



|   |           |               |         |      |
|---|-----------|---------------|---------|------|
| Non repetitive surge peak on-state current (full cycle , $t_p=20ms$ ) | JOCSR23BM | $I_{TSM}$     | 3       | A    |
|   | JOCSR26BM |               | 6       |      |
|   | JOCSR29BM |               | 9       |      |
|   | JOCSR2 BM |               | 12      |      |
| junction to case (AC)   |           | $R_{th(j-c)}$ | 40      | /W   |
| Isolation Voltage   |           | $V_{iso}$     | 5000    | Vrms |
| Operating Temperature   |           | $T_{opr}$     | -40~110 |      |
| Junction Temperature  |           | $T_j$         | 125     |      |
| Storage Temperature   |           | $T_{stg}$     | -40~125 |      |
| Soldering Temperature   |           | $T_{sol}$     | 260     |      |
| Peak pulse voltage ( $T_j=25$ ; non-repetitive,off-state)             |           | $V_{pp}$      | 3       | kV   |

**NOTE1:** 100 $\mu s$  pulse, 100Hz frequency

**NOTE2:** AC for 1minute, R.H.=40~60%

**ELECTRICAL CHARACTERISTICS** (Temperature=25°C)

| Parameter                                  |  | Symbol    | Condition  | Min.          | Typ. | Max. | Unit       |   |
|--|--|-----------|--|---------------|------|------|------------|---|
| Input                                      | Forward Voltage                          | $V_F$     | $I_F=10mA$                                       | -             | 1.2  | 1.5  | V          |   |
|  | Reverse Current                          | $I_R$     | $V_R=6V$   | -             | -    | 1    | $\mu A$    |   |
| Output                                     | Peak Off-state Current, Either Direction | $I_{DRM}$ | $V_{DRM}/V_{RRM}=600V, I_F=0$                    | -             | -    | 5    | $\mu A$    |   |
|  |  | $I_{RRM}$ |  | -             | -    | 5    |            |   |
|  | Peak On-state Voltage, Either Direction  | JOCSR23BM | $V_{TM}$   | $I_{TM}=0.3A$ | -    | -    | 1.2        | V |
|  |  | JOCSR26BM |  | $I_{TM}=0.6A$ | -    | -    | 1.4        |   |
|  |  | JOCSR29BM |  | $I_{TM}=0.9A$ | -    | -    | 1.45       |   |
|  |  | JOCSR2 BM |  | $I_{TM}=1.2A$ | -    | -    | 1.5        |   |
| Critical Rate of Rise of Off-state voltage |  | $dV/dt$   | $V_D=400V$ , Gate Open<br>$I_F=0$ ,<br>$T_j=125$ | 1000          | -    | -    | V/ $\mu s$ |   |

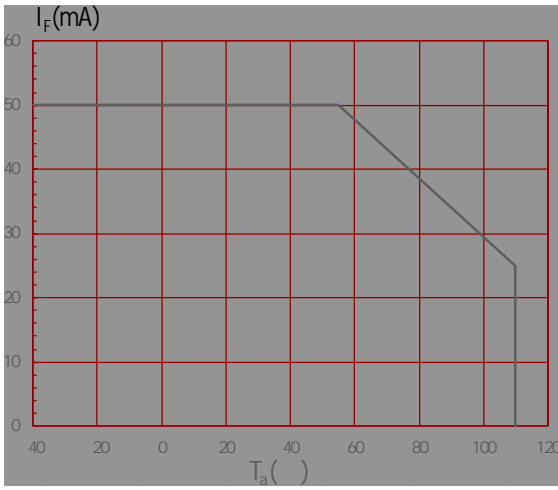
Critical Rate of Rise of Commutating Voltage



