

## Miniature PCB Relay OJ/OJE

- 3 to 10A rating
- Small size
- 4000V<sub>rms</sub> coil to contact dielectric strength (OJ type)
- Sensitive coil optional



F0277-C

Typical applications  
Appliances, HVAC, industrial control



### Approvals

VDE 40007630, TUV R 50139166, UL E82292, CQC03001007764  
Technical data of approved types on request

### Contact Data

|                                         |                                    |
|-----------------------------------------|------------------------------------|
| Contact arrangement                     | 1 form A, 1 NO                     |
| Rated voltage                           | 30VDC, 250VAC                      |
| Max. switching voltage                  | 30VDC, 277VAC                      |
| Rated current                           | 3 to 10A                           |
| Contact material                        | Ag, AgSnO, AgCdO                   |
| Min. recommended contact load           | 100mA, 5VDC                        |
| Frequency of operation                  | 360 ops./h                         |
| Operate time max.                       | OJ/OJE-L: 15ms<br>OJ/OJE-D/H: 10ms |
| Release time max.                       | 4ms                                |
| Electrical endurance                    |                                    |
| LM 3A, 250VAC, res., -30°C to +95°C     | 100x10 <sup>3</sup> ops.           |
| DM 5A, 250VAC, res., -30°C to +85°C     | 60x10 <sup>3</sup> ops.            |
| LMH(2) 8A, 250VAC, res., -30°C to +70°C | 100x10 <sup>3</sup> ops.           |
| LMH2 8A, 250VAC, res., -30°C to +85°C   | 30x10 <sup>3</sup> ops.            |
| HM 10A, 250VAC, res., -30°C to +70°C    | 100x10 <sup>3</sup> ops.           |
| HM2 10A, 250VAC, res., -30°C to +85°C   | 10x10 <sup>3</sup> ops.            |
| Contact ratings                         |                                    |
| LM 3A, 250VAC                           |                                    |
| DM 5A 250VAC                            |                                    |
| LMH(2) 8A 250VAC                        |                                    |
| HM(2) 10A 250VAC                        |                                    |
| Mechanical endurance, DC coil           | 10x10 <sup>6</sup> operations      |

### Coil Data

|                                     |            |
|-------------------------------------|------------|
| Coil voltage range                  | 3 to 48VDC |
| Operative range, IEC 61810          | 2          |
| Coil insulation system according UL | Class E, F |

### Coil versions, DC coil, OJ/OJE-L sensitive type

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10% | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-----------------------|---------------------|
| 003       | 3                 | 2.25                | 0.15                | 45                    | 200                 |
| 005       | 5                 | 3.75                | 0.25                | 125                   | 200                 |
| 006       | 6                 | 4.5                 | 0.3                 | 180                   | 200                 |
| 009       | 9                 | 6.75                | 0.45                | 405                   | 200                 |
| 012       | 12                | 9                   | 0.6                 | 720                   | 200                 |
| 024       | 24                | 18                  | 1.2                 | 2880                  | 200                 |
| 048       | 48                | 36                  | 2.4                 | 11520                 | 200                 |

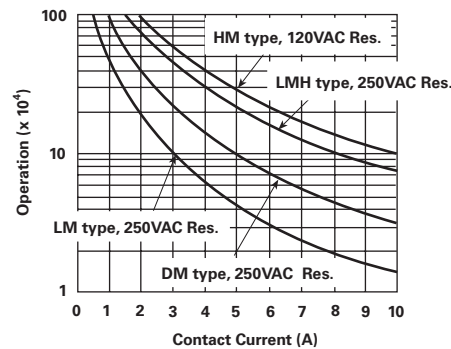
All figures are given for coil without pre-energization, at ambient temperature +23°C

### Coil versions, DC coil, OJ/OJE-D and -H type

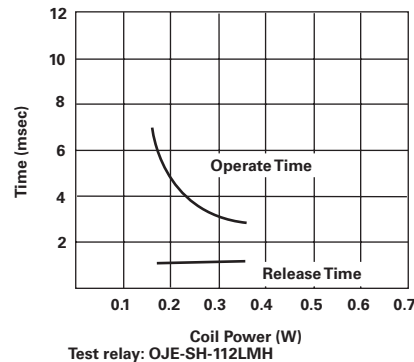
| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10% | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-----------------------|---------------------|
| 003       | 3                 | 2.1                 | 0.15                | 20                    | 450                 |
| 005       | 5                 | 3.5                 | 0.25                | 55.6                  | 450                 |
| 006       | 6                 | 4.2                 | 0.3                 | 80                    | 450                 |
| 009       | 9                 | 6.3                 | 0.45                | 180                   | 450                 |
| 012       | 12                | 8.4                 | 0.6                 | 320                   | 450                 |
| 024       | 24                | 16.8                | 1.2                 | 1280                  | 450                 |
| 048       | 48                | 33.6                | 2.4                 | 5120                  | 450                 |

