BRIGHTEK

BRIGHTEK (EUROPE) LIMITED

Brighten Up The World With LED!

ISO/TS 16949:2009 BS EN ISO 14001:2004 QC 080000 IECQ HSPM

PRODUCT DATASHEET

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

- DC Input Photo Coupler
- SMD6
- Schmitt Trigger

Release Date: 30 August 2024 Version: A00

H11LX(S)(T1)-GV

H11LX(S) Series

H11LX(S) Series

RoHS Compliant

DESCRIPTION:

The H11LX(S) series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a Schmitt Trigger detector in a plastic DIP6 package with SMD6 lead forming option.

FEATURES:

- High isolation 5000 Vrms
- DC input with Schmitt Trigger output
- Operating temperature range -55°C to +100°C
- REACH & RoHS compliance
- MSL class 1
- Regulatory Approvals:
  - UL - UL1577
  - VDE - EN60747-5-5 (VDE0884-5)
  - CQC - GB4943.1, GB8898
  - cUL - CSA Component Acceptance Service Notice 5A
- Packing: 16mm tape with 1000pcs/reel, ø330mm (13'')

APPLICATIONS:

- Logic to logic isolator
- Programmable current level sensor
- Line receiver - eliminate noise and transient problems
- AC to TTL conversion square wave shaping
- Power Supply digital programming
- Interfaces computer peripherals

Partner with:

NAMING & ORDERING INFORMATION:

Naming Information:

H11L X (S) (T1) - G V	
H11L	Part Number
X	Selection: Turn On Threshold Current (X=1/2/3)
S	Lead Form Option: SMD6
T1	Selection: Tape and Reel Option (T1(default)/T2)
G	Green Option
V	VDE Option

Ordering Information:

H11LX(S)(T1)-GV

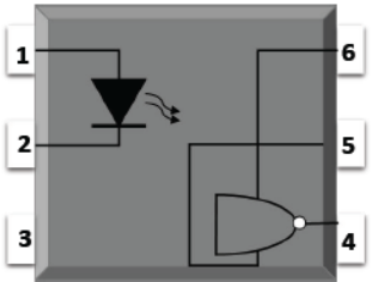
X = Selection: Turn On Threshold Current (X=1/2/3)

Part Number	Symbol	Values			Unit	Test Condition
		Min.	Typ.	Max.		
H11L1(S)(T1)-GV	I_{Fon}	---	---	1.6	mA	V_{CC}=5V, R_L=270Ω
H11L2(S)(T1)-GV		---	---	10		
H11L3(S)(T1)-GV		---	---	5		

Version No.	Original Release Date
Rev: A00	22/06/2021

SCHEMATIC DIAGRAM & MARKING:

Schematic Diagram:



PIN Definition	
1	Anode
2	Cathode
3	NC
4	VOUT
5	GND
6	VCC

Marking Information:

Marking Definition	
TD	Manufacturer Code
H11LX	Part Number & Rank
V	VDE Applicable
Y	Fiscal Year
A	Manufacturing Code
WW	Work Week

Labelling Information:

This product is manufactured, tested, and packed by

LIGHTNING

ABSOLUTE CHARACTERISTICS:

Absolute Maximum Ratings:

Parameter	Symbol	Ratings	Unit
INPUT			
Forward Current	I_F	60	mA
Peak Transient Current	$I_{F(trans)}$	1 *1	A
Reverse Voltage	V_R	6	V
Input Power Dissipation	P_I	120	mW
OUTPUT			
Supply Voltage	V_{CC}	3 to 16	V
Output Voltage	V_O	0 to 16	V
Output Current	I_O	50	mA
Output Power Dissipation	P_O	150	mW
COMMON			
Total Power Dissipation	P_{tot}	250	mW
Isolation Voltage	V_{iso}	5000 *2	Vrms
Operating Temperature	T_{opr}	-55~+100	°C
Storage Temperature	T_{stg}	-55~+150	°C
Soldering Temperature	T_{sol}	260 *3	°C

