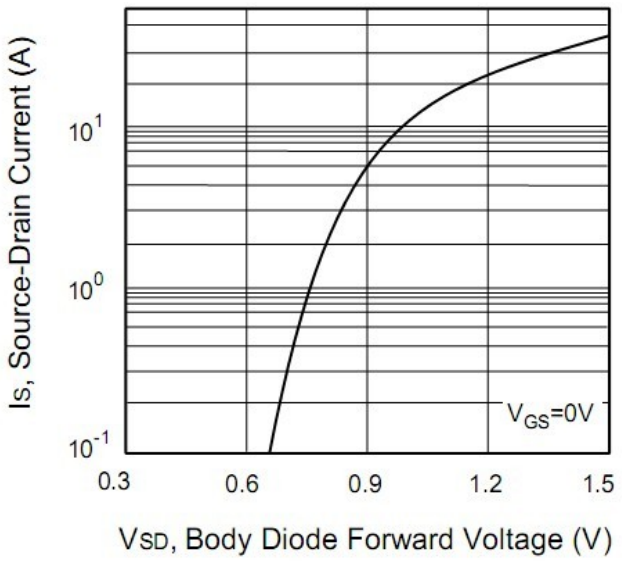


Figure 7. Body Diode Forward Voltage Variation with Source Current

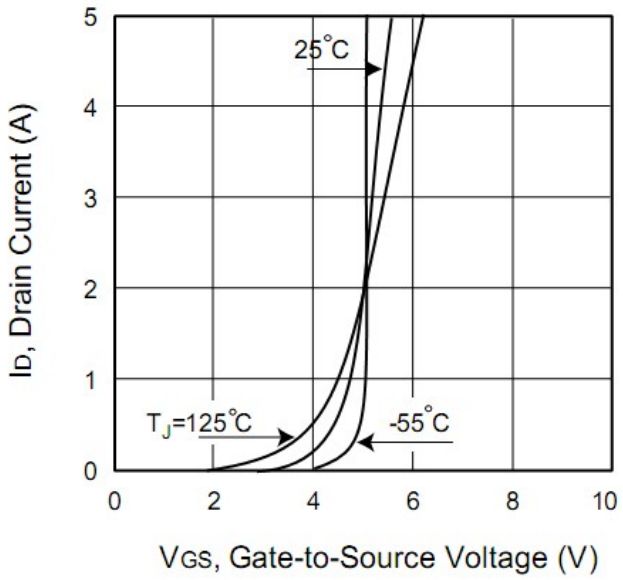


Figure 8. Transfer Characteristics

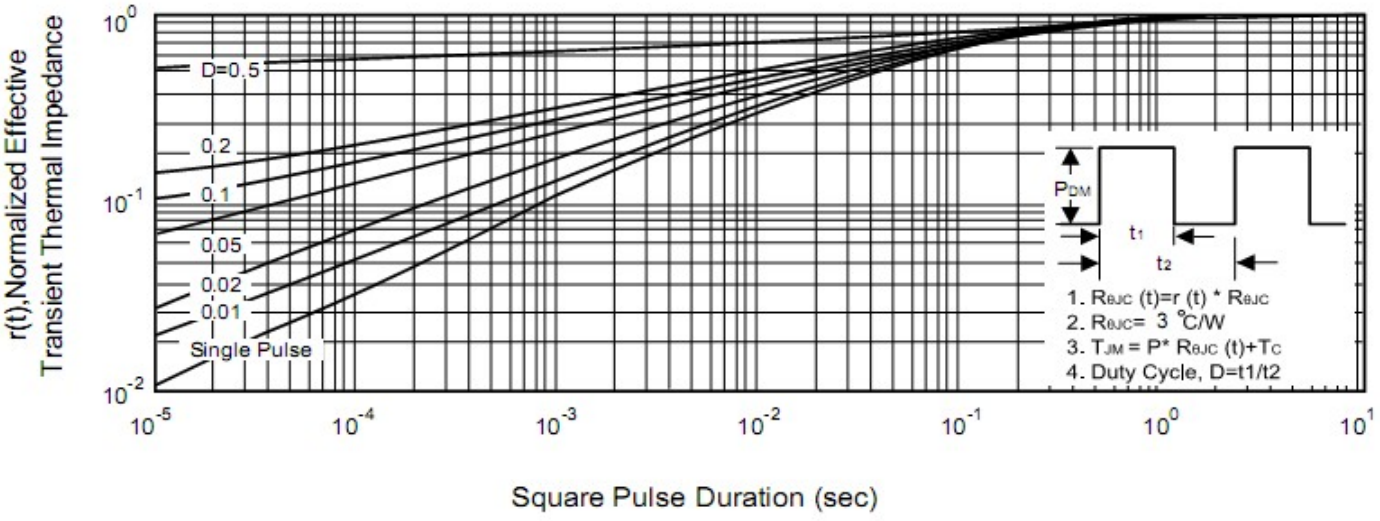
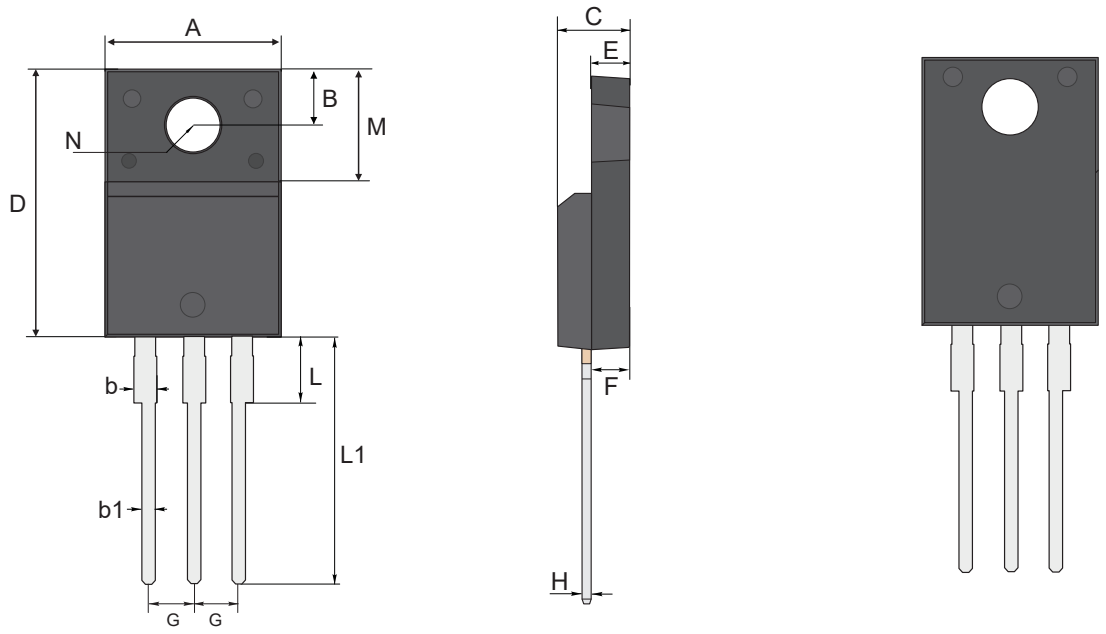


