



产品规格书

Specification Sheet

品 名(P/N): 光电耦合器 Photocoupler

客户名称(Customer): _____

本厂型号(Mfg P/N): MOC302X

日 期(Date): _____

1. 特点(Features)

- (1) 绝缘电压: (Isolation voltage between input and output) $V_{iso} \geq 5,000V_{rms}$
- (2) 6脚可控硅光电隔离器 (6pin DIP optoisolators, triac driver output)
- (3) 符合欧盟 REACH 标准 (Compliance with EU REACH)
- (4) 产品符合 RoHS 要求 (The product itself will remain within RoHS compliant version)
- (5) 运行温度范围: (Operating temperature) $-40^{\circ}C$ to $+100^{\circ}C$

2. 说明 (description)

描述该系列器件包含一个红外发光二极管和光电探测器。不含卤素和 Sb_2O_3 。

3. 应用范围 (Application Range)

- 交流电动机驱动 (AC Motor Drives)
- 交流电机启动器 (AC Motor Starters)
- 照明控制 (Lighting Controls)
- 电磁阀控制 (Solenoid/Valve Controls)
- 固态继电器 (Solid State Relays)
- 温度控制器 (Temperature Controls)

4. 最大绝对额定值(常温 $T=25^{\circ}C$) Max Absolute rated Value (Normal Temperature= $25^{\circ}C$)

| 参数 Parameter | | 符号 Symbol | 典型值 Rated Value | 单位 Unit |
|---------------------------------|--|-----------|-----------------|-------------|
| 输入 Input | 正向电流 (Forward Current) | I_F | 50 | mA |
| | 结温 (Junction Temperature) | T_J | 125 | $^{\circ}C$ |
| | 反向电压 (Reverse Voltage) | V_R | 6 | V |
| | 功率耗损 (Power Dissipation) | P | 100 | mW |
| 输出 Output | 断态重复峰值电压 (Off-State Output Terminal Voltage) | V_{DRM} | 400 | V |
| | 峰值重复浪涌电流 Peak Repetitive Surge Current (PW=1ms, 120 pps) | I_{TSM} | 1 | A |
| | 结温 (Junction Temperature) | T_J | 125 | $^{\circ}C$ |
| | 集电极功率耗损 (Collector Power Dissipation) | P_C | 300 | mW |
| 总功率消耗 (Total Power Dissipation) | | P_{tot} | 330 | mW |
| *1 绝缘电压 (Insulation Voltage) | | V_{iso} | 5000 | Vrms |
| 工作温度 (Working Temperature) | | T_{opr} | -40 ~ +100 | $^{\circ}C$ |
| 存贮温度 (Deposit Temperature) | | T_{stg} | -55 ~ +150 | |
| *2 焊锡温度 (Soldering Temperature) | | T_{sol} | 260 | |

*1. 交流测试, 时间 1 分钟, R.H. =40~60% AC Test, 1 minute, humidity = 40~60%

如下是绝缘测试的方法. Insulation test method as below:

- (1) 将产品的两端短路。 Short circuit both terminals of photocoupler
- (2) 测试绝缘电压时无电流通过。 No Current when testing insulation voltage
- (3) 测试时加正弦波形电压。 Adding sine wave voltage when testing

*2. 锡焊时间为 10 秒 soldering time is 10 seconds

5. 光电特性(常温 T=25°C) (Opto-electronic Characteristics)

| 参数 Parameter | | 符号 Symbol | 条件 Condition | 最小 Min | 典型值 Typ.* | 最大 Max | 单位 Unit | |
|-----------------|--|--------------|---------------------|----------------------------|--------------|-----------|------------|---------|
| 输入 (Input) | 正向电压 (Forward Voltage) | V_F | $I_F=20mA$ | --- | 1.2 | 1.6 | V | |
| | 反向电流(Reverse Current) | I_R | $V_R=6V$ | --- | 0.05 | 10 | μA | |
| 输出 (Output) | 1.峰值阻断电流, 任一方向 (Peak Blocking Current, Either Direction) | I_{DRM} | $V_{DRM} = 400V$ | --- | 10 | 100 | nA | |
| | 峰值状态电压, 任一方向 (Peak On-State Voltage, Either Direction) | V_{TM} | $I_{TM}=100mA$ Peak | --- | 1.7 | 3.0 | V | |
| | 2.断态电压临界上升率 (Critical rate of Rise of Off-State Voltage) | dv/dt | $V_{in}=240V_{rms}$ | 1000 | --- | --- | V/us | |
| 组合 Couple | 3.LED 触发电流, 锁存输出所需的电流, 任一方向 (Led Trigger Current, Current Required to Latch Output, Either Direction) | MOC3020 | I_{FT} | Main Terminal Voltage = 3V | --- | --- | 30 | mA |
| | | MOC3021 | | | --- | --- | 15 | |
| | | MOC3022 | | | --- | --- | 10 | |
| | | MOC3023 | | | --- | --- | 5 | |
| | Holding Current, Either Direction | | I_H | | --- | 200 | --- | μA |

