



# 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)  $V_{iso} \cong 5,000V_{rms}$
- (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)      |  | $T_{opr}$ | $-40 \sim +100$ | $^{\circ}C$ |
| 存贮温度 (Deposit Temperature)      |  | $T_{stg}$ | $-55 \sim +150$ |             |
| *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<br>Parameter |  | 符号<br>Symbol | 条件<br>Condition     | 最小<br>Min                  | 典型值<br>Typ.* | 最大<br>Max | 单位<br>Unit |         |
|-----------------|--|--------------|---------------------|----------------------------|--------------|-----------|------------|---------|
| 输入<br>(Input)   | 正向电压 (Forward Voltage)   | $V_F$        | $I_F=20mA$          | ---                        | 1.2          | 1.6       | V          |         |
|                 | 逆向电流(Reverse Current)  | $I_R$        | $V_R=6V$            | ---                        | 0.05         | 10        | $\mu A$    |         |
| 输出<br>(Output)  | 1.峰值阻断电流, 任一方向<br>(Peak Blocking Current, Either Direction)  | $I_{DRM}$    | $V_{DRM} = 400V$    | ---                        | 10           | 100       | nA         |         |
|                 | 峰值状态电压, 任一方向<br>(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<br>(Critical rate of Rise of Off-State Voltage)  | dv/dt        | $V_{in}=240V_{rms}$ | 1000                       | ---          | ---       | V/us       |         |
| 组合<br>Couple    | 3.LED 触发电流, 锁存输出所需的电流, 任一方向<br>(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       | ---        | $\mu A$ |

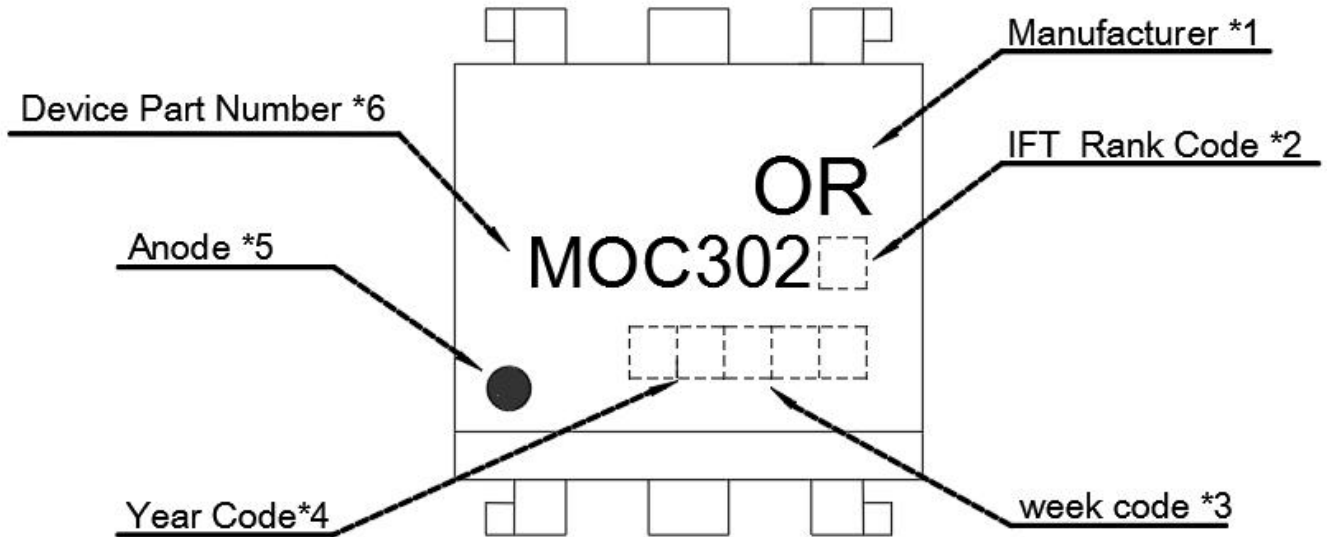
\*1. Test voltage must be applied within dv/dt rating.

