



JOC3061D5, JOC3062D5 JOC3063D5 Series

DIP5, DC Input Zero-Cross Photo TRIAC

Description

The JOC3061D5, JOC3062D5, JOC3063D5 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a monolithic silicon zero-cross photo triac in a plastic DIP5 package with different lead forming options.

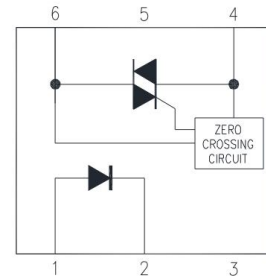
Features

- Isolation voltage between input and output Viso : 5,000Vrms
- 6pin DIP zero-cross photocoupler, triac driver output
- High repetitive peak off-state voltage VDRM : Min. 600V
- High critical rate of rise of off-state voltage( dV/dt : MIN. 1000V / μs )
- RoHS Compliance  
All materials be used in device are followed EU RoHS directive
- MSL class1
- Halogen free option

Applications

- AC Motor Drives
- AC Motor Starters
- E.M. Contactors
- Lighting Controls
- Solenoid/Valve Controls
- Solid State Relays
- Static Power Switches
- Temperature Controls

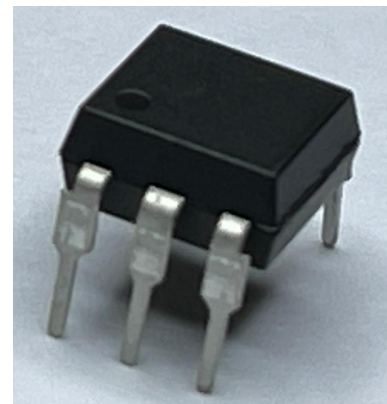
SCHEMATIC



PIN DEFINITION

- |           |                 |
|-----------|-----------------|
| 1.Anode   | 6.Main terminal |
| 2.Cathode | 5.Substrate     |
| 3.NC      | 4.Main terminal |

PACKAGE



ABSOLUTE MAXIMUM RATINGS				
PARAMETER		SYMBOL	Rating	UNIT
Input	Forward Current	I <sub>F</sub>	25	mA
	Reverse Voltage	V <sub>R</sub>	6	V
	Junction Temperature	T <sub>J</sub>	125	°C
	Power Dissipation	P	50	mW
Output	Off-State Output Terminal Voltage	V <sub>DRM</sub>	600	V
	On-State RMS Current	I <sub>D(RMS)</sub>	100	mA
	Peak Repetitive Surge Current (PW=1ms, 120pps)	I <sub>TSM</sub>	1	A
	Junction Temperature	T <sub>J</sub>	125	°C
	Output Power Dissipation	P <sub>o</sub>	300	mW
Total Power Dissipation		P <sub>tot</sub>	330	mW
Isolation Voltage (Note 1)		V <sub>iso</sub>	5000	V <sub>rms</sub>
Operating Temperature		T <sub>opr</sub>	-40 ~ +110	°C
Storage Temperature		T <sub>stg</sub>	-55 ~ +150	°C
Soldering Temperature (Note 2)		T <sub>sol</sub>	260	°C

Note1: Ambient temperature = 25°C, unless otherwise specified. Stresses exceeding the absolute maximum ratings can cause permanent damage to the device. Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Note 2: AC For 1 Minute, R.H. = 40 ~ 60%, Isolation voltage shall be measured using the following method.

- (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.
- (2) The isolation voltage tester with zero-cross circuit shall be used.
- (3) The waveform of applied voltage shall be a sine wave.

Note 3: For 10 Seconds

**RECOMMENDED OPERATION CONDITIONS**

CHARACTERISTICS		SYMBOL	MIN.	Typ.	MAX.	UNIT
Supply Voltage		$V_{AC}$	-	-	240	Vac
Forward Current	JOC3061D5	$I_F$	22.5	25	30	mA
	JOC3062D5		15	20	30	mA
	JOC3063D5		7.5	10	30	mA
Operating Temperature		$T_{opr}$	-25	-	85	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

