

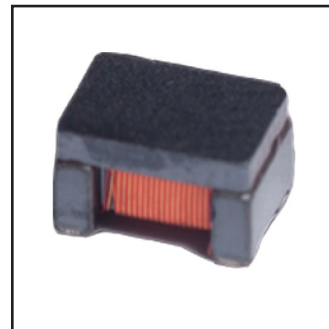
NTX Series

LAN Pulse Transformers

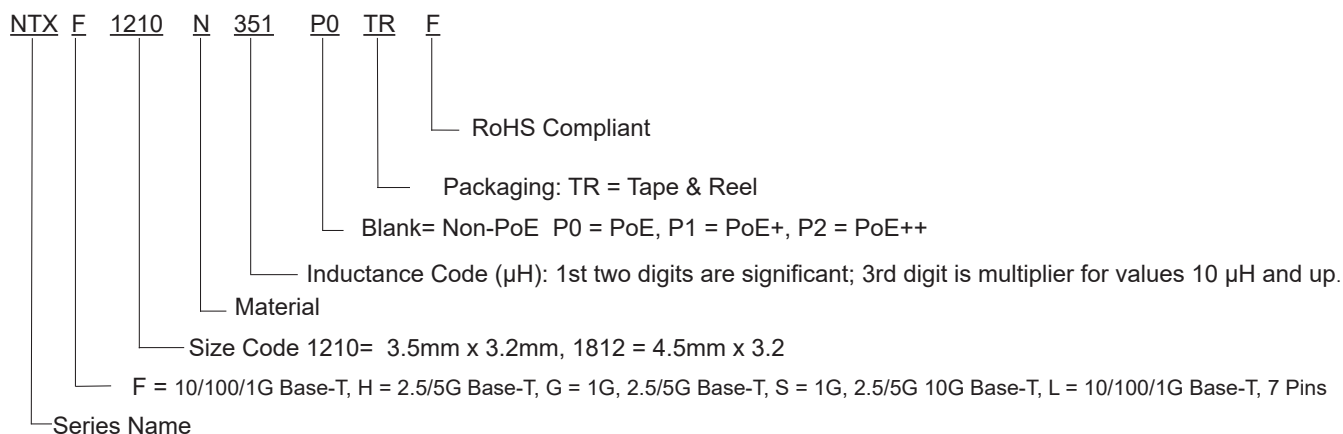


FEATURES

- SMT type pulse transformers
- Small size and low profile
- Excellent noise suppression performance
- High common mode impedance at high frequencies
- 10/100/1G BASE-T, 2.5G/5G, 10G BASE-T speeds
- 100% Lead (Pb) & Halogen-Free and RoHS compliant
- Power over ethernet supported (PoE, PoE+, PoE++)

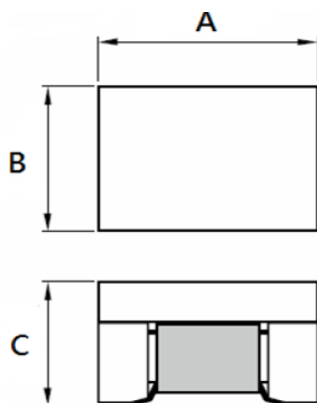


PART NUMBER SYSTEM

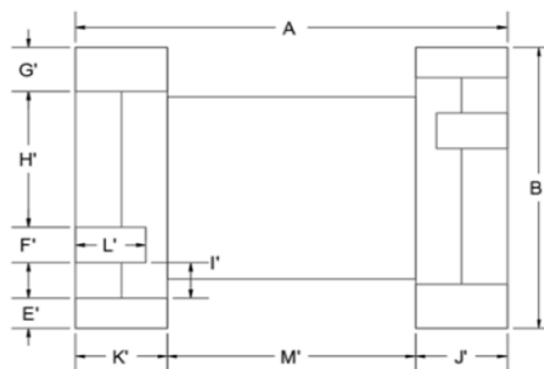


NTX DIMENSIONS (mm)

Case Code	A ± 0.20	B ± 0.20	C max	E' ± 0.06	F' ± 0.06	G' ± 0.06	H' ± 0.10	I' ± 0.10	J' ± 0.06	K' ± 0.10	L' ± 0.06	M' ± 0.10
NTX1210	3.50	3.20	2.90	0.40	0.43	0.61	1.50	0.26	0.72	0.72	0.57	2.06
NTX1812	4.60	3.25	2.90	0.45	0.47	0.60	1.43	0.25	0.25	1.00	0.8	2.70