\*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)

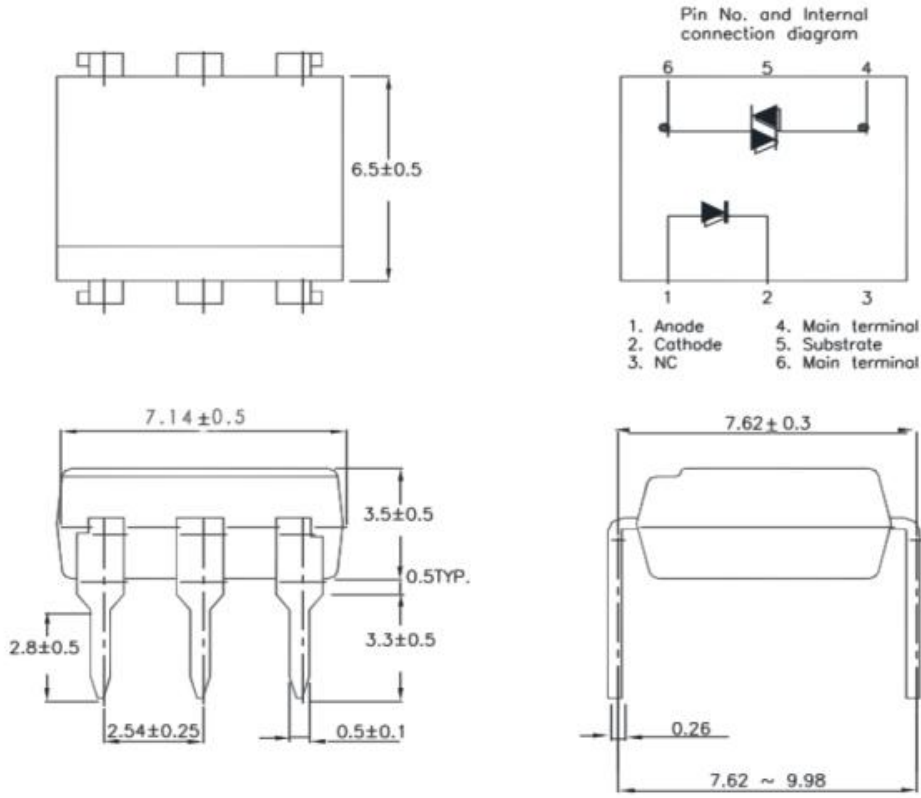


## 注:

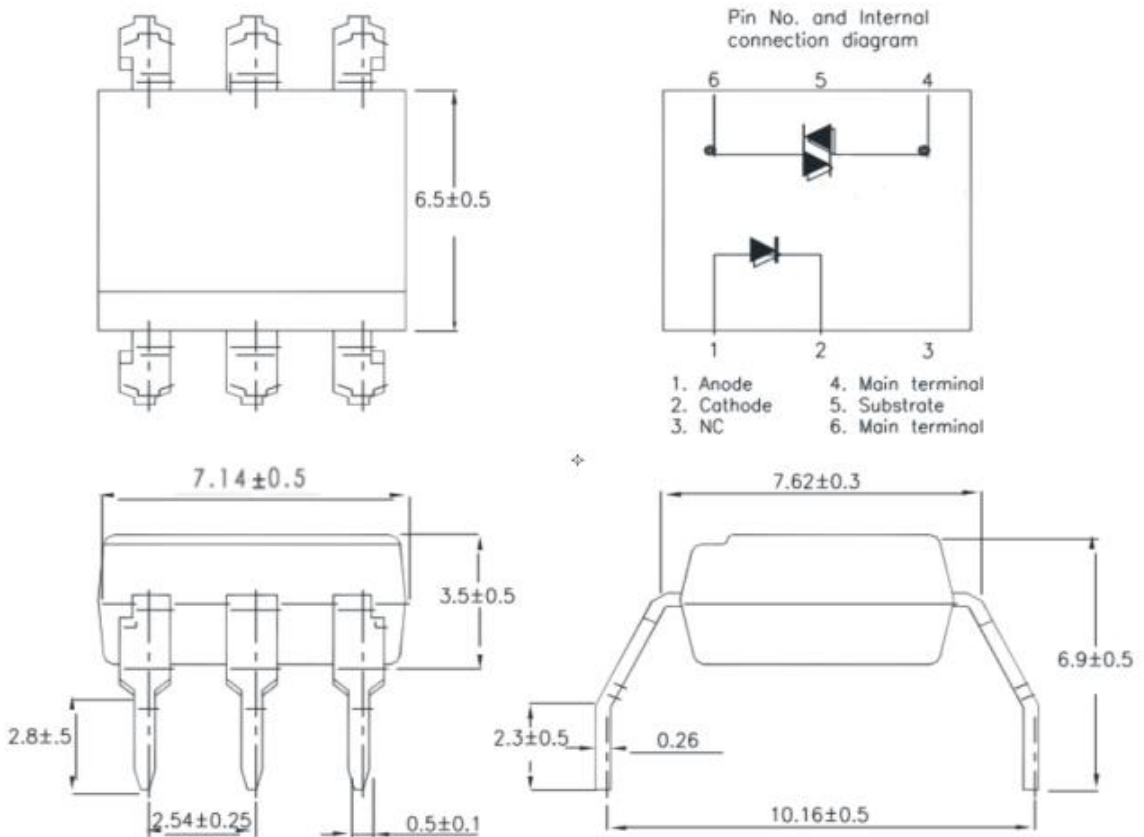
- (1) 制造商名称: OR代表制造商 Shenzhen Orient Components Co., Ltd.
- (2) 等级代码IF Rank Code: 等级代码 Rank: 有0、1、2、3共4种形式, X=0代表MOC3020; X=1代表MOC3021; X=2代表MOC3022; X=3代表MOC3023。
- (3) 周代码:Week Code:   01代表第一周、02代表第二周、依此类推。
- (4) 年代码:Year Code:   例如: F8 或C8, 其中F表铁支架/C表铜支架, 8代表2018年、依此类推。
- (5) Anode: 代表正极。
- (6) Device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