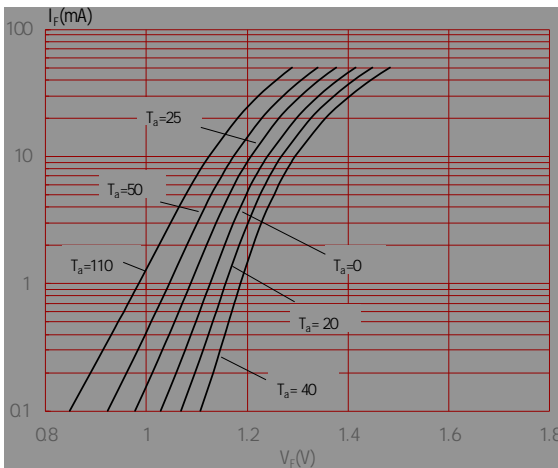
|  |                      |           |                               |           |           |    |    |
|--|----------------------|-----------|-------------------------------|-----------|-----------|----|----|
|  | Holding Current      | $I_H$     | $V_D=6V$                      | -         | -         | 25 | mA |
|  | Isolation Resistance | $R_{ISO}$ | DC500V<br>40~60%R.H.<br>$V_D$ | $10^{12}$ | $10^{14}$ | -  |    |
|  | Response Time        | $t_{on}$  |                               |           |           |    |    |

**Characteristics Curves**

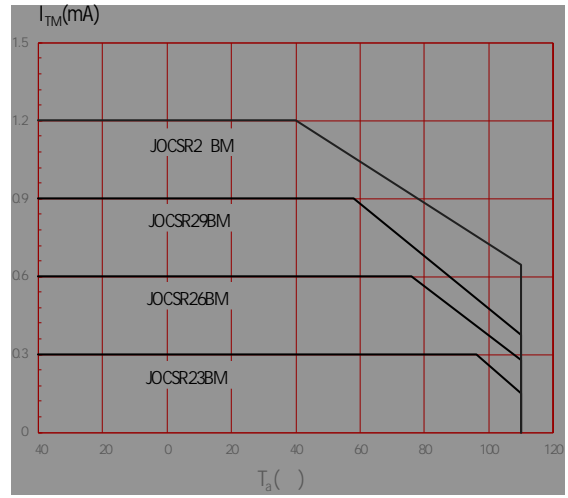
**FIG.1:** Max. Allowable LED Forward Current vs. Ambient Temperature