Dimensions in mm



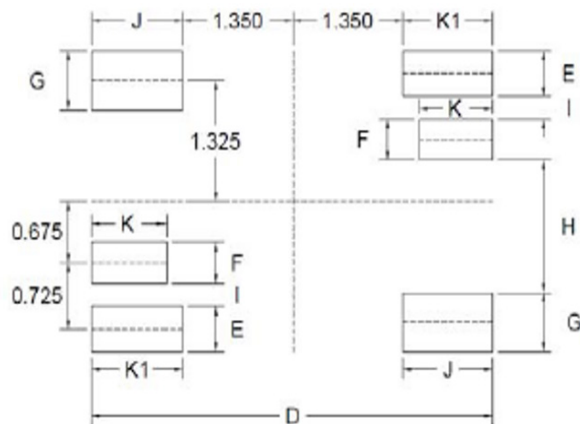
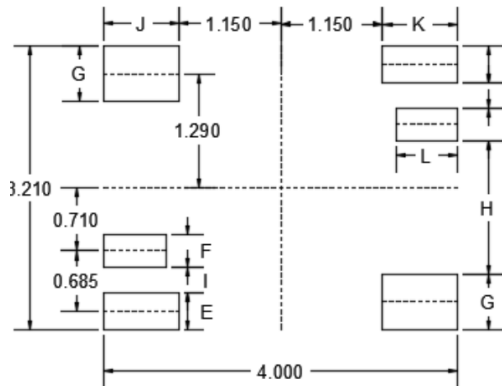
Top View

NTX Series

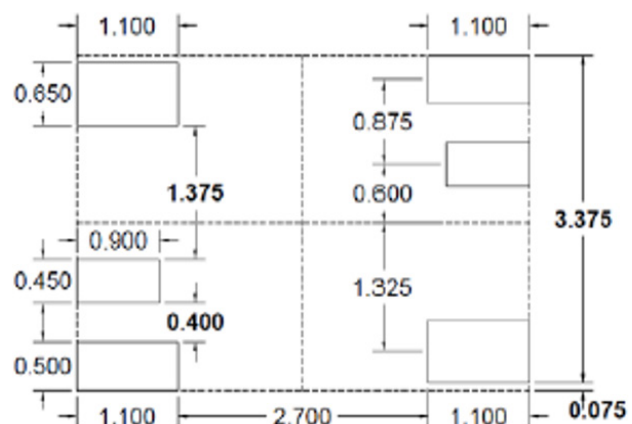
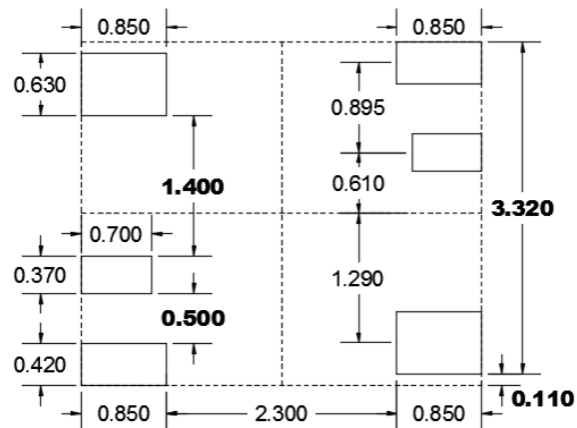
LAN Pulse Transformers



RECOMMENDED PC BOARD PATTERNS



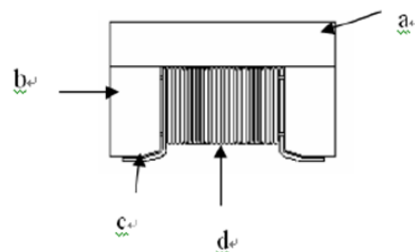
SOLDER PASTE STENCIL APERTURE RECOMENDATION



Case Code	D	E	F	G	H	I	J	K	L
NTXP1210	4.00	0.42	0.37	0.63	1.5	0.29	0.85	0.85	0.70
NTXP1812	4.90	0.50	0.45	0.65	1.45	0.25	1.10	0.90	1.10

MATERIALS

No.	Description	Specification
a.	Upper Plate	Ferrite
b.	Core	Ferrite Core
c.	Termination	Ag/Ni/Sn
d.	Wire	Enameled Copper Wire