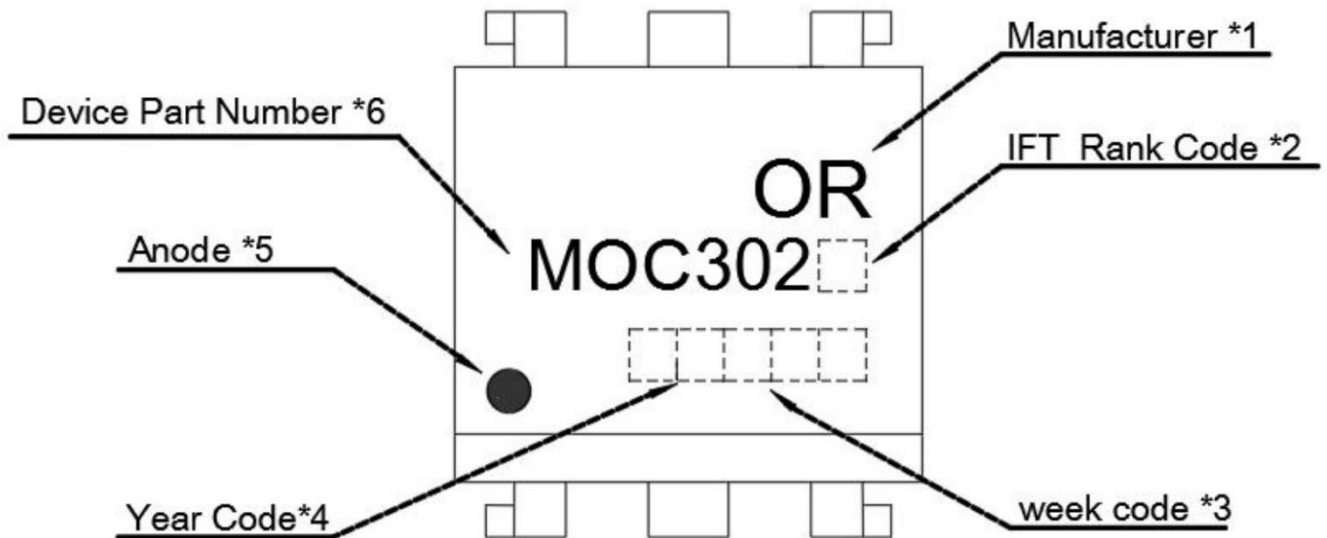
*1. Test voltage must be applied within dv/dt rating.

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

*3. All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT} .

Therefore, recommended operating I_F lies between max I_{FT} , 30 mA for MOC3020, 15 mA for MOC3021, 10 mA for MOC3022, 5 mA for MOC3023, and absolute max I_F (50mA).

6. 命名规则(Naming Rule)

