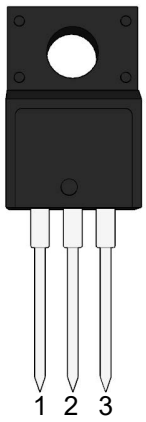
TN80H10NTF

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 800V,I_D=10A
- $R_{DS(on)}$< 1.1Ω @V_{GS}= 10V

TO-220F



(Top View)

Pin	Description
1	Gate
2	Drain
3	Source

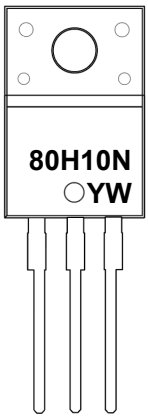
Features

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

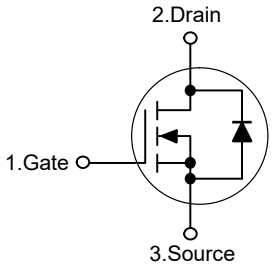
Application

- Uninterruptible Power Supply
- High Frequency Switching Mode Power Supply
- Electronic Ballast

Marking Code



Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	±30	V
Drain Current-Continuous	I_D	10	A
Drain Current-Pulsed Note1	I_{DM}	40	A
Maximum Power Dissipation	P_D	240	W
Single Pulse Avalanche Energy Note2	E_{AS}	920	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.52	°C/W

Electrical Characteristics

(T_J=25℃ unless o therwise s pecified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
On Characteristics						
V_{GS}	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 uA	3.0	--	5.0	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 5.0A	--	0.93	1.10	Ω
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 uA	800	--	--	V
△BVDSS / △TJ	Breakdown Voltage Temperature Coefficient	ID = 250 uA, Referenced to 25℃	--	0.99	--	V/℃
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 800 V, V_{GS} = 0 V	--	--	1	uA
		V_{DS} = 640 V, T_C = 125℃	--	--	10	uA
I_{GSSF}	Gate-Body Leakage Current,Forward	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current,Reverse	V_{GS} =- 30 V, V_{DS} = 0 V	--	--	-100	nA
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	3500	--	pF
C_{oss}	Output Capacitance		--	180	--	pF
C_{rss}	Reverse Transfer Capacitance		--	15	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Time	V_{DS} = 400 V, I_D = 10.0A, R_G = 25 Ω (Note 4,5)	--	50	--	ns
t_r	Turn-On Rise Time		--	130	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	100	--	ns
t_f	Turn-Off Fall Time		--	80	--	ns
Q_g	Total Gate Charge	V_{DS} = 640 V, I_D = 10.0A, V_{GS} = 10 V (Note 4,5)	--	45	--	nC
Q_{gs}	Gate-Source Charge		--	14	--	nC
Q_{gd}	Gate-Drain Charge		--	18	--	nC
Source-Drain Diode Maximum Ratings and Characteristics						
I_S	Continuous Source-Drain Diode Forward Current		--	--	10.0	A
I_{SM}	Pulsed Source-Drain Diode Forward Current		--	--	40.0	
V_{SD}	Source-Drain Diode Forward Voltage	I_S = 10.0A, V_{GS} = 0 V	--	--	1.5	V
t_{rr}	Reverse Recovery Time	I_S =10.0A, V_{GS} = 0 V di_F/dt = 100 A/μs (Note 4)	--	730	--	ns
Q_{rr}	Reverse Recovery Charge		--	11	--	uC

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L=17.5mH, I_{AS}=10.0A, V_{DD}=50V, R_G=25 Ω,Starting TJ=25 ℃
3. I_{SD}≤10.0A, di/dt ≤ 200A/us, V_{DD} ≤ BV_{DSS}, Starting TJ = 25 ℃
4. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%
5. Essentially Independent of Operating Temperature Typical Characteristics