7. 外形尺寸 (Outer Dimension)

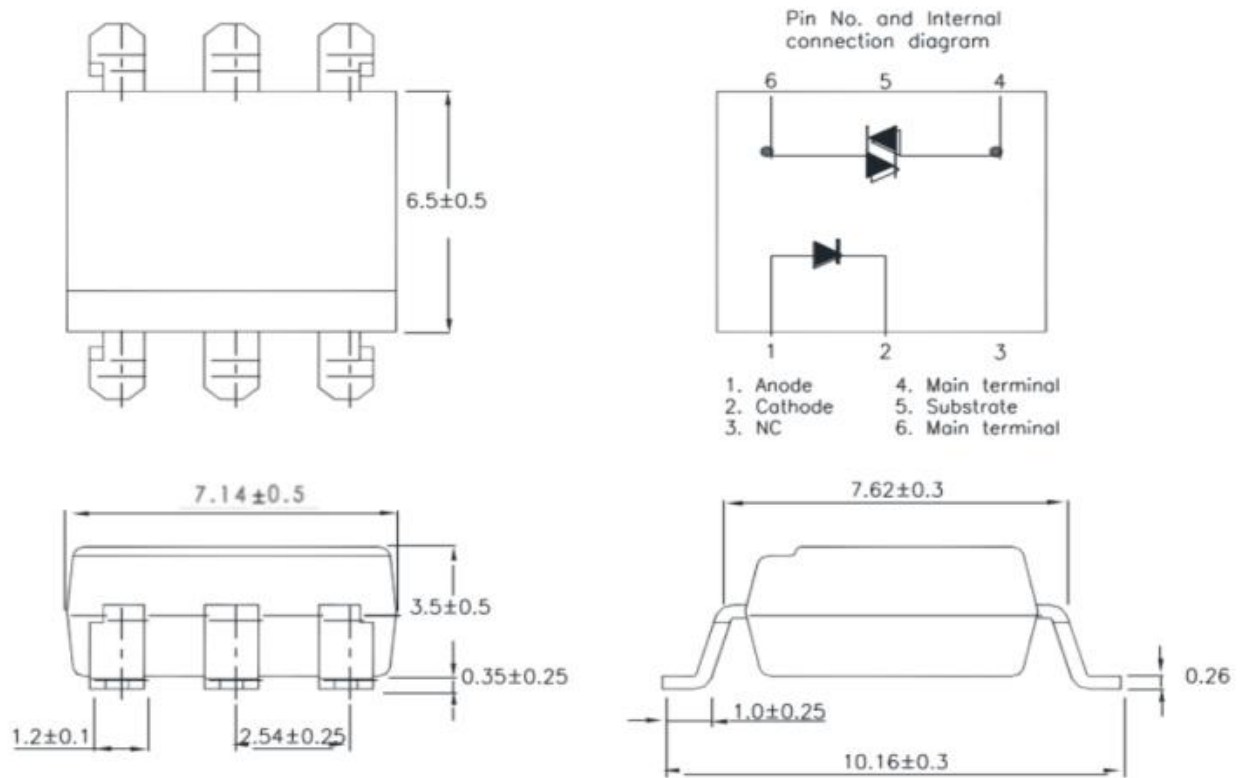
(1).MOC302X



(2).MOC302XM

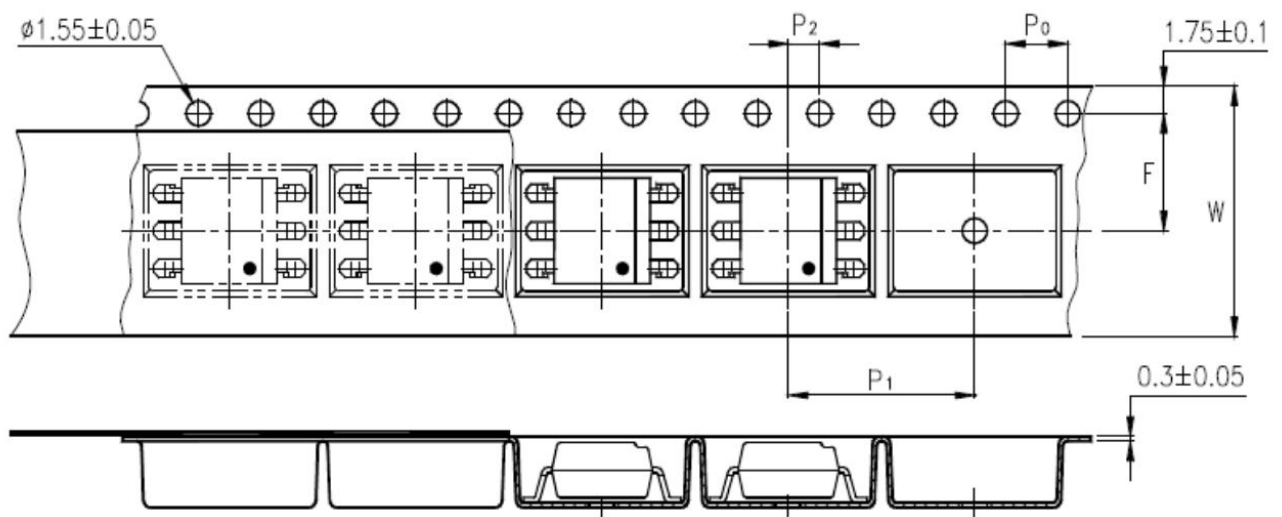


(3). MOC302XS

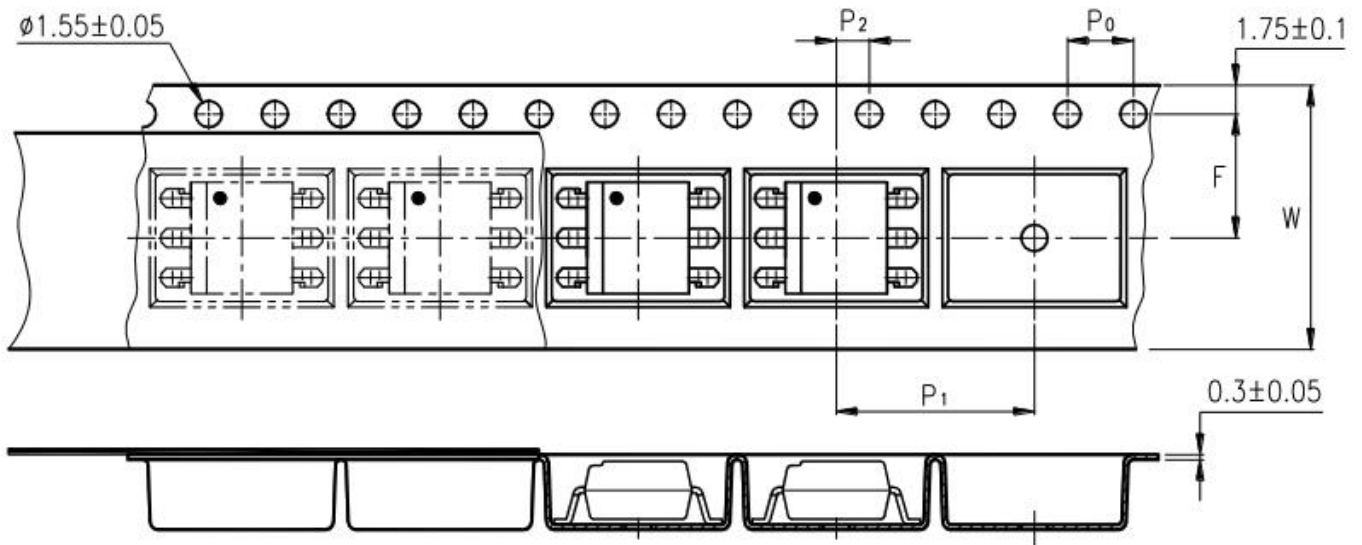


8. 编带尺寸 (Taping Dimensions)

(1). MOC302XS-TA