NTX Series

LAN Pulse Transformers



ELECTRICAL SPECIFICATIONS

Part Number	Speed	Inductance (uH DC BIAS 0mA 1 to 2 or 4 to 5	Test Frequency (Hz/V)	Insertion Loss (Max)	Capacitance (pF) 3 to 6	Turns ratio 1 to 2 or 4 to 5	HI-POT 1, 2, 6 to 4,5,3
NTXF1210N121TRF	10/100,1G Base-T	120 (Min)	100K/0.1	1-100MHz-1.0dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXF1210N181TRF		180 (Min)	100K/0.1	1-100MHz-1.0dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXF1812N121TRF		120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXF1812N181TRF		180 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXF1812N381TRF		380 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXL1812N181TRF		180 (Min)	100K/0.1	1-100MHz-1.0dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXL1812N231TRF		230 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXL1812N381TRF		380 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXG1812N121TRF	1G, 2.5/5G Base-T	120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXG1812N181TRF		180 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXS1210N121TRF	1G, 2.5/5G, 10G Base-T	120 (Min)	100K/0.1	1-500MHz-3.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXS1812N101TRF		100 (Min)	100K/0.1	-2.0 Typ, -2.5 Max	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXS1812N121TRF		120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	1:1	AC 1.5KV 60SEC
NTXH1210N121TRF	2.5/5G Base-T	120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (MAX)	1:1	AC 1.5KV 60SEC
NTXH1210N181TRF		180 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (MAX)	1:1	AC 1.5KV 60SEC

Part Number	Speed	Inductance (uH DC BIAS 0mA 1 to 2 or 4 to 5	Test Frequency (Hz/V)	Insertion Loss (Max)	Capacitance (pF) 3 to 6	HI-POT 1, 2, 6 to 4,5,3	POE Rated Current mA (MAX)
NTXF1210N121P0TRF	10/100,1G Base-T	120 (Min)	100K/0.1	1-100MHz-1.0dB	35pF (MAX)	AC 1.5KV 60SEC	350
NTXF1210N181P0TRF		180 (Min)	100K/0.1	1-100MHz-1.0dB	35pF (MAX)	AC 1.5KV 60SEC	350
NTXF1210N121P1TRF		120 (Min)	100K/0.1	1-100MHz-1.0dB	35pF (MAX)	AC 1.5KV 60SEC	600
NTXF1812N121P0TRF		120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	350
NTXF1812N181P0TRF		180 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	350
NTXF1812N381P0TRF		380 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	350
NTXF1812N121P1TRF		120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	600
NTXF1812N181P1TRF		180 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	720
NTXF1812N121P2TRF		120 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	1000

Turns Ratio (1 to 2 or 4 to 5): 1:1

NTX Series

LAN Pulse Transformers



ELECTRICAL SPECIFICATIONS

Part Number	Speed	Inductance (uH DC BIAS 0mA 1 to 2 or 4 to 5)	Test Frequency (Hz/V)	Insertion Loss (Max)	Capacitance (pF) 3 to 6	HI-POT 1, 2, 6 to 4,5,3	POE Rated Current mA (MAX)
NTXG1210N121P0TRF	1G, 2.5/5G Base-T	120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (MAX)	AC 1.5KV 60SEC	350
NTXG1210N181P0TRF		180 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (MAX)	AC 1.5KV 60SEC	350
NTXG1210N121P1TRF		120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (MAX)	AC 1.5KV 60SEC	600
NTXG1812N121P0TRF		120 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	350
NTXG1812N181P0TRF		180 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	350
NTXG1812N121P1TRF		120 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	600
NTXG1812N181P1TRF		180 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	720
NTXG1812N121P2TRF		120 (Min)	100K/0.1	1-125MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	1000
NTXS1210N121P0TRF	1G, 2.5/5G, 10G Base-T	120 (Min)	100K/0.1	1-500MHz-3.5dB	35pF (MAX)	AC 1.5KV 60SEC	350
NTXS1210N121P1TRF		120 (Min)	100K/0.1	1-500MHz-3.5dB	35pF (MAX)	AC 1.5KV 60SEC	600
NTXS1812N101P1TRF		100 (Min)	100K/0.1	-2.0 Typ, -2.5 Max	35pF (MAX)	AC 1.5KV 60SEC	600
NTXS1812N101P0TRF		100 (Min)	100K/0.1	-2.0 Typ, -2.5 Max	35pF (Typ)	AC 1.5KV 60SEC	350
NTXS1812N101P2TRF		100 (Min)	100K/0.1	1-100MHz-1.5dB	35pF (Typ)	AC 1.5KV 60SEC	1000
NTXS1812N121P0TRF		120 (Min)	100K/0.1	-2.0 Typ -3.0 Max	35pF (Typ)	AC 1.5KV 60SEC	350
NTXS1812N121P1TRF		120 (Min)	100K/0.1	-2.0 Typ -3.0 Max	35pF (Typ)	AC 1.5KV 60SEC	600
NTXS1812N121P2TRF		120 (Min)	100K/0.1	-2.0 Typ -3.0 Max	35pF (Typ)	AC 1.5KV 60SEC	1000

