WAYON

WOC-302X_305X

Photo Coupler

Description

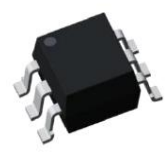The WOC-302X_305X series of devices each consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon non zero voltage crossing photo triac.They are designed for use with a discrete power triac in the interface of logic systems , such as solid-state relays, industrial controls, motors, solenoids and consumer appliances.

DIP6   DIP6-M   DIP6-S1

Features

- 6pin Non-zero-cross optoisolators triac driver
- High input-output isolation voltage(Viso = 5,000Vrms)
- High repetitive peak off-state voltage VDRM
- WOC-302X: Min. 400V; WOC-305X: Min. 600V
- High critical rate of rise of off-state voltage(dv/dt : MIN. 1000V /s)
- Operating Temperature:-40℃~110℃
- Safety approval
- RoHS
- MSL1

Applications

- Solenoid/valve controls
- Static power switch
- AC motor drivers
- Temperature Control

Schematic & PIN Configuration
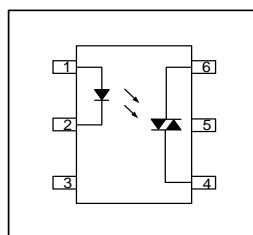
Pin Configuration
1.Anode
2.Cathode
3.No Connection
4.Terminal
5.No Connection
(do not connect)
6.Terminal

Order Code

$$\text{WOC–30XX–}\underline{\text{XX}}\text{–}\underline{\text{XX}}\text{–}\underline{\text{XX}}$$
  ①   ②   ③ ④   ⑤

WOC=WAYON Optocoupler

30XX= Product Series(302X/305X, X:1/2/3)

①　= Lead form option(S1,M,NONE)[1]

②　= Tape and Reel option(TA,TA1,NONE)[2]

③　= VDE order option(fixed code "V")

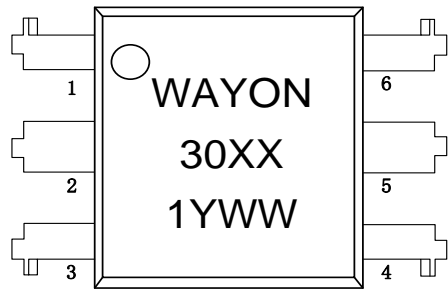④　= Halogen free option(fixed code"G")

⑤　= Customer code

Notes

1.　Lead form option:

Symbol	Description
S1	DIP6-S1
M	DIP6-M
NONE	DIP6 Normal

2.　Tape and Reel option:

Symbol	Description
TA&TA1	Tape and Reel Type
NONE	DIP Type

Marking Information

Designation:

WAYON: denotes WAYON

"30XX"denotes Device

"1Y"denotes year code

"WW" denotes week code

Maximum Rating

Parameter		Symbol	Value	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	120	mW
	Junction Temperature	T_J	125	°C
Output	Off-State Output Terminal Voltage WOC-302X	V_{DRM}	400	V
	Off-State Output Terminal Voltage WOC-305X		600	
	Peak Repetitive Surge Current (PW=1ms,120 pps)	I_{TSM}	1	A
	On-State RMS Current	$I_{T(RMS)}$	100	mA
	Junction Temperature	T_J	125	°C
	Collector Power Dissipation	P_C	150	mW
Operating temperature range		T_{opr}	−40 ~ 110	°C
Storage temperature range		T_{stg}	−55 ~ 125	°C
Total Power consumption		P(W)	250	mW
Isolation Voltage[1]		V_{ISO}	5000	Vrms
Soldering Temperature[2]		T_{SOL}	260	°C

Notes:

(1). AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

(2).For 10 seconds.

Electrical Optical Characteristics (T$_a$=25°C)

Parameter			Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input	Forward Voltage		V_F	I_F = 20mA	-	1.2	1.6	V
	Reverse Current		V_R	VR=6V	-		5	µA
Output	Peak Blocking Current, Either Direction[1]		I_{DRM}	VDRM=Rated VDRM	-	-	500	nA
	Peak On-State Voltage, Either Direction		V_{TM}	ITM=100mA Peak	-	-	3	V
	Critical rate of Rise of Off-State Voltage[2]		dv/dt	Vin=240Vrms	1000	-	-	V/µs
Couple	Led Trigger Current,Current Required to Latch Output, Either Direction	WOC-3021 WOC-3051	I_{FT}	Main Terminal Voltage = 3V	-	-	15	mA
		WOC-3022 WOC-3052			-	-	10	
		WOC-3023 WOC-3053			-	-	5	
	Holding Current, Either Direction		I_H	-	-	200	-	µA

Note*：

(1)Test voltage must be applied within dv/dt rating.