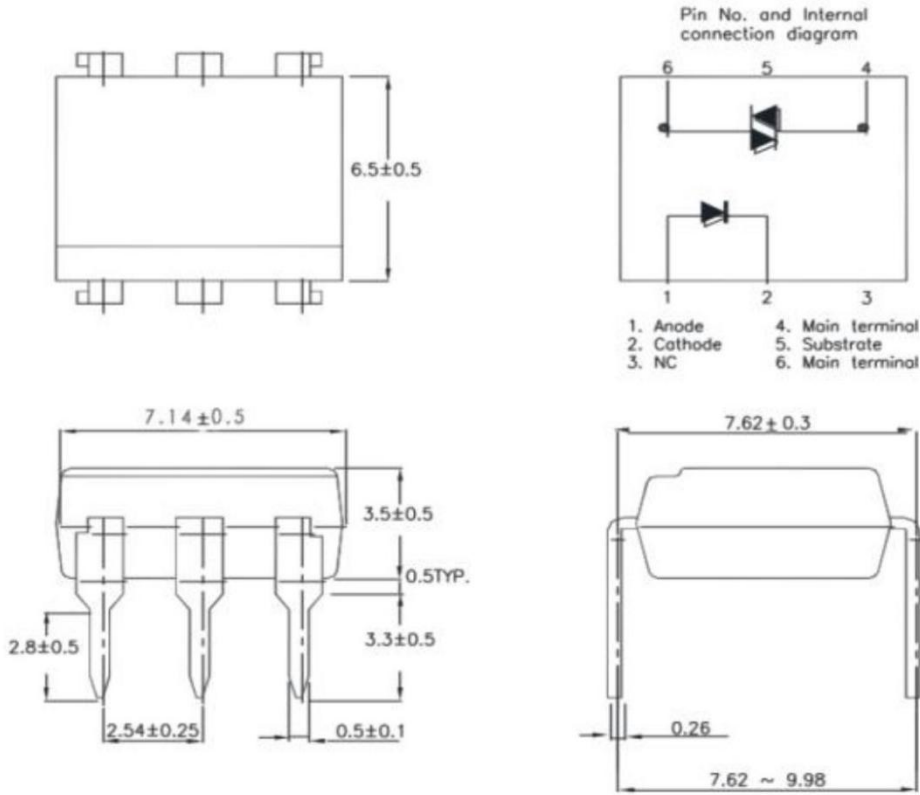


注:

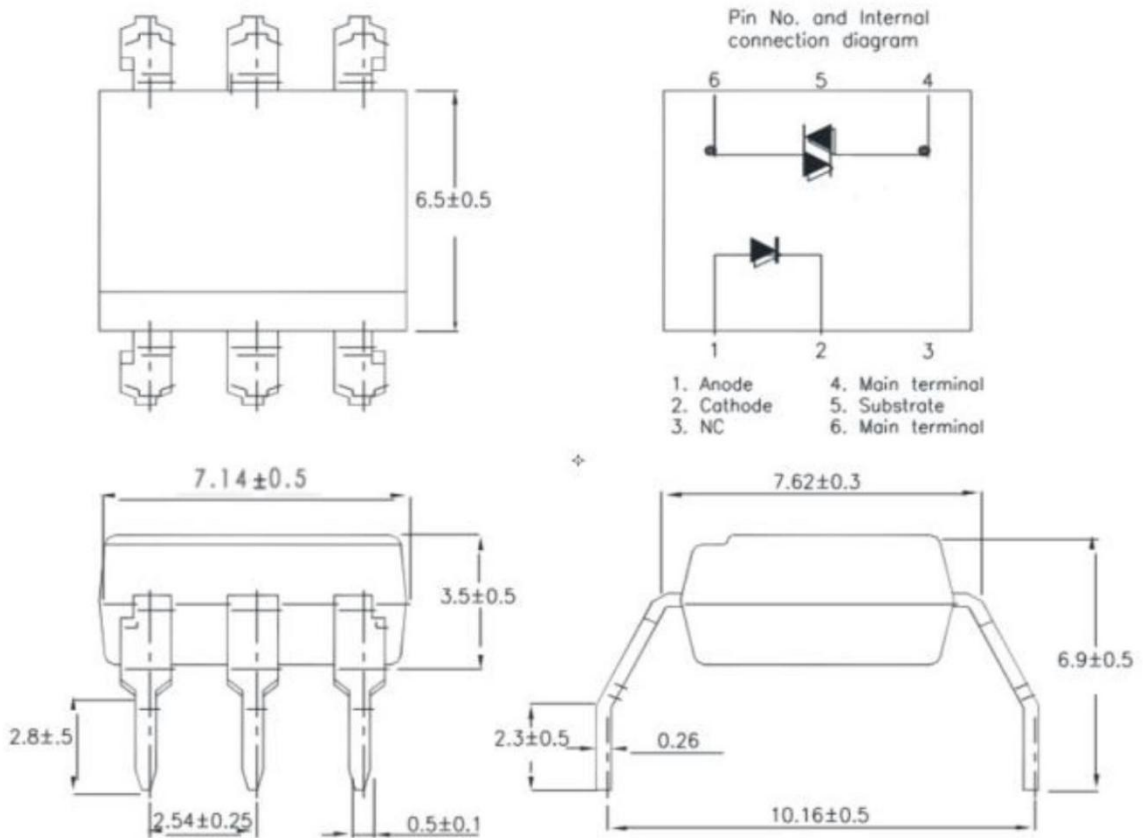
- (1) 制造商名称: OR代表制造商 Shenzhen Orient Components Co., Ltd.
- (2) 等级代码IF Rank Code: 等级代码 Rank: 有0、1、2、3共4种形式, X=0代表MOC3020; X=1代表MOC3021; X=2代表MOC3022; X=3代表MOC3023。
- (3) 周代码:Week Code: 01代表第一周、02代表第二周、依此类推。
- (4) 年代码:Year Code: 例如: F8 或C8, 其中F表铁支架/C表铜支架, 8代表2018年、依此类推。
- (5) Anode: 代表正极。
- (6) Device Part Number 代表MOC302X光耦产品。

