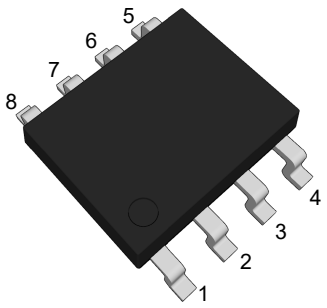
TN10H15NPA

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 100V,I_D= 15A
- $R_{DS(on)}$< 60mΩ @V_{GS}= 10V
- $R_{DS(on)}$< 85mΩ @V_{GS}= 4.5V

SOP-8



(Top View)

Pin	Description
1,2,3	Source
4	Gate
5,6,7,8	Drain

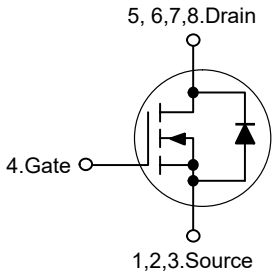
Features

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

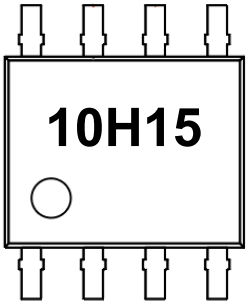
Application

- Load Switch
- Automative lighting
- Uninterruptible Power Supply

Schematic Diagram



Marking Code



Absolute Maximum Ratings

Ratings at 25℃ ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	15	A
Drain Current-Pulsed Note1	I_{DM}	80	A
Maximum Power Dissipation	P_D	46	W
Single Pulse Avalanche Energy Note2	E_{AS}	22	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient Note3	$R_{\theta JA}$	2.7	°C/W

Electrical Characteristics

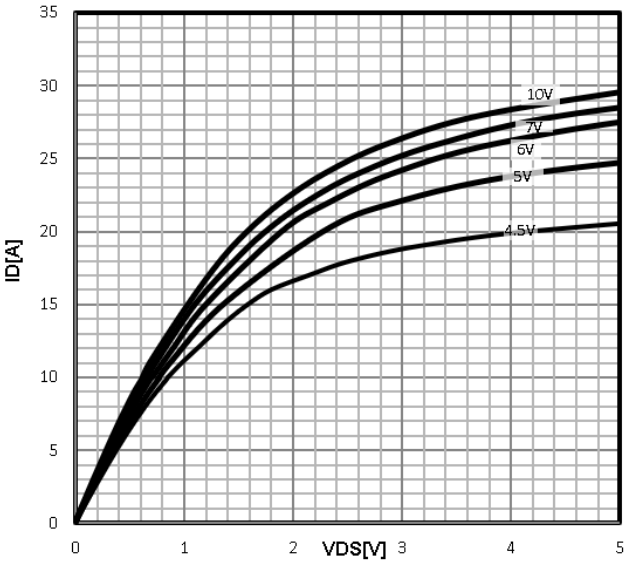
(T_J=25℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage Note4	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	1.0	1.5	2.5	V
Drain-Source On-Resistance Note4	$R_{DS(on)}$	V_{GS}=10V,I_D=5A	--	92	60	mΩ
		V_{GS}=4.5V,I_D=4A	--	100	80	mΩ
Forward Transconductance Note4	g_{FS}	V_{DS}=10V,I_D=5A	--	2	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V,f=1MHz	--	228	--	pF
Output Capacitance	C_{oss}		--	58	--	pF
Reverse Transfer Capacitance	C_{rss}		--	1.9	--	pF
Gate Resistance	R_g	V_{DS}=0V,V_{GS}=0V,f=1MHz	--	1.44	--	Ω
Total Gate Charge	Q_g	V_{DS}=50V, I_D=2A, V_{GS}=10V	--	37	--	nC
Gate-Source Charge	Q_{gs}		--	0.8	--	nC
Gate-Drain Charge	Q_{gd}		--	1	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=10A, V_{GS}=10V, R_{GEN}=3Ω	--	8	--	nS
Turn-on Rise Time	t_r		--	16	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	17	--	nS
Turn-off Fall Time	t_f		--	14	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage Note4	V_{SD}	V_{GS}=0V,I_S=5A	--	--	1.2	V
Diode Forward Current Note3	I_S		--	--	15	A

