

## Product Summary

- $V_{DS} = 650V, I_D = 07A$
- $R_{DS(on)} < 1.5\Omega$  @  $V_{GS} = 10V$

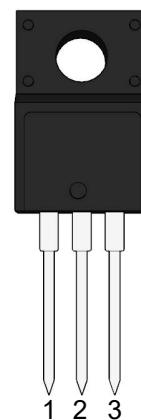
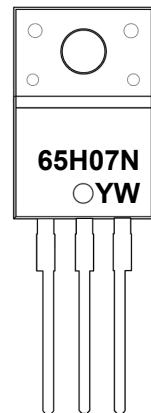
## Features

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

## Application

- Electronic Ballast
- Electronic Transformer
- Switch Mode Power Supply

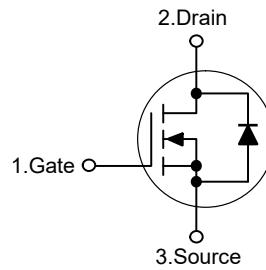
## Marking Code



(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	$V_{DS}$	650	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Drain Current-Continuous	$I_D$	07	A
Drain Current-Pulsed <sup>Note1</sup>	$I_{DM}$	288	A
Maximum Power Dissipation	$P_D$	35	W
Single Pulse Avalanche Energy <sup>Note2</sup>	$E_{AS}$	350	mJ
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

## Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{eJC}$	3.57	°C/W
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## Electrical Characteristics

(T<sub>J</sub>=25°C unless otherwise specified)

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Unit
			Min.	Typ.	Max.	
V <sub>DSS</sub>	Drain to Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	650	--	--	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Bvdss Temperature Coefficient	I <sub>D</sub> =250μA, Reference 25°C	--	0.7	--	V/°C
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> = 650V, V <sub>GS</sub> = 0V, T <sub>a</sub> = 25°C	--	--	1	μA
		V <sub>DS</sub> = 520V, V <sub>GS</sub> = 0V, T <sub>a</sub> = 125°C	--	--	100	μA
I <sub>GSS(F)</sub>	Gate to Source Forward Leakage	V <sub>GS</sub> = +30V	--	--	100	nA
I <sub>GSS(R)</sub>	Gate to Source Reverse Leakage	V <sub>GS</sub> = -30V	--	--	-100	nA
ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R <sub>DS(ON)</sub>	Drain-to-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =3.5A	--	1.2	1.4	Ω
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2.0	--	4.0	V
Pulse width tp≤300μs, δ≤2%						
Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =15V, I <sub>D</sub> = 3.5A	--	6.5	--	S
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0V V <sub>DS</sub> = 25V f = 1.0MHz	--	1130	--	pF
C <sub>oss</sub>	Output Capacitance		--	93	--	
C <sub>rss</sub>	Reverse Transfer Capacitance		--	5.5	--	
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t <sub>d(ON)</sub>	Turn-on Delay Time	I <sub>D</sub> = 7A V <sub>DD</sub> = 325V R <sub>G</sub> = 10Ω	--	19	--	ns
t <sub>r</sub>	Rise Time		--	21	--	
t <sub>d(OFF)</sub>	Turn-Off Delay Time		--	42	--	
t <sub>f</sub>	Fall Time		--	19	--	
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> = 7A V <sub>DD</sub> = 520V V <sub>GS</sub> = 10V	--	24	--	nC
Q <sub>gs</sub>	Gate to Source Charge		--	5.1	--	
Q <sub>gd</sub>	Gate to Drain ("Miller") Charge		--	9.5	--	
Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I <sub>s</sub>	Continuous Source Current (Body Diode)	I <sub>s</sub> =7A, V <sub>GS</sub> =0V	--	--	7	A
I <sub>SM</sub>	Maximum Pulsed Current (Body Diode)		--	--	28	A
V <sub>SD</sub>	Diode Forward Voltage		--	--	1.5	V
t <sub>rr</sub>	Reverse Recovery Time		--	382	--	ns
Q <sub>rr</sub>	Reverse Recovery Charge	I <sub>s</sub> =7A, T <sub>J</sub> = 25°C dI <sub>F</sub> /dt=100A/us, V <sub>GS</sub> =0V	--	1980	--	nC
I <sub>RRM</sub>	Reverse Recovery Current		--	10.4	--	A
Pulse width tp≤300μs, δ≤2%						