Figure 9 Normalized Effective Transient Thermal Impedance With Pulse Duration

Package Outline

TO-220F

Dimensions in mm



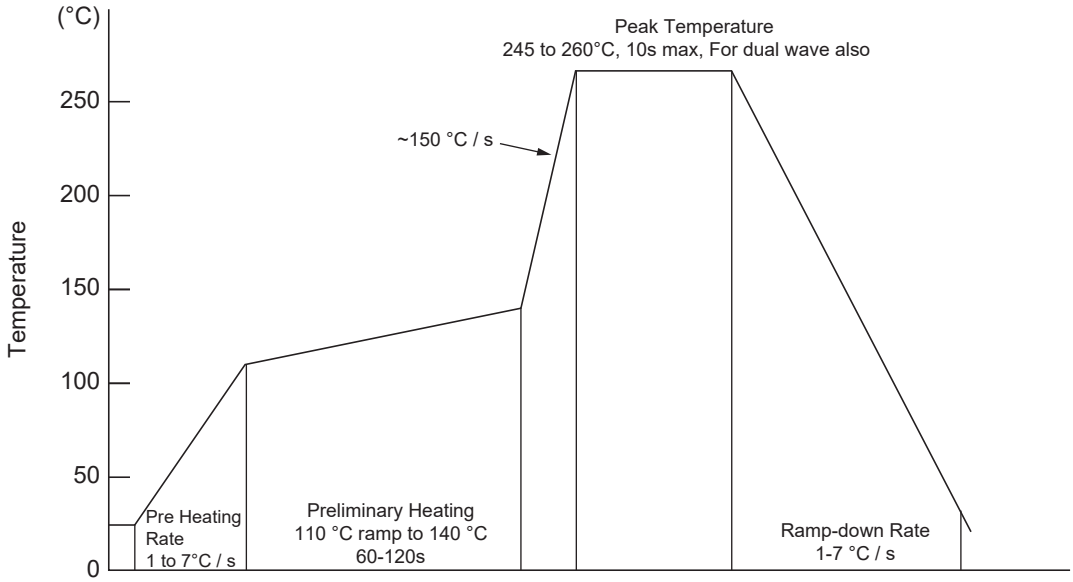
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	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
TN60H02NTF	TO-220F	50PCS/Tube