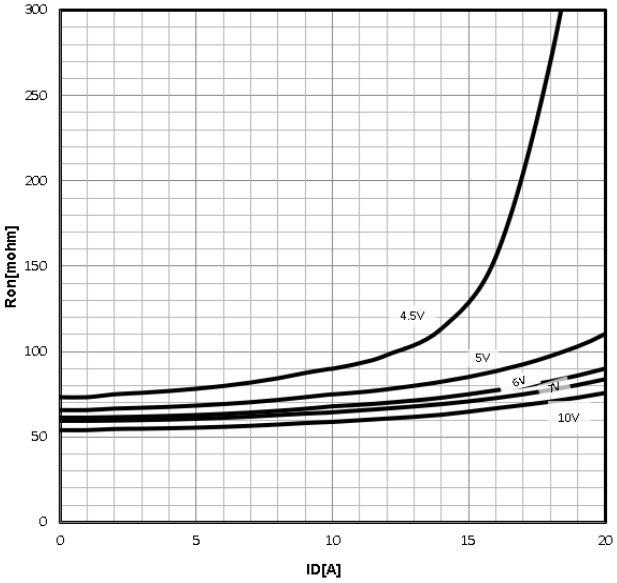
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS Condition: T_J=25℃,V_{DD}=50V,V_G=10V,R_G=25Ω,L=0.5mH,I_{AS}=7.5A.
3. Surface Mounted on FR4 Board, t ≤ 10 sec.
4. Pulse Test: Pulse width≤300μs, duty cycle≤2%.

Typical Characteristic Curves

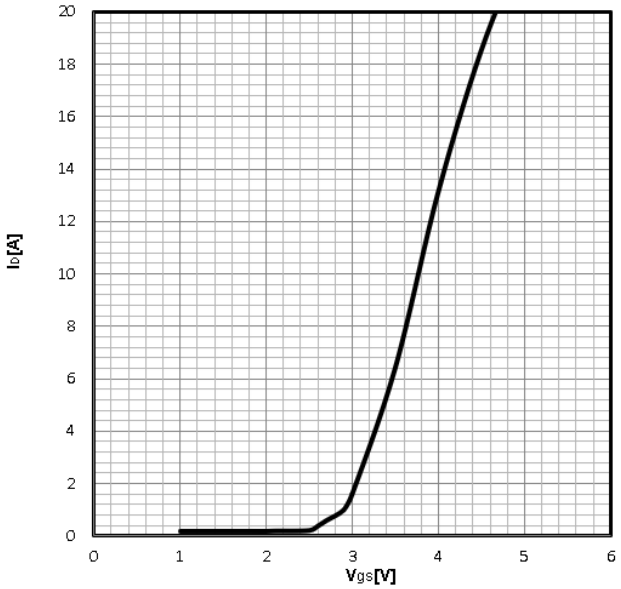
Typ. output characteristics
$I_D=f(V_{DS})$



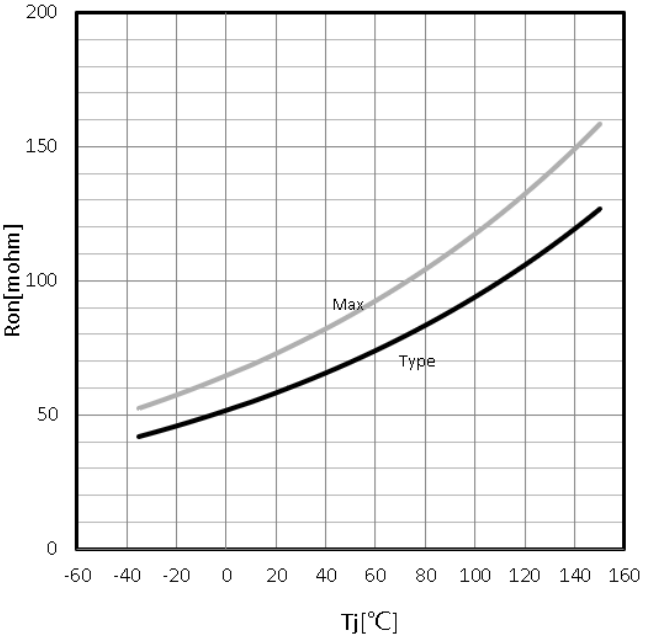
Typ. drain-source on resistance
$R_{DS(on)}=f(I_D)$