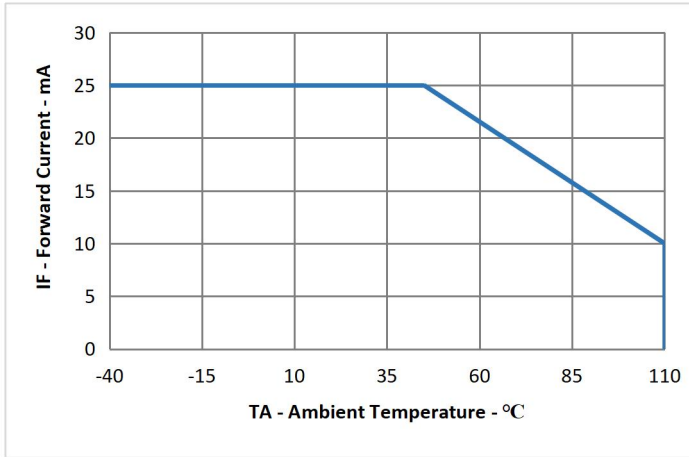
ELECTRICAL OPTICAL CHARACTERISTICS							
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION	
INPUT CHARACTERISTICS							
Forward Voltage	$V_F$	-	2.0	2.4	V	$I_F = 10 \text{ mA}$	
Reverse Current	$I_R$	-	0.05	10	$\mu\text{A}$	$V_R = 5\text{V}$	
OUTPUT CHARACTERISTICS							
1. Peak Blocking Current, Either Direction	$I_{DRM}$	-	-	500	nA	$V_{DRM} = 600\text{V}$	
Peak On-State Voltage, Either Direction	$V_{TM}$	-	1.8	3.0	V	$I_{TM} = 100 \text{ mA Peak}$	
2. Critical rate of Rise of Off-State Voltage	$dv/dt$	1000	4000	10000	$\text{V}/\mu\text{s}$	$V_{in} = 240\text{Vrms}$	
COUPLE CHARACTERISTICS							
Led Trigger Current, Current Required to Latch Output, Either Direction	JOC3061D5	$I_{FT}$	-	-	15	mA	Main Terminal Voltage = 3V
	JOC3062D5		-	-	10	mA	
	JOC3063D5		-	-	5	mA	
Holding Current, Either Direction	$I_H$	-	200	-	$\mu\text{A}$		
ZERO CROSSING CHARACTERISTICS							
Inhibit Voltage	$V_{INH}$	-	10	20	Volts	$I_F = \text{Rated } I_{FT}$ , MT1-MT2 Voltage above which device will not trigger.	
Leakage in Inhibited State	$I_{DRM2}$	-	-	500	$\mu\text{A}$	$I_F = \text{Rated } I_{FT}$ , Rated $V_{DRM}$ , Off State	

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

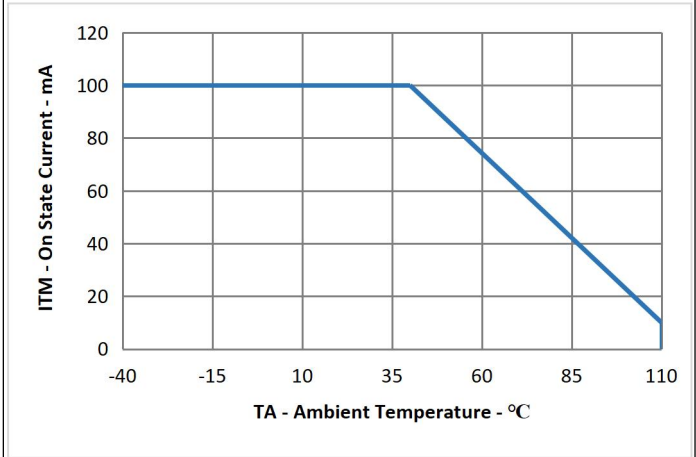
2. This is static  $dv/dt$ . Commutating  $dv/dt$  is a function of the load-driving thyristor(s) only.

**TYPICAL PERFORMANCE CURVES & TEST CIRCUITS**

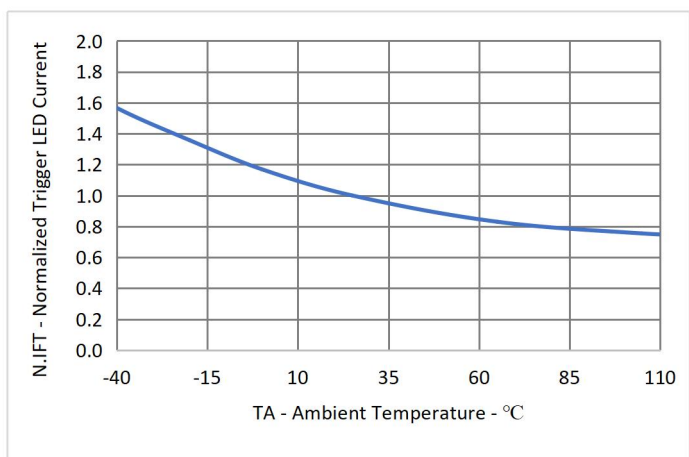
**Fig.1 Forward Current vs. Temperature**