Typical Characteristic Curves

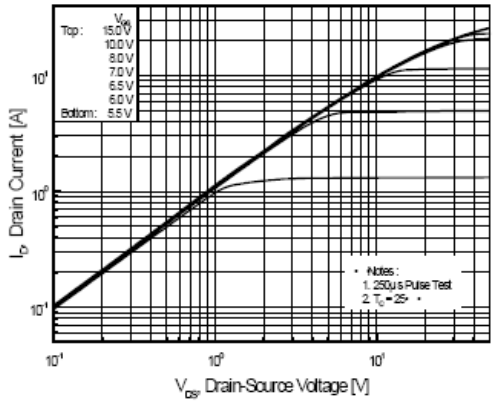


Figure 1. On-Region Characteristics

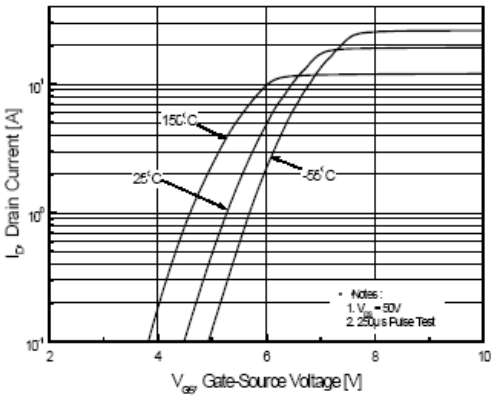


Figure 2. Transfer Characteristics

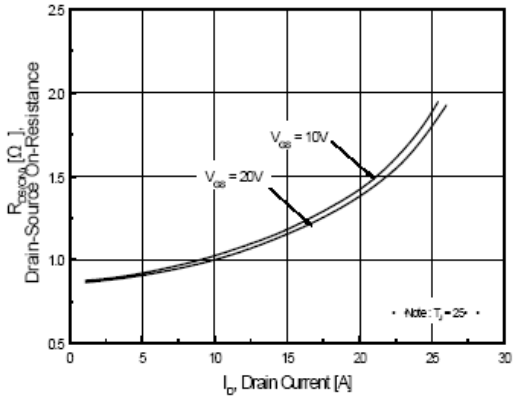


Figure 3. On-Resistance Variation

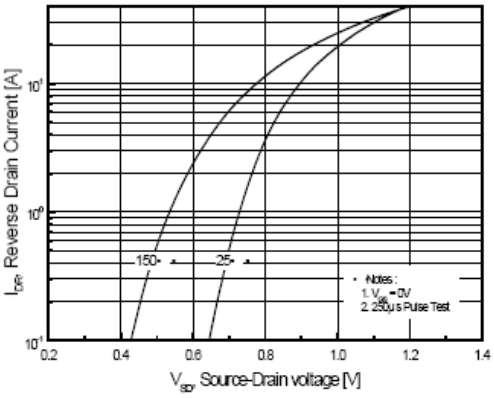


Figure 4. Body Diode Forward Voltage

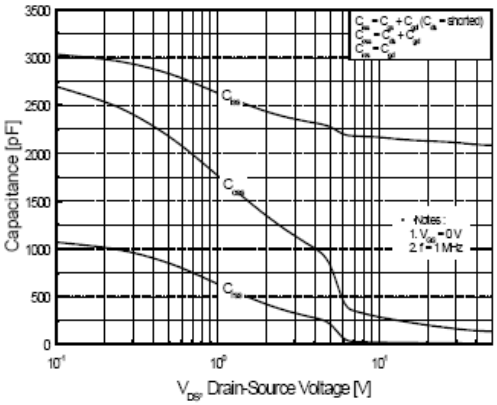


Figure 5. Capacitance Characteristics