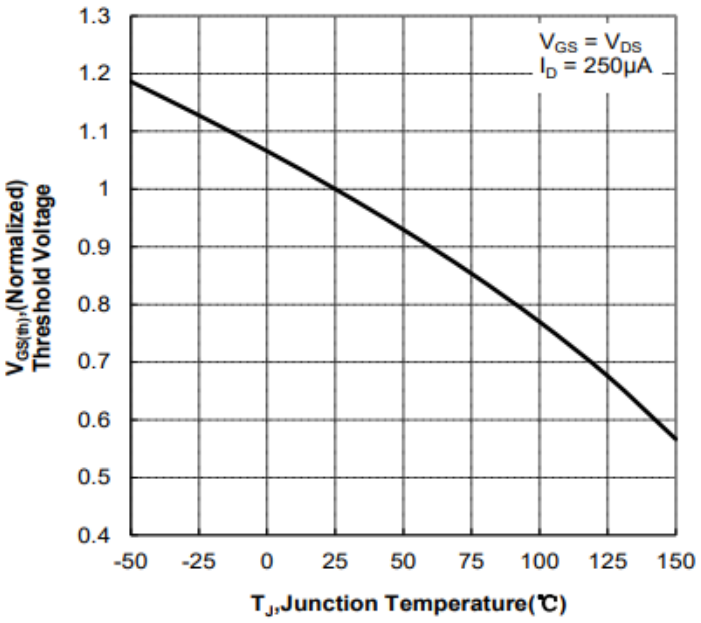
Typ. transfer characteristics
$I_D=f(V_{GS})$



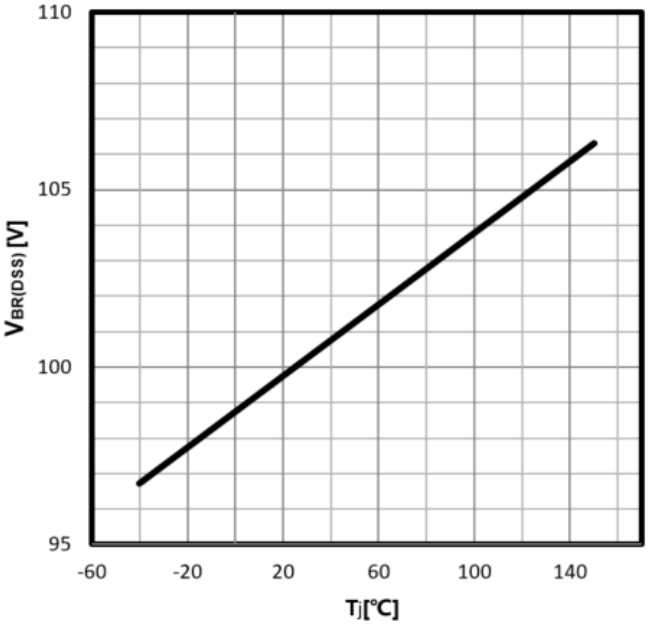
Drain-source on-state resistance
$R_{DS(on)}=f(T_j);I_D=5A;\ V_{GS}=10V$



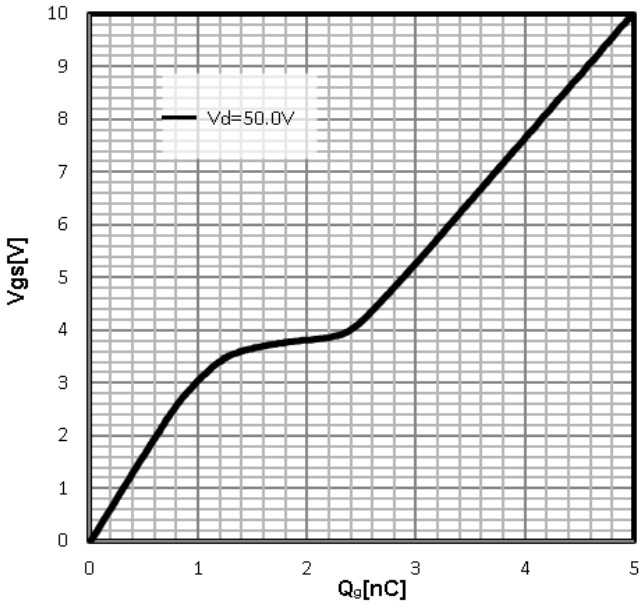
Gate Threshold Voltage
$V_{TH}=f(T_j)$; I_D=250uA



