ORIENT

Photo coupler

Product Data Sheet

Part Number: OR-263X

Customer: _____

Date: _____

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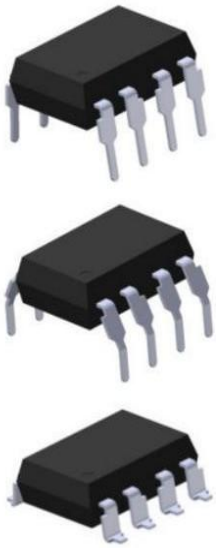
1.Features



(1)High speed: 10MBd

(2)Logic gate output

(3)Guaranteed performance from -40 to 105℃

(4)High isolation voltage between input and output (Viso=5000 Vrms)

(5)Safety approval

UL approved (No.E323844)

VDE approved (No.40029733)

CQC approved (No.CQC19001231254)

(6)In compliance with RoHS, REACH standards

(7)MSL Class I

2.Instructions

The OR-263X are consists of an infrared emitting diode optically coupled to a high speed integrated photo detector logic gate with a strobable output. It is packaged in a 8-pin DIP package and available in wide-lead spacing and SMD options.

3.Application Range

(1)Ground loop elimination

(2)LSTTL to TTL, LSTTL or 5 volt CMOS

(3)Line receiver, data transmission

(4)Data multiplexing

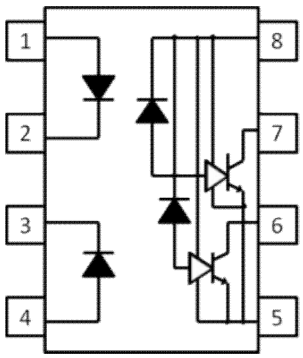
(5)Switching power supplies

(6)Pulse transformer replacement

(7)Computer peripheral interface

(8)High speed logic ground isolation

4.Functional Diagram



Pin Configuration:

1.Anode 5.Gnd

2.Cathode 6.Vout2

3.Cathode 7.Vout1

4.Anode 8.V_{CC}

Truth Table (Positive Logic)	
Input	**Output**
H	L
L	H

0.1 capacitor F bypass capacitance needs to be connected between Pin8 and Pin5

5.Absolute Maximum Ratings (Ta=25℃)*1

Parameter		Symbol	Rated Value	Unit
Input	Average Forward Input Current	I_F	20	mA
	Reverse Input Voltage	V_R	5	V
	Power Dissipation	P_I	40	mW
Output	Output Current	I_O	50	mA
	Output Voltage	V_O	7	V
	Supply voltage	V_{CC}	7	V
	Output Power Dissipation	P_O	85	mW
Insulation Voltage		V_{iso}	5000	Vrms
Working Temperature		T_{opr}	-40 ~ + 105	℃
Storage Temperature		T_{stg}	-55 ~ + 125	
Soldering Temperature*2		T_{sol}	260	

Notes:

*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2, 3 & 4 are shorted together, and pins 5, 6, 7 & 8 are shorted together.

*2. soldering time is 10 seconds.

6.Opto-electronic Characteristics

Over recommended temperature (TA = -40°C to +105°C) unless otherwise specified. All Typicals at TA = 25°C. All enable test conditions apply to single channel products only.

Parameter		Symbol	Min	Typ	Max	Unit	Condition
Input	Forward Voltage	V_F	—	1.4	1.8	V	I_F= 10mA
	Temperature Coefficient Of Forward Voltage	$\Delta V_F/ \Delta T_A$	—	-0.9	—	mV/°C	I_F= 10mA
	Reverse Voltage	BV_R	5	—	—	V	I_R = 10μA
	Input Capacitance	C_{IN}	—	34	—	pF	f = 1MHz, V_F = 0V
Output	High Level Supply Current	I_{CCH}	—	13	18	mA	V_{CC}=5.5V, I_F=0mA
	Low Level Supply Current	I_{CCL}	—	15	21	mA	V_{CC}= 5.5V, I_F=10mA
Transfer Characteristics	High Level Output Current	I_{OH}	—	—	100	μA	V_{CC}=5.5V, V_O=5.5V, I_F=250μA
	Low Level Output Voltage	V_{OL}	—	0.35	0.6	V	V_{CC}=5.5V, I_F=5mA, I_{OL}= 13mA
	Input Threshold Current	I_{FT}	—	2.5	5	mA	V_{CC}= 5.5V, V_O=0.6V, I_{OL}=13mA

7.Switching Characteristics

(Over recommended temperature (TA = -40°C to +105°C) unless otherwise specified. All Typicals at TA = 25°C. All enable test conditions apply to single channel products only.

Parameter	Symbol	Min	Typ	Max	Unit	Condition
Propagation delay time to output High level	T_{PLH}	—	48	100	ns	C_L=15pF, R_L=350Ω
Propagation delay time to output Low level	T_{PHL}	—	40	100	ns	
Pulse width distortion	$\|T_{PHL}–T_{PLH}\|$	—	15	35	ns	
Output rise time	t_r	—	21	—	ns	
Output fall time	t_f	—	10	—	ns	

8.Order Information

Part Number

OR-263XU-Y-Z

Note

263X = Part Number, 2630 or 2631.