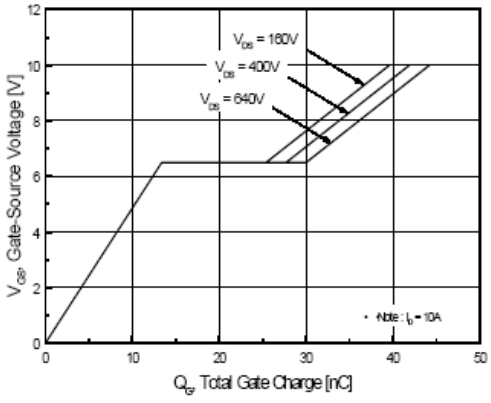


Figure 6. Gate Charge Characteristics

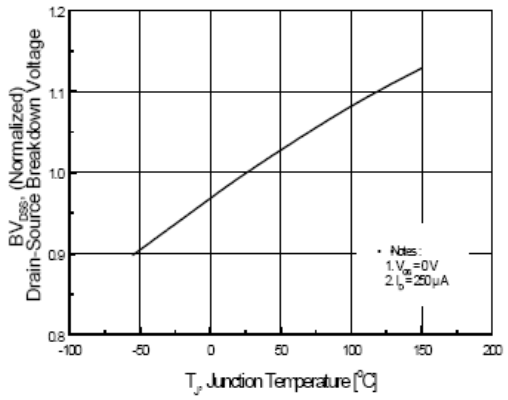


Figure 7. Breakdown Voltage Variation vs Temperature

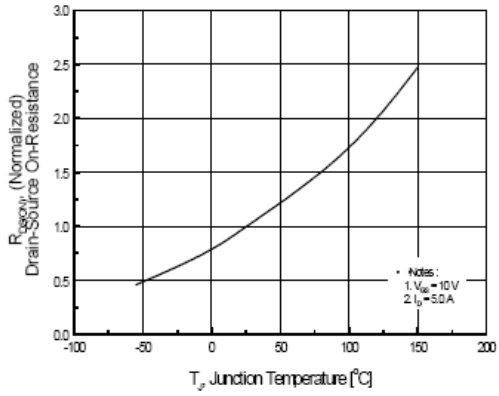


Figure 8. On-Resistance Variation vs Temperature

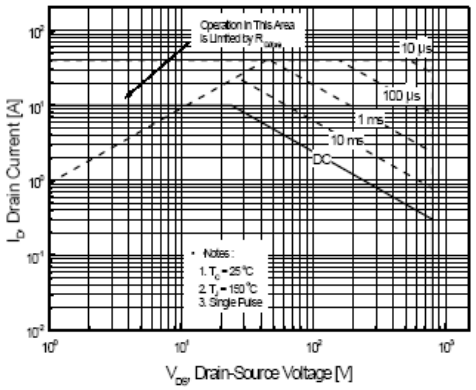


Figure 9. Maximum Safe Operating Area

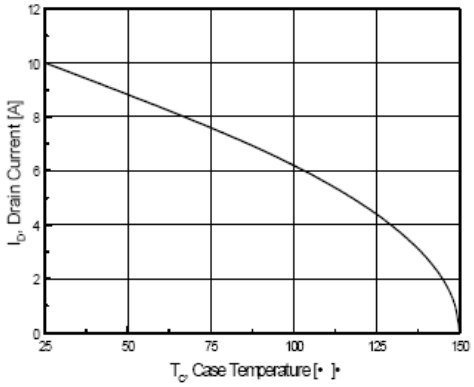