## Typical Characteristic Curves

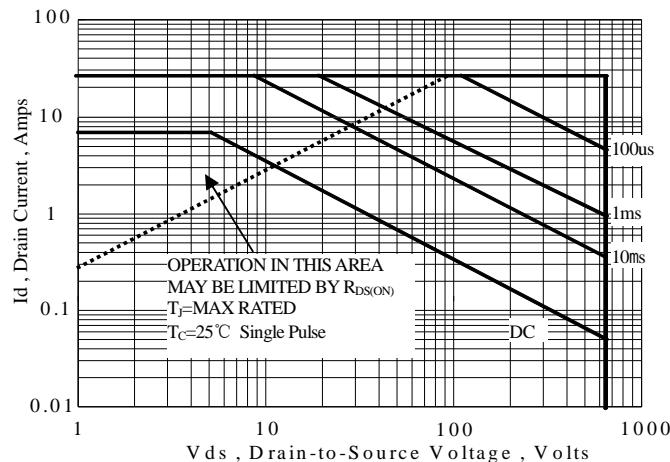


Figure 1 Maximum Forward Bias Safe Operating Area

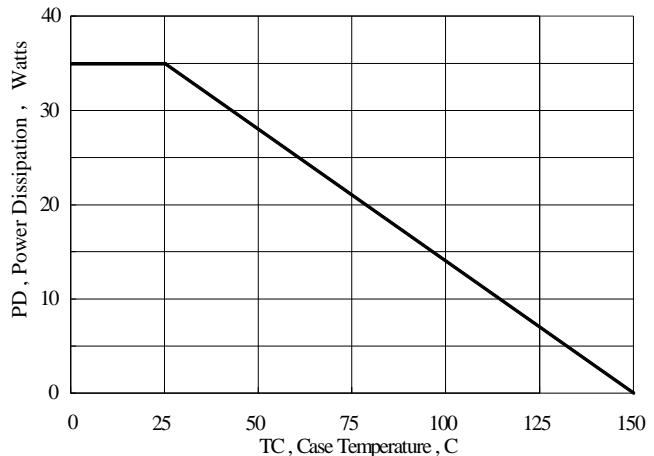


Figure 2 Maximum Power Dissipation vs Case Temperature

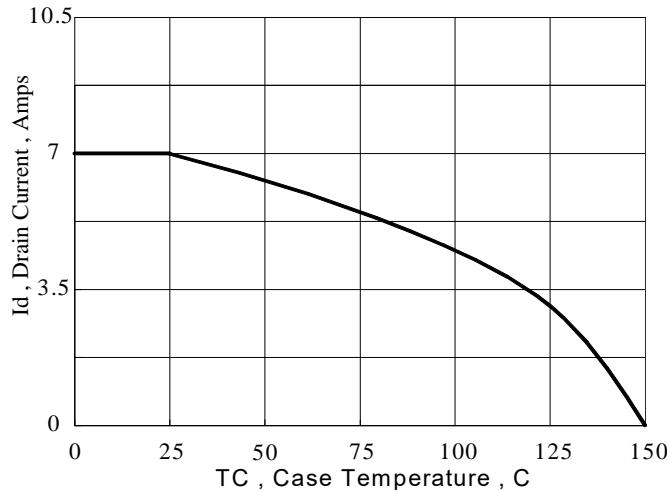


Figure 3 Maximum Continuous Drain Current vs Case Temperature