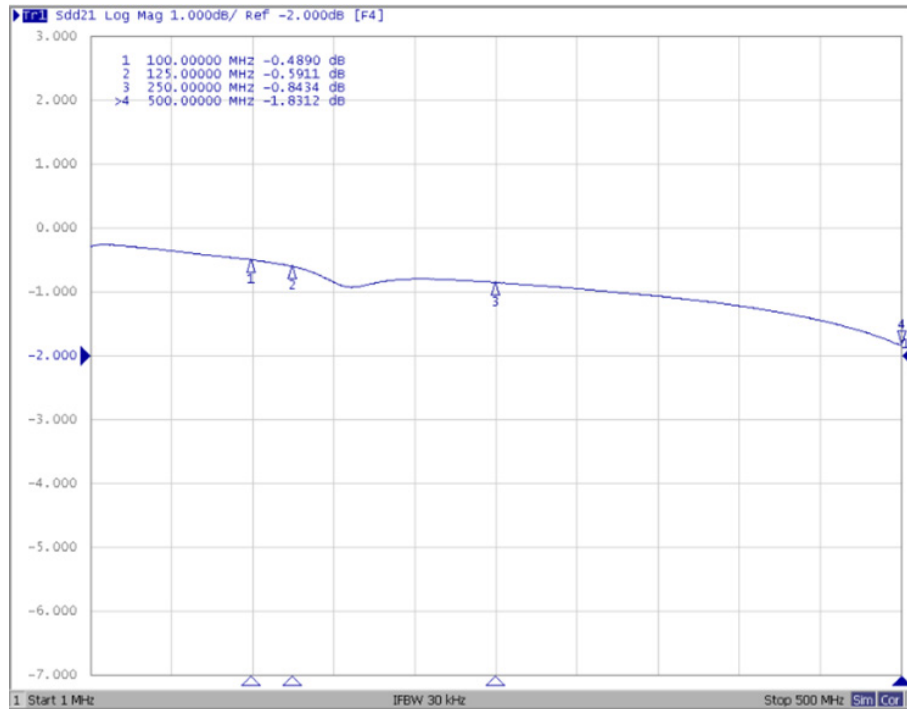
Turns Ratio (1 to 2 or 4 to 5): 1:1

RELIABILITY AND TEST CONDITIONS

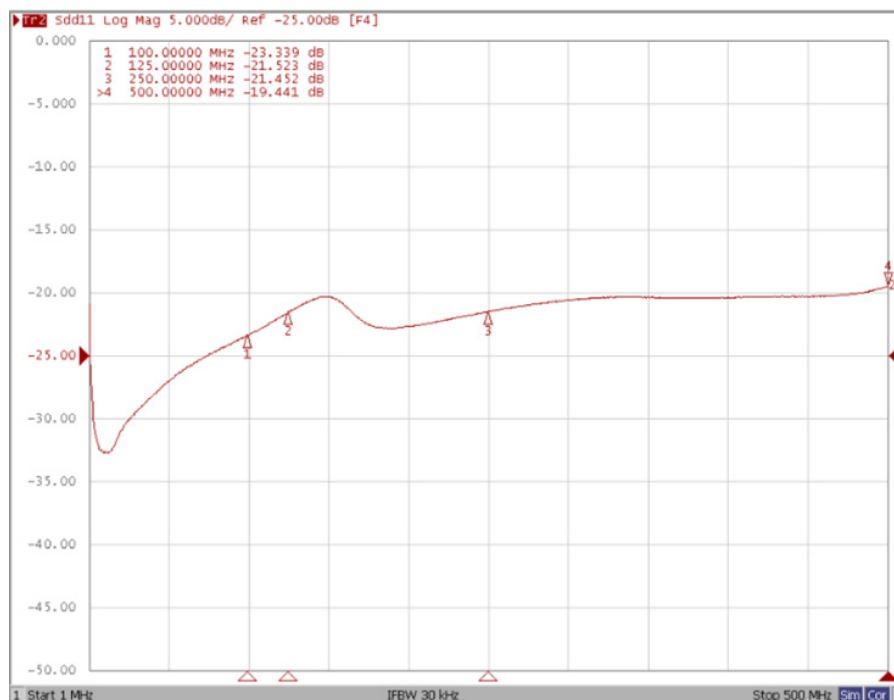
Reliability Tests																			
Operating Temperature		-40 °C ~+105°C (Including self-heating)																	
Storage Temperature		-40 °C ~+105 °C (on board)																	
Electrical Performance Test																			
Ls	Refer to standard electrical characteristics list		Keysight –E4980AL+ Keysight t -16334A																
Cs			Keysight –E4980AL+ Keysight t -16334A																
Insertion Loss			Agilent E5071C																
Return Loss			Agilent E5071C																
Life Test			Preconditioning: Run through IR reflow for 3 times. (IPC/JEDEC J-STD-020E Classification Reflow Profiles) Temperature : 105±2°C Applied current : rated current Duration : 1000±12hrs Measured at room temperature after placing for 24 hrs.																
Load Humidity			Preconditioning: Run through IR reflow for 3 times. (IPC/JEDEC J-STD-020E Classification Reflow Profiles) Humidity : 85 °C ±3% R.H, Temperature : 85°C ±2 Duration : 1000hrs Min. Bead : with 100% rated current : Inductance: with 10% rated current Measured at room temperature after placing for 24 hrs.																
Shock			<table><tr><td>Type</td><td>Peak value (g's)</td><td>Normal duration (D) (ms)</td><td>Wave form</td><td>Velocity change (Vi)ft/sec</td></tr><tr><td>SMD</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr><tr><td>Lead</td><td>50</td><td>11</td><td>Half-sine</td><td>11.3</td></tr></table> 3 shocks in each direction along 3 perpendicular axes. (18 shocks).		Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type			Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec													
SMD	50	11	Half-sine	11.3															
Lead	50	11	Half-sine	11.3															
Resistance to Soldering Heat	Depth: completely cover the termination																		
Terminal Strength			Preconditioning: Run through IR reflow for 3 times. (IPC/JEDEC J-STD-020E Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force (>0805:1kg, <=0805:0.5kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also, the force shall be applied gradually as not to apply a shock to the component being tested.																