7. 外形尺寸 (Outer Dimension)

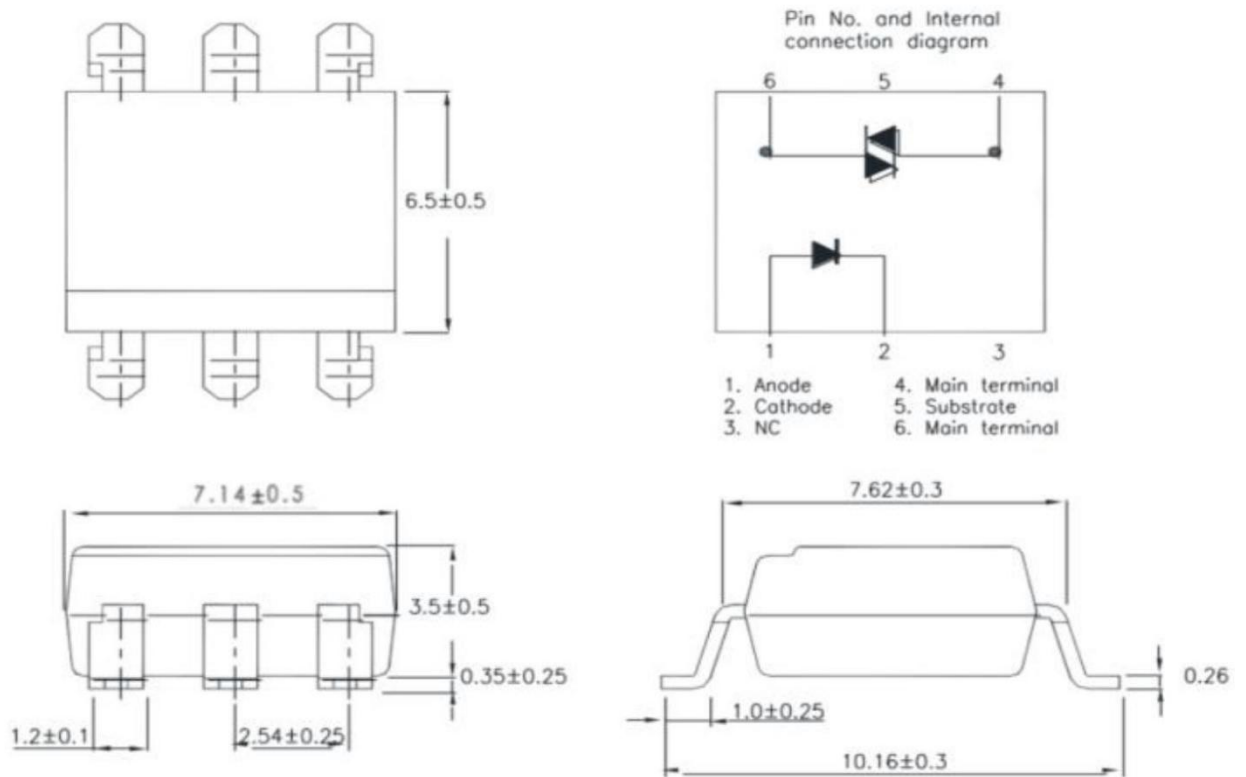
(1).MOC302X



(2).MOC302XM

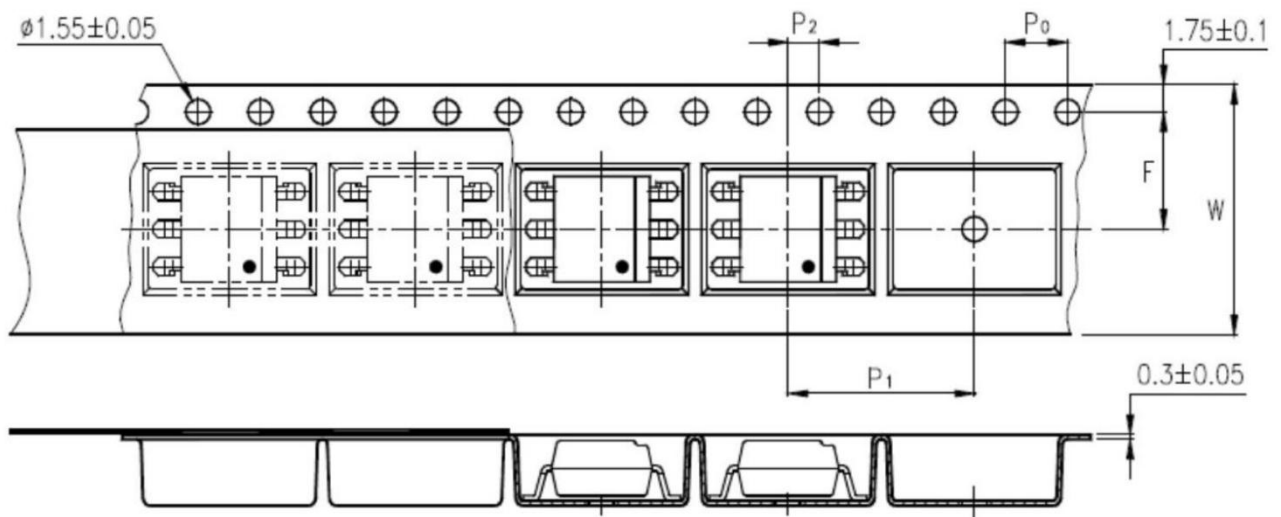


(3). MOC302XS

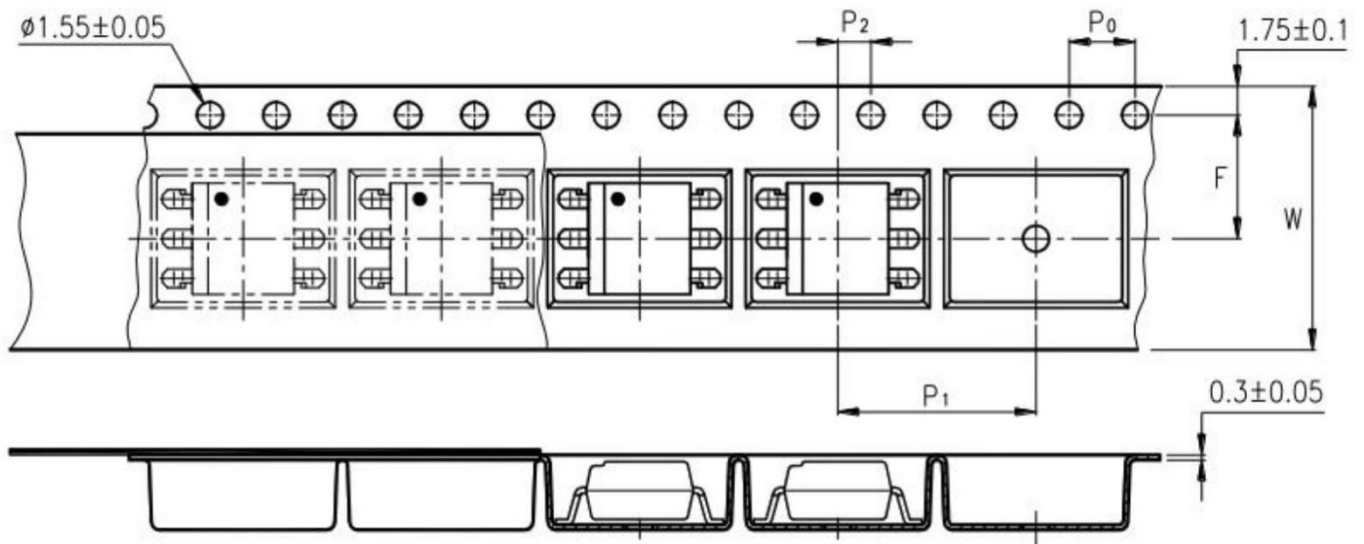


8. 编带尺寸 (Taping Dimensions)

(1). MOC302XS-TA



(2). MOC302XS-TA1



| Description | Symbol | Dimension in mm (inch) |
|--|--------|------------------------|
| Tape wide | W | 16 ± 0.3 (0.63) |
| Pitch of sprocket holes | P_0 | 4 ± 0.1 (0.15) |
| Distance of compartment | F | 7.5 ± 0.1 (0.295) |
| | P_2 | 2 ± 0.1 (0.079) |
| Distance of compartment to compartment | P_1 | 12 ± 0.1 (0.472) |