(2)This is static dv/dt. Commutating dv/dt is a function of the load-driving thyristor(s) only.

Typical Characteristics

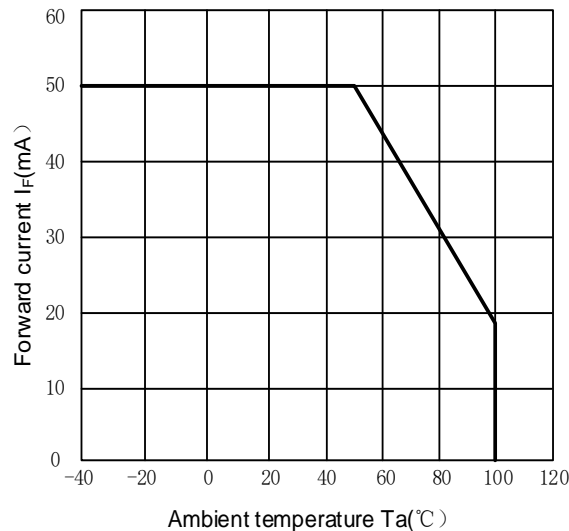Fig.1 Forward current vs.Ambient temperature
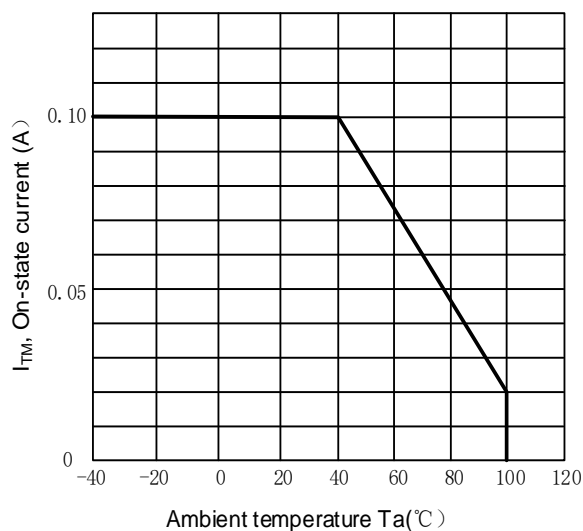
Fig.2 On-state current vs.Ambient temperature

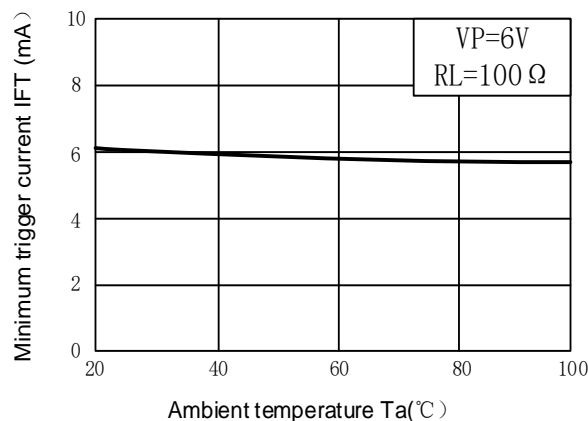Fig.3 Minimun Trigger Current vs Ambient temperature