NTXP1812FN121TRF

Insertion Loss



Return Loss

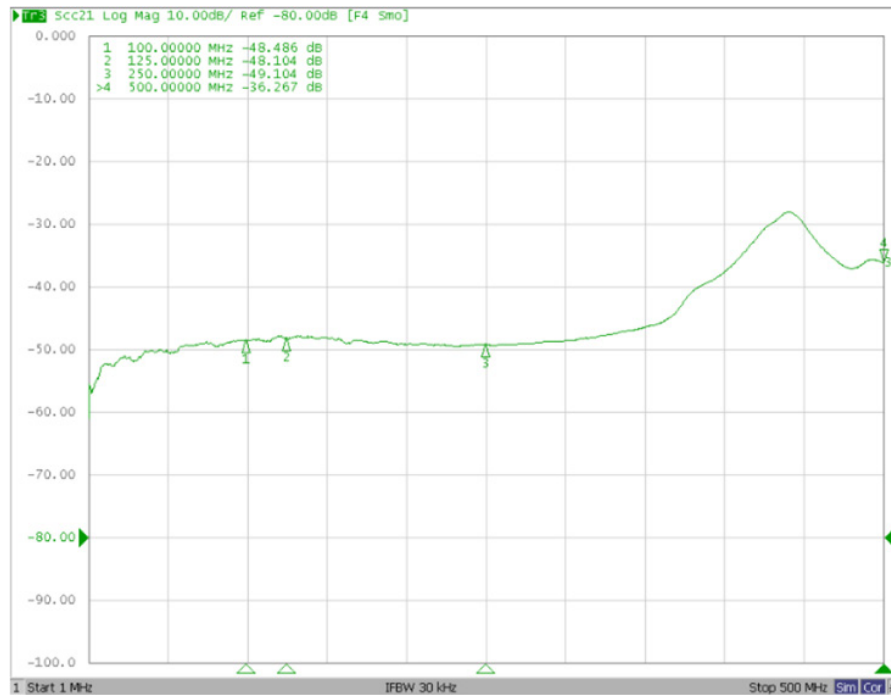


NTX Series

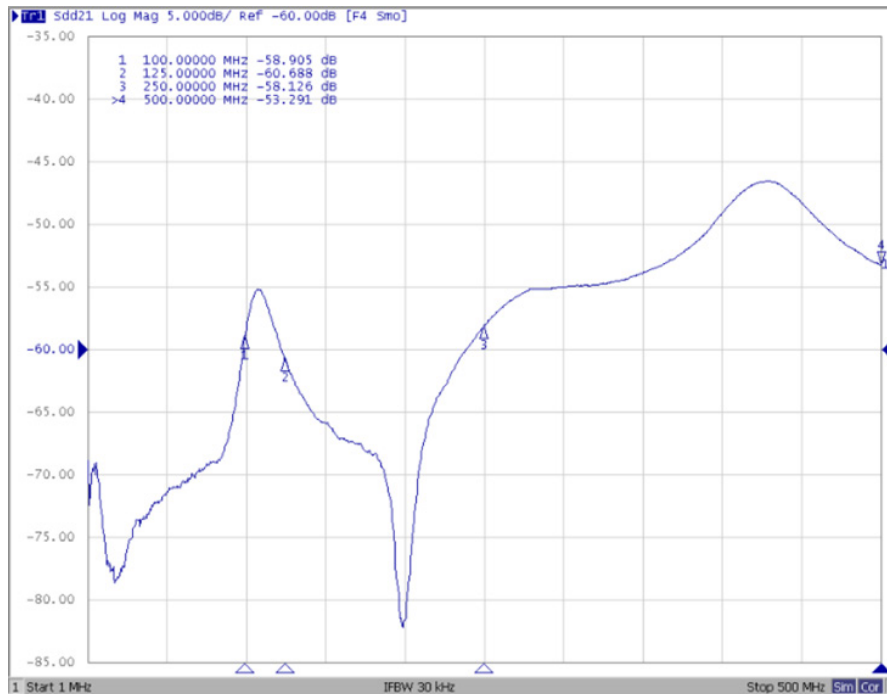
LAN Pulse Transformers



CMRR



Cross Talk



Note: Extended values, tolerances, and enhanced versions are available please contact NIC for more details.

Performance Passives By Design

NIC Components Corp.
1 Huntington Quadrangle, Suite 1C10, Melville, NY 11747

Page 7
www.niccomp.com

