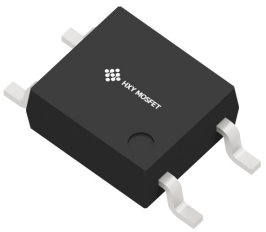
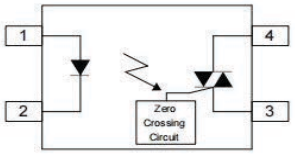
## Description

The HLM3063 series devices are optocouplers composed of a GaAs infrared light emitting diode and a single-crystal silicon chip Zerocross photoelectric bidirectional thyristor.




SOP-4




Pin Configuration
1 Anode
2 Cathode
3 Terminal
4 Terminal

## Features

- Peak breakdown voltage
  ELM3063(TA)：Min.600V
- 4pin zero-cross optoisolators triac driver outp
- High input-output isolation voltage(Viso = 3,750Vrms)
- Operating Temperature: -40℃~110℃
- RoHS

## Applications

- Lighting Control
- AC Motor Starter
- Static power switc
- Temperature Controls

## Maximum Rating

| Parameter | | Symbol | Values | Unit |
|---|---|---|---|---|
| Input | Forward Current | $I_F$ | 50 | mA |
| | Reverse Voltage | $V_R$ | 6 | V |
| | Power Dissipation | P | 120 | MW |
| | Junction Temperature | $T_J$ | 100 | |
| Output | Off-State Output Terminal Voltage | $V_{DRM}$ | 600 | V |
| | On state RMS current | $I_{T(RMS)}$ | 100 | mA(RMS) |
| | Peak Repetitive Surge Current (PW=1ms 120 pps | $I_{TSM}$ | 1 | A |
| | Junction Temperature | $T_J$ | 125 | |
| | Collector Power Dissipation | $P_C$ | 300 | mW |
| Operating temperature range | | $T_{op}$ | 40 ~ 110 | C |
| Storage temperature range | | $T_{stg}$ | 55 ~ 125 | C |
| Total Power consumption | | $P_{(W)}$ | 330 | 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

## Electronic Optical Characteristics
## (TA = 25°C)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Conditon |
|---|---|---|---|---|---|---|---|
| Input | Forward Voltage | $V_F$ | - | 1.2 | 1.6 | V | $I_F$=10mA |
| | Reverse Current | $I_R$ | - | - | 5 | μA | $V_R$=6V |
| Output | Peak Blocking Current, Either Directiot (1) | $I_{DRM}$ | - | 10 | 100 | nA | $V_{DRM}$ = Rated $V_{DRM}$ |
| | Inhibit Voltage (MT1-MT2 voltage above which device will not trigger) | $V_{INH}$ | - | - | 20 | - | $I_F$= Rated $I_F$ |
| | Peak On-State Voltage, Either Dire | $V_{TM}$ | - | - | 3 | V | $I_{TM}$=100mA Peak |
| | Critical rate of Rise of Off-State Voltage (2) | dv/dt | 1000 | - | - | V/ μ s | $V_{in}$=240Vrms |
| Transfer Charact eristics | Led Trigger Current, Crrent Required to Latch Output, Either Direction | $I_{FT}$ | - | - | 15 | mA | Main Terminal Voltage = 3V |
| | | | - | - | 10 | | |
| | | | - | - | 5 | | |
| | Holding Current, Either Direction | $I_H$ | - | 280 | - | uA | $I_F$ = Rated |
| ZERO CROSSI NG | Leakage in Inhibited State | $I_{DRM2}$ | - | - | 500 | uA | $I_{FT}$ , 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.