*1. ≤1μs P.W., 300pps
*2. AC for 1 minute, R.H.=40~60%
*3. For 10 seconds

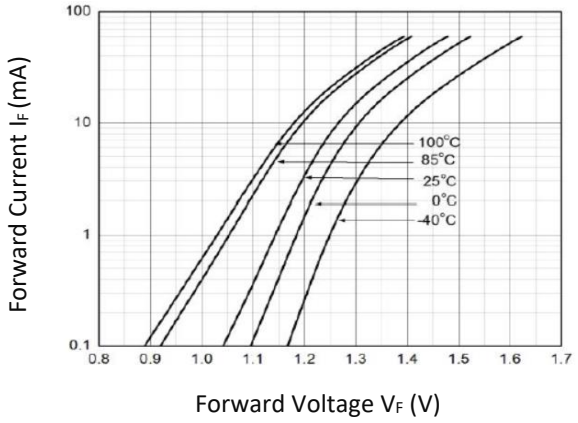
ELECTRICAL CHARACTERISTICS:

Electrical Optical Characteristics at Ta=25°C:

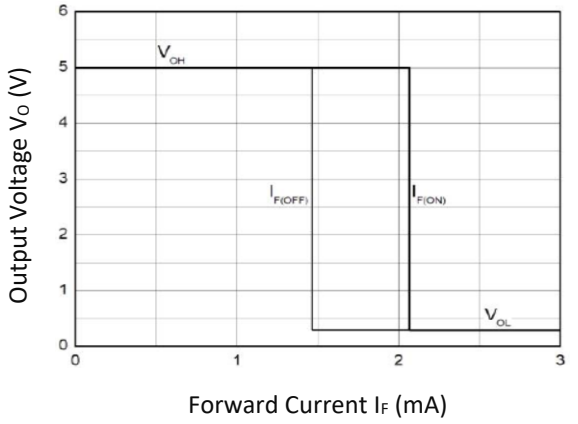
Parameter		Symbol	Values			Unit	Test Condition
			Min.	Typ.	Max.		
INPUT							
Forward Voltage		V_F	---	1.24	1.5	V	I_F=10mA
Reverse Current		I_R	---	---	10	μA	V_R=5V
Input Capacitance		C_{IN}	---	60	---	pF	V=0, f=1MHz
OUTPUT							
Operation Voltage Range		V_{CC}	3	---	15	V	---
Off State Supply Current		$I_{CC(off)}$	---	1.6	5	mA	I_F=0mA, V_{CC}=5V
On State Supply Current		$I_{CC(on)}$	---	1.6	5	mA	I_F=10mA, V_{CC}=5V
High Level Output Current		I_{OH}	---	---	100	μA	I_F=10mA, V_{CC}=V_O=15V
TRANSFER CHARACTERISTICS (Ta=-40~+85°C)							
Low Level Output Voltage		V_{OL}	---	0.35	0.6	V	V_{CC}=5.5V, V_E=2.0V, I_F=5mA, I_{CL}=13mA
Turn On Threshold Current	H11L1	I_{Fon}	---	---	1.6	mA	V_{CC}=5V, R_L=270Ω
	H11L2		---	---	10		
	H11L3		---	---	5		
Turn Off Threshold Current		I_{Foff}	---	1	---	mA	V_{CC}=5V, R_L=270Ω
Turn On Time		t_{on}	---	---	4	μs	V_{CC}=5V, I_F=I_{Fon}, R_L=270Ω
Fall Time		t_f	---	0.1	---	μs	
Turn Off Time		t_{off}	---	---	4	μs	
Rise Time		t_r	---	0.1	---	μs	
Data Rate		---	---	1	---	MHz	---
Isolation Resistance		R_{iso}	10^12	10^14	---	Ω	DC=500V, 40~60% R.H.
Floating Capacitance		C_{IO}	---	0.3	1	pF	V=0, f=1MHz

CHARACTERISTIC CURVES:

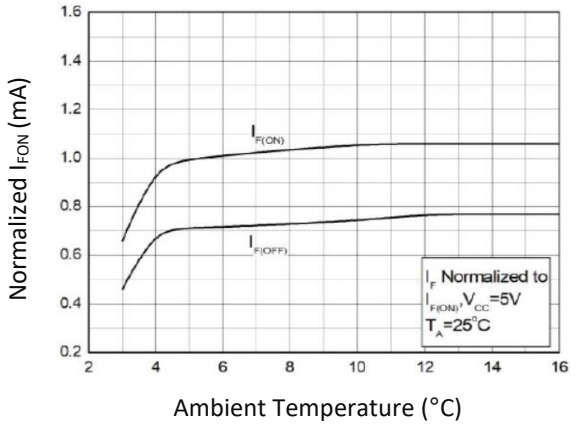
Forward Voltage v.s. Forward Current



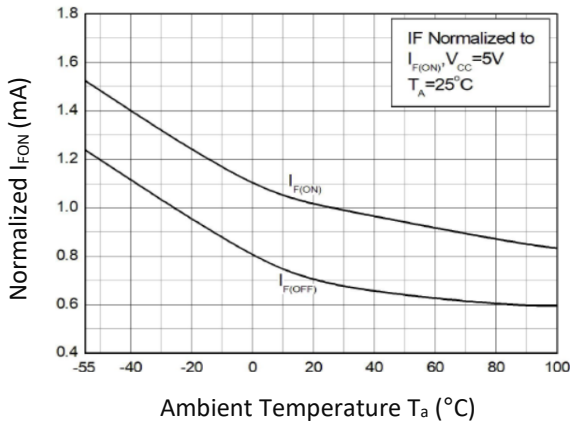
Output Voltage v.s. Forward Current



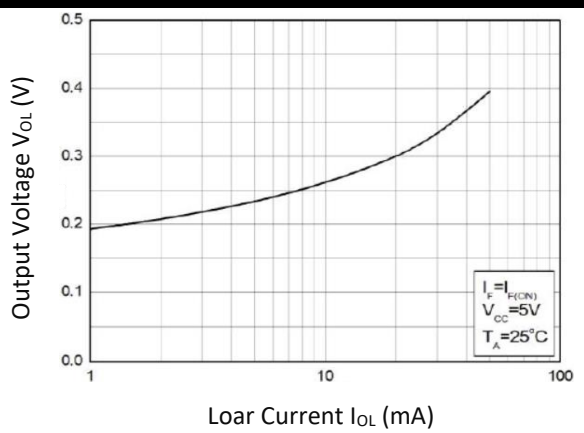
Normalized Turn-On Threshold Current v.s. Supply Voltage



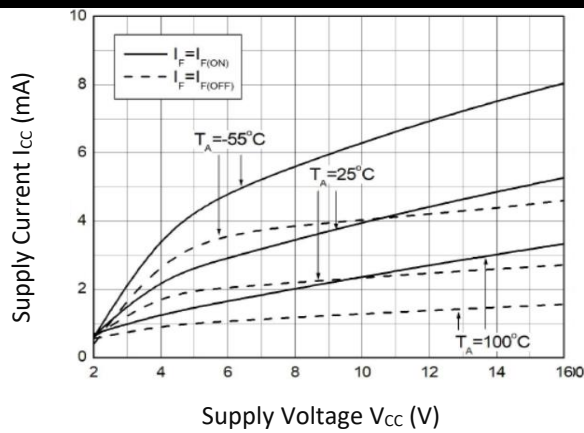
Normalized Turn-On Threshold Current v.s. Ambient Temperature