Last Updated 10/8/2025. Specification subject to change without notice. Please check web site for latest information.

Soldering and Mounting

Soldering

Mildly activated rosin fluxes are preferred. Component terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

IR Soldering Reflow

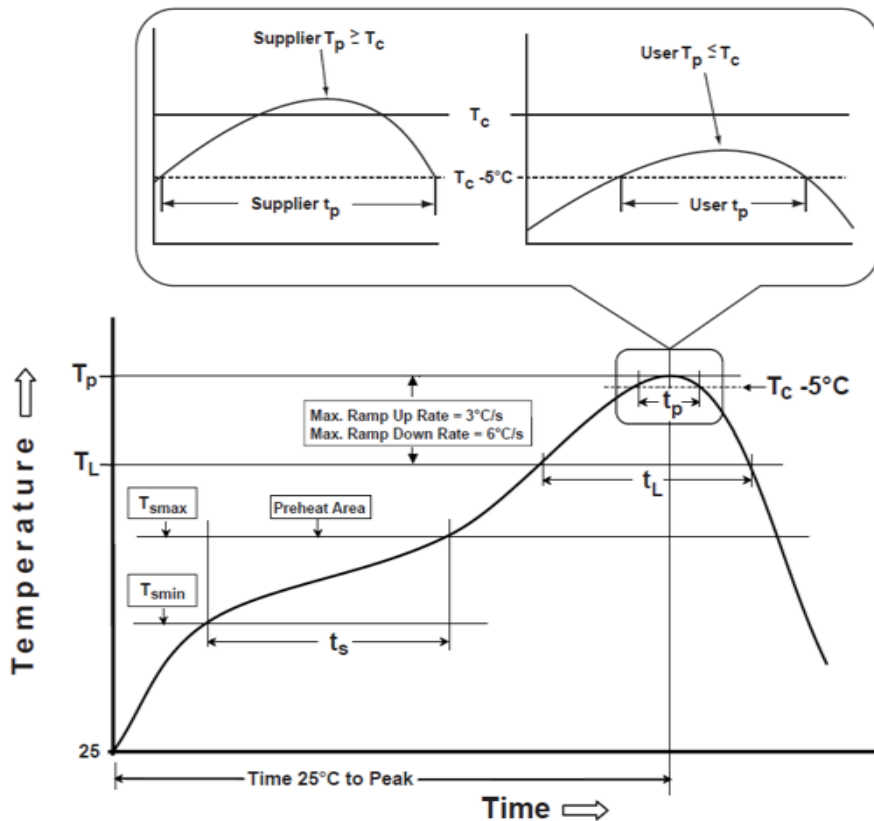
Recommended temperature profiles for lead free re-flow soldering in Figure 1. Table 1.1&1.2 (J-STD-020E)

Soldering Iron

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended. (Figure 2.)