All figures are given for coil without pre-energization, at ambient temperature +23°C

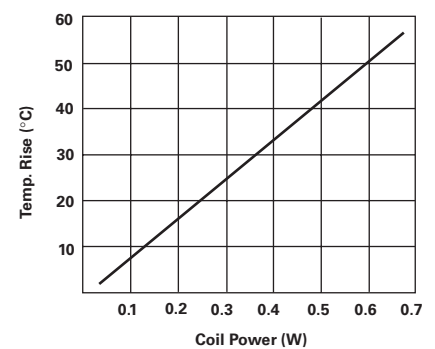
### Electrical endurance



### Operate time



### Coil temperature rise



Miniature PCB Relay OJ/OJE (Continued)

**Insulation Data**

|                              |                           |
|------------------------------|---------------------------|
| Initial dielectric strength  | 750V <sub>rms</sub>       |
| between open contacts        | OJ: 4000V <sub>rms</sub>  |
| between contact and coil     | OJE: 3000V <sub>rms</sub> |
| Clearance/creepage           |                           |
| between contact and coil     | OJ: > 7.7mm / 9.4mm       |
| between contact and coil     | OJE: > 3.2mm / 3.6mm      |
| Tracking index of relay base | PTI 250                   |

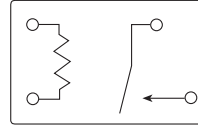
**Other Data**

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at [www.te.com/customer-support/rohssupportcenter](http://www.te.com/customer-support/rohssupportcenter)

|                                      |                                         |
|--------------------------------------|-----------------------------------------|
| Ambient temperature                  |                                         |
| DM:                                  | -30°C to +85°C                          |
| HM:                                  | -30°C to +70°C                          |
| HM2:                                 | -30°C to +85°C                          |
| LM:                                  | -30°C to +90°C                          |
| LMH:                                 | -30°C to +70°C                          |
| LMH2:                                | -30°C to +85°C                          |
| Category of environmental protection |                                         |
| IEC 61810                            | RTII - flux proof<br>RTIII - wash tight |
| Shock resistance (functional)        | 10g                                     |
| Shock resistance (destructive)       | 100g                                    |
| Weight                               | 9g                                      |
| Resistance to soldering heat THT     |                                         |
| IEC 60068-2-20                       | RTII: 270°C/10s<br>RTIII: 260°C/5s      |
| Packaging unit                       | tray/100, carton box/1000               |

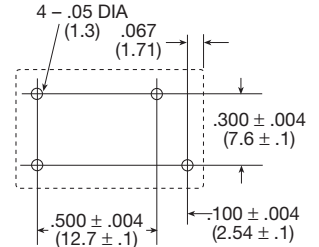
**Terminal assignment**

Bottom view on solder pins

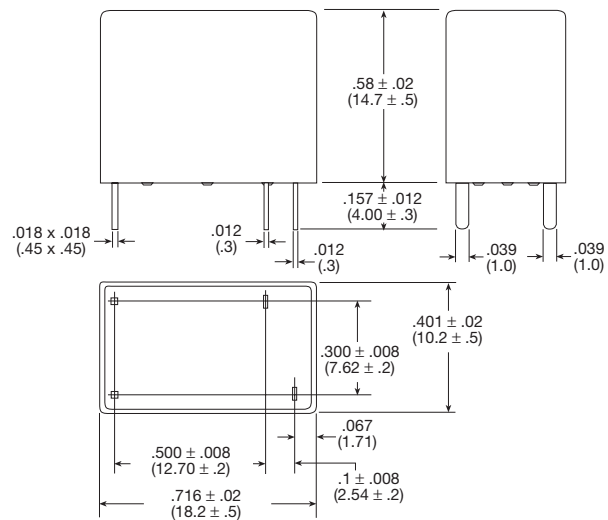


**PCB layout**

Bottom view on solder pins



**Dimensions**



**Product code structure**

Typical product code

**OJ -SH -1 12 LMH F -WG ,000**

**Type**

|            |                                                                   |
|------------|-------------------------------------------------------------------|
| <b>OJ</b>  | Miniature PCB Relay OJ, 4kV dielectric between coil and contacts  |
| <b>OJE</b> | Miniature PCB Relay OJE, 3kV dielectric between coil and contacts |