U = Lead form option (S, M or none)

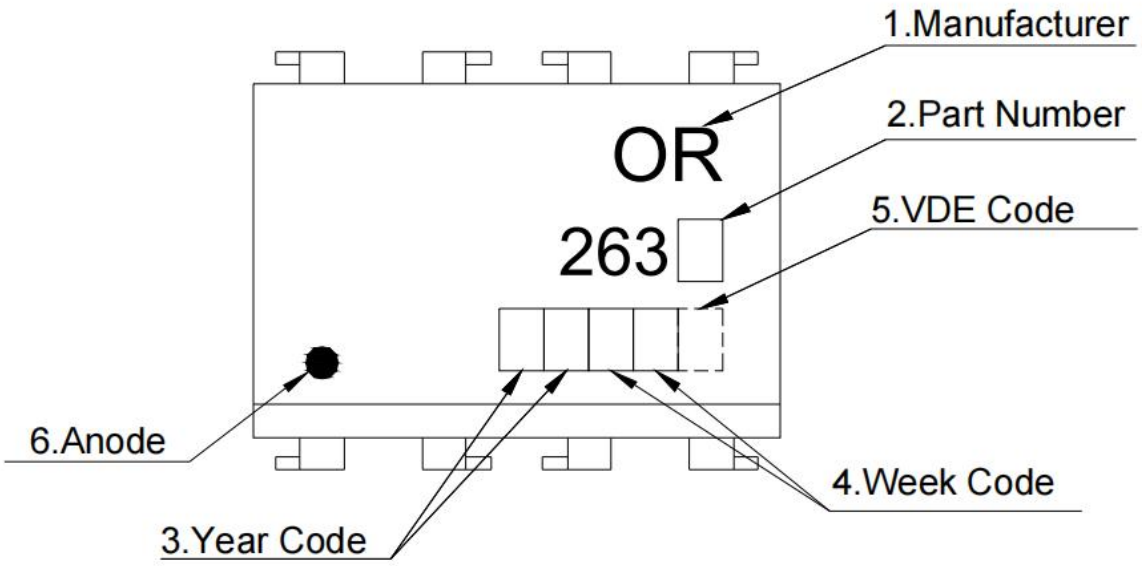
Y = Tape and reel option (TA,TA1 or none).

Z = 'V' code for VDE safety (This option is not necessary).

* VDE Code can be selected.

Option	Description	Packing quantity
None	Standard Option	45 units per tube
M	Wide lead bend (0.4 inch spacing)	45 units per tube
TA	Surface mount lead form + TA tape & reel option	1000 units per reel
TA1	Surface mount lead form + TA1 tape & reel option	1000 units per reel

9.Naming Rule



1.Manufacturer : ORIENT.

2.Part Number : 2630 or 2631.

3.Year Code □□ : '21' means '2021' and so on.

4.Week Code □□: 01 means the first week, 02 means the second week and so on.

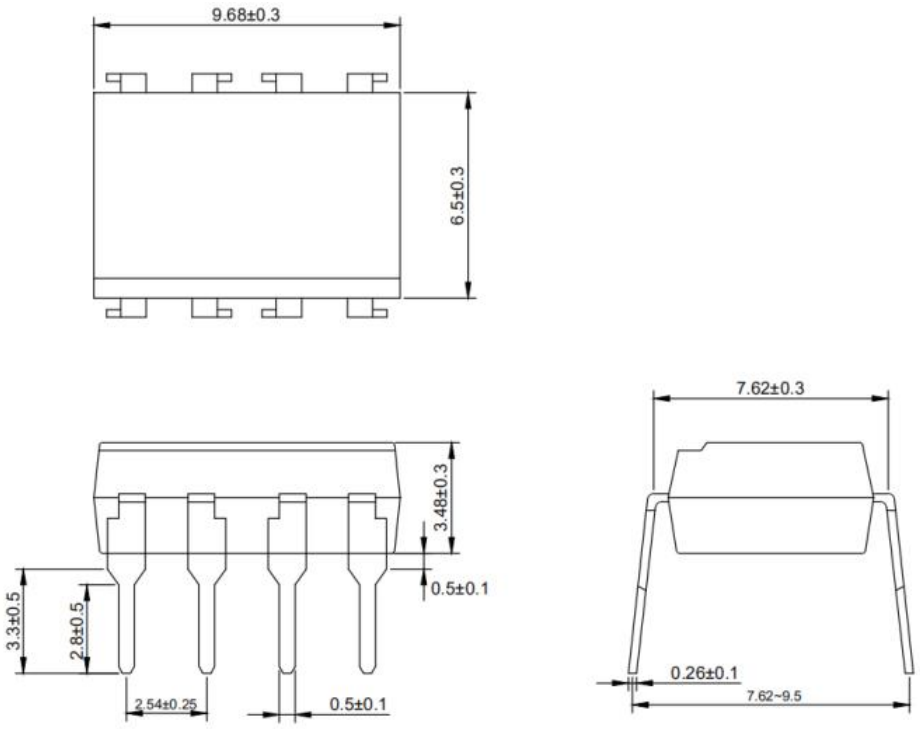
5.VDE Code ⬚. (Optional)

6.Anode.