Figure 10. Maximum Drain Current vs Case Temperature

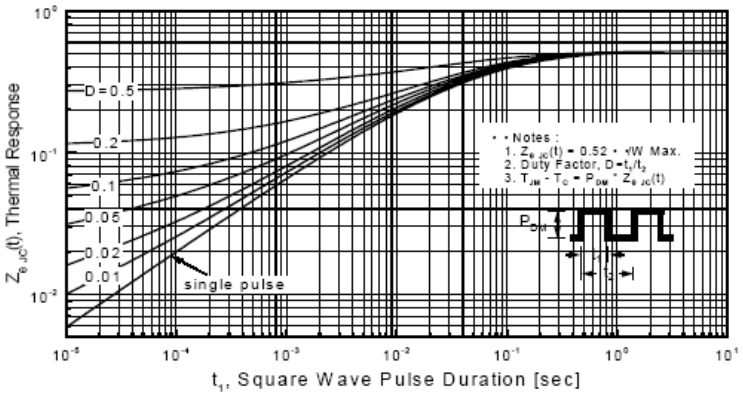
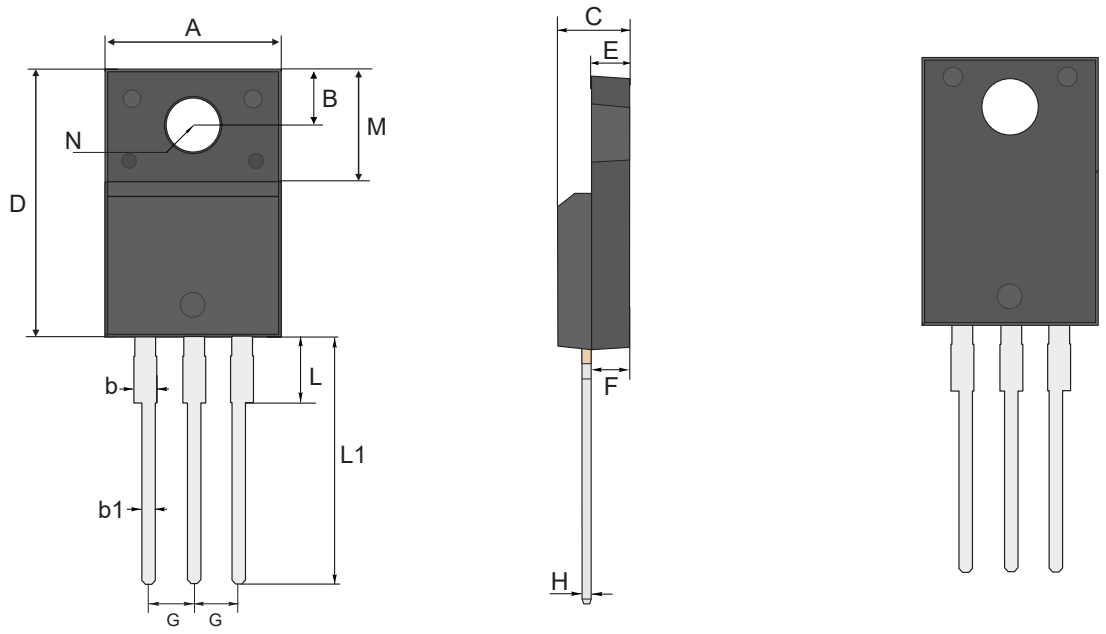


Figure 11. Transient Thermal Response Curve

Package Outline

TO-220F

Dimensions in mm



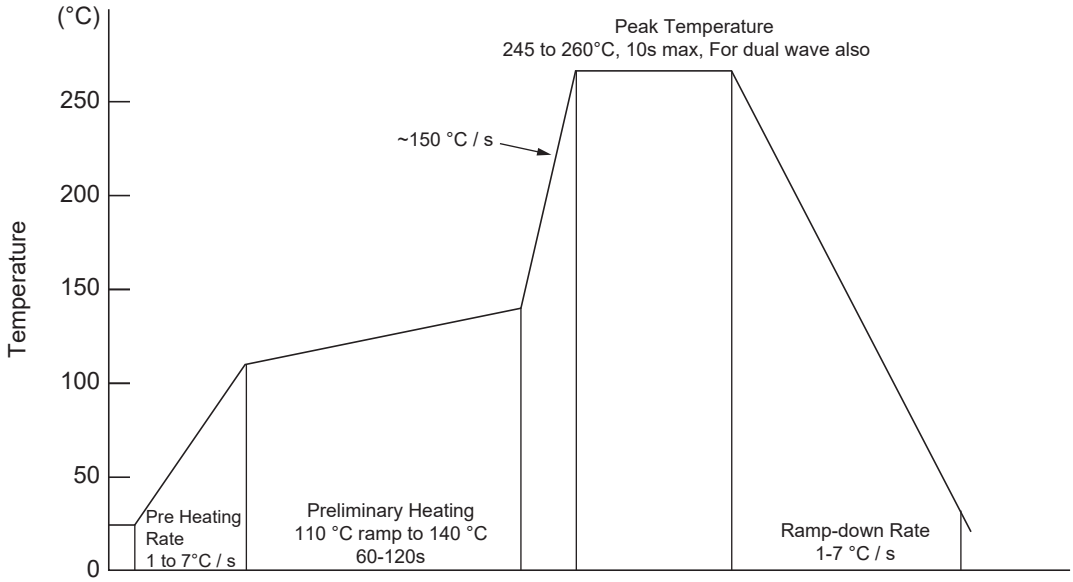
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	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
TN80H10NTF	TO-220F	50PCS/Tube