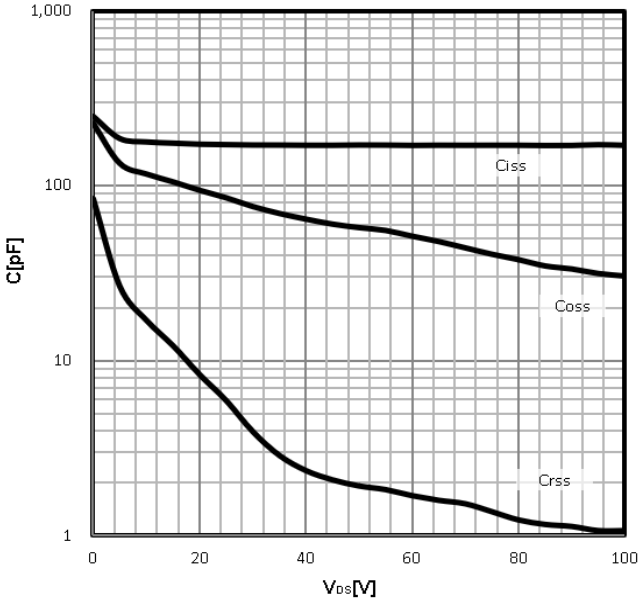
Drain-source breakdown voltage
$V_{BR(DSS)}=f(T_j)$; I_D=250uA



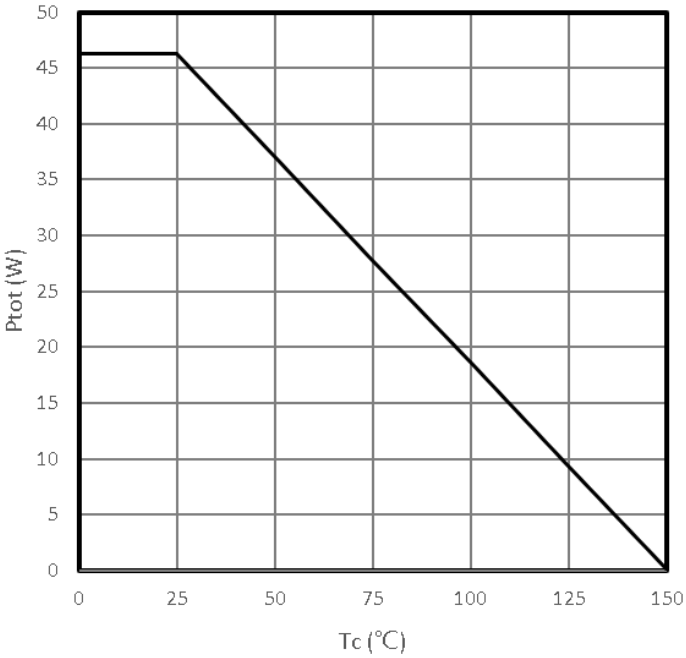
Typ. gate charge
$V_{GS}=f(Q_g)$; I_D=10A



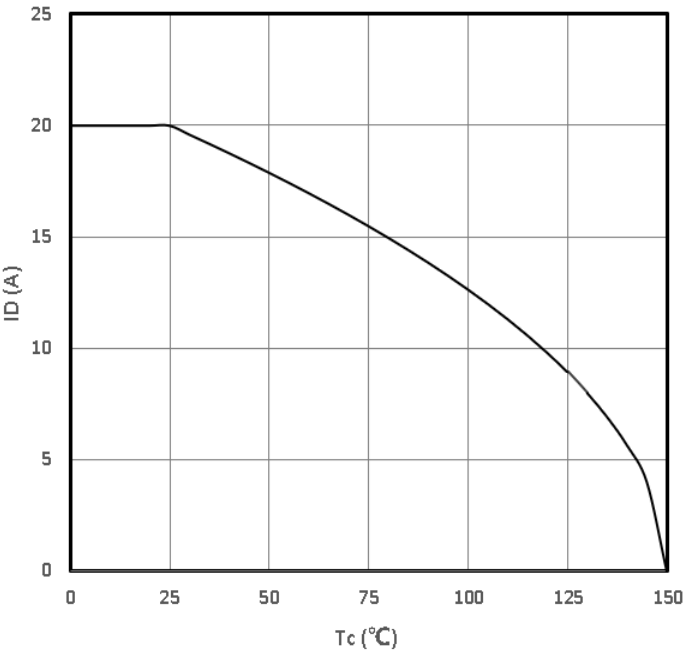
Typ. capacitances
C =f(V_{DS}); V_{GS}=0V; f =1MHz