**FIG.3:** Forward Current vs. Forward Voltage



**FIG.2:** On-state Terminal Current vs. Ambient Temperature



**FIG.4:** Forward Voltage vs. Ambient Temperature

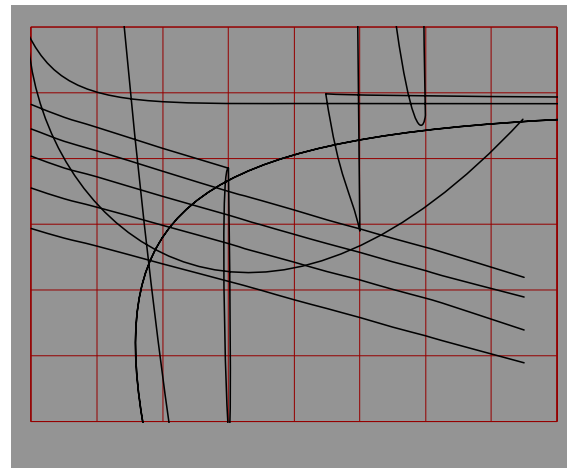


FIG.7: On-state characteristics

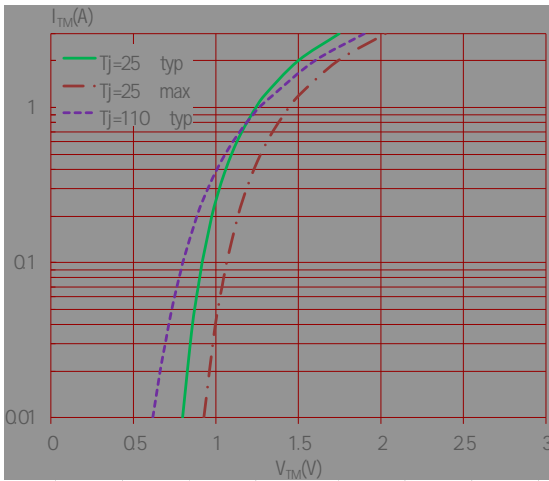
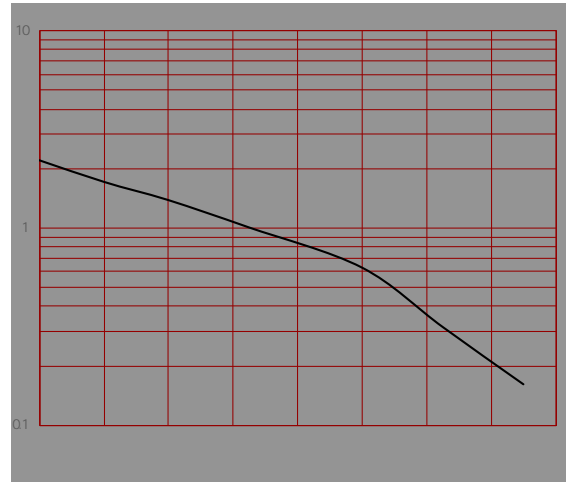


FIG.8: Normalized Holding Current vs. Ambient Temperature



TEST CIRCUITS

FIG.10: Test Circuits of Turn On Time

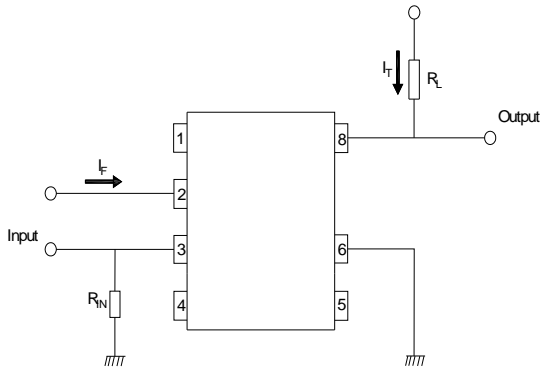
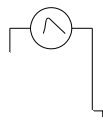