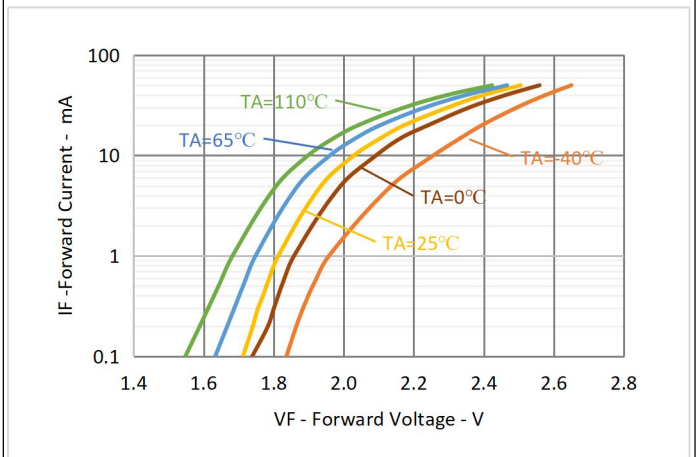
**Fig.2 On-state Current vs. Forward Voltage**



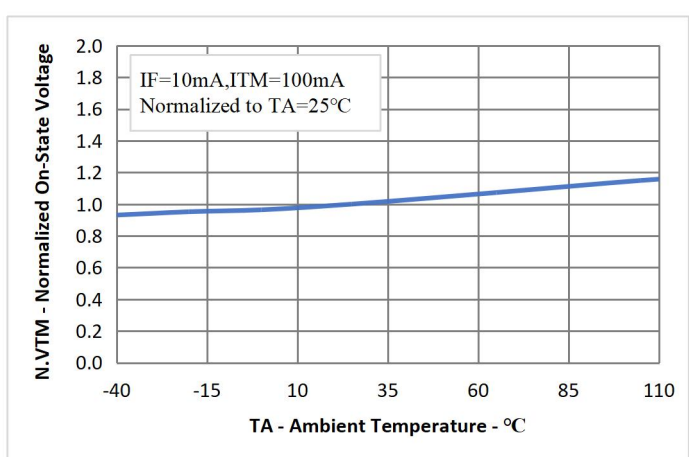
**Fig.3 Normalized Trigger LED Current vs. Temperature**



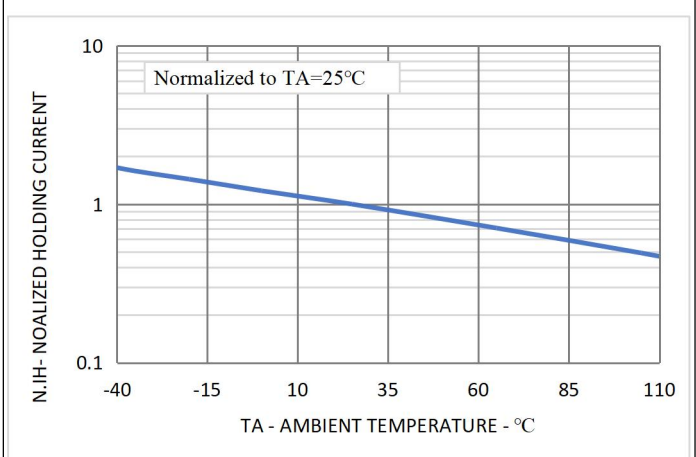
**Fig.4 Forward Current vs. Forward Voltage**