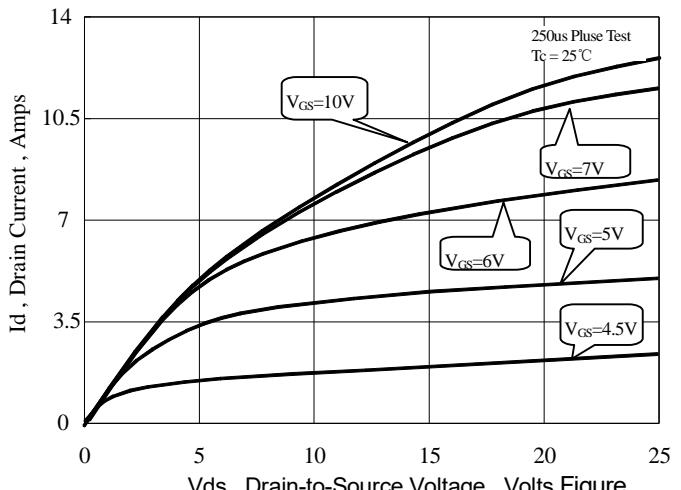


Figure 4 Typical Output Characteristics

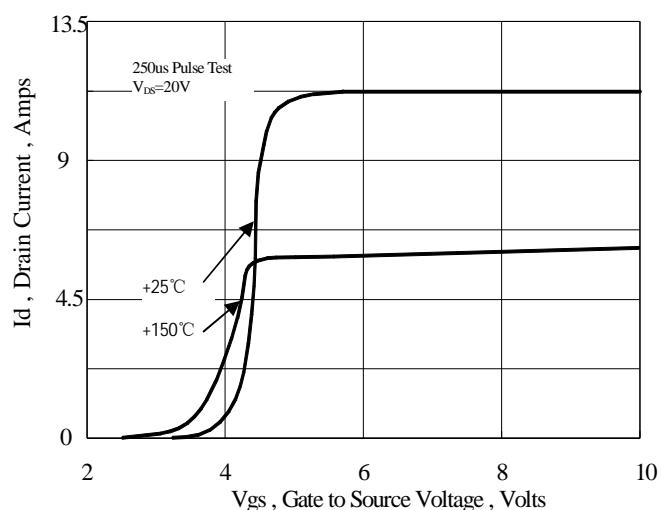


Figure 6 Typical Transfer Characteristics

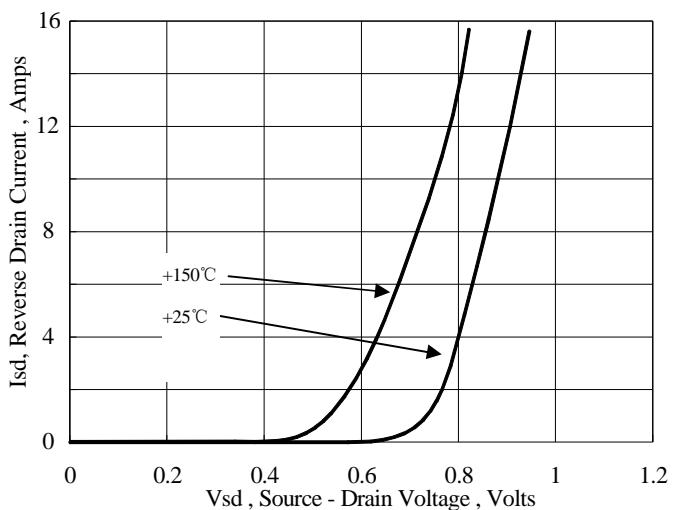


Figure 7 Typical Body Diode Transfer Characteristics

