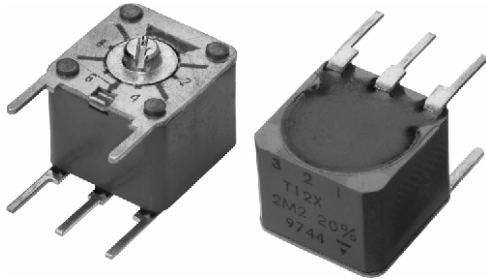


Fully Sealed Container 12 mm Square or Round Cermet Trimmer


FEATURES

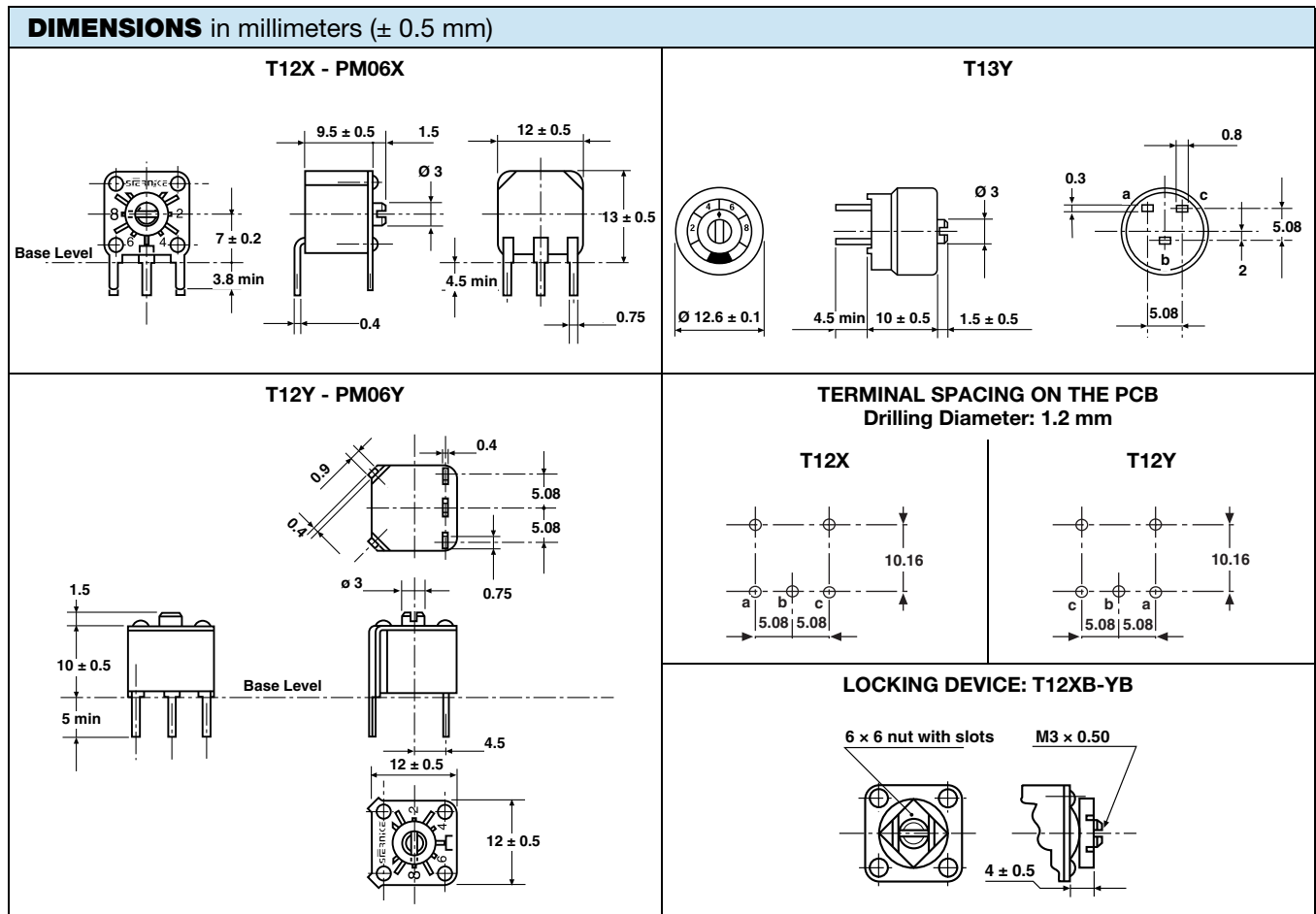
- Military and professional grade
- High power rating (1 W at 70 °C)
- Tests according to CECC 41000 or IEC 60393-1
- High stability (1 % typical)
- Mechanical strength
- Hermetic sealing of the case
- Compliant to RoHS Directive 2002/95/EC