**Fig.5 Normalized On-state Voltage vs. Temperature**

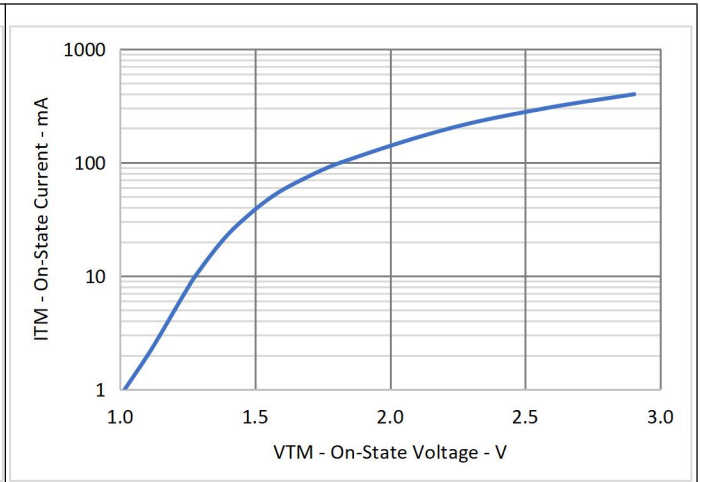
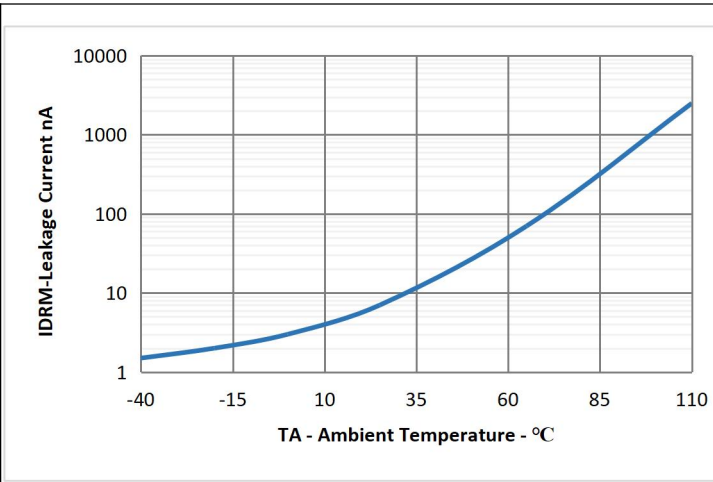


**Fig.6 Normalized Holding Current vs. Temperature**

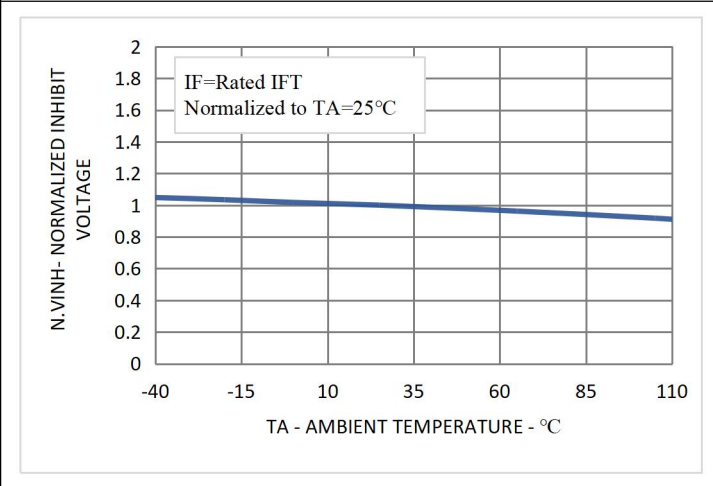


**Fig.7 Off-state Current vs Temperature**

**Fig.8 On-state Current vs On-state Voltage**



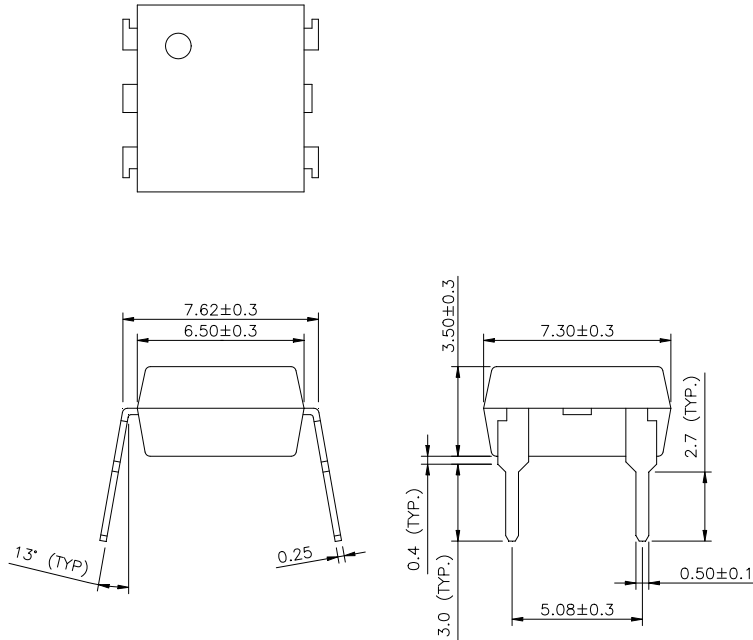
**Fig.9 Inhibit Voltage vs. Temperature**