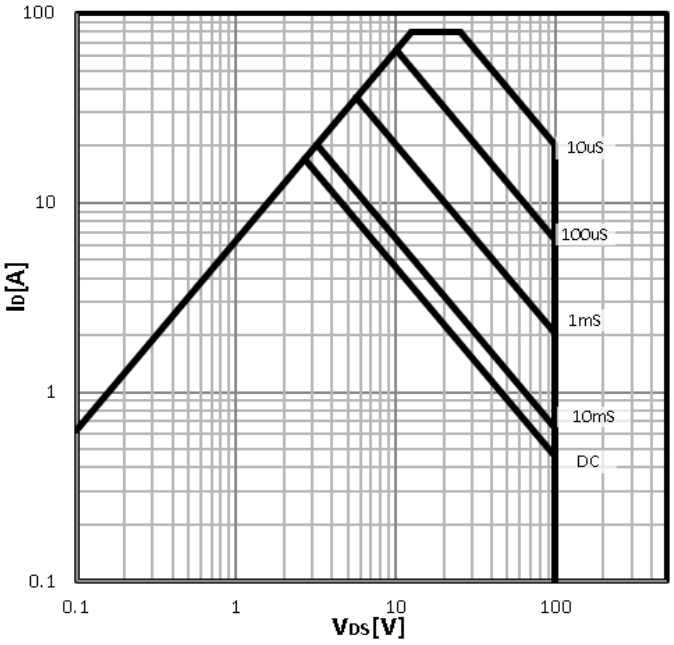
Power Dissipation
$P_{tot}=f(T_C)$



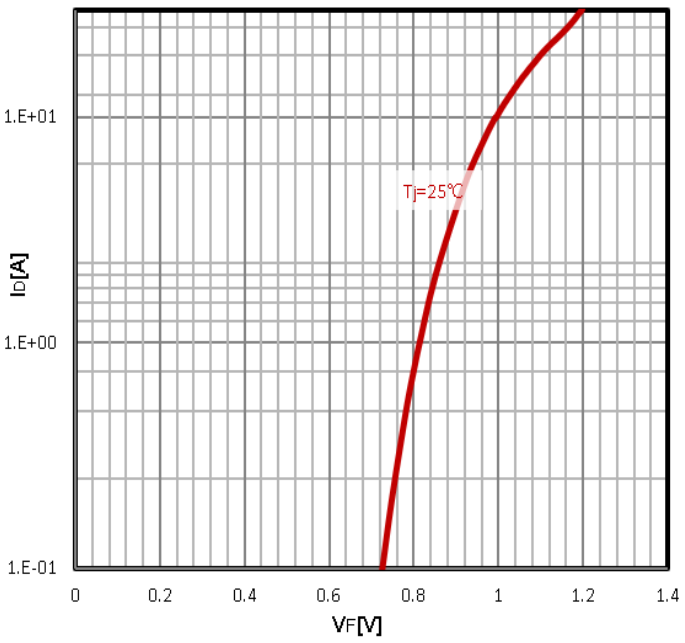
Maximum Drain Current $I_D=f(T_C)$



Safe operating area
$I_D=f(V_{DS})$

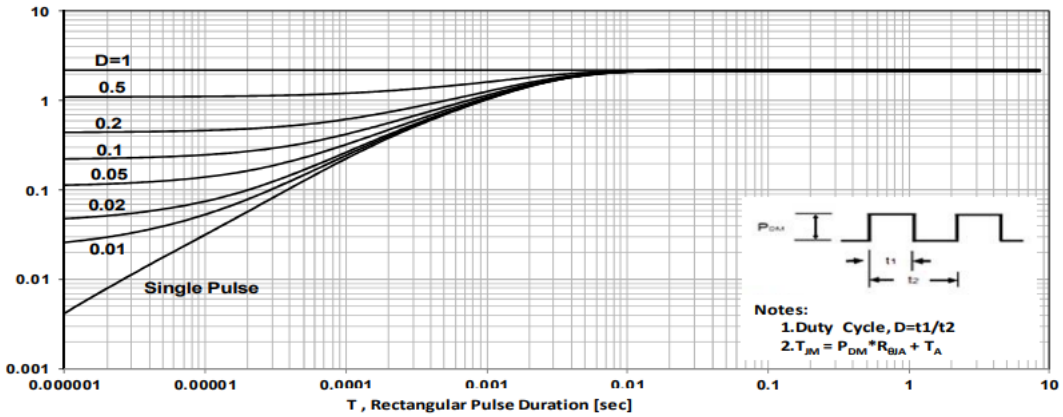


Body Diode Forward Voltage Variation
$I_F=f(V_{GS})$