**RoHS
COMPLIANT**

The Vishay SFERNICE trimming potentiometers T12 and T13 fully meet the requirements of CECC 41 100.

The use of a cermet track combined with sealing of the case provides unique characteristics and performances.

T12 and T13 have been specially designed for mounting on printed circuit board.



| ELECTRICAL SPECIFICATIONS | | |
|--|--|----------------|
| Resistive element | Cermet | |
| Electrical travel | 270° ± 10° | |
| Resistance range | 22 Ω to 10 MΩ | |
| Standard series E3 | 1 - 2.2 - 4.7 and on request 1 - 2 - 5 | |
| Tolerance | standard | ± 20 % |
| | on request | ± 10 %, ± 5 % |
| Power rating | linear | 1 W at 70 °C |
| | logarithmic | 0.5 W at 70 °C |
| Power rating chart | | |
| Circuit diagram | | |
| Resistance laws | | |
| Temperature coefficient | See Standard Resistance Element Table | |
| Limiting element voltage (linear law) | 350 V | |
| Contact resistance variation | 3 % R _n or 3 Ω | |
| End resistance (typical) | 1 Ω | |
| Dielectric strength (RMS) | 1000 V | |
| Insulation resistance (500 V _{DC}) | 10 ⁶ MΩ | |



| MECHANICAL SPECIFICATIONS | |
|----------------------------------|-------------------|
| Mechanical travel | 300° ± 5° |
| Operating torque (max. Ncm) | 3 |
| End stop torque (max. Ncm) | 15 |
| Unit weight (max. g) | 4.7 |
| Terminals | Pure Sn (code e3) |

| ENVIRONMENTAL SPECIFICATIONS | |
|-------------------------------------|----------------------|
| Temperature range | - 55 °C to + 125 °C |
| Climatic category | 55/100/56 |
| Sealing | IP67 Fully sealed |

| PERFORMANCES | | | |
|--------------------------|--|--|--|
| TESTS | CONDITIONS | TYPICAL VALUES AND DRIFTS | |
| | | $\Delta R_T/R_T$ (%) | $\Delta R_{1-2}/R_{1-2}$ (%) |
| Load life | 1000 h at rated power 90'/30' - ambient temperature 70 °C | ± 1 % Contact res. variation: < 2 % Rn | ± 2 % |
| Climatic sequence | Phase A dry heat 100 °C Phase B damp heat Phase C cold - 55 °C Phase D damp heat 5 cycles | ± 0.5 % | ± 1 % |
| Long term damp heat | 56 days 40 °C, 93 % RH | ± 0.5 % Dielectric strength: 1000 V _{RMS} Insulation resistance: > 10 ⁴ MΩ | ± 1 % |
| Rapid temperature change | 5 cycles - 55 °C to + 125 °C | ± 0.5 % | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 1 % |
| Shock | 50 g at 11 ms 3 successive shocks in 3 directions | ± 0.1 % | ± 0.5 % |
| Vibration | 10 Hz to 55 Hz 0.75 mm or 10 g during 6 h | ± 0.1 % | $\Delta V_{1-2}/\Delta V_{1-3}$ ≤ ± 0.5 % |
| Rotational life | 200 cycles | ± 1 % Contact res. variation: < 2 % Rn | |