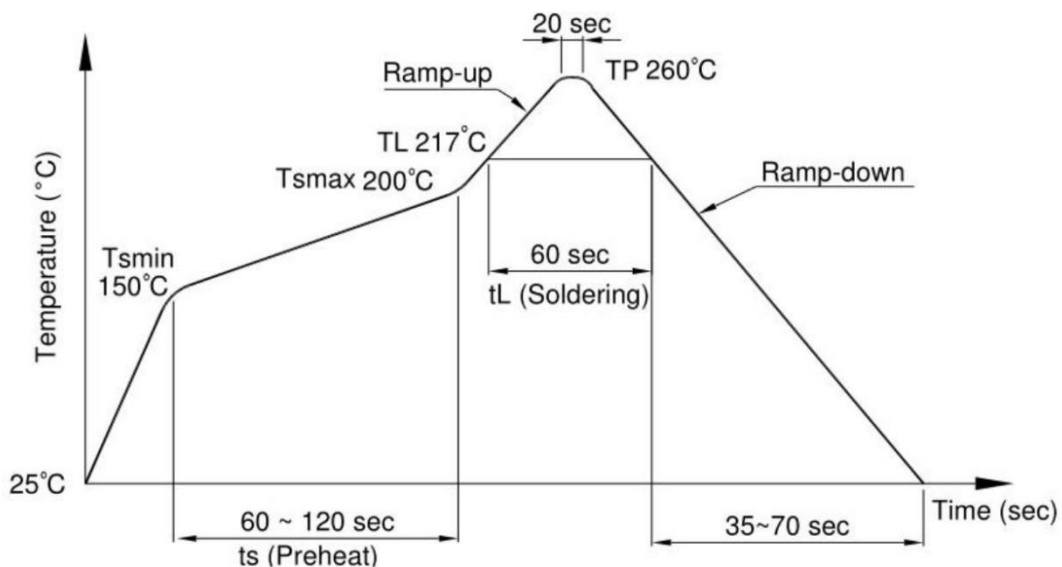
| | |
|--------|--------------------------|
| 封装类型 | MOC302XS series (TA/TA1) |
| 数量 (个) | 1000 |

9. 焊接温度曲线 (Temperature Profile Of Soldering)

(1). 红外回流焊 (jedec-std-020c 兼容) (IR Reflow soldering (JEDEC-STD-020C compliant))

注意：一次焊接回流建议在温度和时间配置文件如下所示的条件下。不要焊接超过三次。

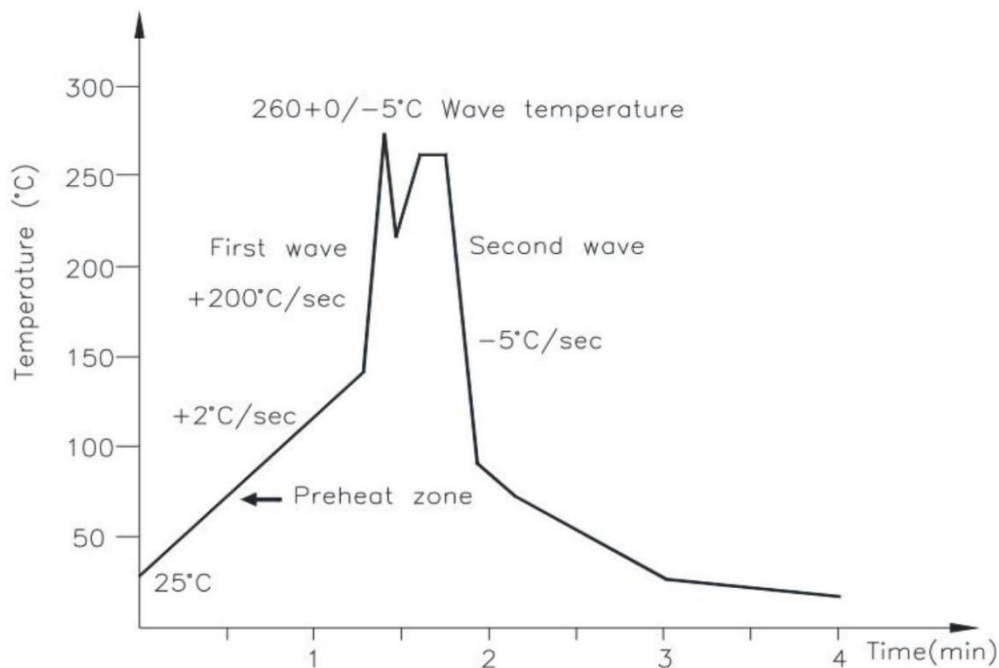
| 配置项 | 条件 |
|-------------------------|----------------|
| 预热 (Preheat) | |
| -最低温度 (TSmin) | 150°C |
| -最高温度 (TSmax) | 200°C |
| -时间 (最小到最大 (TS)) | 90±30 sec |
| 焊接区 (Soldering zone) | |
| -温度 (TL) | 217°C |
| -时间 (tL) | 60 sec |
| 峰值温度 (Peak Temperature) | 260°C |
| 爬升率 (Ramp-up rate) | 3°C / sec max. |
| 下降率 (3°C / sec max.) | 3~6°C / sec |