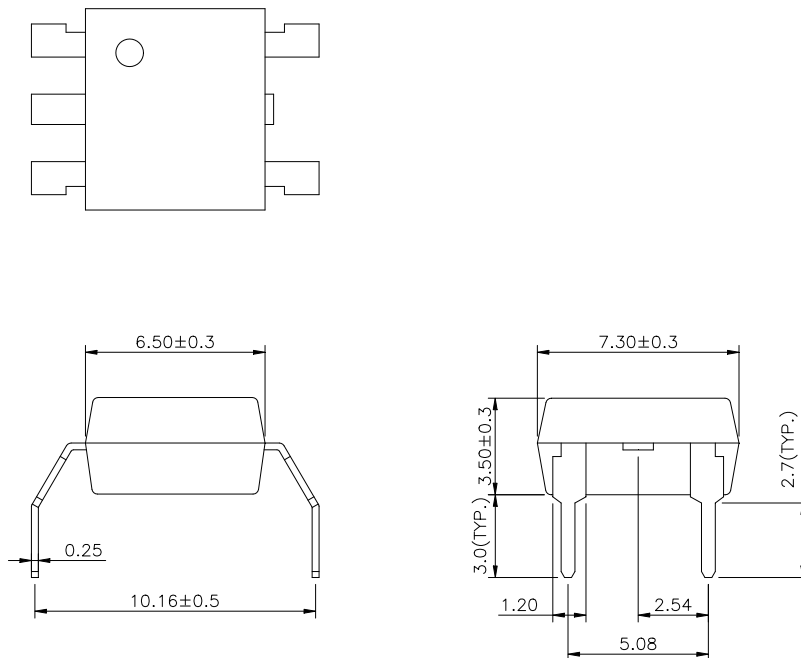
**PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)**