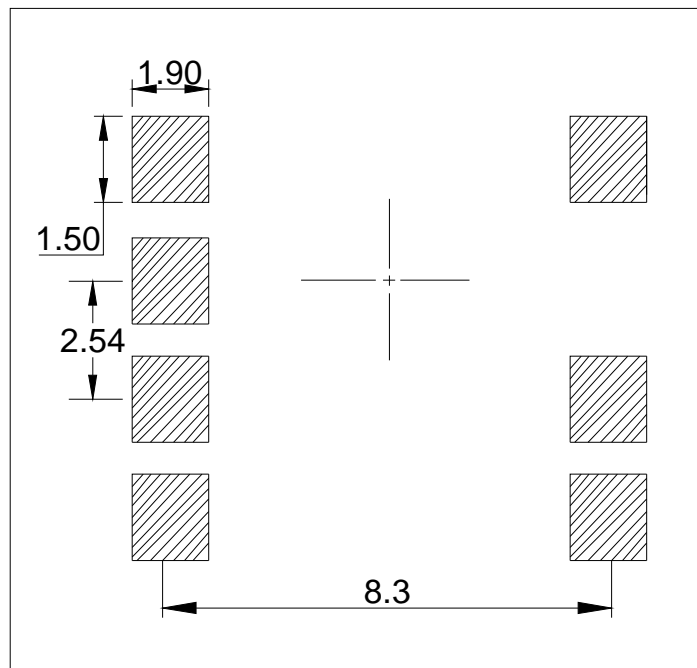
FIG.11: Waveforms of Turn On Time

FIG.12: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



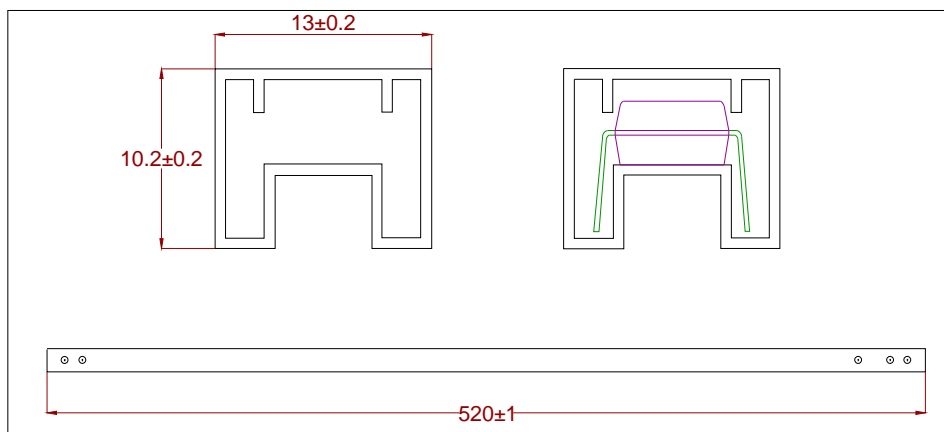


RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)