**Category of protection**

|           |            |
|-----------|------------|
| <b>SS</b> | Fux proof  |
| <b>SH</b> | Wash tight |

**Number of poles**

|          |        |
|----------|--------|
| <b>1</b> | 1 pole |
|----------|--------|

**Coil voltage**

Coil code: please refer to coil versions table (e.g. 12 = 12VDC)

**Contact rating and coil power**

|            |                                               |             |                                               |
|------------|-----------------------------------------------|-------------|-----------------------------------------------|
| <b>DM</b>  | 450 mWcoil power<br>5A type, coil power 450mW | <b>LM</b>   | 200mW coil power<br>3A type, coil power 200mW |
| <b>TM</b>  | TV-5 type, coil power 450mW                   | <b>LMH</b>  | 8A type, coil power 200mW                     |
| <b>HM</b>  | 10A type, coil power 450mW                    | <b>LMH2</b> | 8A type, coil power 200mW                     |
| <b>HM2</b> | 10A type, coil power 450mW                    |             |                                               |

**Insulation system designation**

|              |                               |          |                    |
|--------------|-------------------------------|----------|--------------------|
| <b>Blank</b> | Insulation Class E (standard) | <b>F</b> | Insulation Class F |
|--------------|-------------------------------|----------|--------------------|

**Special type**

|              |          |           |                                                  |
|--------------|----------|-----------|--------------------------------------------------|
| <b>Blank</b> | Standard | <b>WG</b> | For domestic appliances (IEC 60335-1, 4 Edition) |
|--------------|----------|-----------|--------------------------------------------------|

**Suffix**

|             |          |
|-------------|----------|
| <b>,000</b> | Standard |
|-------------|----------|

Miniature PCB Relay OJ/OJE (Continued)