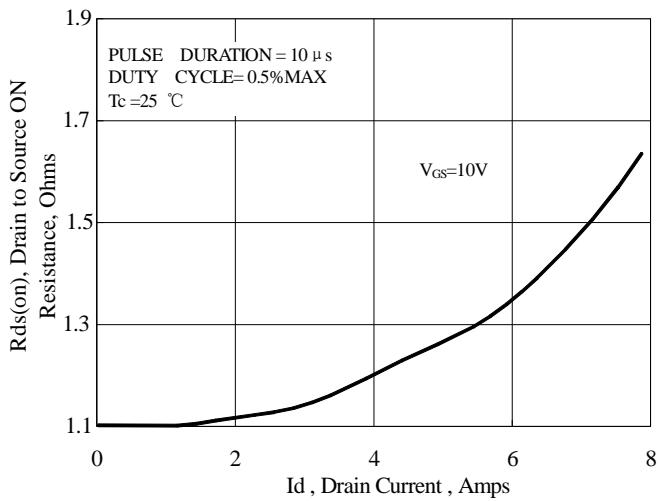


Figure 8 Typical Drain to Source ON Resistance vs Drain Current

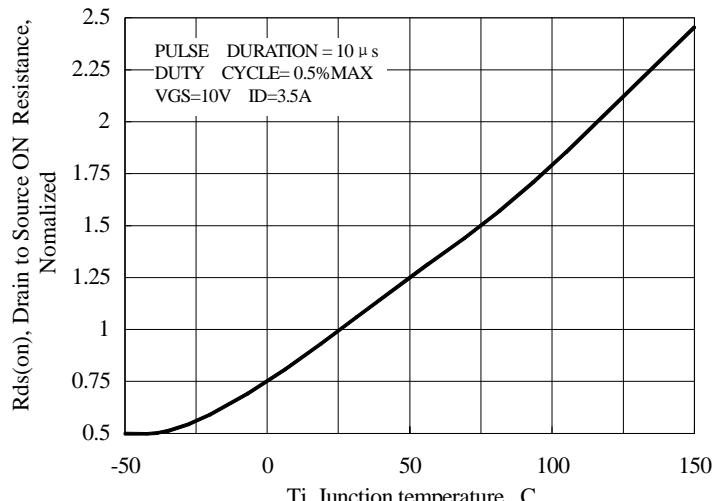


Figure 9 Typical Drian to Source on Resistance vs Junction Temperature

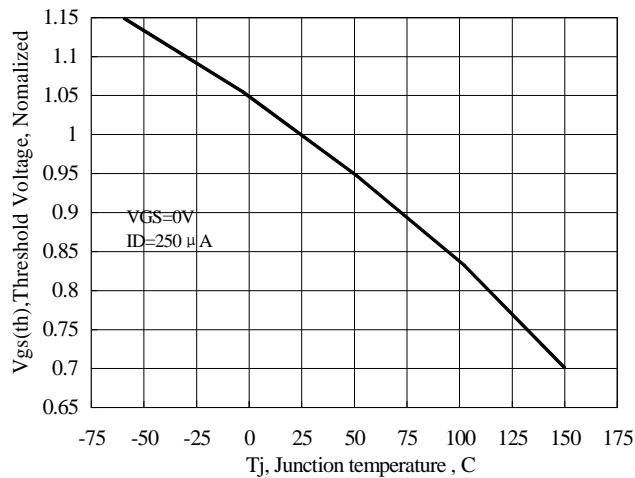


Figure 10 Typical Threshold Voltage vs Junction Temperature