**Through hole package Lead Forming**

**DIP type Dimension**



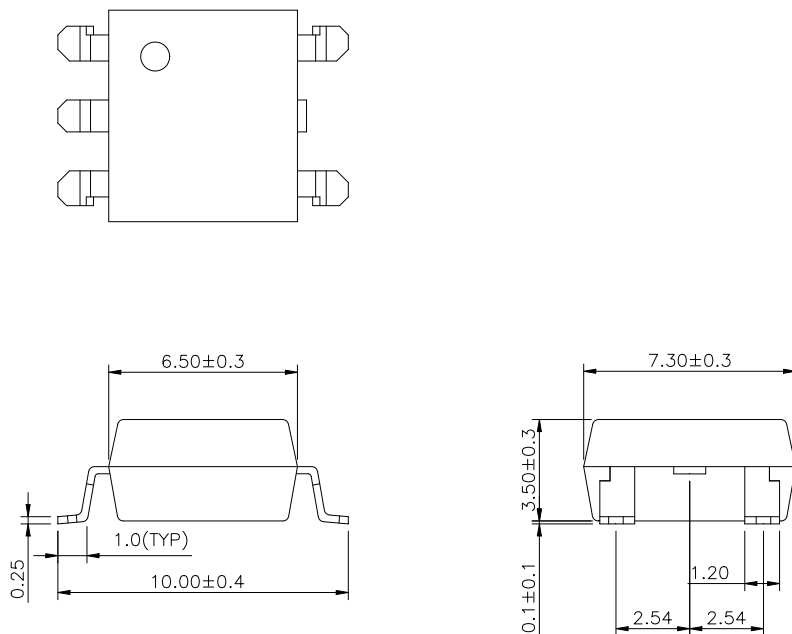
**M type Dimension**



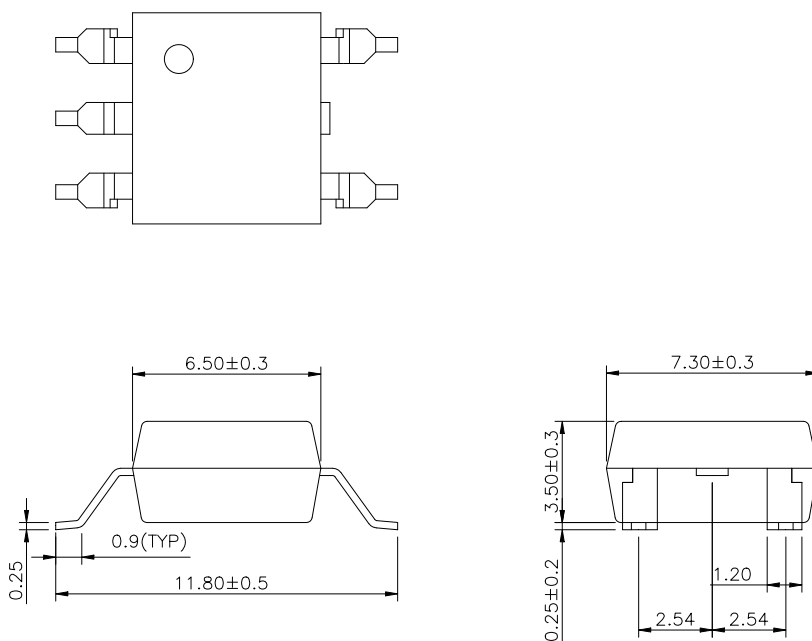
**PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)**

**Surface Mount Lead Forming**

**SL type Dimension**



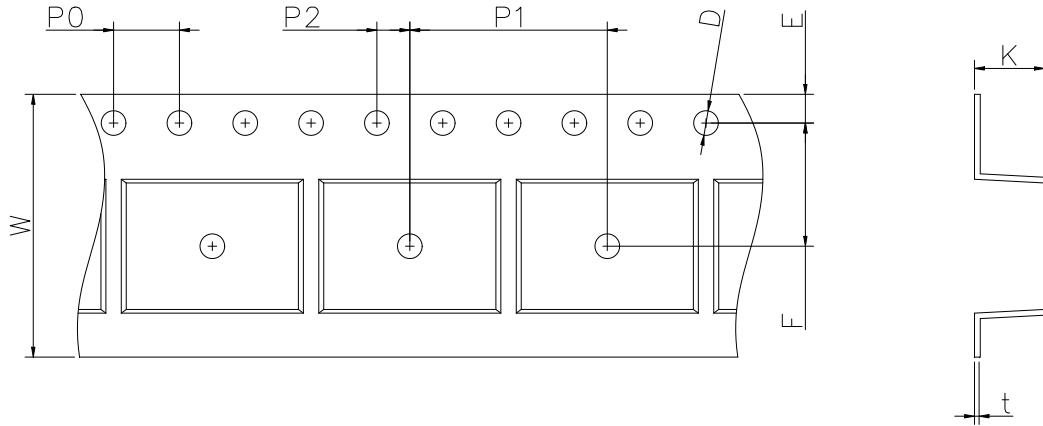
**SLM type Dimension**





**TAPING DIMENSIONS** (Dimensions in mm unless otherwise stated)

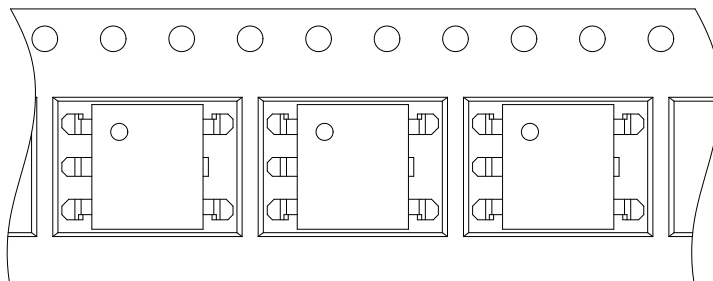
**SL type Taping Dimensions**



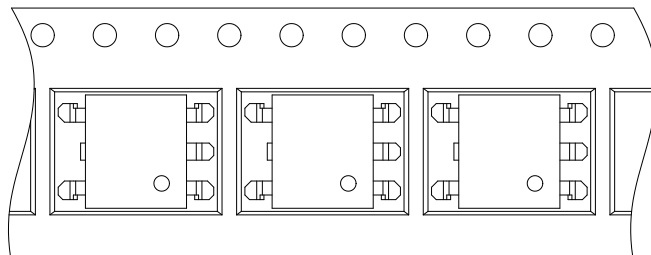
Dimension Symbol	D	E	F	P0	P1	P2	t	W	K
Dimension (mm)	1.55±0.2	1.75±0.2	7.5±0.2	4.0±0.2	12.0±0.2	2.0±0.2	0.35±0.2	16.0±0.3	4.25±0.2