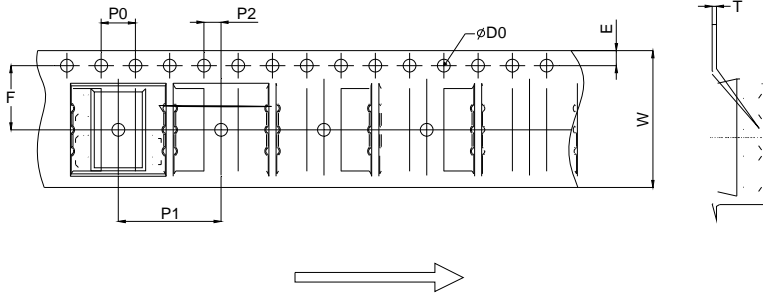
TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP



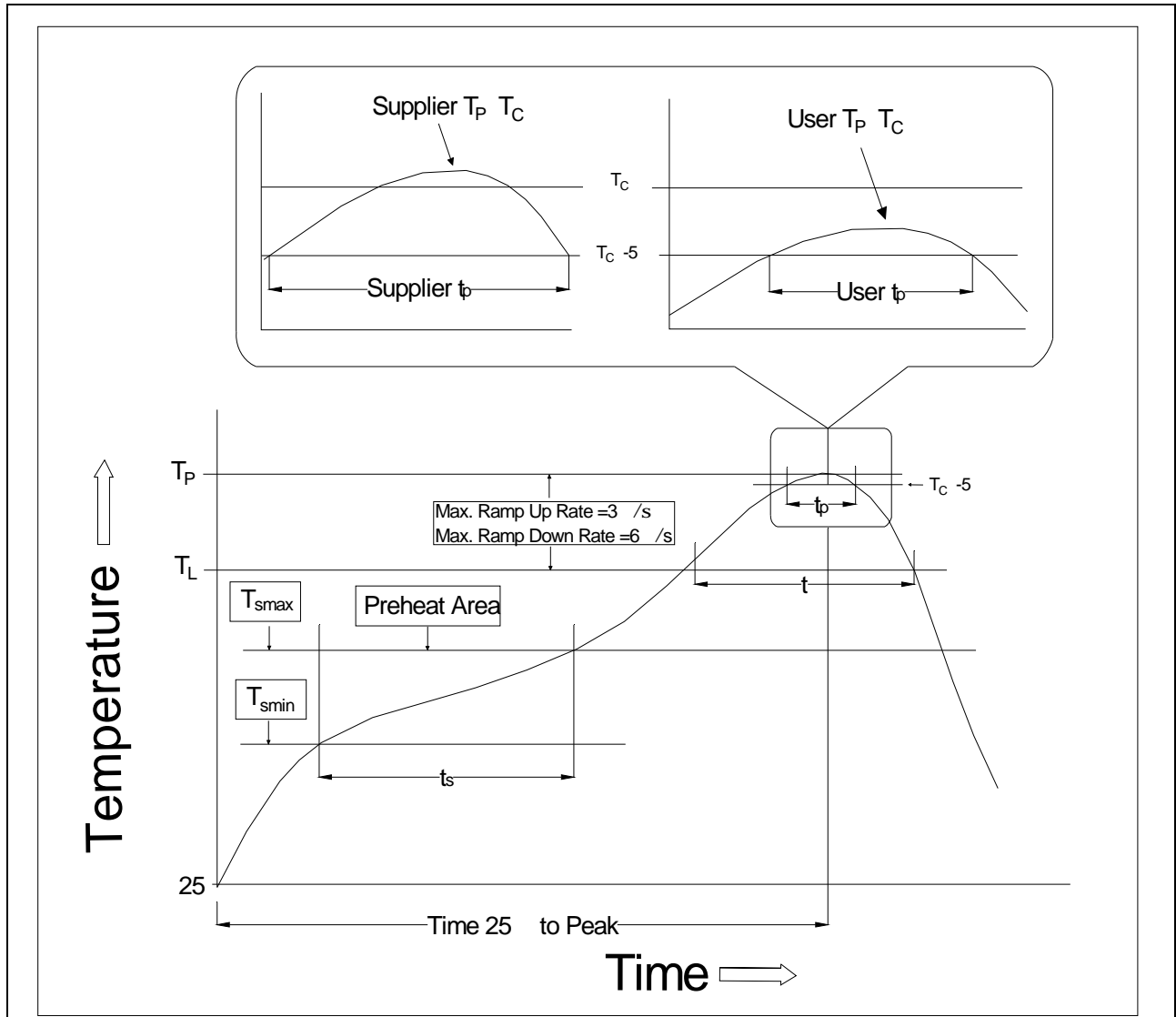
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S/L