(2). MOC302XS-TA1



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

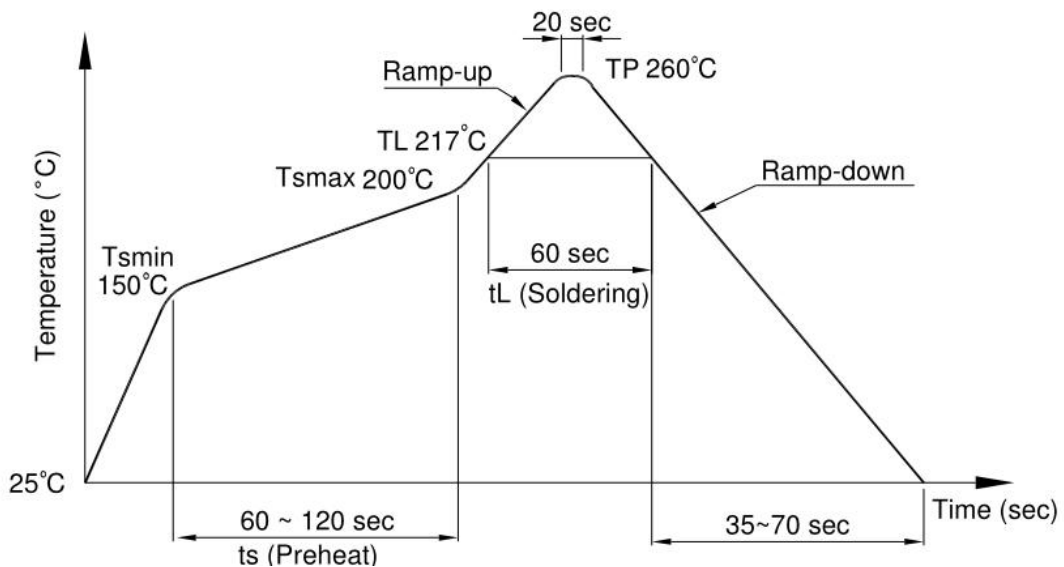
|        |                         |
|--------|-------------------------|
| 封装类型   | MOC302XS series(TA/TA1) |
| 数量 (个) | 1000                    |