**Tape & Reel Packing Specifications**

**Option T1**

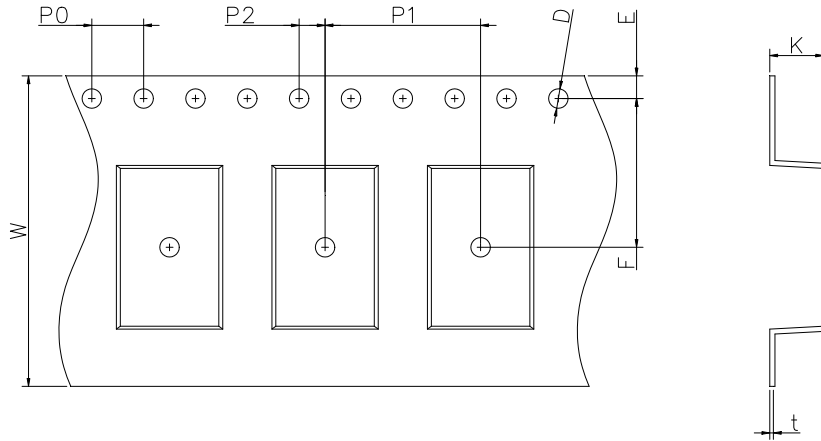


**Option T2**



**TAPING DIMENSIONS** (Dimensions in mm unless otherwise stated)

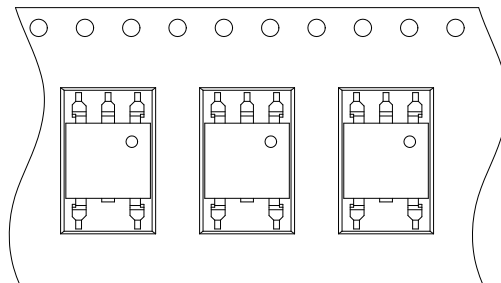
**SLM type Taping Dimensions**



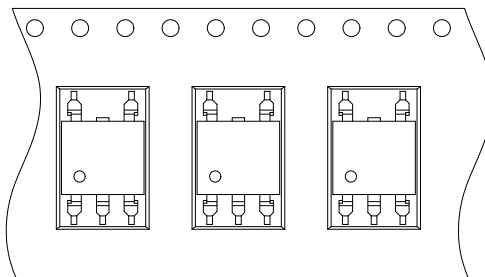
Dimension Symbol	D	E	F	P0	P1	P2	t	W	K
Dimension (mm)	1.5±0.2	1.75±0.2	11.5±0.2	4.0±0.2	12.0±0.2	2.0±0.2	0.4±0.2	24.0±0.3	4.15±0.2

**Tape & Reel Packing Specifications**

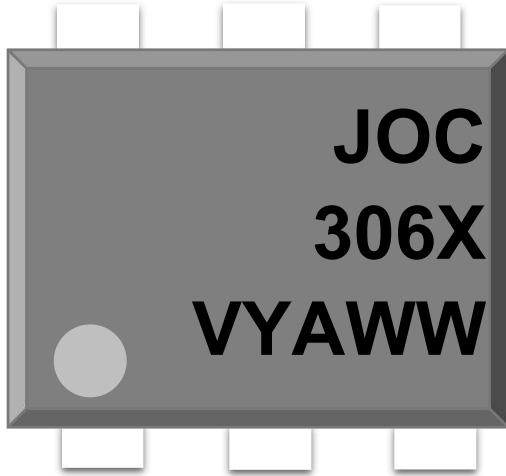
**Option T1**



**Option T2**



**MARKING INFORMATION**



JOC : Company Abbr.  
 306X : Part Number & Rank  
 V : VDE Option  
 Y : Fiscal Year  
 A : Manufacturing Code  
 WW : Work Week