## Characteristics Curves

Fig.1 Forward current vs Ambient temperature

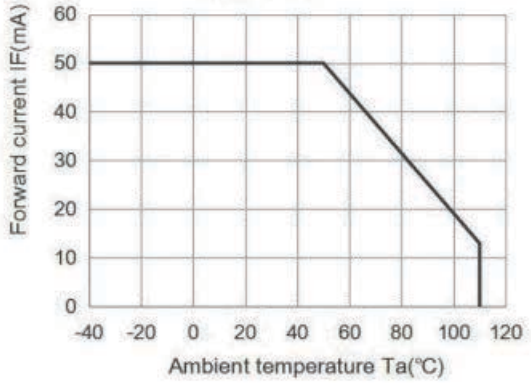



Fig.2 On-state current vs Ambient temperature

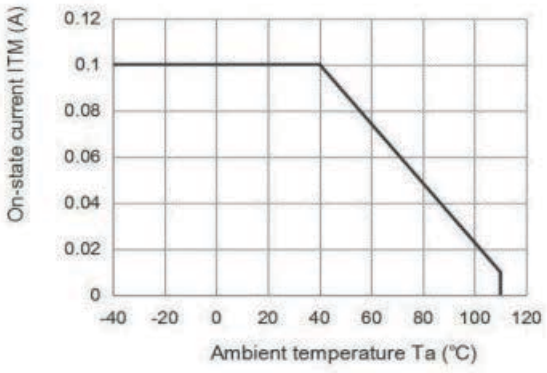



Fig.3 Minimun Trigger Current vs.Ambient temperature

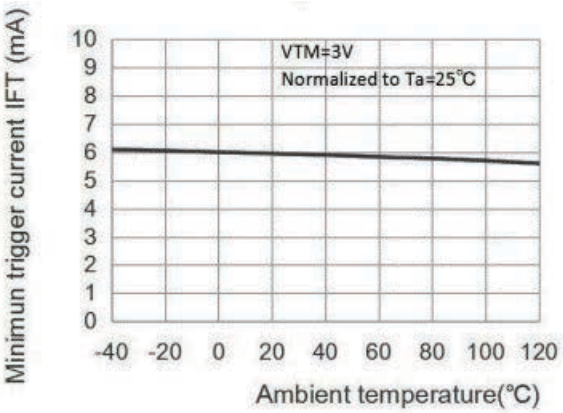



Fig.4 Forward current vs Forward Voltage