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    |

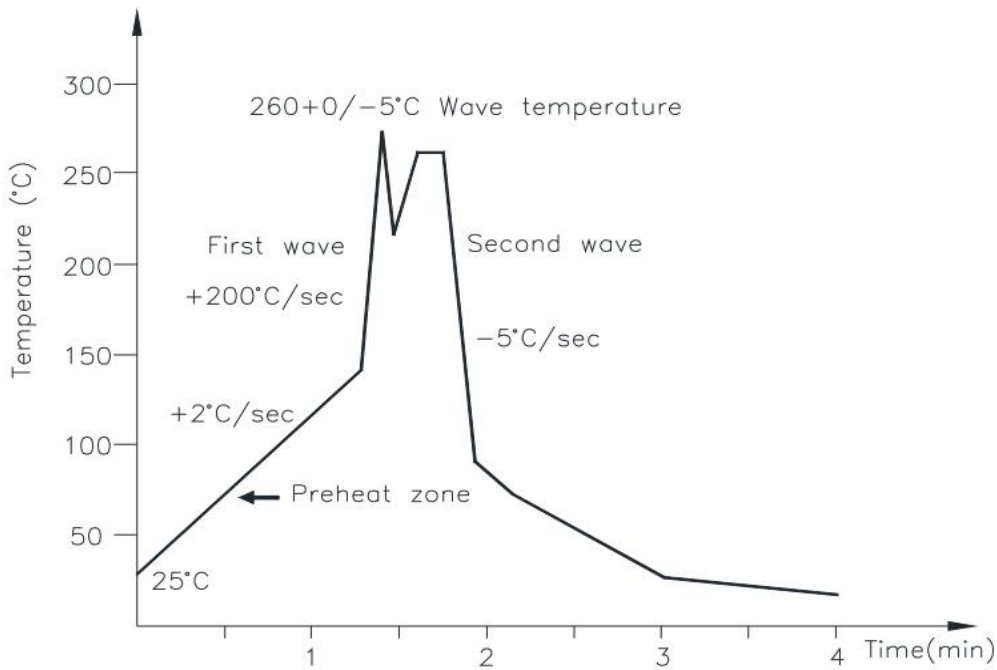




(2).波峰焊接 (jedec22a111 兼容) (Wave soldering (JEDEC22A111 compliant))

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 |



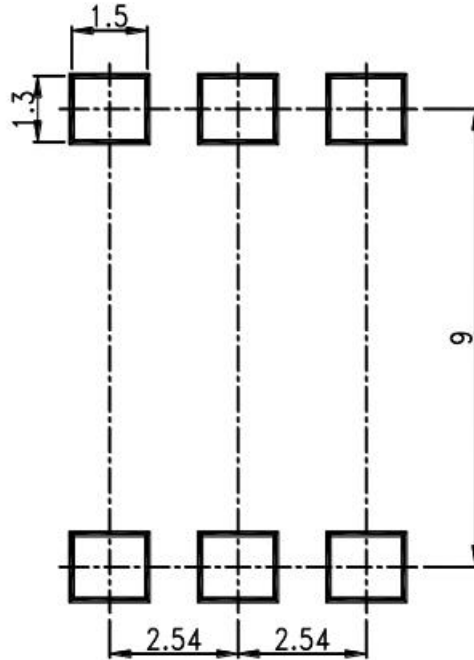
(3).电烙铁手工焊接 (Hand soldering by soldering iron)