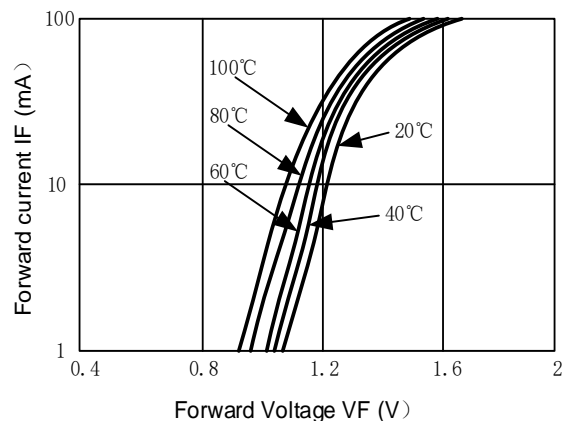Fig.4 Forward current vs Forward Voltage

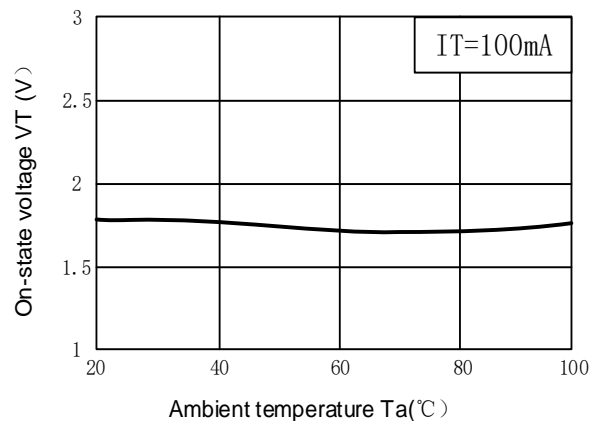Fig.5 On-state voltage vs Ambient temperature
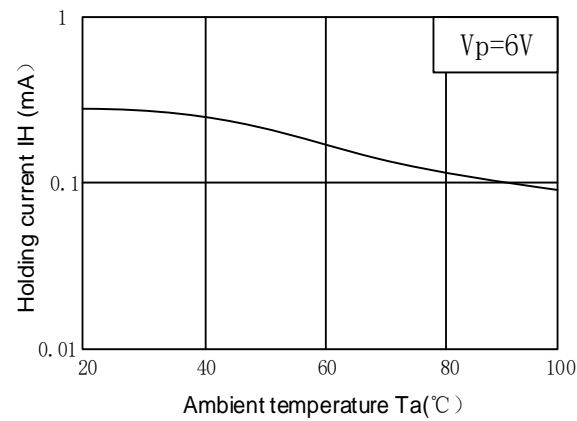
Fig.6 Holding current vs Ambient temperature
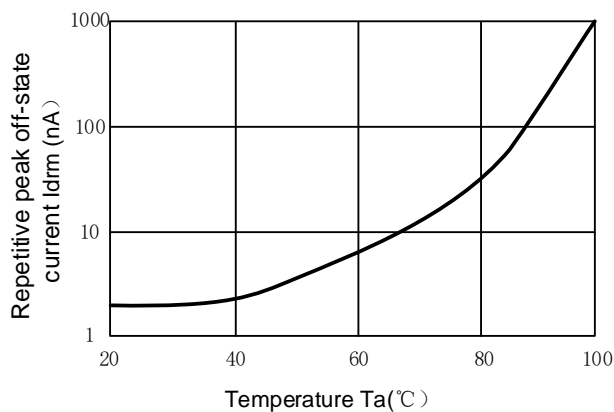
Fig.7 Repetitive peak off-state current vs Temperature
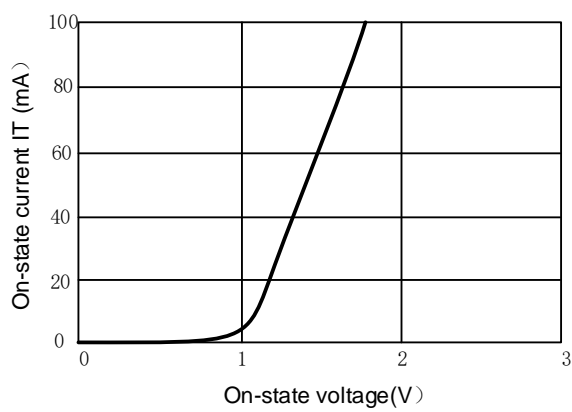
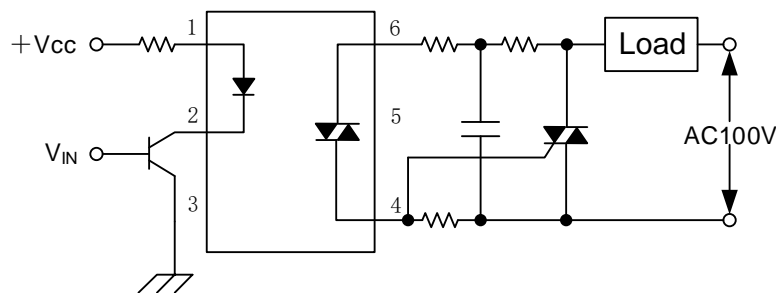Fig.8 On-state current vs On-state voltage