Max. transient thermal impedance

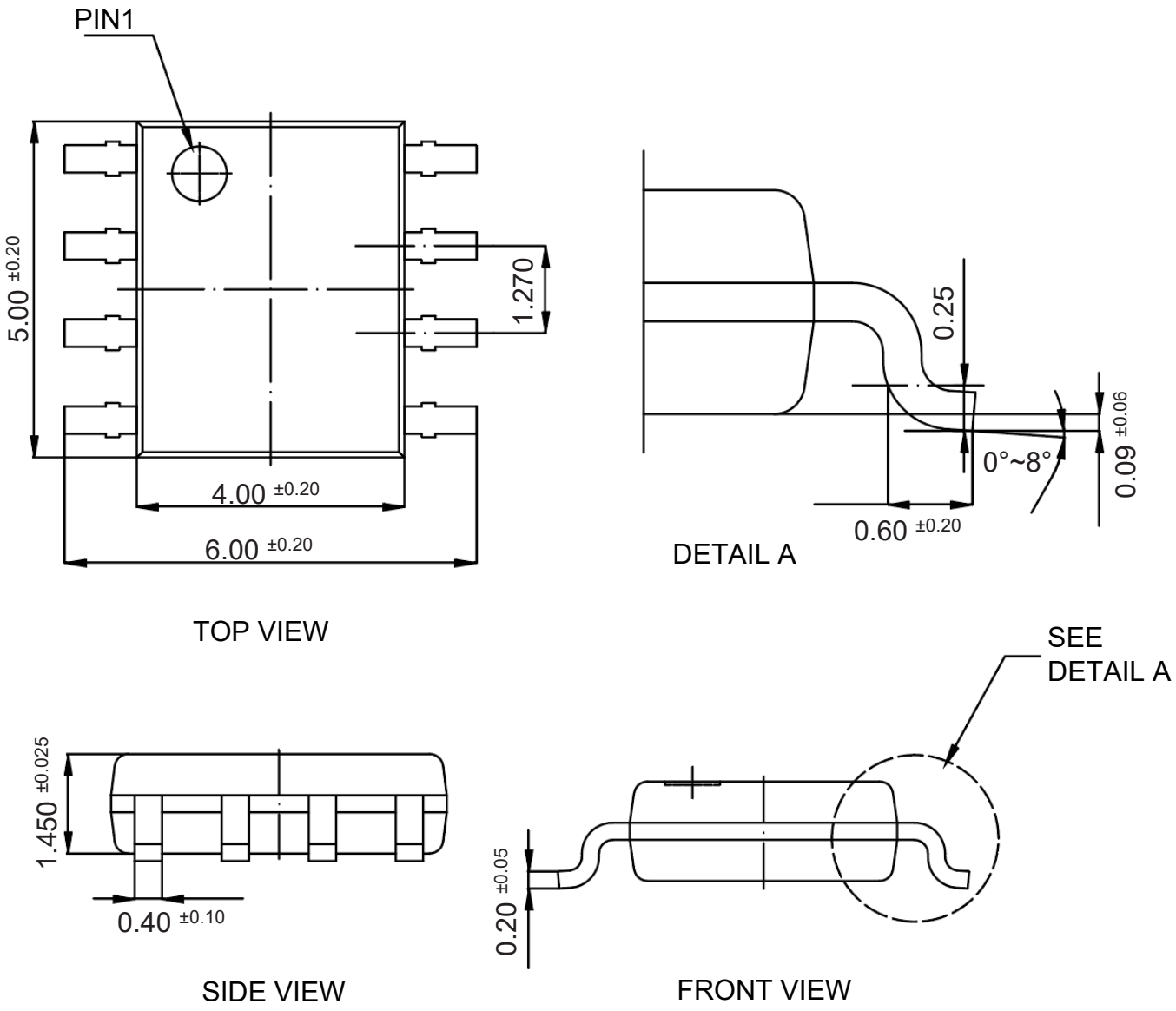
$Z_{thJC}=f(t_p)$



Package Outline

SOP-8

Dimensions in mm

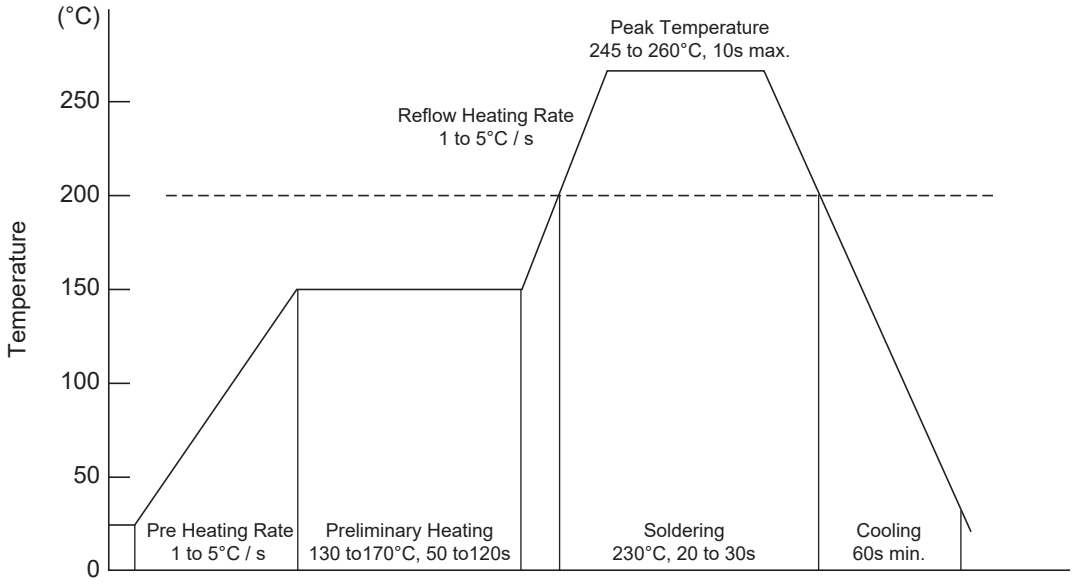


Ordering Information

Device	Package	Shipping
TN10H15NPA	SOP-8	4,000PCS/Reel&13inches

Conditions of Soldering and Storage