Conditions of Soldering and Storage

◆ Wave Soldering



◆ Conditions of hand soldering

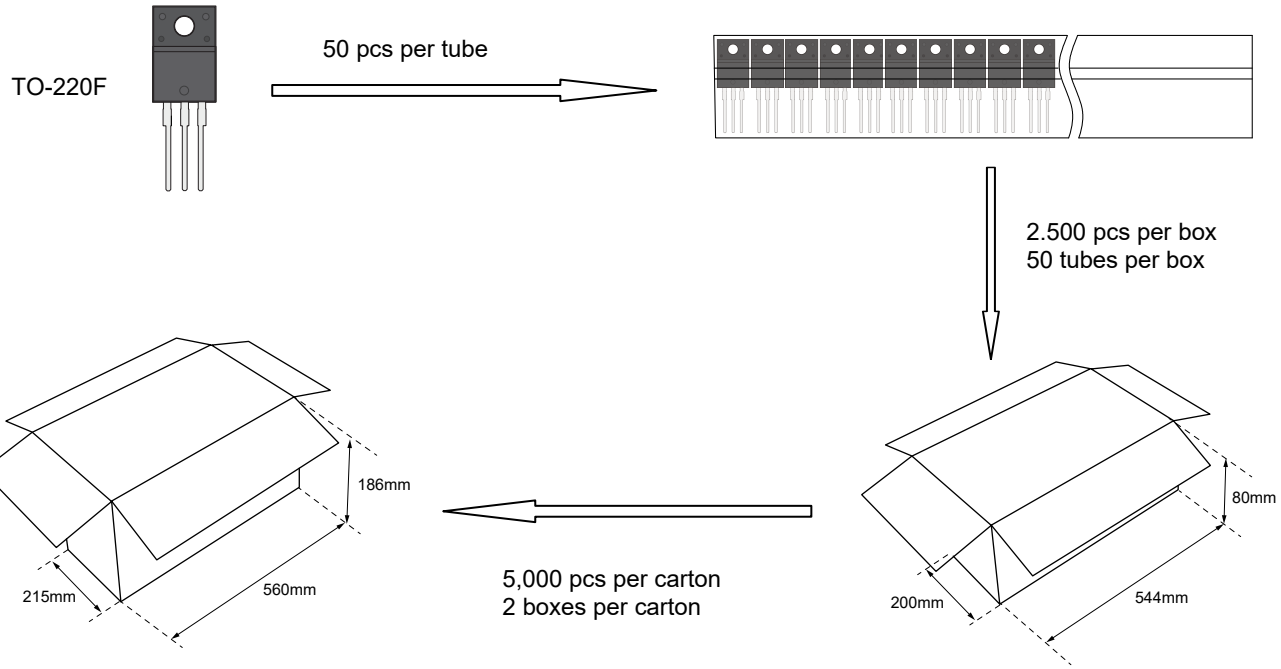
- Temperature: 360°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

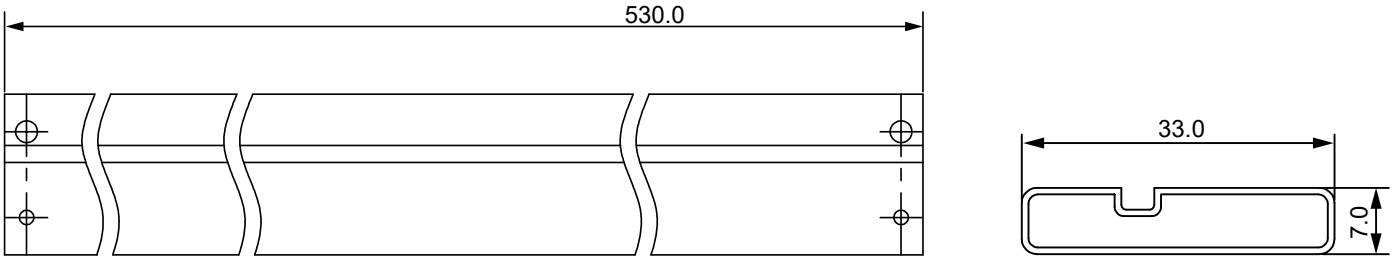
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

Package Specifications

- The method of packaging



◆ Tube data



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