Low Level Output Voltage v.s. Load Current



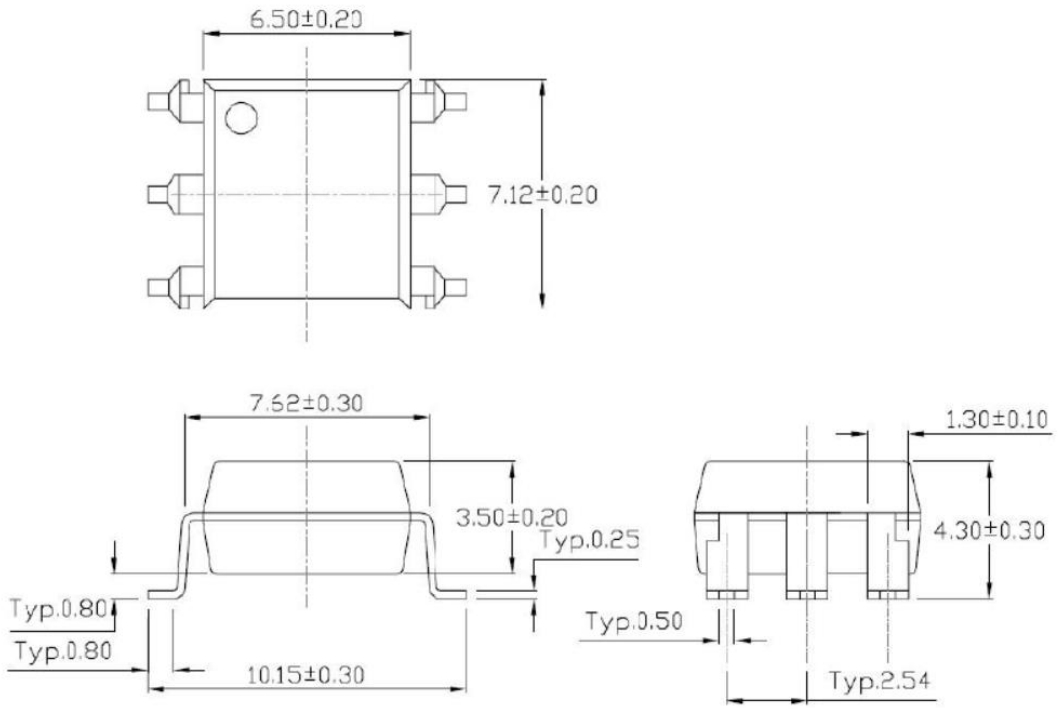
Supply Current v.s. Supply Voltage



OUTLINE DIMENSION:

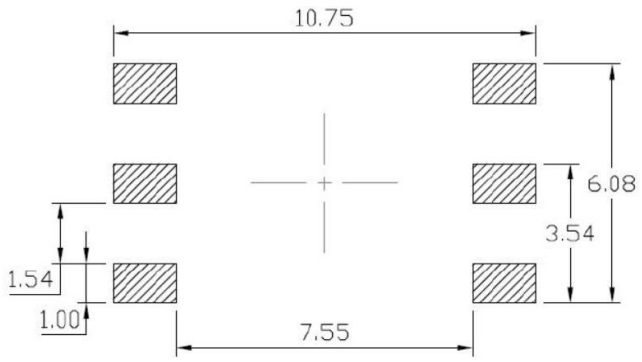
Package Dimension:

Surface Mount Lead Forming - SMD (S Type)



1. All dimensions are in millimetre (mm).

Recommended Soldering Mask:



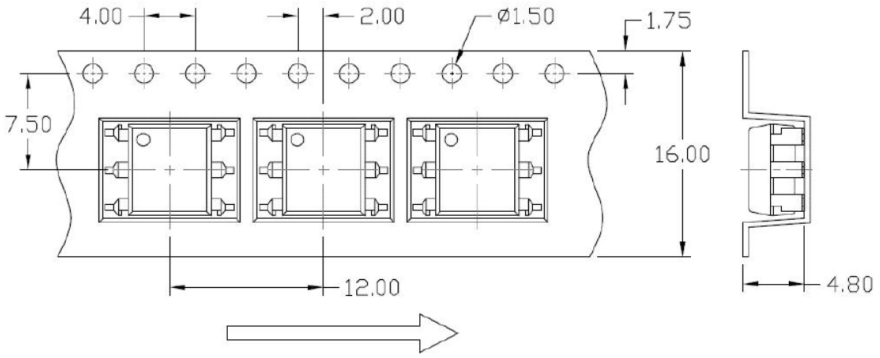
1. Dimensions are in millimetre (mm).

PACKING SPECIFICATION:

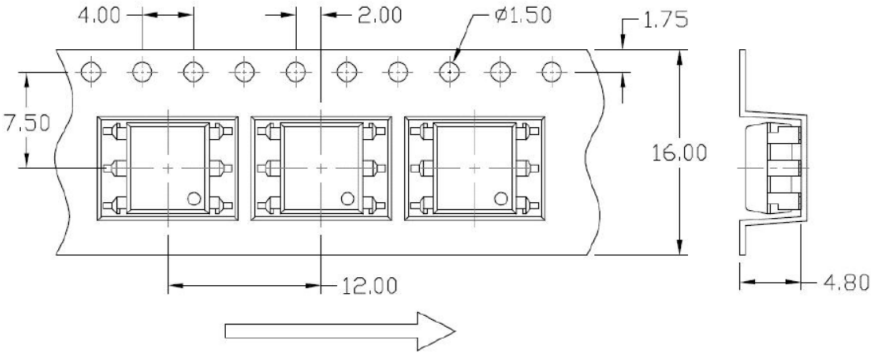
Reel Dimension:

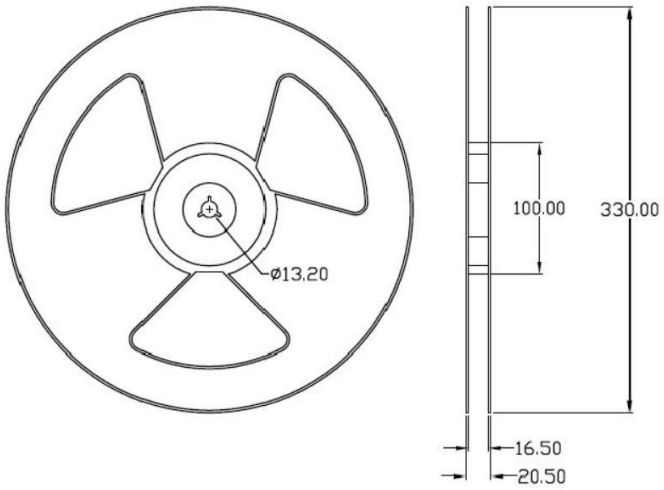
1000pcs/reel

Reel Option: T1 (default)



Reel Option: T2

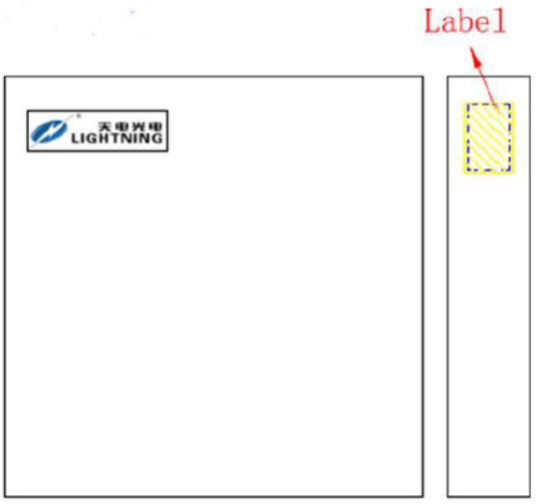




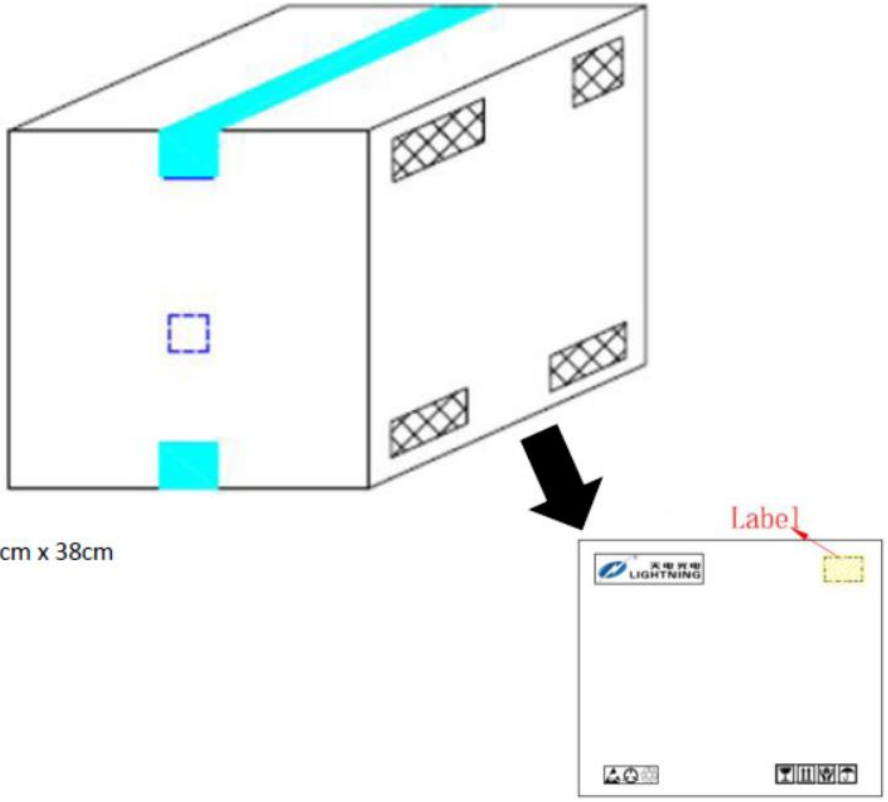
PACKING SPECIFICATION:

Box Dimension:

3 reel (3Kpcs)/inner box, 5 inner box (15Kpcs)/carton



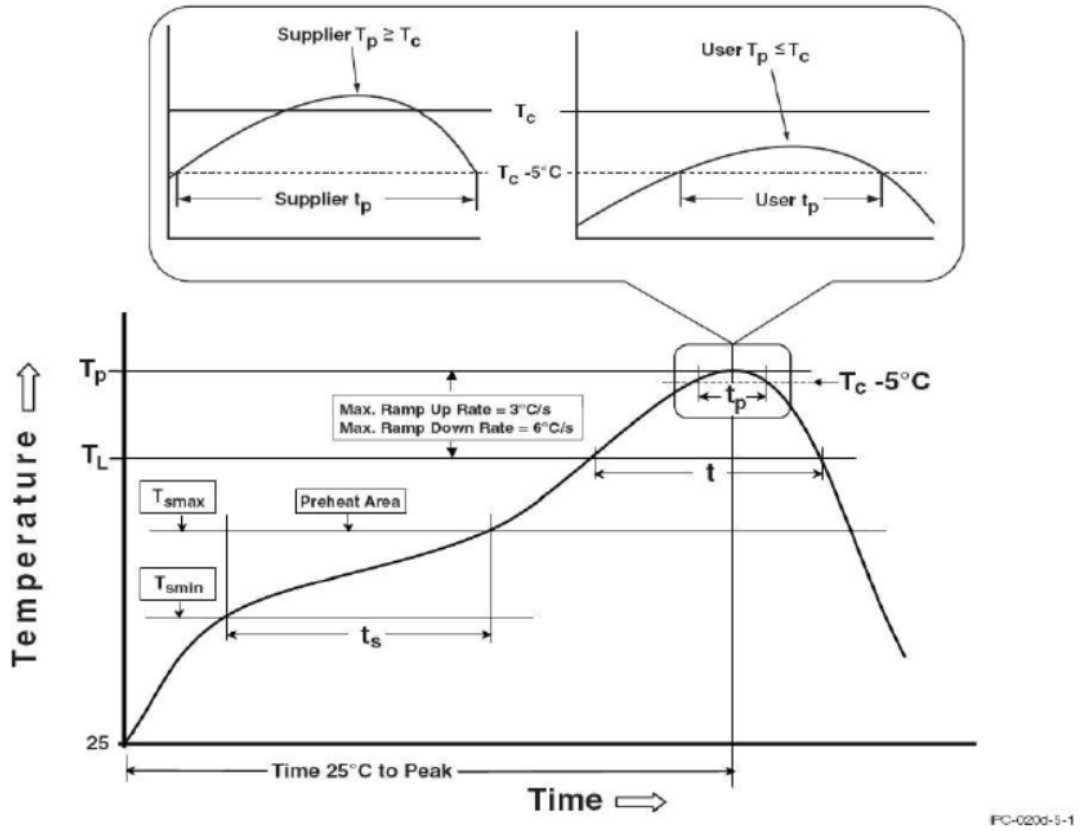
- L x W x H = 36cm x 36cm x 6.9cm



- L x W x H = 45cm x 38cm x 38cm

RECOMMENDED SOLDERING PROFILE:

Reflow Information:



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T_{smin})	100°C	150°C
Temperature Max. (T_{smax})	150°C	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.	3°C/second max.
Liquidous Temperature (T_L)	183°C	217°C
Time (t_L) Maintained Above (T_L)	60-150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (t_P) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max.	6°C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.