(2).波峰焊接 (jedec22a111 兼容) (Wave soldering (JEDEC22A111 compliant))

建议在温度条件下一致性焊接。

| | |
|----------------------------|--------------|
| 温度 (Temperature) | 260+0/-5°C |
| 时间 (Time) | 10 sec |
| 预热温度 (Preheat temperature) | 5 to 140°C |
| 预热时间 (Preheat time) | 30 to 80 sec |



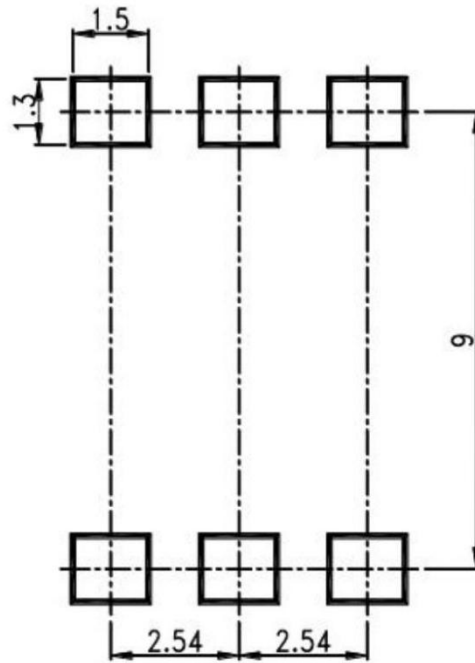
(3).电烙铁手工焊接 (Hand soldering by soldering iron)

允许单铅焊接在每一个过程中, 建议一次性焊接。

| | |
|------------------|------------|
| 温度 (Temperature) | 380+0/-5°C |
| 时间 (Time) | 3 sec max |

10. 推荐的焊盘 (RRECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD))

Unit: mm



11. 特性曲线 (Characteristics Curve)