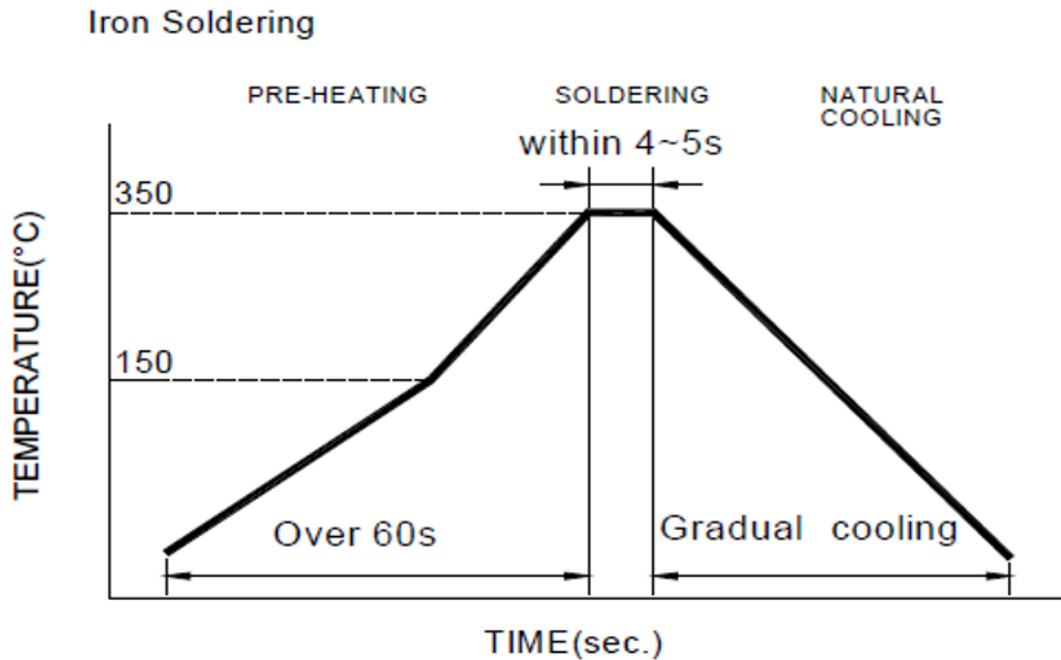
- Preheat circuit and products to 150°C
- 350 °C tip temperature (max)
- Never contact the ceramic with the iron tip
- 1.0mm tip diameter (max)
- Use a 20-watt soldering iron with tip diameter of 1.0mm
- Limit soldering time to 4~5sec.

Soldering Reflow / Reflow per IPC/JEDEC J-STD-020E



Reflow Cycles : 3 times max

Iron Soldering Temperature Profiles



Iron Soldering times : 1 times max

Reflow Soldering

Profile Type:	Pb-Free Assembly
Preheat	
-Temperature Min(T_{smin})	150°C
-Temperature Max(T_{smax})	200°C
-Time(t_s)from(T_{smin} to T_{smax})	60-120seconds
Ramp-up rate(T_L to T_p)	3°C/second max.
Liquidus temperature(T_L)	217°C
Time(t_L)maintained above T_L	60-150 seconds
Classification temperature(T_c)	See Table (1.2)
Time(t_p) at $T_c - 5^\circ\text{C}$ (T_p should be equal to or less than T_c .)	< 30 seconds
Ramp-down rate(T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

T_p: maximum peak package body temperature, **T_c**: the classification temperature.
For user (customer) T_p should be equal to or less than T_c.