Fig.9 Basic Driver Circuit

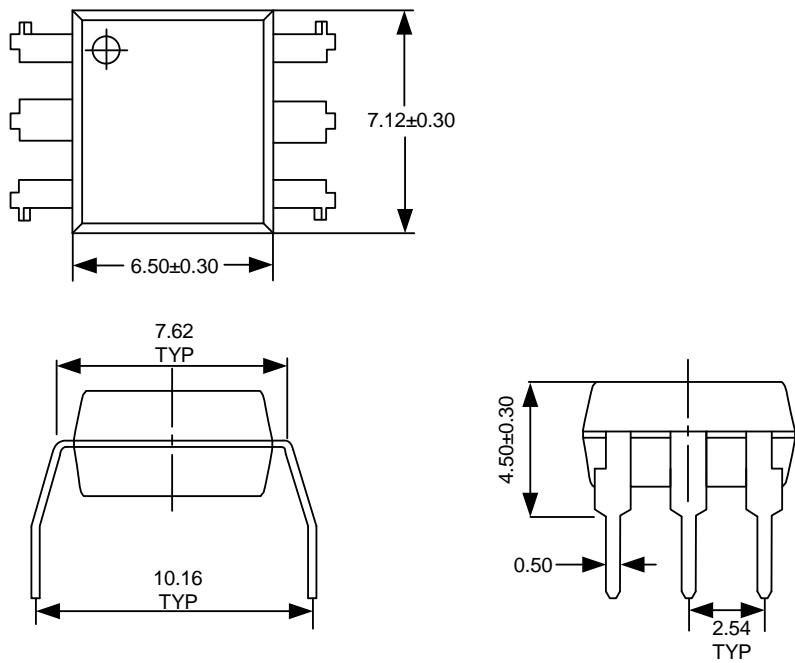## Outline Dimensions

DIP Normal Type:

7.12±0.30

6.50±0.30

7.62 TYP

0.25

5°-15°

8.57±0.50

4.5±0.30

0.50

2.54 TYP

DIP M Type:

7.12±0.30

6.50±0.30

7.62
TYP

10.16
TYP

4.50±0.30

0.50

2.54
TYP
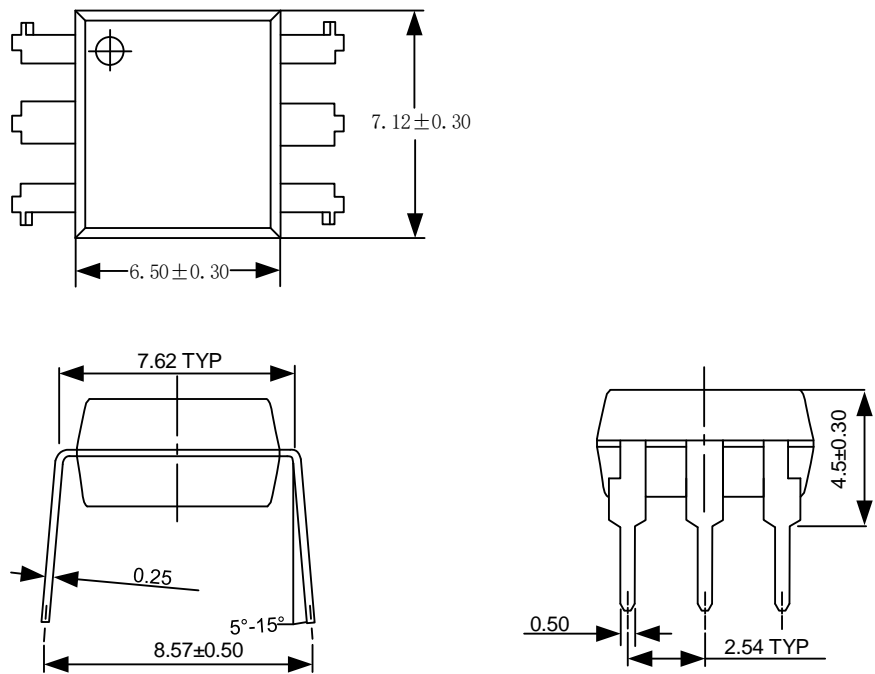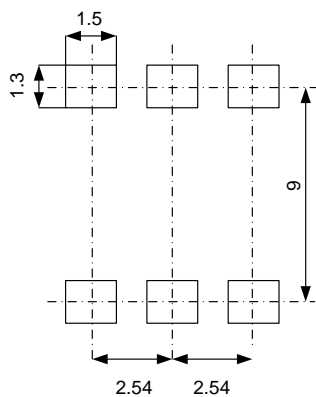
DIP S1 Type:
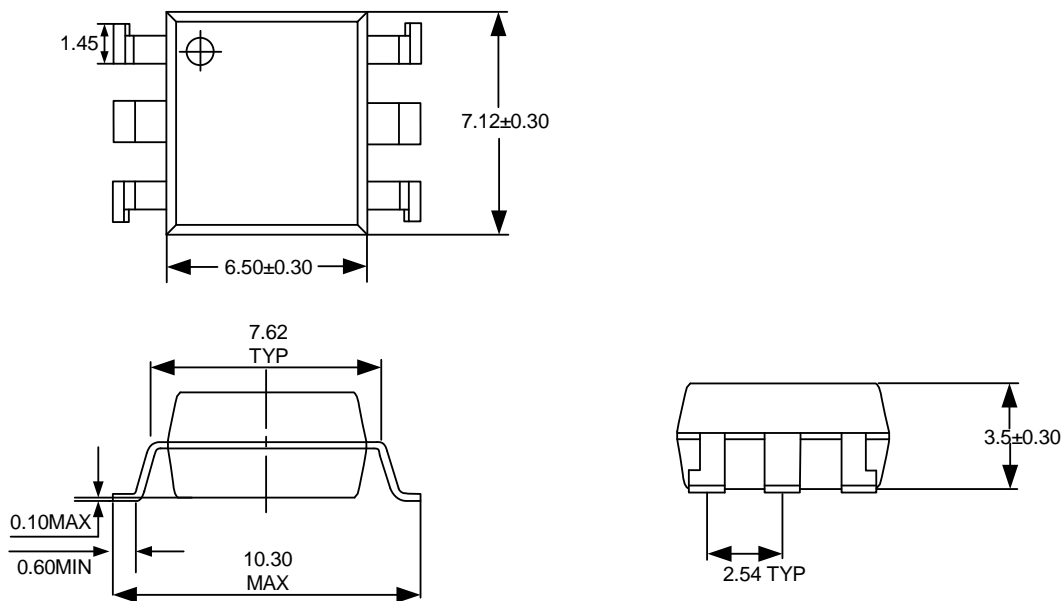
Unit: mm
Tolerance: ±0.1mm