Fig.1 Forward Current vs. Ambient Temperature

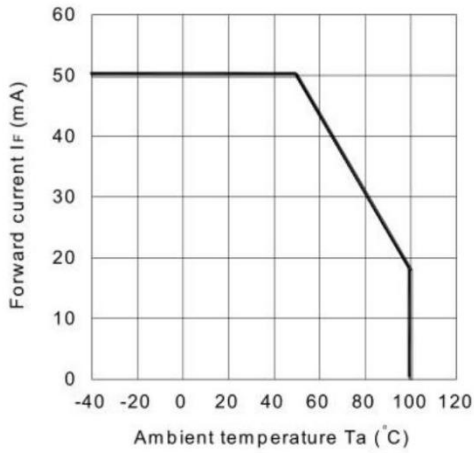


Fig.2 On-state Current vs. Ambient Temperature

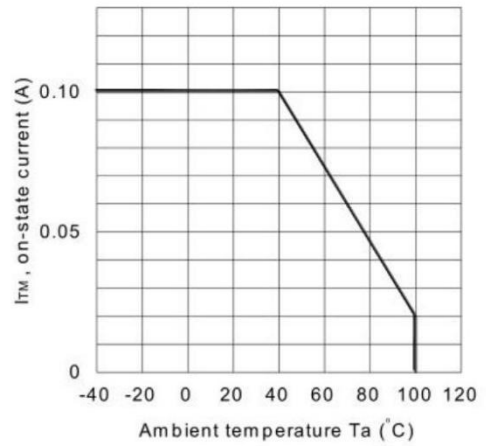


Fig.3 Minimum Trigger Current vs. Ambient Temperature

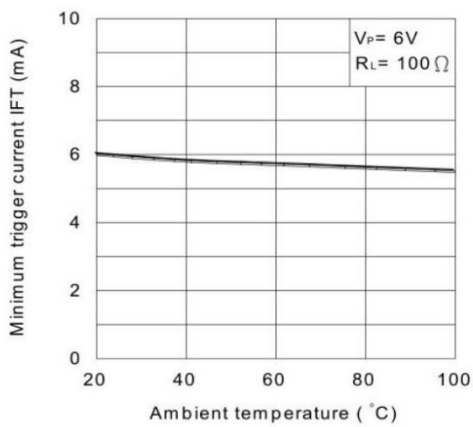


Fig.4 Forward Current vs. Forward Voltage

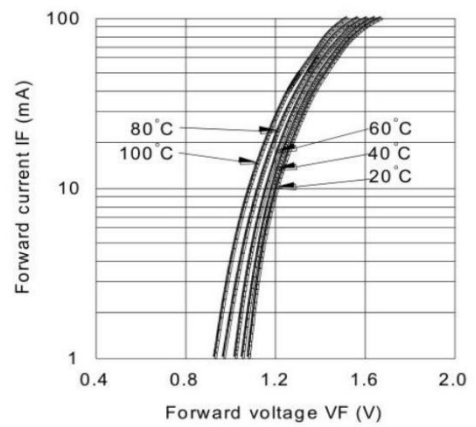


Fig.5 On-state Voltage vs. Ambient Temperature

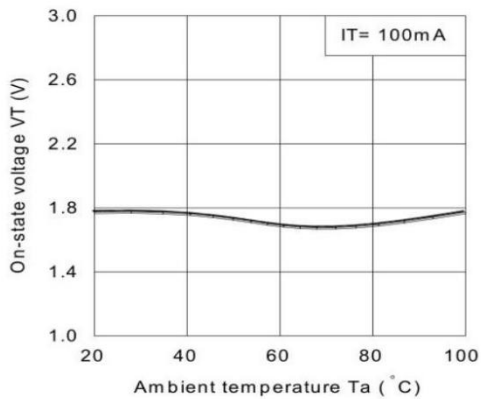


Fig.6 Holding Current vs. Ambient Temperature

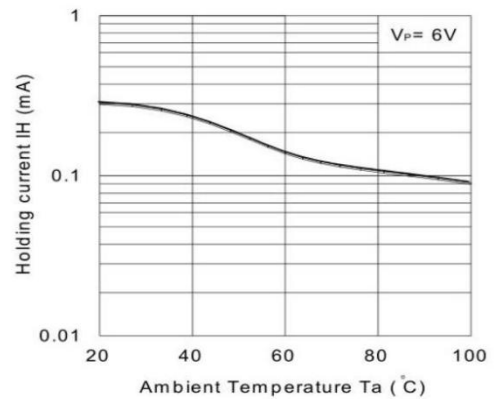


Fig.7 Repetitive Peak Off-state Current vs. Temperature

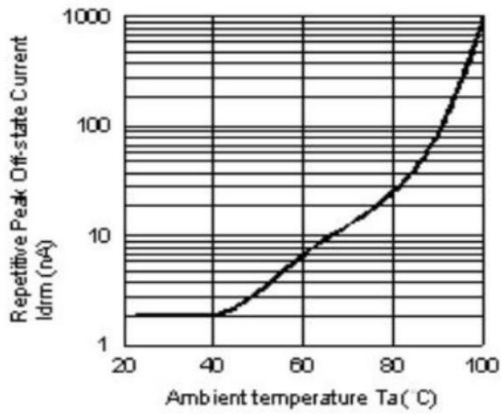
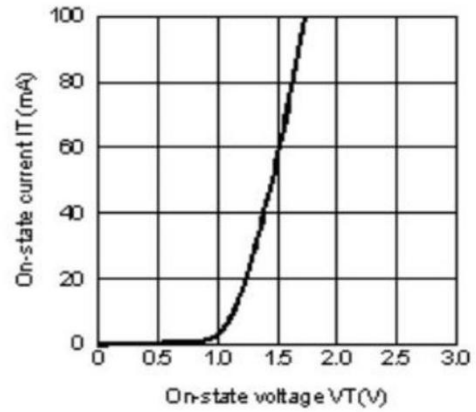


Fig.8 On-state Current vs. On-state Voltage



Basic Operation Circuit
Medium/High Power Triac Drive Circuit