**ORDERING INFORMATION**

**LABEL INFORMATION**

**JOC306XD5(Y)(Z)-GV**

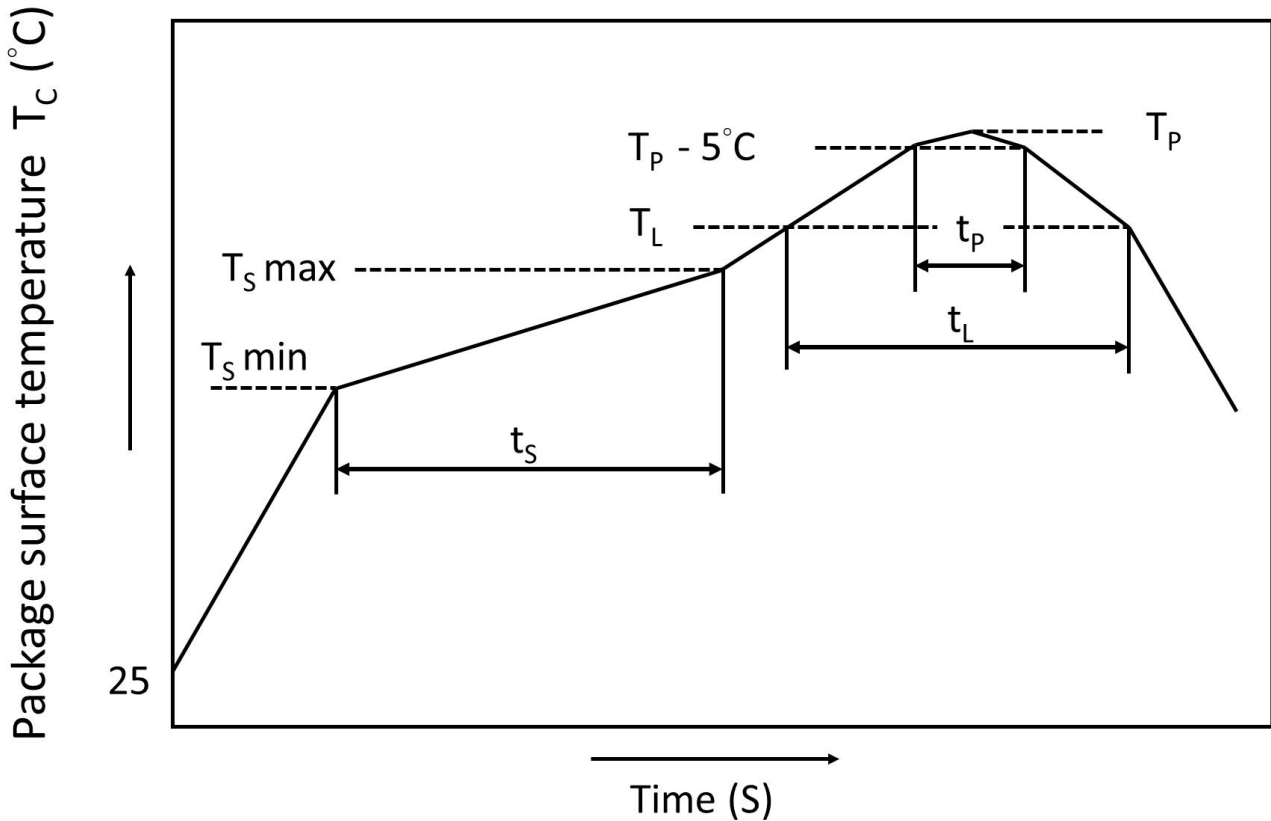
JOC – Company Abbr.  
 306X – Part Number (61/62/63)  
 D5 – DIP-5 or SMD-5  
 Y – Lead Form Option (M/S/SL/None)  
 Z – Tape and Reel Option (T1/T2)  
 G – Green Option (G or None)  
 V – VDE Option (V or None)



**Precautions for Soldering**

IR Reflow soldering

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



	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	100	s
Peak Temperature	$T_P$		260	°C
Time during which $T_c$ is between ( $T_P - 5$ ) and $T_P$	$t_p$		20	s
Ramp-down rate			6	°C/s

**DISCLAIMER**

- Our company is continually improving the quality, reliability, function and design. Our company reserves the right to make changes without further notices.
- The characteristic curves shown in this datasheet are representing typical performance which are not guaranteed.
- Our company makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Our company disclaims (a) any and all liability arising out of the application or use of any product, (b) any and all liability, including without limitation special, consequential or incidental damages, and (c) any and all implied warranties, including warranties of fitness for particular
- 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 purpose, non-infringement and merchantability.
- This product is not intended to be used for military, aircraft, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death.
- Please contact Our company sales agent for special application request.
- Immerge unit's body in solder paste is not recommended.
- Parameters provided in datasheets may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated in each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Our company's terms and conditions of purchase, including but not limited to the warranty expressed therein.
- Discoloration might be occurred on the package surface after soldering, reflow or long-time use. It neither impacts the performance nor reliability.