

TN60H07NTF

N-Channel Enhancement Mode Power MOSFET

Product Summary

- $V_{DS} = 600V, I_D = 07A$
- $R_{DS(on)} < 1.3\Omega @ V_{GS} = 10V$

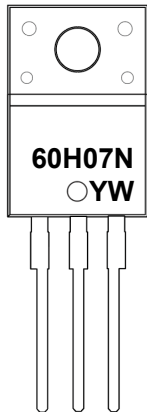
Features

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

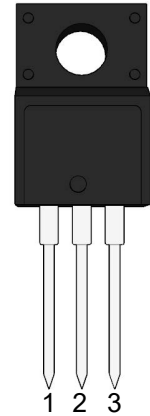
Application

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

Marking Code



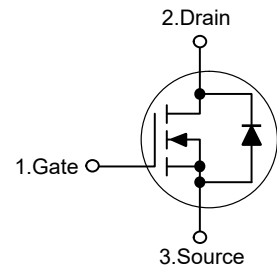
TO-220F



(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}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Drain Current-Continuous	I_D	7	A
Drain Current-Pulsed ^{Note1}	I_{DM}	28	A
Maximum Power Dissipation	P_D	50	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	300	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.4	°C/W
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Electrical Characteristics

(T_J=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA , V _{GS} =0	600	-	-	V
△BVDSS/△T _J	Breakdown Voltage Temperature Coefficient	I _D =250μA ,Reference to 25°C	-	0.67	-	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V	-	-	10	μA
		V _{DS} =520V, T _j =125°C			100	
I _{GSSF}	Gate-body leakage Current, Forward	V _{GS} =+30V, V _{DS} =0V	-	-	100	nA
I _{GSSR}	Gate-body leakage Current, Reverse	V _{GS} =-30V, V _{DS} =0V	-	-	-100	
On Characteristics						
V _{GS(TH)}	Date Threshold Voltage	I _D =250μA,V _{DS} =V _{GS}	2	-	4	V
R _{DS(ON)}	Static Drain-Source On-Resistance	I _D =3.5A,V _{GS} =10V	-	1.25	1.35	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V , V _{GS} =0 , f=1.0MHz	-	1000	-	pF
C _{oss}	Output Capacitance		-	95	-	
C _{rss}	Reverse Transfer Capacitance		-	2.4	-	
Switching Characteristics						
T _{d(on)}	Turn-On Delay Time	V _{DD} =325V , I _D =7A R _G =25Ω (Note 3,4)	-	30	70	nS
T _r	Turn-On Rise Time		-	80	170	
T _{d(off)}	Turn-Off Delay Time		-	65	140	
T _f	Turn-Off Rise Time		-	60	130	
Q _g	Total Gate Charge	V _{DS} =520V,V _{GS} =10V , I _D =7A (Note 3,4)	-	29	38	nC
Q _{gs}	Gate-Source Charge		-	7	-	
Q _{gd}	Gate-Drain Charge		-	14.5	-	
Drain-Source Diode Characteristics and Maximum Ratings						
I _s	Max. Diode Forward Current	-	-	-	7	A
I _{SM}	Max. Pulsed Forward Current	-	-	-	28	
V _{SD}	Diode Forward Voltage	I _D =7A	-	-	1.4	V
T _{rr}	Reverse Recovery Time	I _S =7A,V _{GS} =0V diF/dt=100A/μs	-	293	-	nS
Q _{rr}	Reverse Recovery Charge	(Note3)	-	1.7	-	μC