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

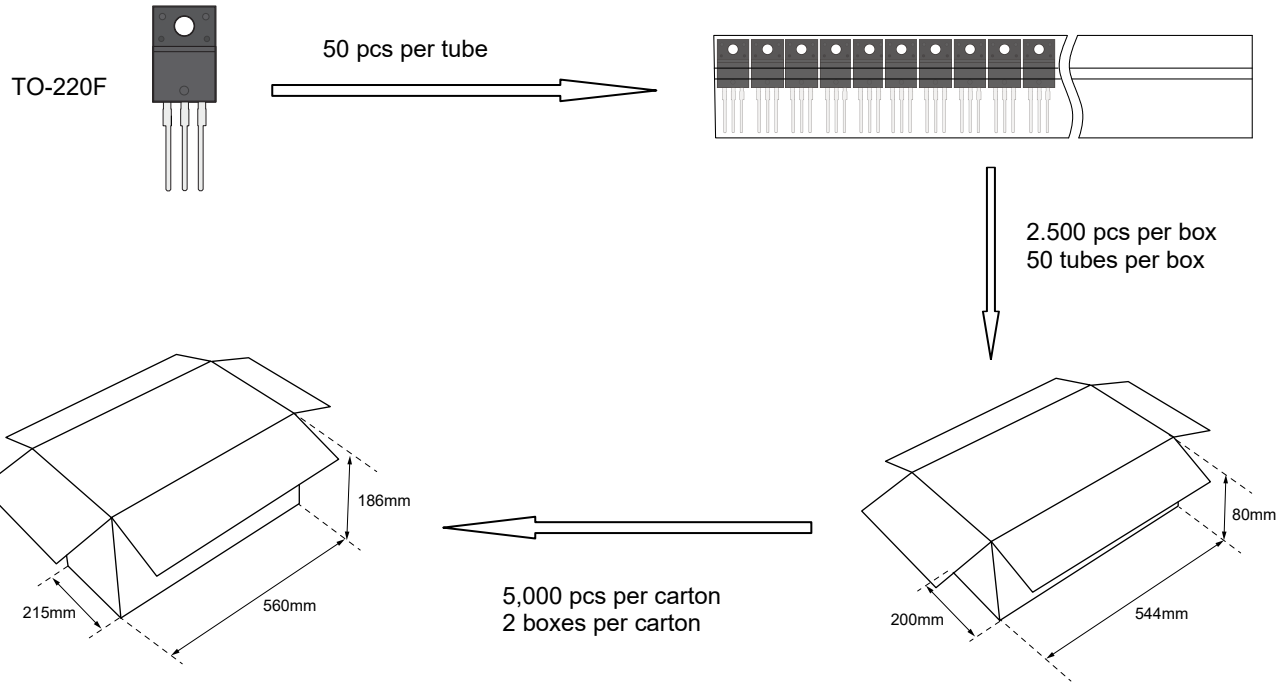
- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

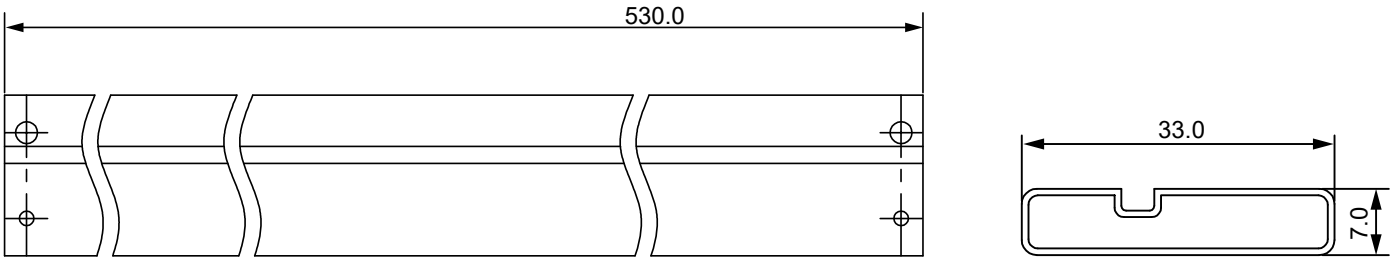
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

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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