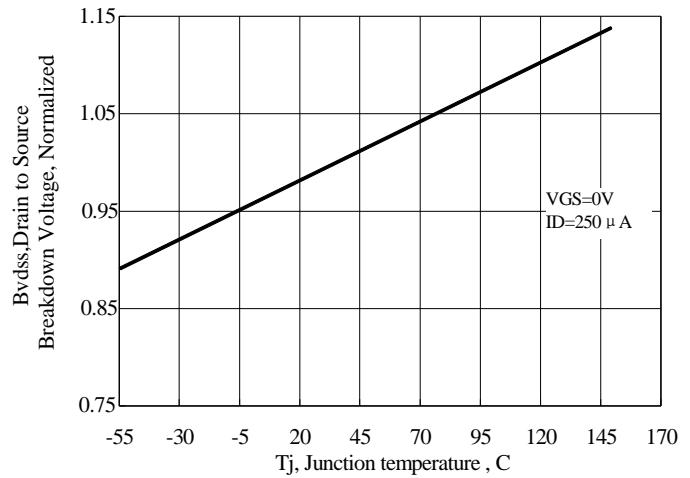


Figure 11 Typical Breakdown Voltage vs Junction Temperature

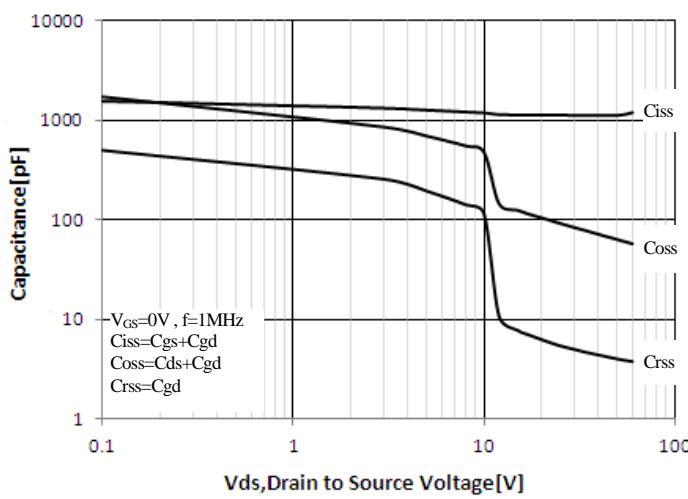


Figure 12 Typical Capacitance vs Drain to Source Voltage

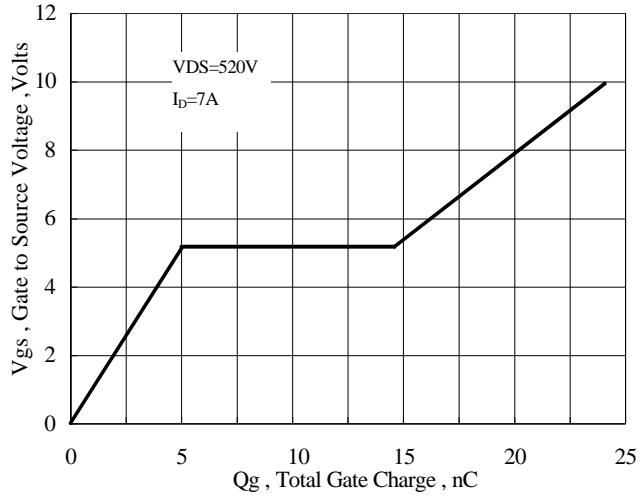
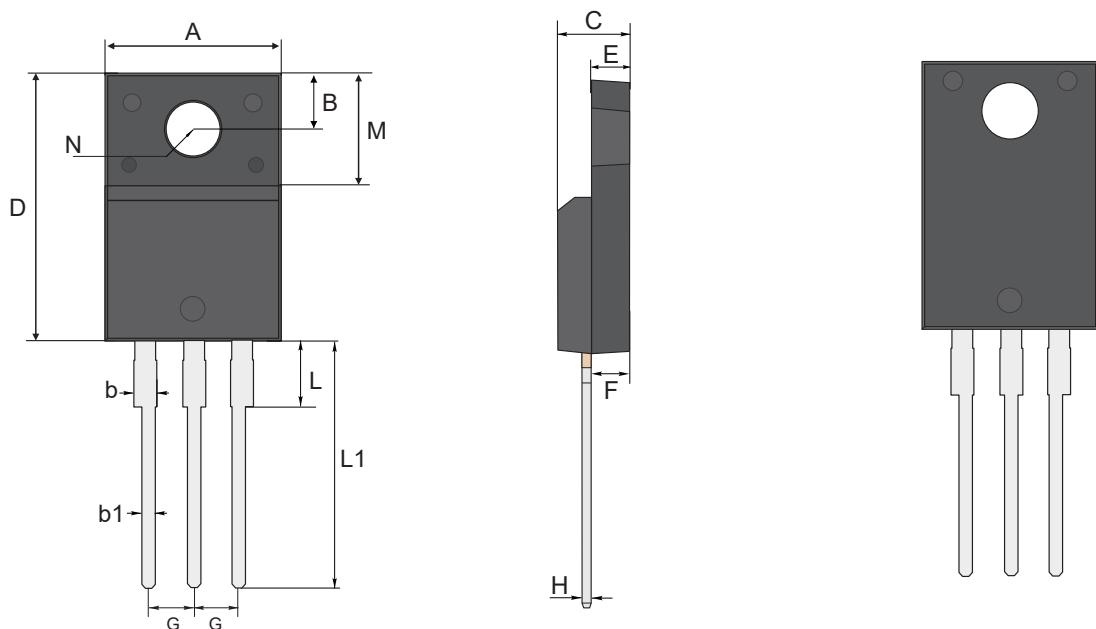