Notes : 1, L=0.5mH, I_{AS}= 7A, V_{DD}=50V, R_G=25Ω, Starting T_J =25°C

2, Repetitive Rating : Pulse width limited by maximum junction temperature

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

4, Essentially Independent of Operating Temperature

Typical Characteristic Curves

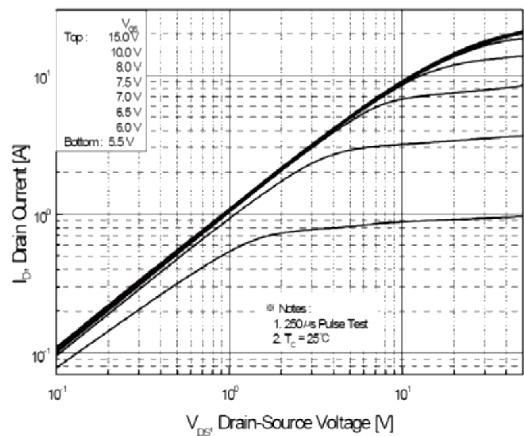


Figure 1. On-Region Characteristics

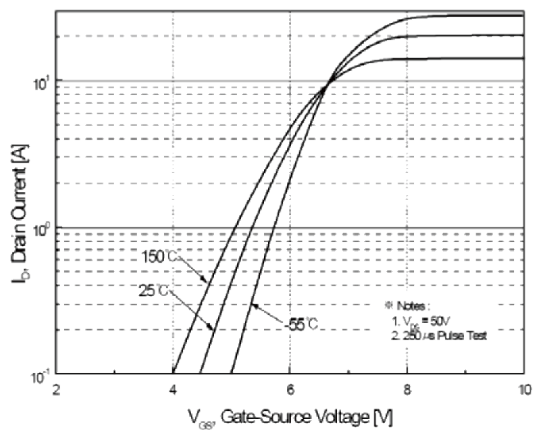


Figure 2. Transfer Characteristics

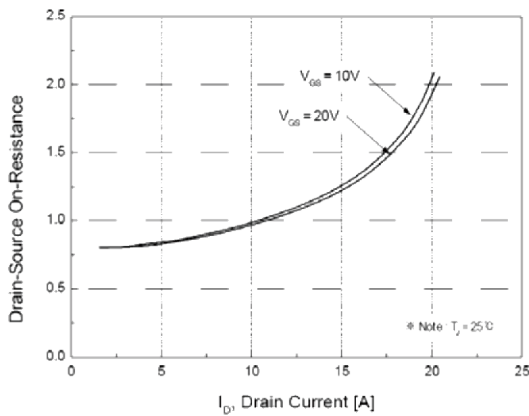