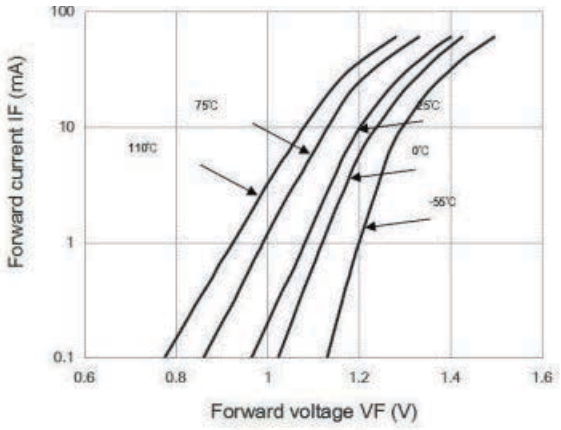



Fig.5 On-state voltage vs Ambient temperature

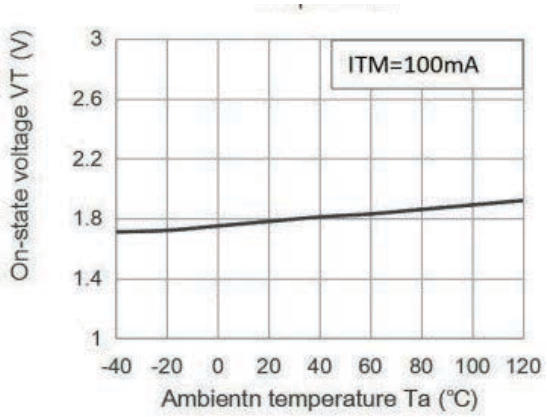



Fig.6 Holding current vs Ambient temperature

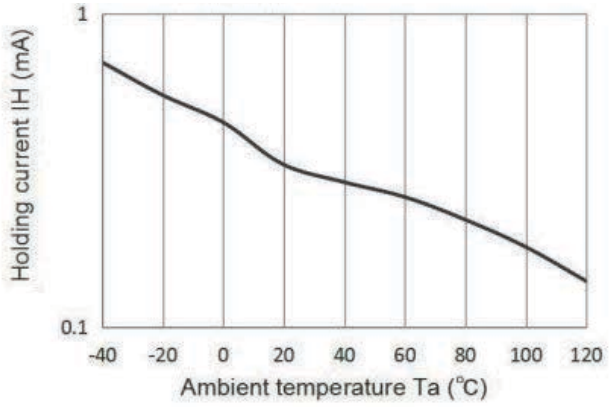


Fig.7 Repetitive peak off-state current vs Temperature

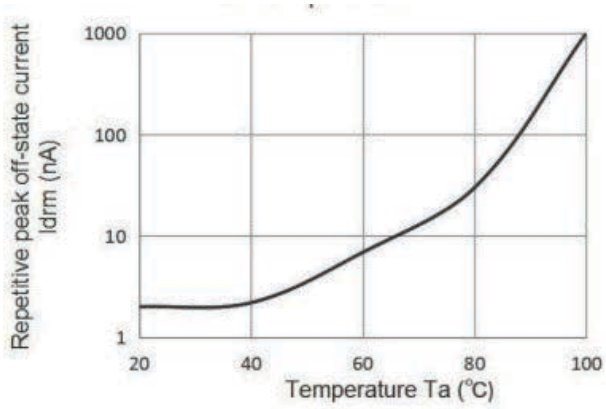