Figure 13 Typical Gate Charge vs Gate to Source Voltage

## Package Outline

TO-220F

Dimensions in mm



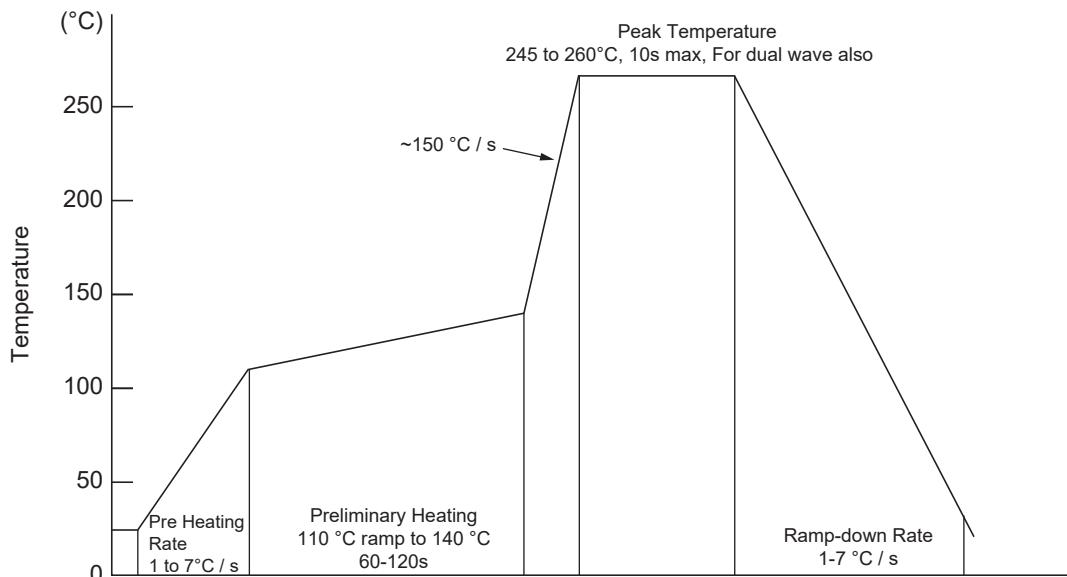
UNIT		A	B	b	b1	C	D	E	F	G	H	L	L1	M	N
mm	max	10.28	3.37	1.44	0.9	4.9	16.07	2.74	2.74	2.64	0.6	2.85	13.7	6.88	3.18 typ.
	typ	10.18	3.27	1.34	0.8	4.7	15.87	2.54	2.54	2.54	0.5	2.65	13.5	6.68	
	min	10.08	3.17	1.24	0.7	4.5	15.67	2.34	2.34	2.44	0.4	2.45	13.3	6.48	
mil	max	405	133	57	35	193	633	108	108	104	24	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
TN65H07NTF	TO-220F	50PCS/Tube