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

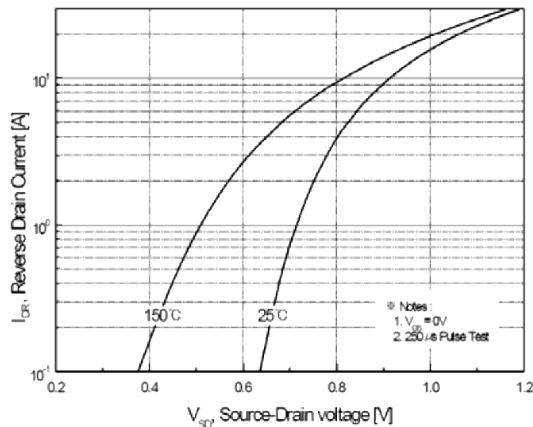


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

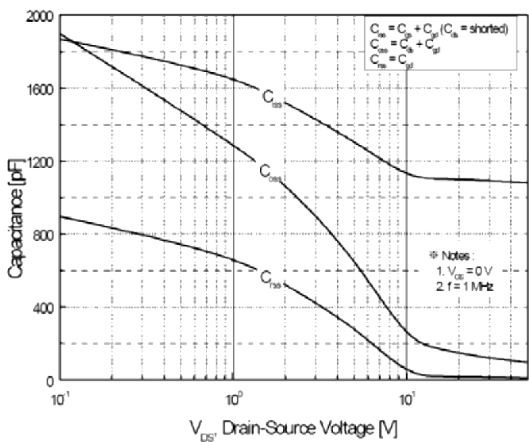


Figure 5. Capacitance Characteristics

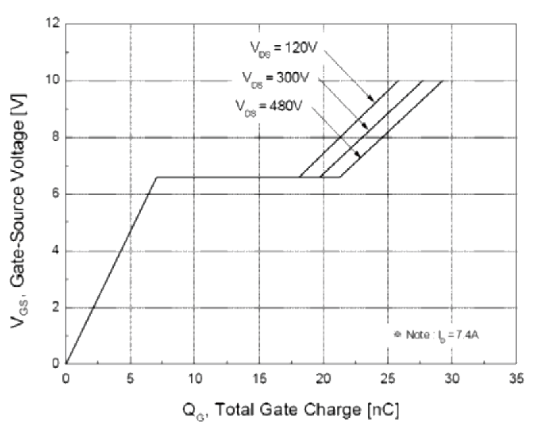


Figure 6. Gate Charge Characteristics

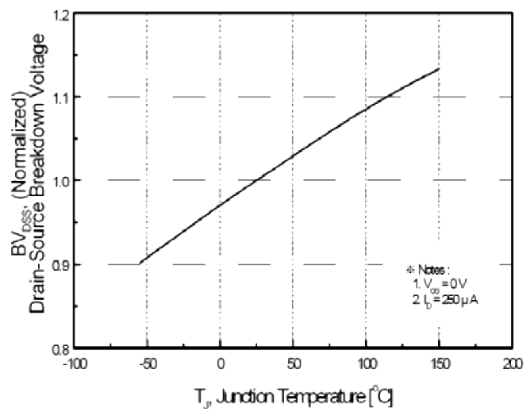


Figure 7. Breakdown Voltage Variation vs Temperature

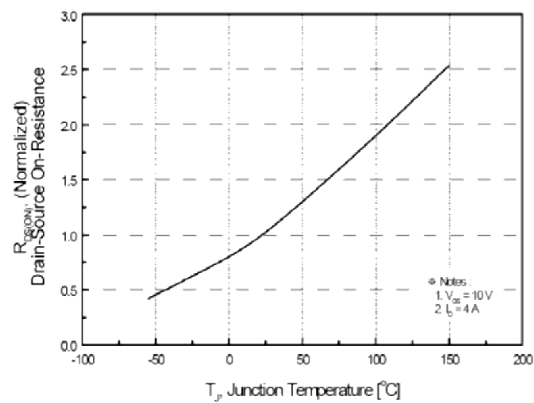


Figure 8. On-Resistance Variation vs Temperature

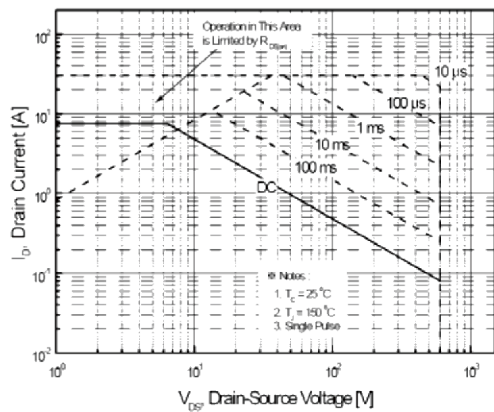