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

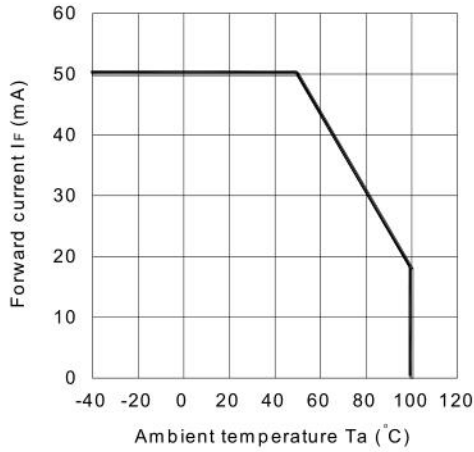


Fig.2 On-state Current vs. Ambient Temperature

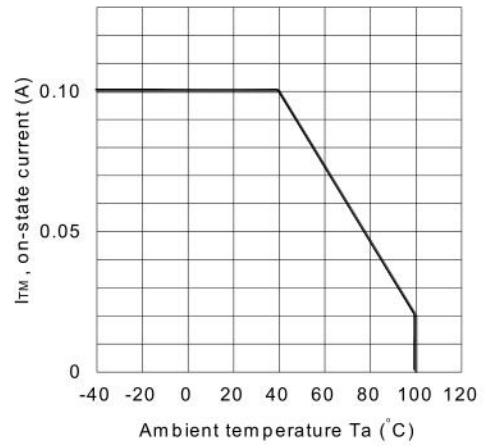


Fig.3 Minimum Trigger Current vs. Ambient Temperature

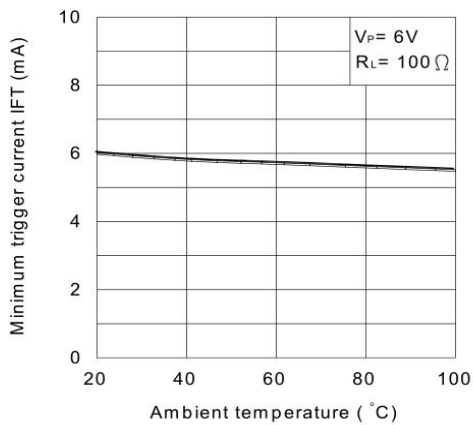


Fig.4 Forward Current vs. Forward Voltage

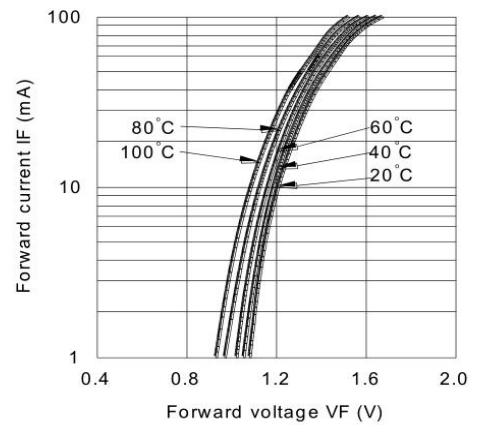


Fig.5 On-state Voltage vs. Ambient Temperature

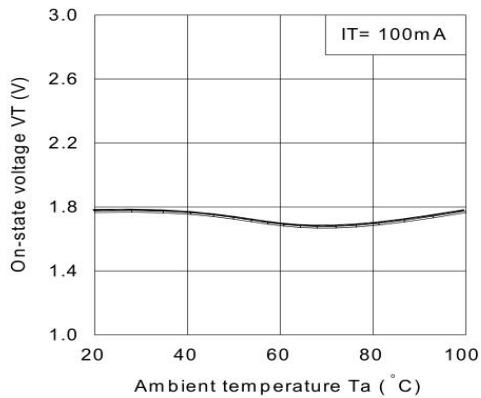