## Conditions of Soldering and Storage

### ◆ Wave Soldering



### ◆ Conditions of hand soldering

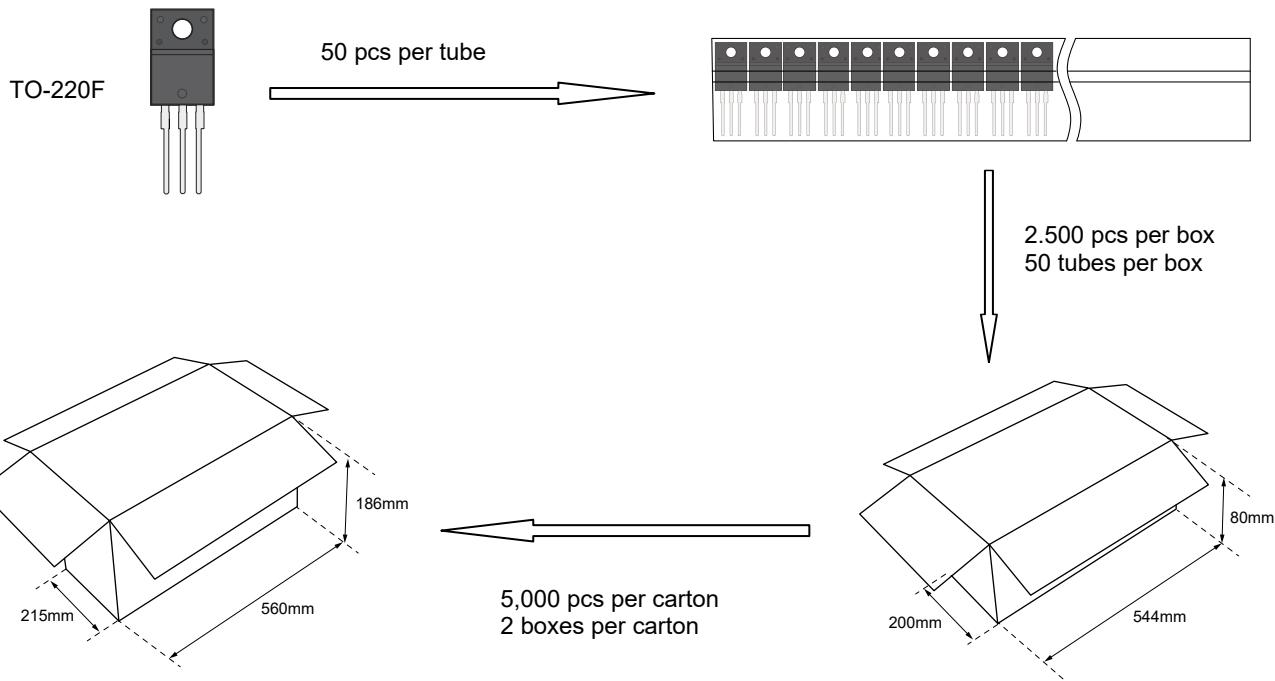
- Temperature: 360°C
- Time: 3s max.
- Times: one time

### ◆ Storage conditions

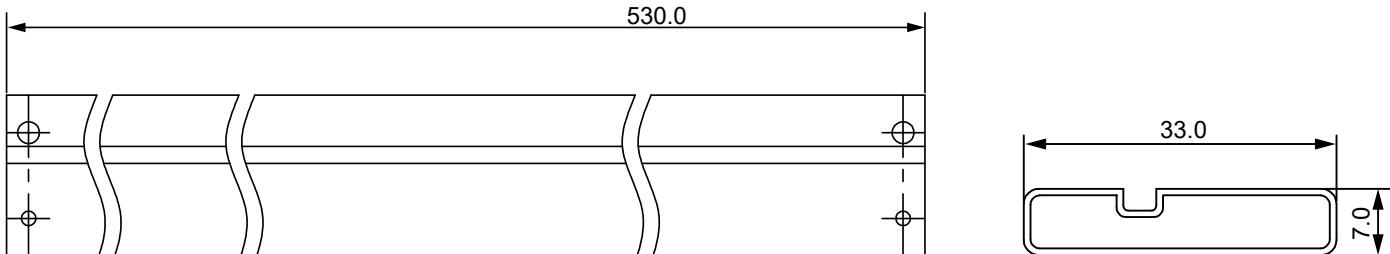
- **Temperature**  
5 to 40°C
- **Humidity**  
30 to 80% RH
- **Recommended period**  
One year after manufacturing

## Package Specifications

- The method of packaging



### ◆ Tube data



## Contact Information

TANI website: <http://www.tanisemi.com> Email: [tani@tanisemi.com](mailto:tani@tanisemi.com)

For additional information, please contact your local Sales Representative.



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### Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

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Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

The design of the product is intended to meet civilian needs and is not guaranteed for use in harsh environments or precision equipment. It is not recommended for use in systems or equipment such as medical devices, aircraft, nuclear power, and similar systems, where failures in these systems or equipment could reasonably be expected to result in personal injury. TANI shall assume no responsibility for any consequences resulting from such usage.

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