Figure 9-2. Maximum Safe Operating Area

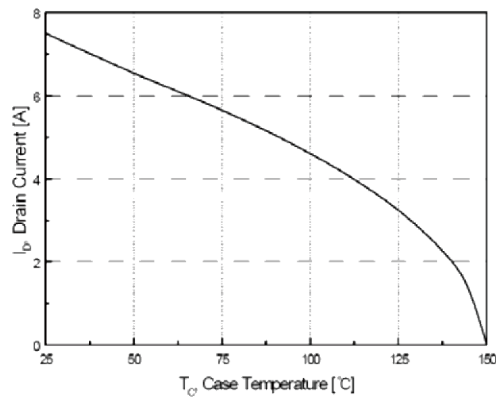


Figure 10. Maximum Drain Current vs Case Temperature

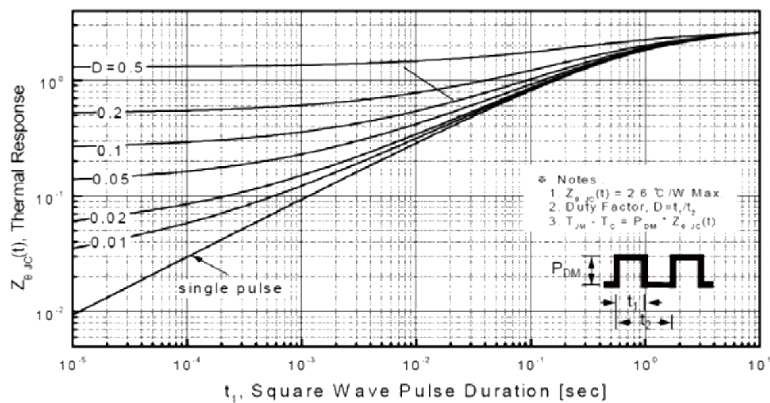
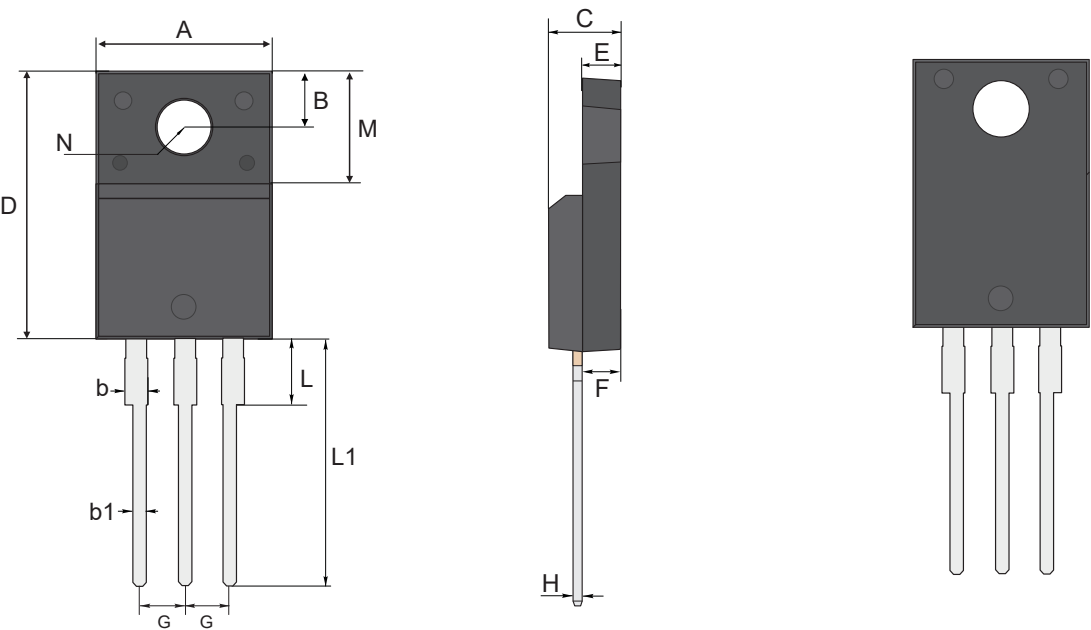


Figure 11-2. Transient Thermal Response Curve

Package Outline

TO-220F

Dimensions in mm



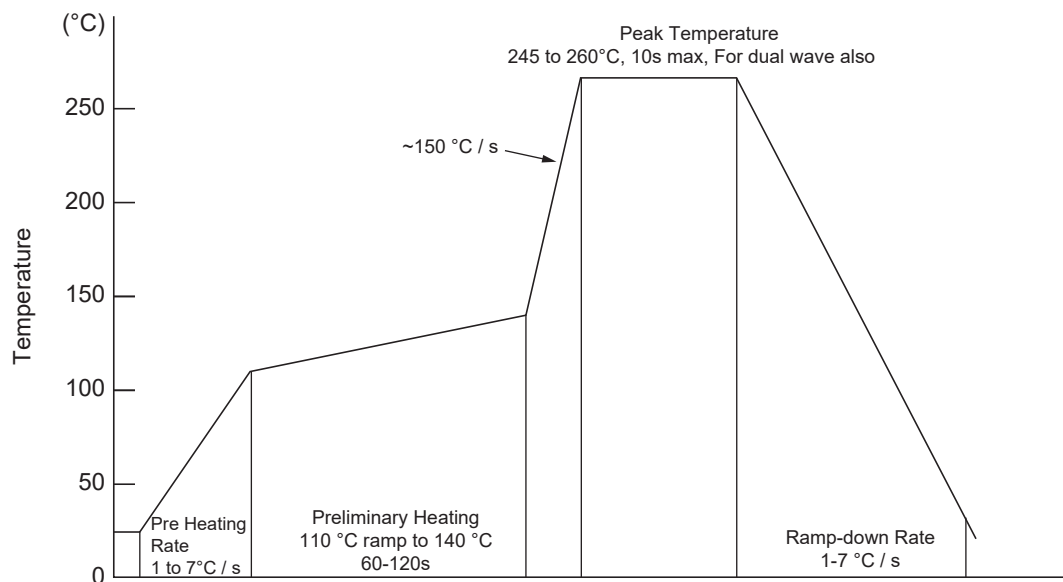
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	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
TN60H07NTF	TO-220F	50PCS/Tube