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245°C. If peak temperature is below 245°C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

◆ Conditions of hand soldering

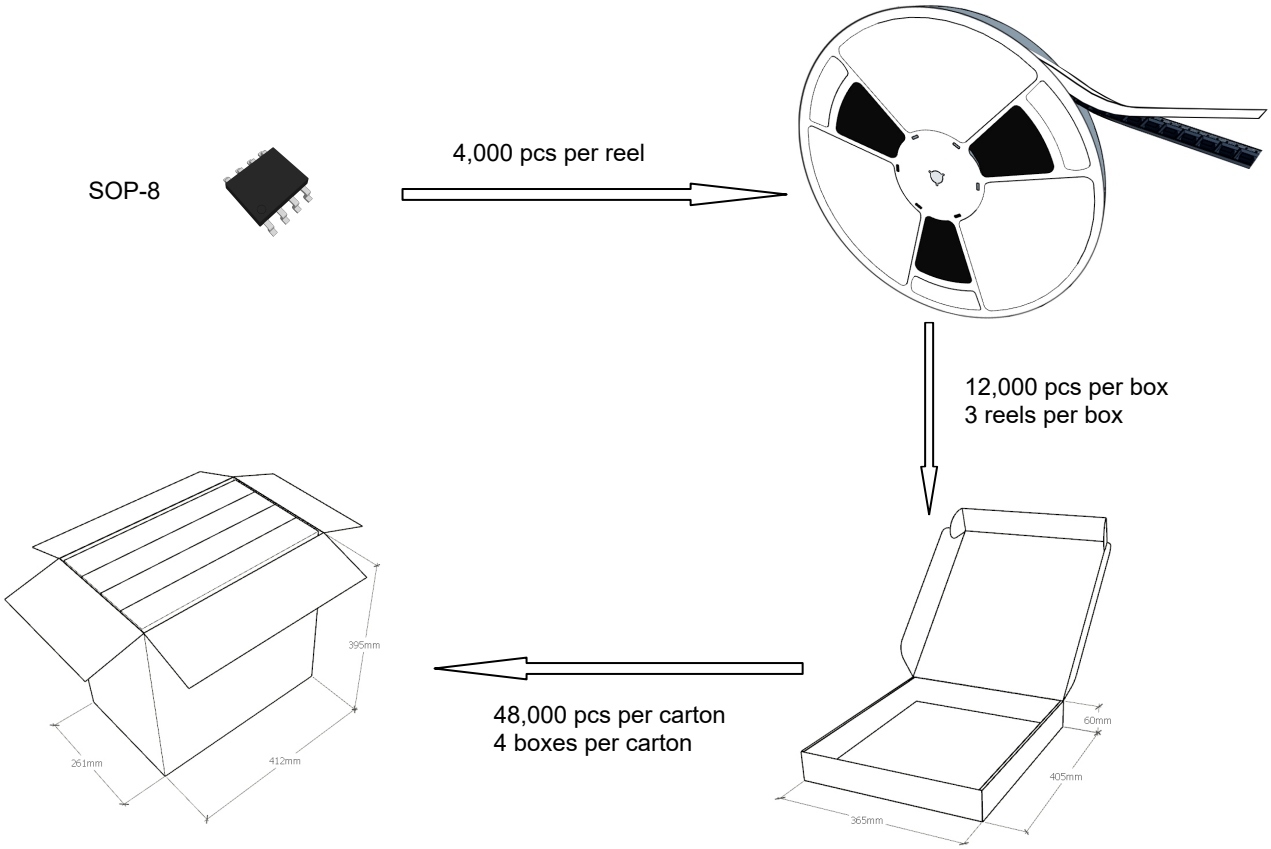
- Temperature: 300°C
- Time: 3s max.
- Times: one time