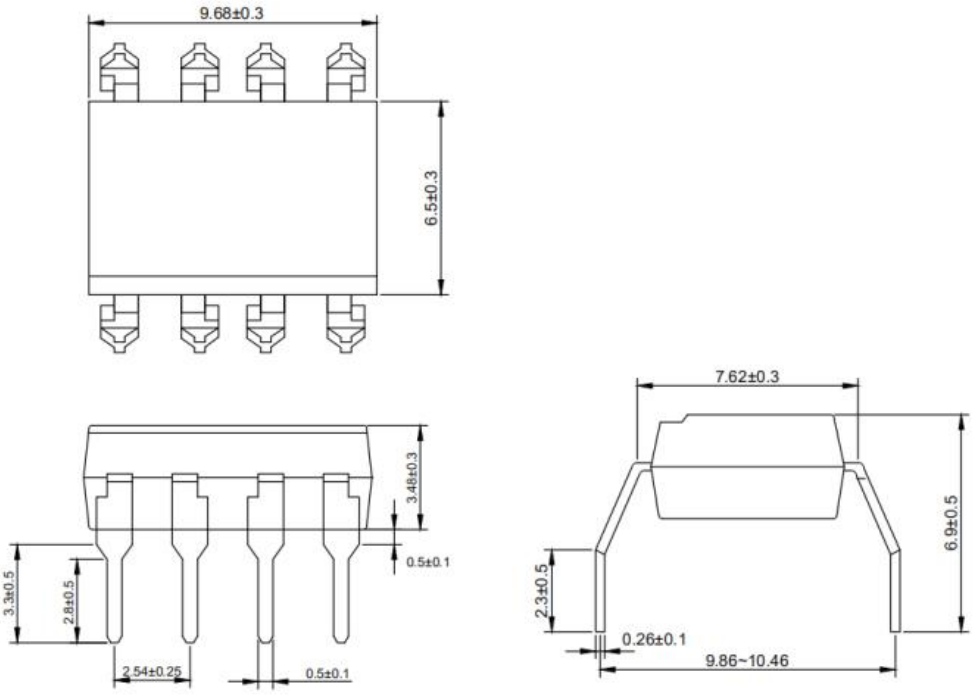
* VDE Mark can be selected.