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

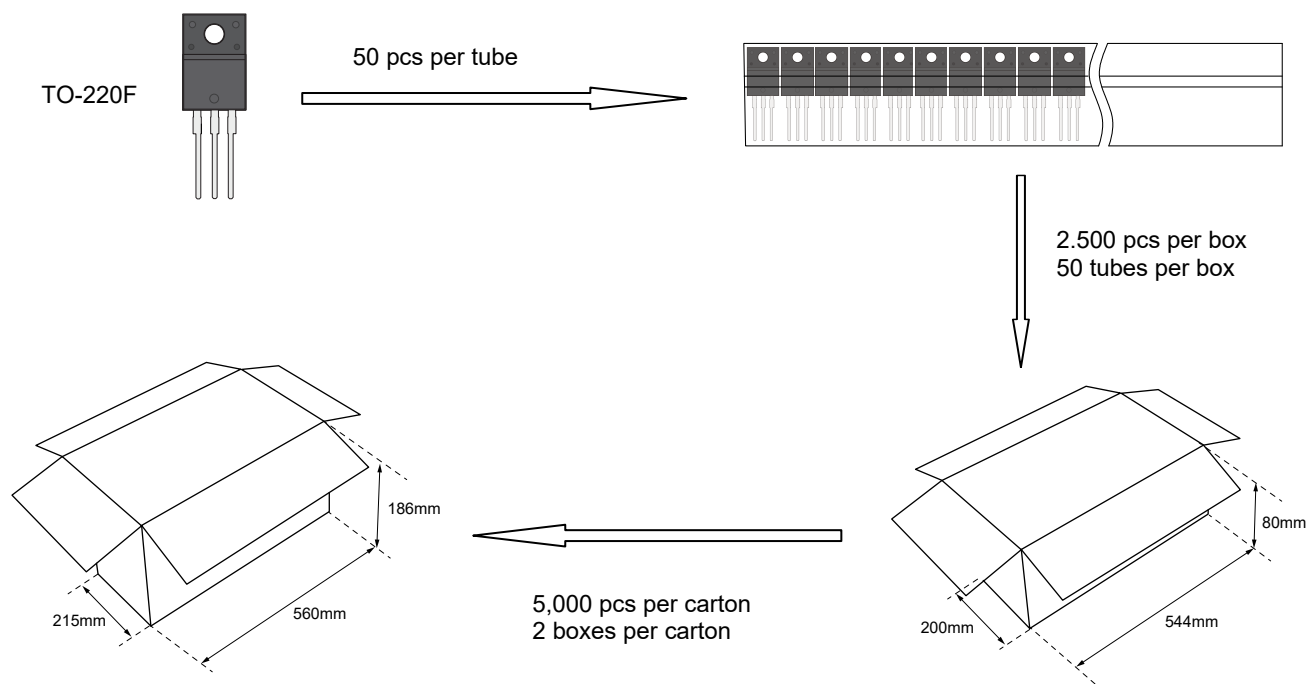
- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

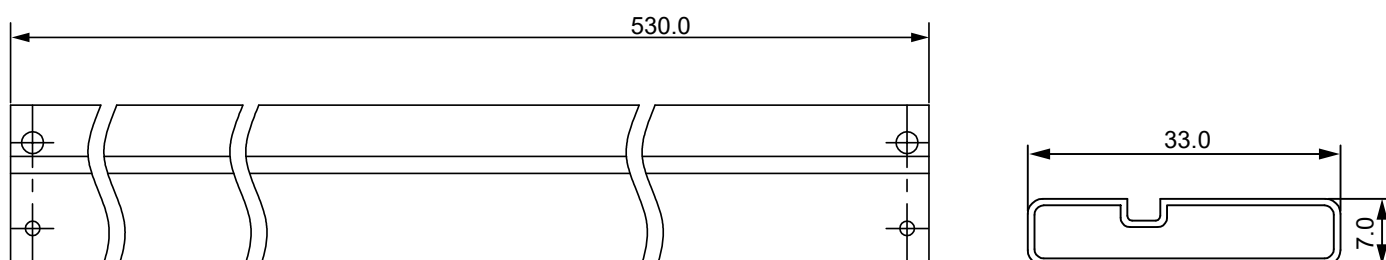
- **Temperature**
5 to 40°C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

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

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