Fig.8 On-state current vs On-state voltage

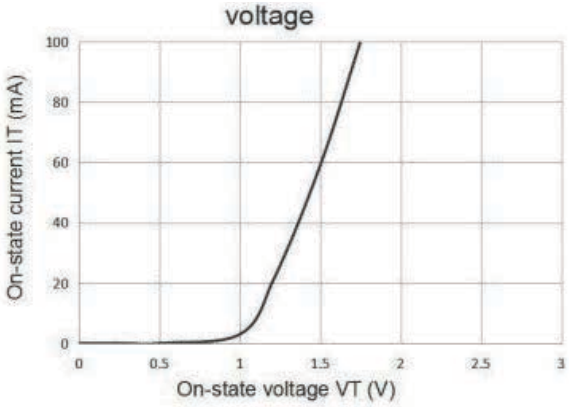



Fig.9 Basic Operation Circuit Medium/High Power Triac Drive Circuit

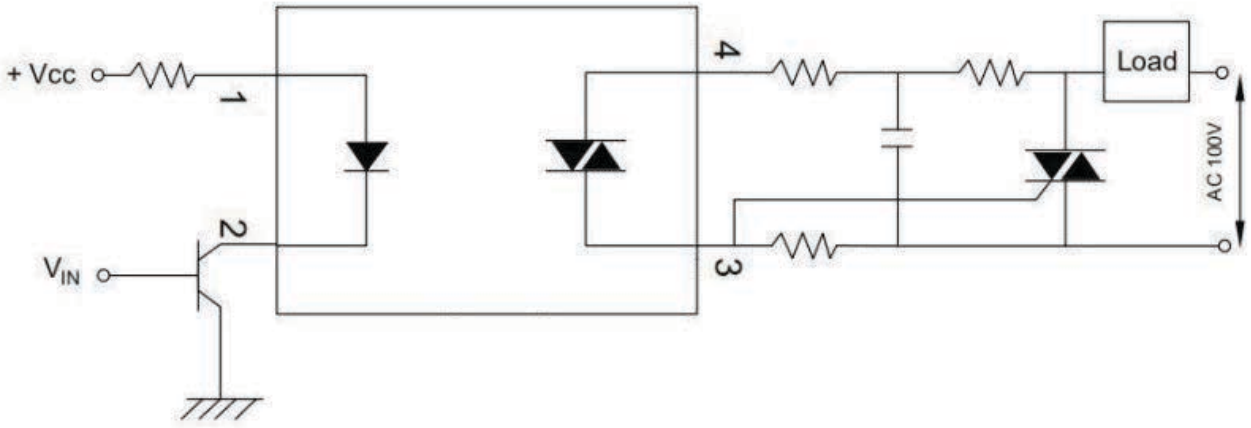
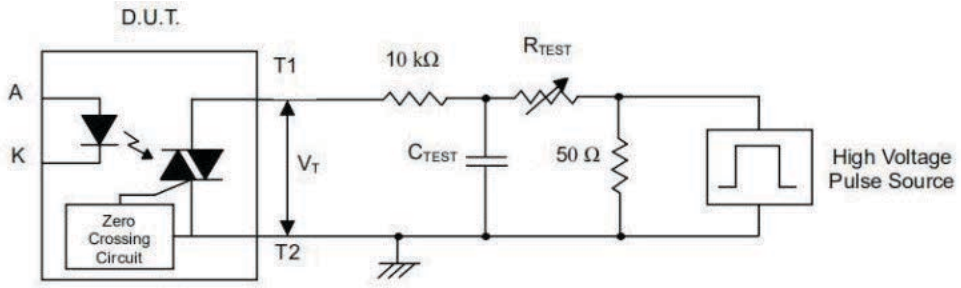
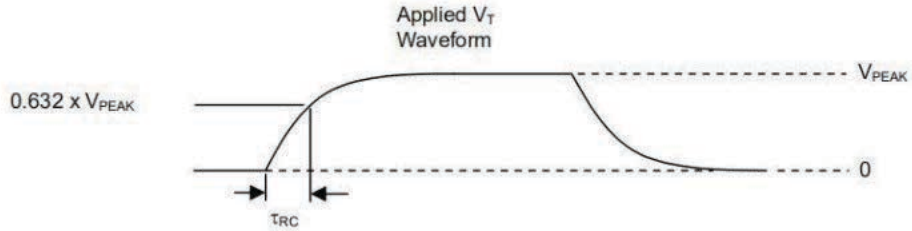
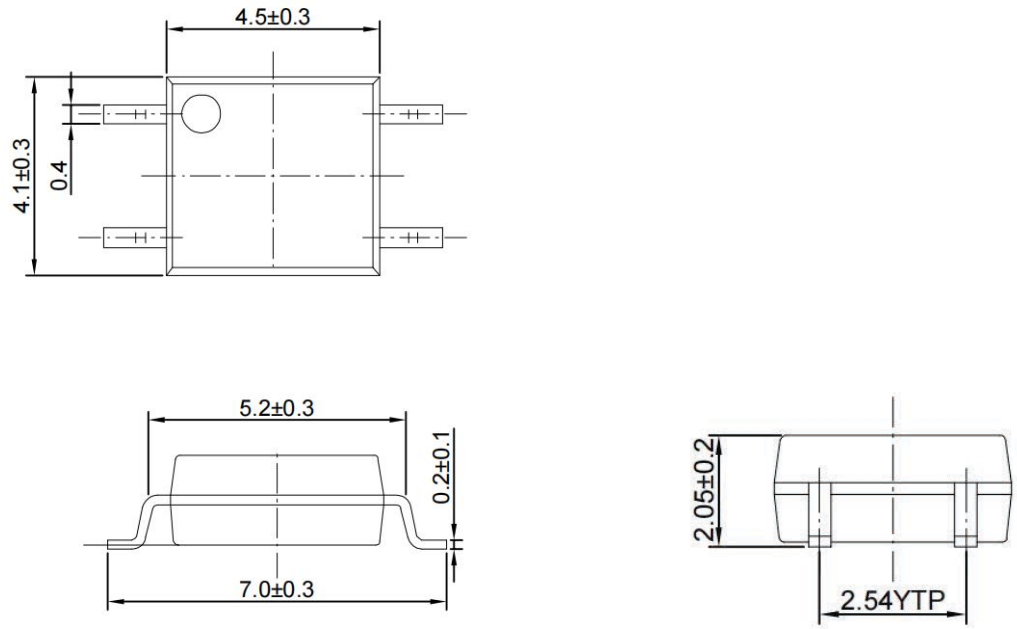