Recommended Pad Layout

Unit: mm
Tolerance: ±0.1mm

Temperature Profile Of Soldering

1. IR Reflow soldering(JEDEC-STD-020D compliant)
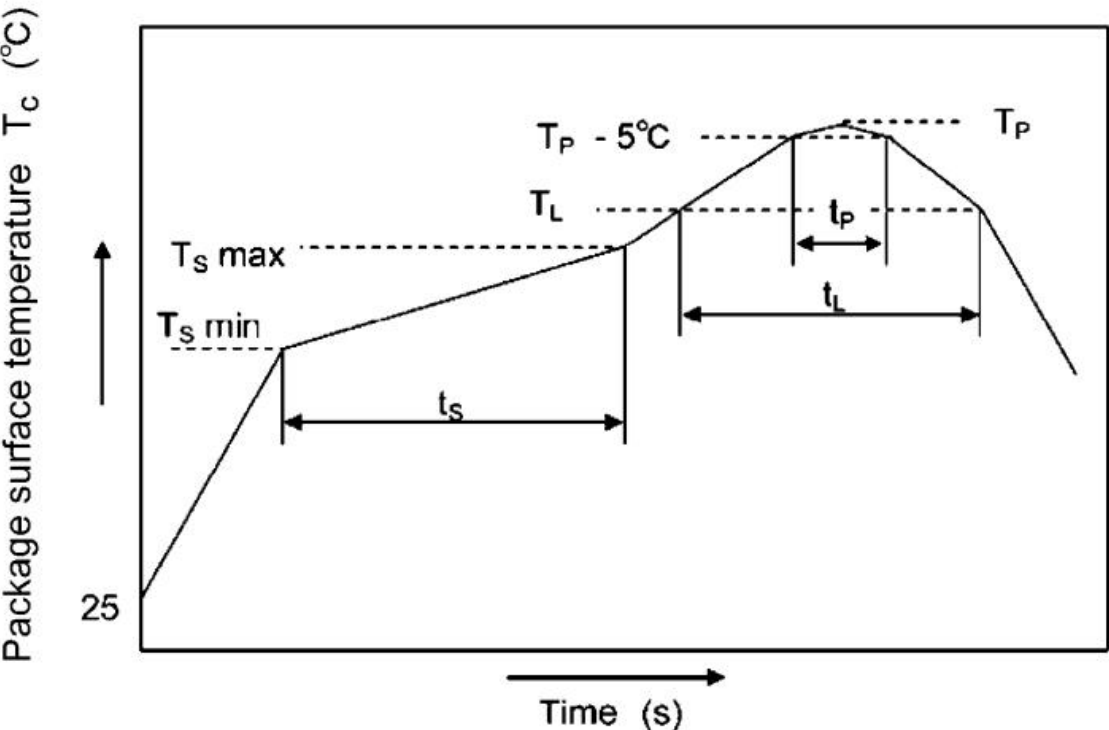
Item	Symbol	Min.	Max.	Unit
Preheat Temperature	T_s	150	200	°C
Preheat Time	t_s	60	120	s
Ramp-Up Rate (T_L to T_P)	-	-	3	°C /s
Liquidus Temperature	T_L	217		°C
Time Above T_L	t_L	60	150	s
Peak Temperature	T_P	-	260	°C
Time During Which Tc Is Between (T_P-5) and T_P	t_p	-	30	s
Ramp-down Rate(T_P to T_L)	-	3	6	°C /s

Note：

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

2. Wave Soldering(JEDEC22A111 compliant)
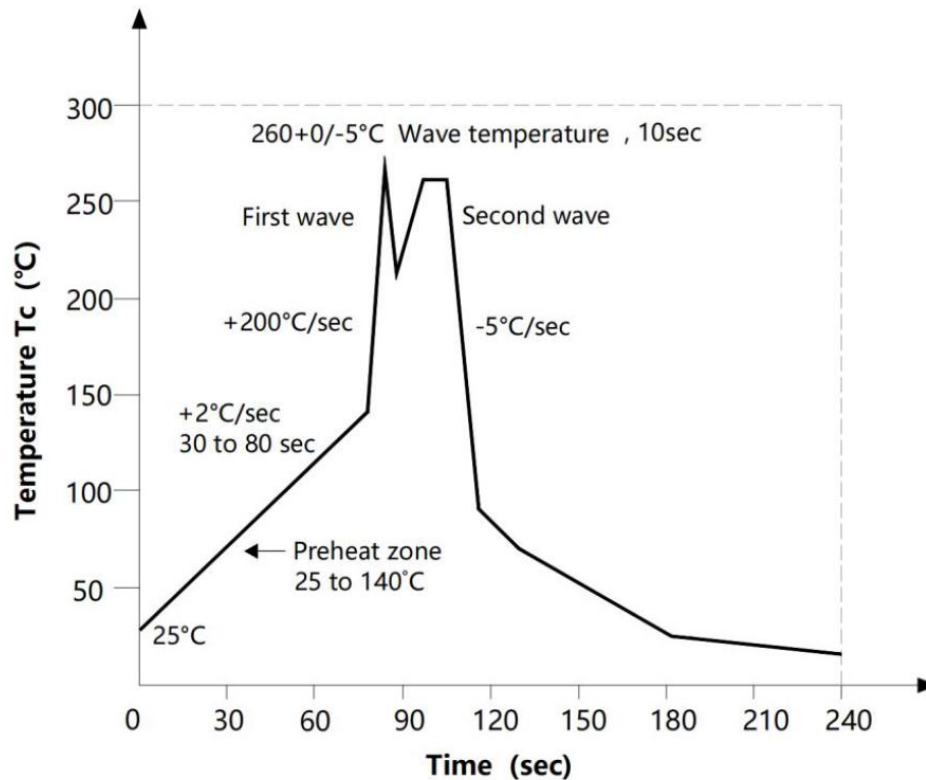
One time soldering is recommended within the condition.

Temperature:260+0/-5˚C.

Time:10 sec.

Preheat temperature:25 to 140˚C.

Preheat time:30 to 80 sec.