Fig.6 Holding Current vs. Ambient Temperature

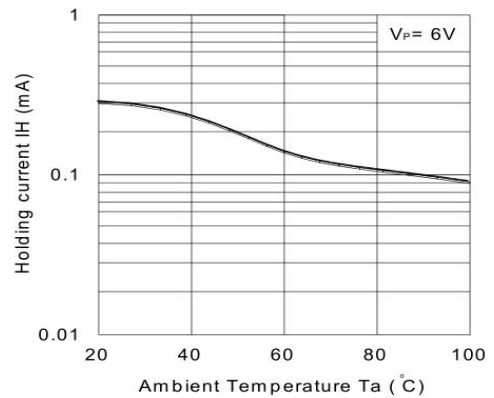


Fig.7 Repetitive Peak Off-state Current vs. Temperature

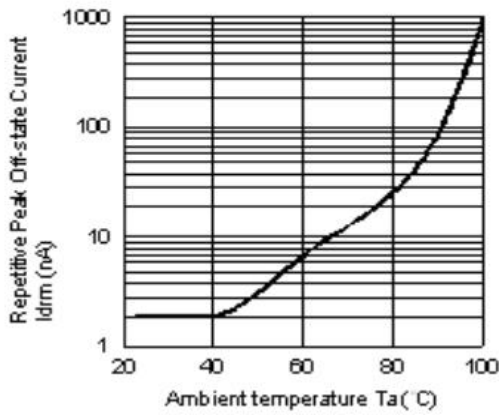
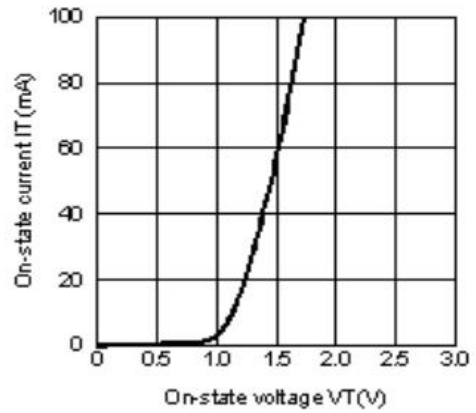
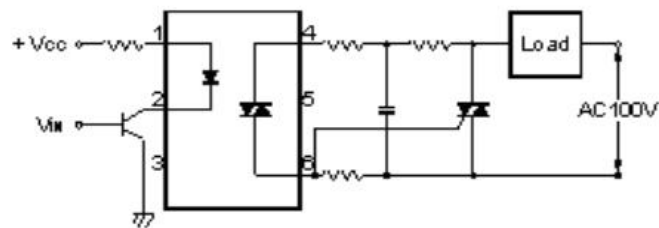


Fig.8 On-state Current vs. On-state Voltage



Basic Operation Circuit

Medium/High Power Triac Drive Circuit



单击下面可查看定价，库存，交付和生命周期等信息

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