◆ Storage conditions

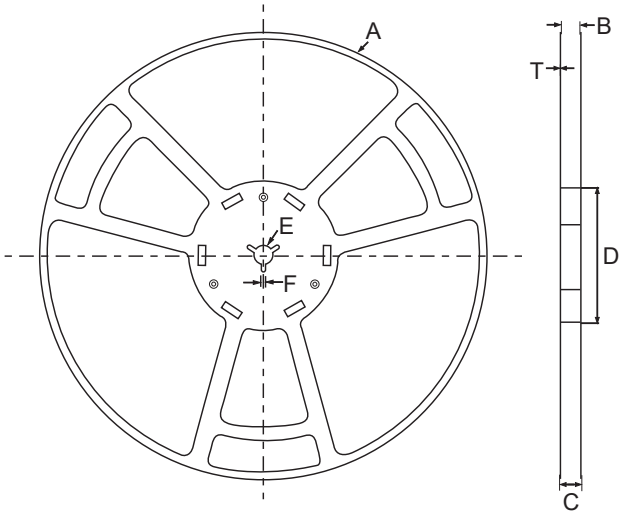
- **Temperature**
  5 to 40°C
- **Humidity**
  30 to 80% RH
- **Recommended period**
  One year after manufacturing

Package Specifications

- The method of packaging

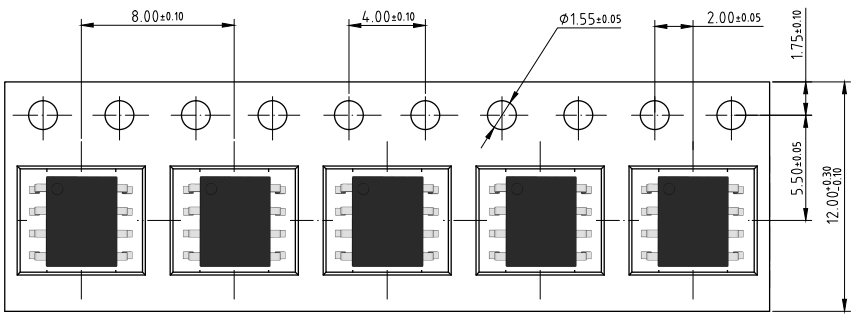


◆ **Embossed tape and reel data**



Reel (13")

symbol	Value(unit:mm)
A	ϕ330±1
B	12.7±0.5
C	16.5±0.3
D	ϕ99.5±0.5
E	ϕ13.6±0.3
F	2.8±0.3
T	1.9±0.2



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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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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