Fig10.Static dv/dt Test Circuit & Wave form



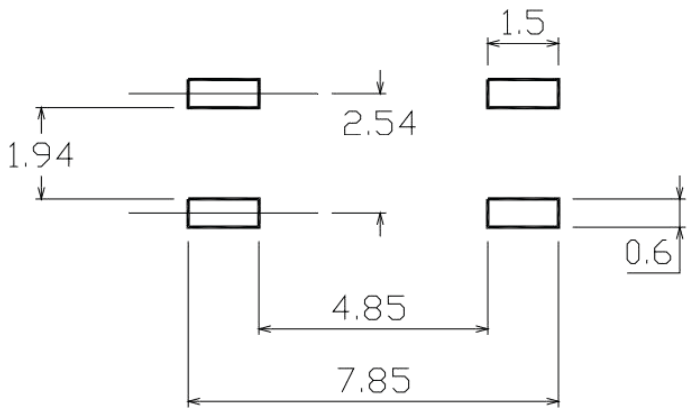



## Outline Dimension




Unit: mm
Tolerance: ±0.1mm

## Recommended solder pad Design



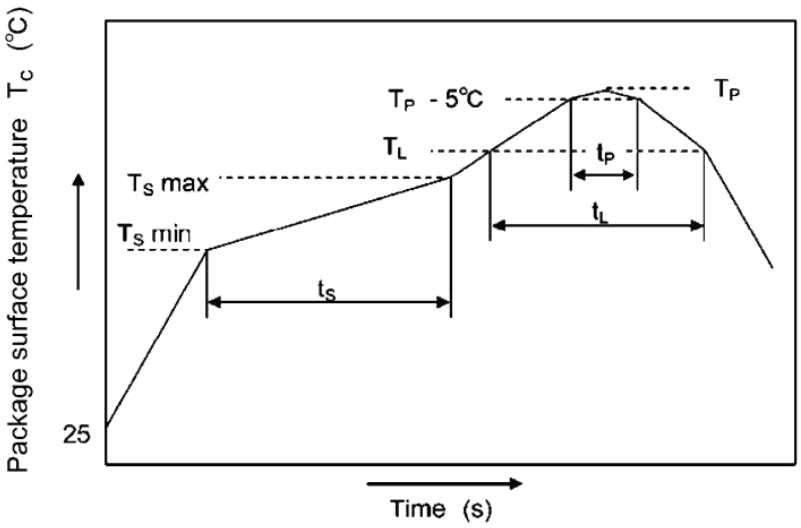

Unit: mm
Tolerance: ±0.1mm

## Temperature Profile Of Soldering

### 1. IR Reflow soldering

***(JEDEC-STD-020D compliant)***

| Profile item | Conditon |
|---|---|
| Preheat | |
| -Temperature Min (TSmin) | 150°C |
| -Temperature Max (TSmax) | 200°C |
| -Time (min to max) (ts) | 90±30 sec |
| Soldering zone | |
| -Temperature (TL) | 217°C |
| -Time (tL) | 60-150 sec |
| Peak Temperature (TP) | 260°C |
| -Time (TP-5℃to TP) (ts) | 30 sec |
| Ramp-up rate | 3°C / sec max |
| Ramp-down rate | 3~6°C/ sec |

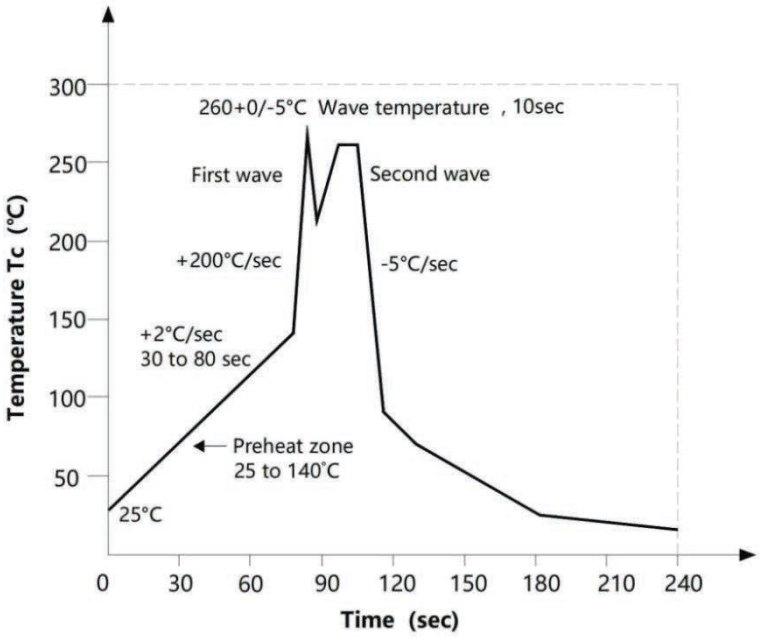



Notes:

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.

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