3. Hand soldering by soldering iron

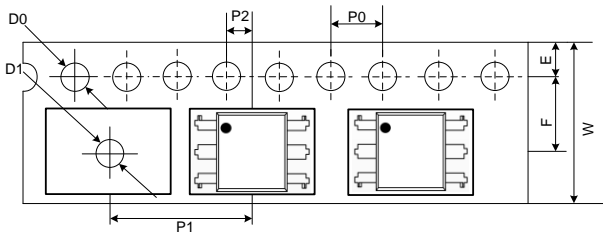Allow single lead soldering in every single process. One time soldering is recommended.

Temperature: 380+0/-5˚C

Time: 3 sec max

Packing
Tape & Reel
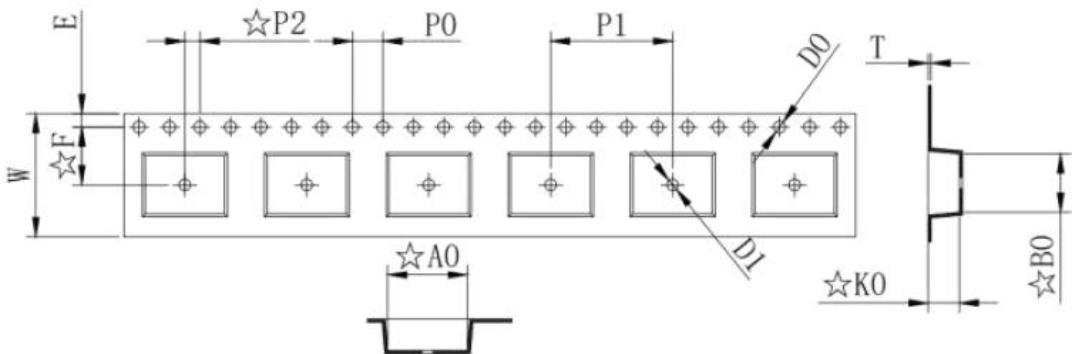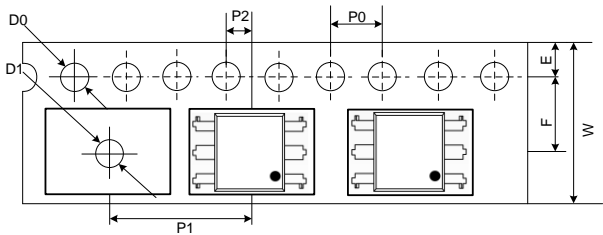
Deminsion/mm	W	E	F	P0	P1	P2
Package type:S	16±0.2	1.75±0.1	7.5±0.1	4±0.1	16±0.1	2±0.1

Deminsion/mm	A0	B0	D0	D1	K0
Package type:S	10.45±0.1	7.6±0.1	1.5±0.1	1.5±0.1	4.1±0.1

Unit: mm

1. Reel

Packagetype:S	Reel	Inner carton	Outer carton
QTY/PCS	1K/reel	2K(2 reels)	20K

2. Tape and Tube

Package type:Normal&M	Tube	Outer carton
QTY/PCS	65	3.25K(50 tubes)

CONTACT INFORMATION

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For additional information, please contact your local Sales Representative.

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Product Specification Statement

1．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.

2．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. WAYON 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 WAYON assumes no responsibility for the application of the product.

3．WAYON strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, WAYON cannot guarantee that the information provided in the product specification is entirely accurate and error-free. WAYON shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications. WAYON reserves the right to revise or update the product specification and the products at any time without prior notice, and the user's continued use of the product specification is considered an acceptance of these revisions and updates. Prior to purchasing and using the product, users should verify the above information with WAYON to ensure that the product specification is the most current, effective, and complete. If users are particularly concerned about product parameters, please consult WAYON in detail or request relevant product test reports. Any data not explicitly mentioned in the product specification shall be subject to separate agreement.

4．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.

5．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. WAYON shall assume no responsibility for any consequences resulting from such usage.

6．Users should also comply with relevant laws, regulations, policies, and standards when using the product specification. Users are responsible for the risks and liabilities arising from the use of the product specification and must ensure that it is not used for illegal purposes. Additionally, users should respect the intellectual property rights related to the product specification and refrain from infringing upon any third-party legal rights. WAYON shall assume no responsibility for any disputes or controversies arising from the above-mentioned issues in any form.