10.Outer Dimension

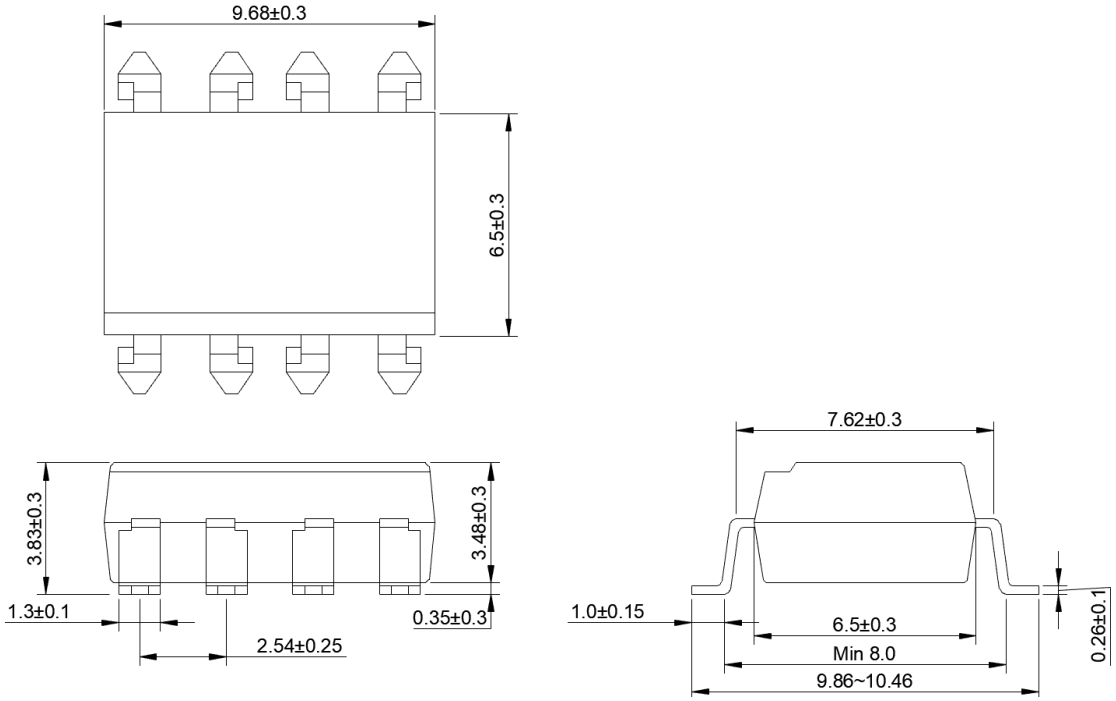
(1) OR-263X



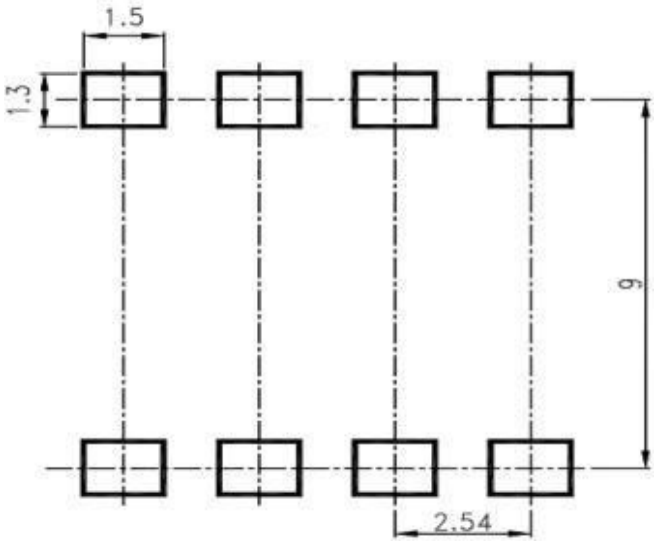
(2) OR-263XM



(3) OR-263XS



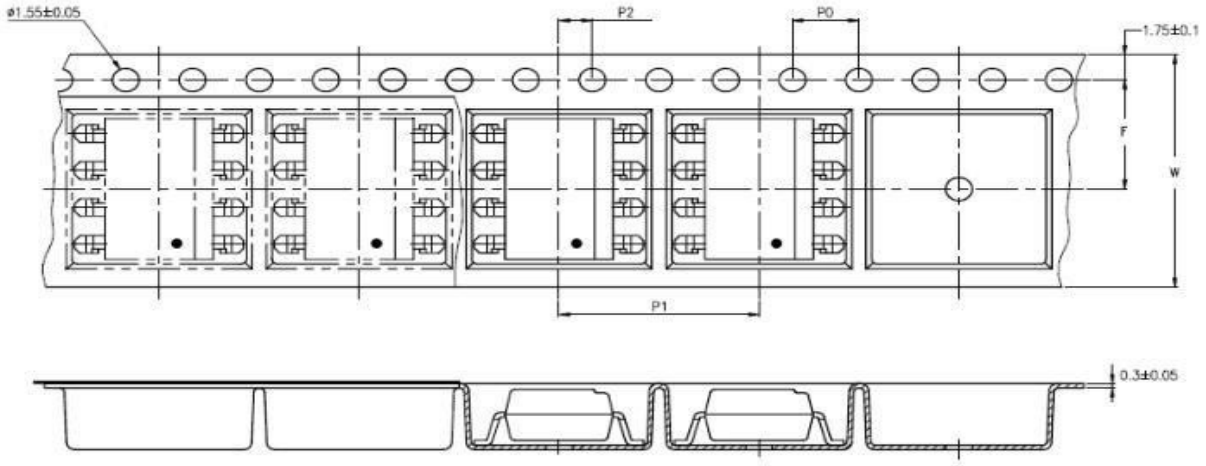
11.Recommended Foot Print Patterns (Mount Pad)