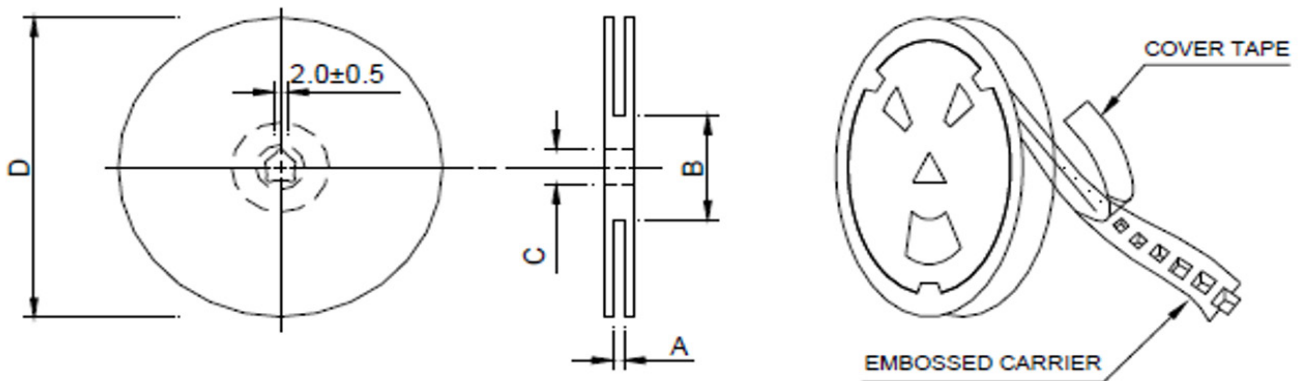
Package Thickness/Volume and Classification Temperature (Tc)

	Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E

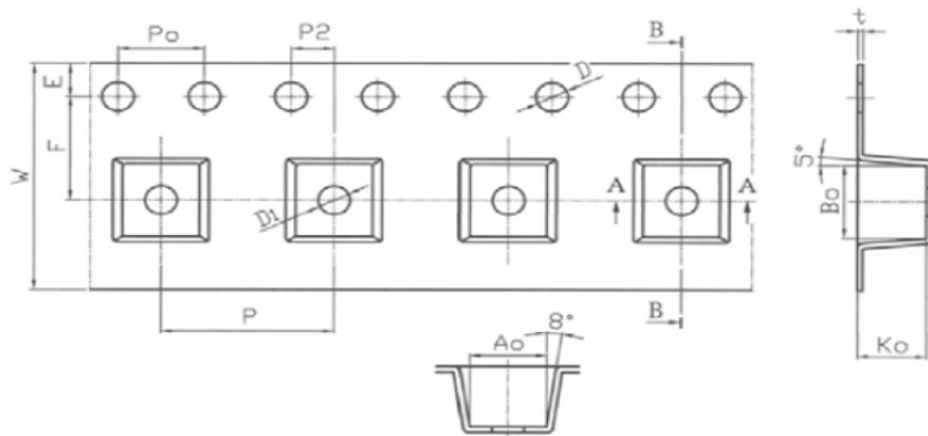
Packaging Information

Reel Dimensions



Type	A(mm)	B(mm)	C(mm)	D(mm)
13X12mm	12.5 ±0.5	100±2	13.5±0.5	330

(1) Tape Dimension / 12mm



NTX Series

LAN Pulse Transformers



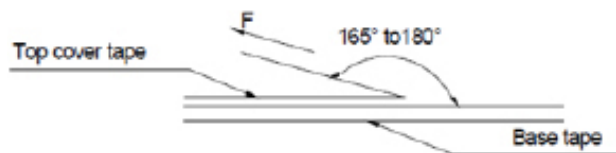
Series	P(mm) ±0.10	Po(mm) ±0.10	P2(mm) ±0.05	B0(mm) ±0.10	A0(mm) ±0.10	K0(mm) ±0.10	D(mm) ±0.10	D1(mm) ±0.10	E(mm) ±0.10
NTX1210	8.0	4.0	2.0	3.9	3.55	3.2	1.5 +0.10/-0.00	1.50	1.75
NTX1812	8.0	4.0	2.0	4.9	3.6	3.0	1.5 +0.10/-0.00	0.90	1.75

Series	F(mm) ±0.05	W(mm) ±0.10	t(mm) ±0.05
NTX1210NXXXXF	5.50	12.0	0.3
NTX1812MXXXXF	5.50	12.0	0.26

Packaging Quantity

Chip Size	Chip/Reel	Inner Box	Carton
NTX1210NXXXXF	2000	4000	32000
NTX1812NXXXXF	2000	4000	32000

Tearing Off Force



The force for tearing off cover tape is 15 to 80 grams in the arrow direction under the following conditions.

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions(component level)
To maintain the solderability of terminal electrodes:
 1. NIC NTX products meet IPC/JEDEC J-STD-020E standard-MSL, level 1.
 2. Temperature and humidity conditions: Less than 40°C and 60% RH.
 3. Recommended products should be used within 6 months from the time of delivery.
 4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
 1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
 2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
 3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Performance Passives By Design