| Product code      | Rating | Cont. mat. | Coil  | Coil power | Type     | Insulation | Enclosure  | Part Number |
|-------------------|--------|------------|-------|------------|----------|------------|------------|-------------|
| OJ-SH-105LM,000   | 3A     | Ag         | 5VDC  | 200mW      | Standard | Class E    | Wash tight | 1461404-1   |
| OJE-SH-112LM,000  |        |            | 12VDC |            |          |            |            | 1461401-5   |
| OJE-SS-112LM,000  |        |            |       |            |          |            | Flux proof | 4-1419128-6 |
| OJ-SH-112LM,000   |        |            |       |            |          |            | Wash tight | 1461404-6   |
| OJ-SS-112LM,000   | 5A     |            |       | 450mW      |          |            | Flux proof | 2-1419129-1 |
| OJ-SS-124LM,000   |        |            |       |            |          |            |            | 3-1419129-1 |
| OJ-SH-124LM,000   |        |            | 24VDC |            |          |            | Wash tight | 1461404-4   |
| OJE-SH-105DM,000  |        |            | 5VDC  |            |          |            |            | 1461400-1   |
| OJE-SS-105DM,000  |        |            |       |            |          |            | Flux proof | 2-1419128-8 |
| OJE-SH-112DM,000  |        |            | 12VDC |            |          |            | Wash tight | 1461400-4   |
| OJE-SS-112DM,000  |        |            |       |            |          |            | Flux proof | 4-1419128-2 |
| OJ-SH-112DM,000   |        |            |       |            |          |            | Wash tight | 1461406-4   |
| OJ-SS-112DM,000   |        |            |       |            |          |            | Flux proof | 1-1419129-8 |
| OJE-SH-124DM,000  |        |            | 24VDC |            |          |            | Wash tight | 1461400-5   |
| OJE-SS-124DM,000  |        |            |       |            |          |            | Flux proof | 6-1419128-2 |
| OJ-SS-124DM,000   |        |            |       |            |          |            |            | 2-1419129-9 |
| OJE-SH-105LMH,000 | 8A     | AgCdO      | 5VDC  | 200mW      |          |            | Wash tight | 1461403-3   |
| OJE-SH-105LMH-WG  |        |            |       |            | WG type  |            |            | 1721875-2   |
| OJE-SS-105LMH,000 |        |            |       |            | Standard |            | Flux proof | 1461034-2   |
| OJ-SH-105LMH,000  |        |            |       |            |          |            | Wash tight | 8-1419128-1 |
| OJ-SH-106LMH,000  |        |            | 6VDC  |            |          |            |            | 1461247-1   |
| OJE-SH-109LMH,000 |        |            | 9VDC  |            |          |            |            | 1461403-2   |
| OJE-SS-109LMH,000 |        |            |       |            |          |            | Flux proof | 5-1419144-3 |
| OJ-SH-109LMH,000  |        |            |       |            |          |            | Wash tight | 1461247-2   |
| OJ-SS-109LMH2-WG  |        | AgSnO      |       |            | WG type  |            | Flux proof | 1721874-4   |
| OJ-SS-109LMHF,000 |        | AgCdO      |       |            | Standard | Class F    |            | 1721083-5   |
| OJE-SH-112LMH,000 |        |            | 12VDC |            |          | Class E    | Wash tight | 1461403-4   |
| OJE-SH-112LMH-WG  |        |            |       |            | WG type  |            |            | 1721875-5   |
| OJE-SS-112LMH,000 |        |            |       |            | Standard |            | Flux proof | 5-1419128-0 |
| OJE-SS-112LMH2    |        | AgSnO      |       |            |          |            |            | 1721261-5   |
| OJ-SH-112LMH,000  |        | AgCdO      |       |            |          |            | Wash tight | 9-1419128-8 |
| OJ-SH-112LMH2     |        | AgSnO      |       |            |          |            |            | 1-1721260-1 |
| OJ-SS-112LMH,000  |        | AgCdO      |       |            |          |            | Flux proof | 2-1419129-5 |
| OJ-SS-112LMH2     |        | AgSnO      |       |            |          |            |            | 1721260-5   |
| OJ-SS-112LMHF,000 |        | AgCdO      |       |            |          | Class F    |            | 1721083-1   |
| OJE-SH-124LMH,000 |        |            | 24VDC |            |          | Class E    | Wash tight | 1461403-5   |
| OJE-SH-124LMH-WG  |        |            |       |            | WG type  |            |            | 1721875-6   |
| OJE-SS-124LMH,000 |        |            |       |            | Standard |            | Flux proof | 7-1419128-1 |
| OJ-SH-124LMH,000  |        |            |       |            |          |            | Wash tight | 1461247-3   |
| OJ-SS-124LMH,000  |        |            |       |            |          |            | Flux proof | 4-1419144-4 |
| OJ-SS-124LMH2     |        | AgSnO      |       |            |          |            |            | 1721260-6   |
| OJ-SS-124LMH2-WG  | 10A    | Ag         |       | 450mW      |          |            |            | 1721874-6   |
| OJ-SS-124LMHF,000 |        |            |       |            |          |            |            | 1461014-2   |
| OJ-SH-105HM,000   |        |            | 5VDC  |            |          |            | Class E    | 1461405-3   |
| OJE-SH-112HM,000  |        |            | 12VDC |            |          |            |            | 1461402-6   |
| OJE-SS-112HM,000  |        |            |       |            |          |            | Flux proof | 4-1419128-3 |
| OJE-SS-112HM2,000 |        | AgSnO      |       |            |          |            |            | 1721539-5   |
| OJ-SH-112HM,000   |        | Ag         |       |            |          |            | Wash tight | 1461405-5   |
| OJ-SS-112HM,000   |        |            |       |            |          |            | Flux proof | 1419135-3   |
| OJ-SS-112HMF,000  |        |            |       |            |          | Class F    |            | 1461078-5   |
| OJE-SS-124HM,000  |        |            | 24VDC |            |          | Class E    |            | 6-1419128-4 |
| OJ-SS-124HM,000   |        |            |       |            |          |            |            | 1440007-2   |
| OJ-SS-124HM2,000  |        | AgSnO      |       |            |          |            |            | 1721538-7   |

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Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)

[www.lifeelectronics.ru](http://www.lifeelectronics.ru)