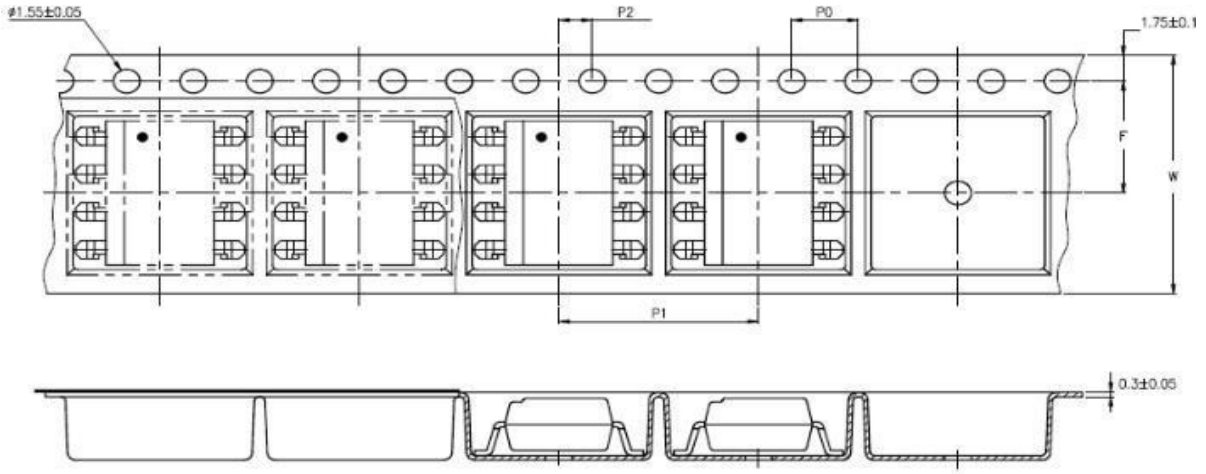
Unit：mm

12.Taping Dimensions

(1) OR-263XS-TA



(2) OR-263XS-TA1



type	symbol	Size: mm (inches)
bandwidth	W	16±0.3 (0.63)
pitch	P0	4±0.1 (0.15)
pitch	F	7.5±0.1 (0.295)
	P2	2±0.1 (0.079)
interval	P1	12±0.1 (0.472)

Encapsulation type	TA/TA1
Amount (pcs)	1000

13.Package Dimension

(1) package dimension

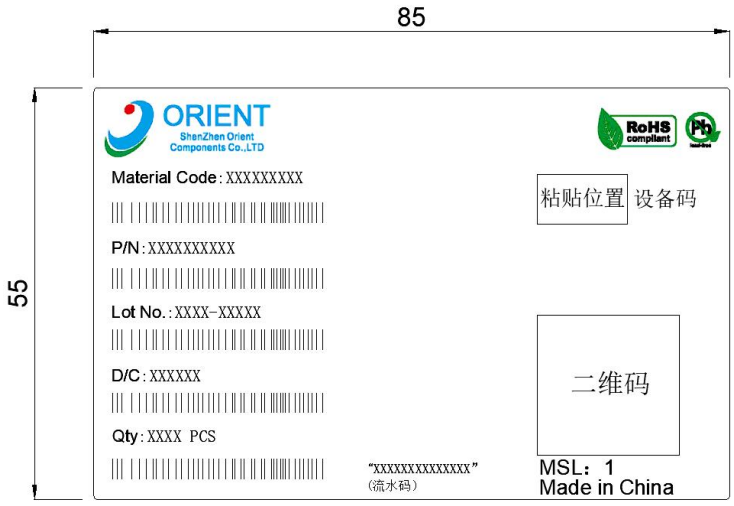
DIP Type

Packing Information	
Packing type	Tube
Qty per Tube	45pcs
Small box (Inner) Dimension	525*128*60mm
Large box (Outer) Dimension	545*290*335mm
The Amount per Inner Box	2,250pcs
The Amount per Outer Box	22,500pcs

SOP Type

Packing Information	
Packing type	Reel type
Tape Width	16mm
Qty per Reel	1,000pcs
Small box (inner) Dimension	345*345*58.5mm
Large box (Outer) Dimension	620x360x360mm
Max qty per small box	2,000pcs
Max qty per large box	20,000pcs

(2)Packing Label Sample



Note：

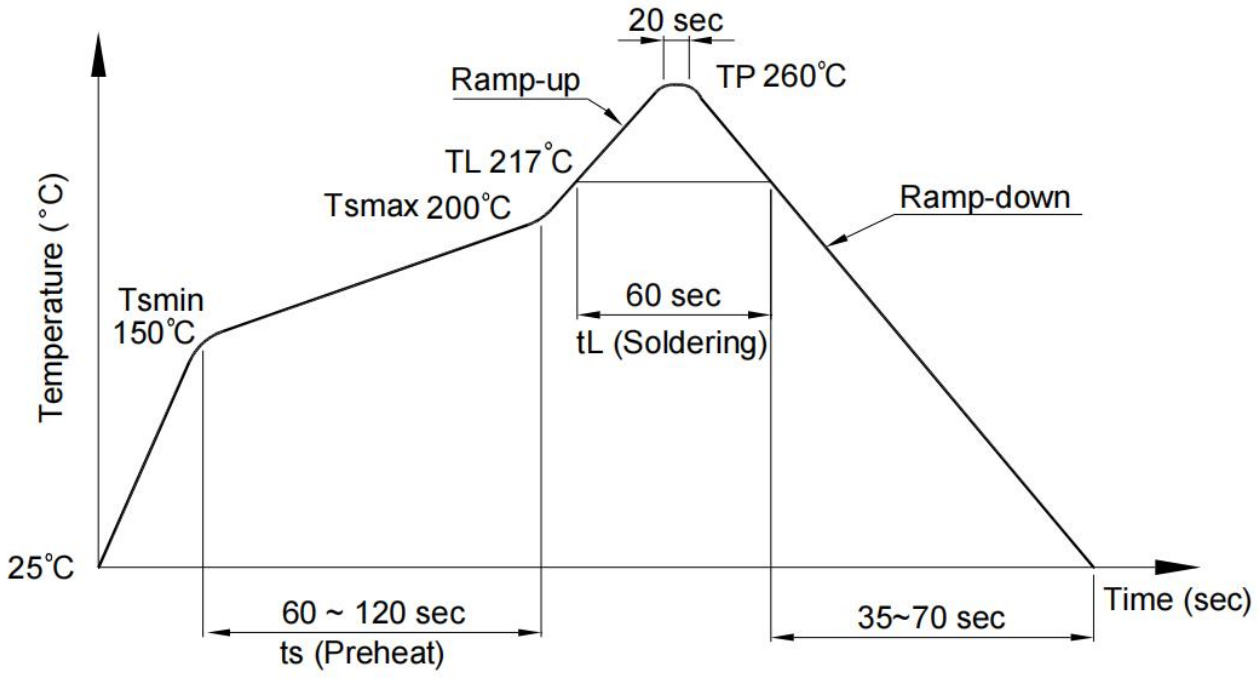
1.Material Code :Product ID.
2.P/N :Contents with "Order Information" in the specification.
3.Lot No. :Product data.
4.D/C :Product weeks.
5.Quantity :Packaging quantity.