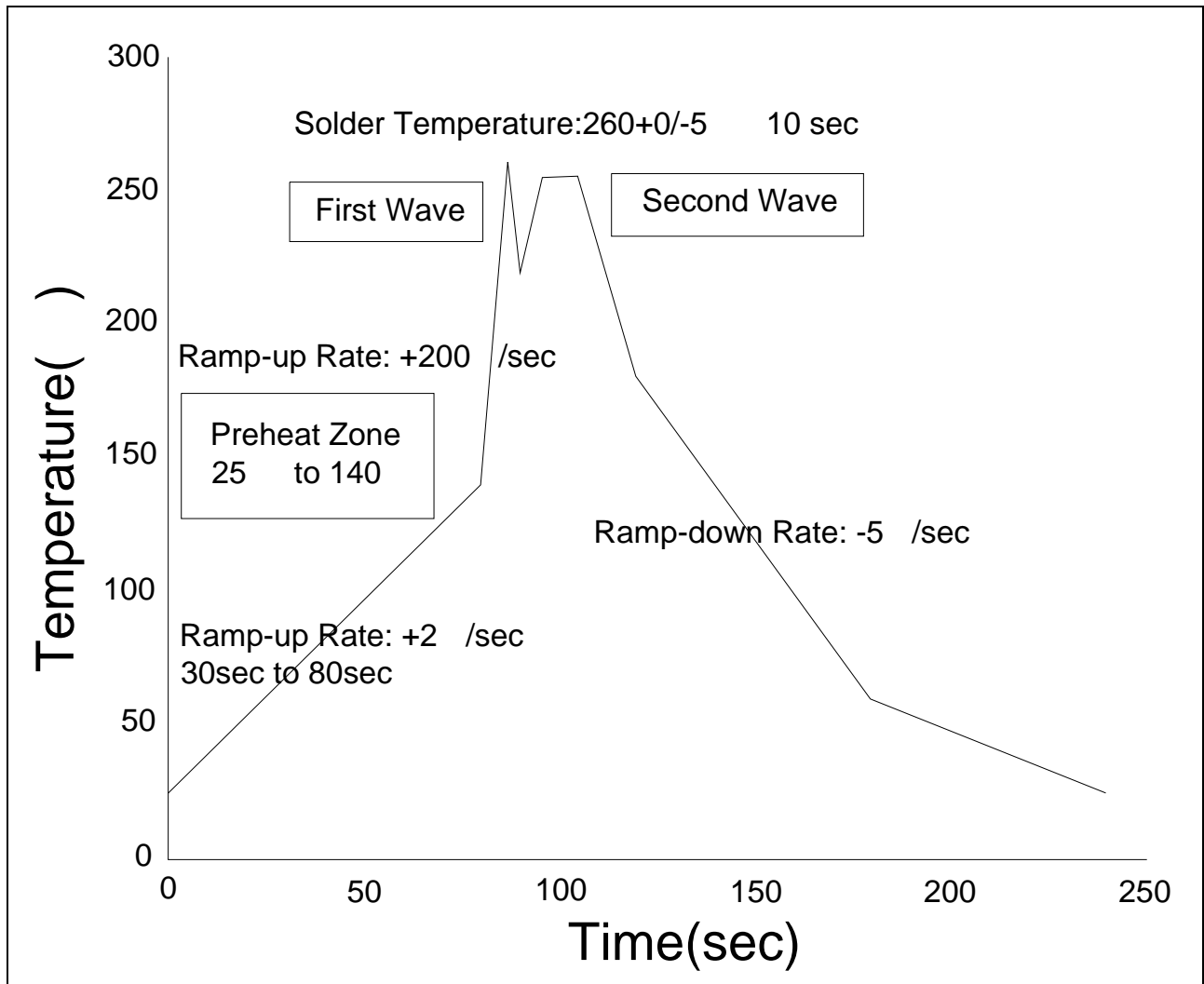
| Ref. | Dimensions  |       |       |        |       |       |
|------|-------------|-------|-------|--------|-------|-------|
|      | Millimeters |       |       | Inches |       |       |
|      | Min.        | Typ.  | Max.  | Min.   | Typ.  | Max.  |
| D0   |             | 1.50  | 1.60  |        | 0.059 | 0.063 |
| P0   | 3.90        | 4.00  | 4.10  | 0.154  | 0.157 | 0.161 |
| P1   | 11.90       | 12.00 | 12.10 | 0.469  | 0.472 | 0.476 |
| P2   | 1.90        | 2.00  | 2.10  | 0.075  | 0.079 | 0.083 |
| E    | 1.65        | 1.75  | 1.85  | 0.065  | 0.069 | 0.073 |
| F    | 7.40        | 7.50  | 7.60  | 0.291  | 0.295 | 0.299 |
| T    | 0.35        | 0.40  | 0.45  | 0.014  | 0.016 | 0.018 |
| W    | 15.90       | 16.00 | 16.20 | 0.626  | 0.630 | 0.638 |

REFLOW INFORMATION



|   |                |
|---|----------------|
| Temperature Min. (T <sub>smin</sub> )                                 | 150            |
| Temperature Max. (T <sub>smax</sub> )                                 | 200            |
| Time (t <sub>s</sub> ) from (T <sub>smin</sub> to T <sub>smax</sub> ) | 60-120 seconds |
| Ramp-up Rate (t <sub>L</sub> to t <sub>P</sub> )                      | 3 /second max. |
| Liquidous Temperature (T <sub>L</sub> )                               | 217            |
| Time (t <sub>L</sub> ) Maintained Above (T <sub>L</sub> )             | 60-120 seconds |
| Peak Body Package Temperature   | 260 +0 /-5     |
| Time (t <sub>P</sub> ) within 5 of 260                                | 10 seconds     |
| Ramp-down Rate (T <sub>P</sub> to T <sub>L</sub> )                    | 6 /second max. |

WAVE SOLDERING



HAND SOLDERING BY SOLDERING IRON

|                       |             |
|-----------------------|-------------|
| Soldering Temperature | $360 \pm 5$ |
| Soldering Time        | 3s max.     |

Note:

1. Reflow soldering is recommended at the temperatures and times shown, no more than three times.