14.Temperature Profile Of Soldering

(1) Reflow soldering (JEDEC-STD-020 compliant)

Note: one solder backflow is recommended under the conditions described below in the temperature and time profile. Do not weld more than three times.

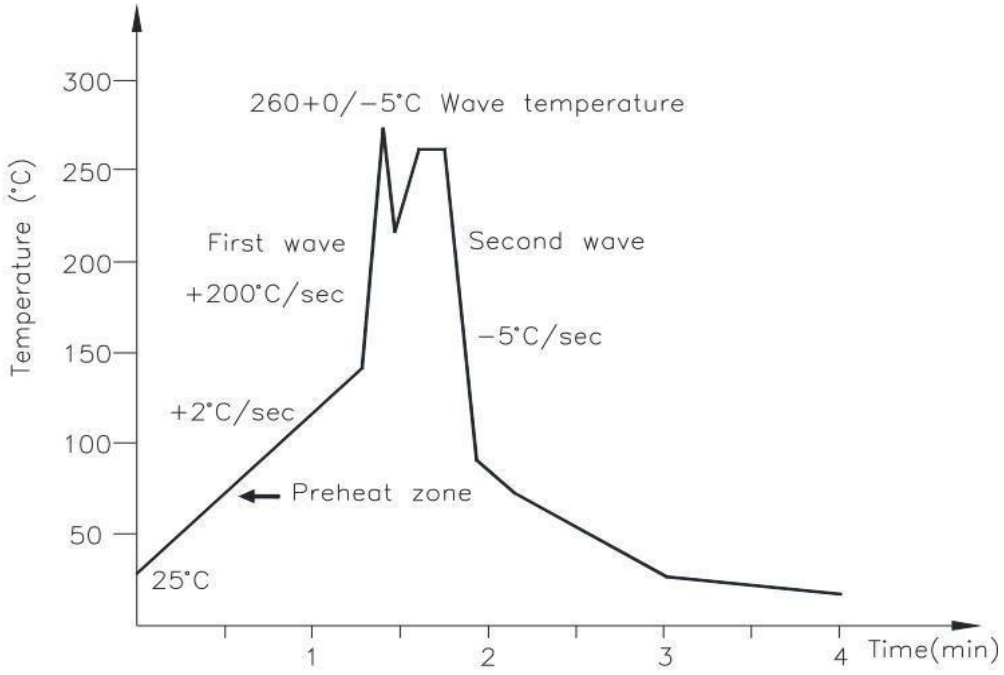
Profile item	Conditions
Preheat - Temperature Min (T Smin) - Temperature Max (T Smax) - Time (min to max) (ts)	 150˚C 200˚C 90±30 sec
Soldering zone - Temperature (TL) - Time (t L)	 217˚C 60 sec
Peak Temperature	260˚C
Peak Temperature time	20 sec
Ramp-up rate	3˚C / sec max.
Ramp-down rate from peak temperature	3~6˚C / sec
Reflow times	≤3



(2) Wave soldering (JEDEC22A111 compliant)

One-time welding is recommended under the temperature condition.

Temperature Time	260+0/-5˚C 10 sec
Preheat temperature Preheat time	5 to 140˚C 30 to 80 sec



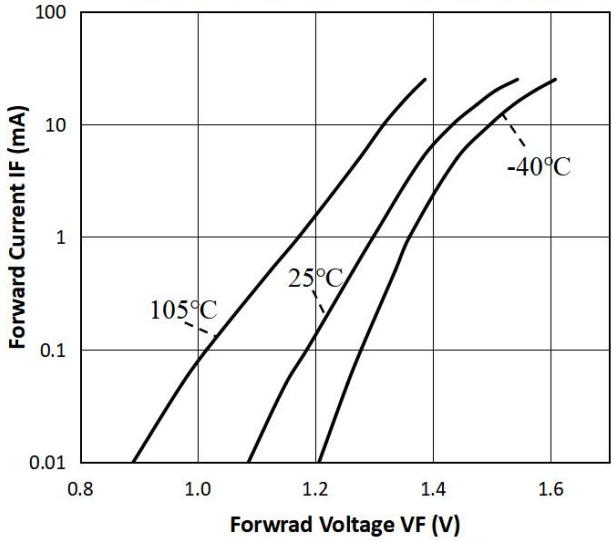
(3) Hand soldering by soldering iron

Single lead welding is allowed in each process and one-time welding is recommended.

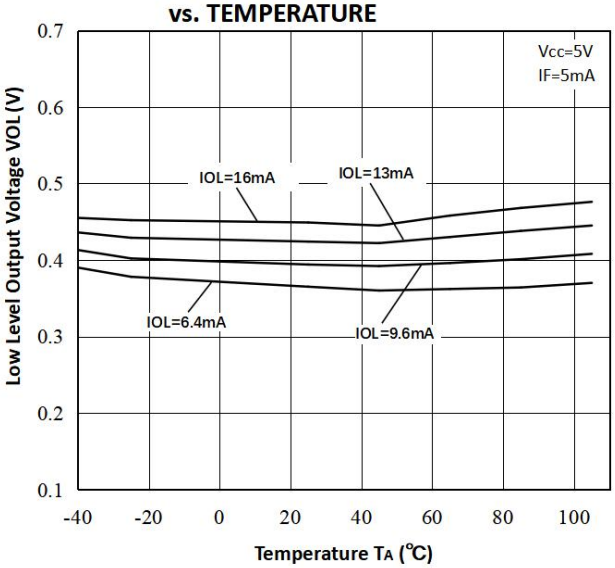
Temperature Time	380+0/-5˚C 3 sec max

15.Characteristics Curve

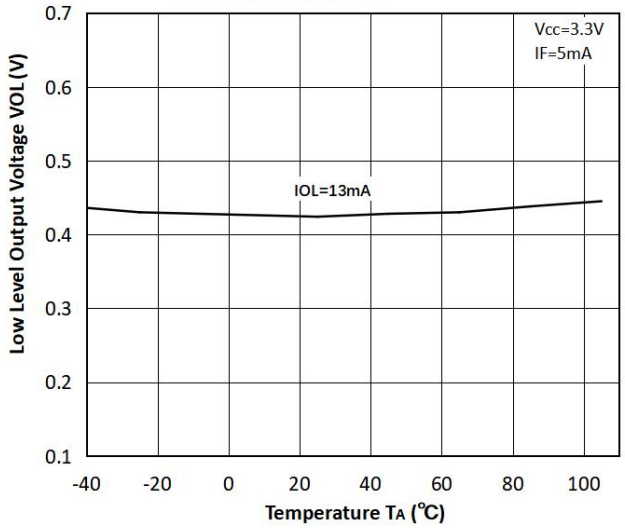
FORWARD CURRENT vs. FORWARD VOLTAGE



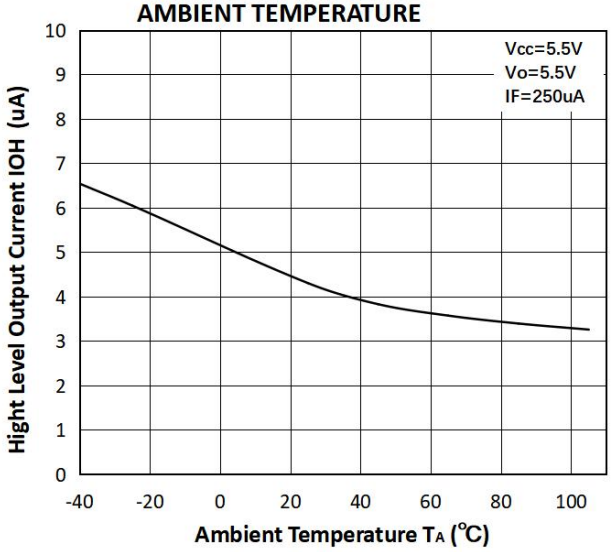
LOW LEVEL OUTPUT VOLTAGE vs. TEMPERATURE



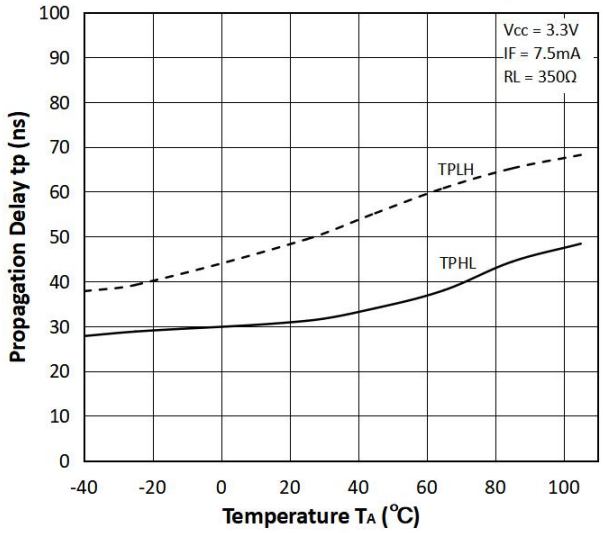
LOW LEVEL OUTPUT VOLTAGE vs. TEMPERATURE



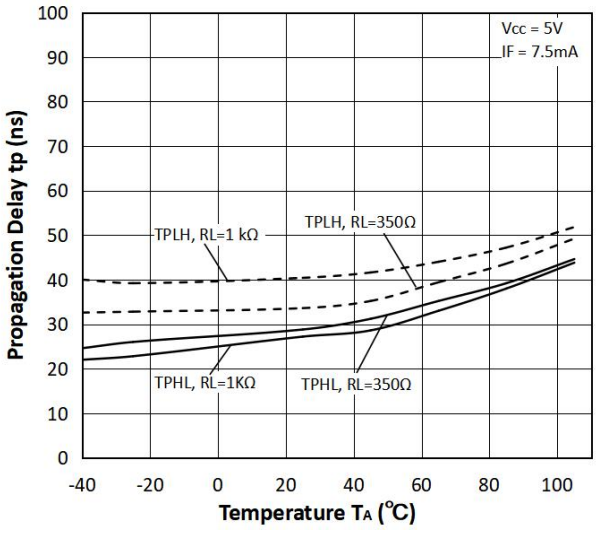
HIGHT LEVEL OUTPUT CURRENT vs. AMBIENT TEMPERATURE



PROPAGATION DELAY TIME vs. TEMPERATURE



PROPAGATION DELAY TIME vs. TEMPERATURE



16.Switching time test circuit

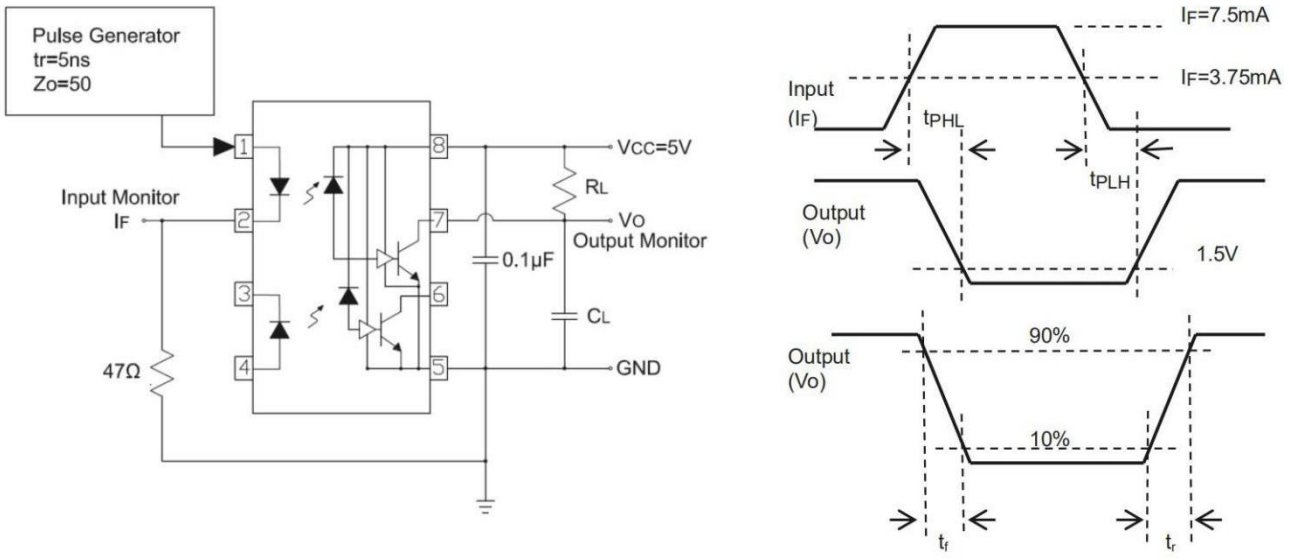


Fig. 11 Test circuit and waveforms for tPHL, tPLH, t_r, and t_f

17.Note

(1) Orient is continually improving the quality, reliability, function or design and Orient reserves the right to make changes without further notices.

(2) The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.

(3) For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.

(4) When requiring a device for any “specific” application, please contact our sales in advice.

(5) If there are any questions about the contents of this publication, please contact us at your convenience.

(6) The contents described herein are subject to change without prior notice.

(7) Immerge unit’s body in solder paste is not recommended.