T12, T13

Vishay Sfernice

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STANDARD RESISTANCE ELEMENT DATA

| STANDARD RESISTANCE VALUES | LINEAR LAW | | | LOG LAWS | | | TYPICAL TCR - 55 °C to + 125 °C |
|----------------------------|---------------------|----------------------|----------------------------|---------------------|----------------------|----------------------------|------------------------------------|
| | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. CURRENT THROUGH WIPER | MAX. POWER AT 70 °C | MAX. WORKING VOLTAGE | MAX. CURRENT THROUGH WIPER | |
| Ω | W | V | mA | W | V | mA | ppm/°C |
| 22 | 1 | 4.69 | 213.2 | | | | ± 100 |
| 47 | 1 | 6.85 | 145.8 | | | | |
| 100 | 1 | 10 | 100 | | | | |
| 220 | 1 | 14.8 | 67.4 | | | | |
| 470 | 1 | 21.6 | 46.1 | | | | |
| 1K | 1 | 31.6 | 31.6 | 0.5 | 22.4 | 22.4 | |
| 2.2K | 1 | 46.9 | 21.3 | 0.5 | 33.2 | 15.1 | |
| 4.7K | 1 | 68.5 | 14.5 | 0.5 | 48.5 | 10.3 | |
| 10K | 1 | 100 | 10 | 0.5 | 79.7 | 7.07 | |
| 22K | 1 | 148.3 | 6.7 | 0.5 | 105 | 4.77 | |
| 47K | 1 | 216.7 | 4.6 | 0.5 | 153 | 3.26 | |
| 100K | 1 | 316.2 | 3.16 | 0.5 | 224 | 2.24 | |
| 220K | 0.56 | 350 | 1.59 | 0.5 | 332 | 1.51 | |
| 470K | 0.26 | 350 | 0.75 | 0.26 | 350 | 0.74 | |
| 1M | 0.12 | 350 | 0.35 | 0.12 | 350 | 0.35 | |
| 2.2M | 0.05 | 350 | 0.16 | | | | |
| 4.7M | 0.02 | 350 | 0.07 | | | | |
| 10M | 0.01 | 350 | 0.03 | | | | |

MARKING

- Vishay trademark
- Model
- Ohmic value (in Ω , k Ω , M Ω)
- Tolerance (in %)
- Manufacturing date
- Marking of terminal: 1, 2, 3

PACKAGING

- For T13Y: In plastic box of 50 pieces, code B25 (BL50)
- For T12Y, T12X: In carton box of 50 pieces, code B25 (BO50)



Fully Sealed Container 12 mm Square or Round Cermet Trimmer

Vishay Sfernice

| ORDERING INFORMATION FOR T12 (part number) | | | | | | | | | | | | | | | | |
|--|--------|----------------------------------|---|-----------------------------------|---|---|--|-------------|---------------------|---|--|---|--|--|--|--|
| T | 1 | 2 | X | B | 2 | 2 | 3 | M | A | B | 2 | 5 | | | | |
| MODEL | STYLE | OPTION | | OHMIC VALUE | | | TOLERANCE | TAPER | PACKAGING CODE | | SPECIAL NUMBER | | | | | |
| T12 | X Y | B = Locking shaft 0 = Without | | From 22 Ω to 10 MΩ 103 = 10 kΩ | | | M = 20 % On request: K = 10 % J = 5 % | A L F | B25 = Box 50 pieces | | (If applicable) Given by Vishay for custom design | | | | | |

| DESCRIPTION (for information only) | | | | | | | | | | |
|------------------------------------|-------|---------|-------|-----------|-------|---------|-----------|---------|-------|-------------|
| T12 | X | B | 22K | 20 % | A | | BO | | | e3 |
| MODEL | STYLE | SPECIAL | VALUE | TOLERANCE | TAPER | SPECIAL | PACKAGING | SPECIAL | SHAFT | LEAD FINISH |

| ORDERING INFORMATION FOR T13 (part number) | | | | | | | | | | | | | | | |
|--|-------|-----------------------------------|---|---|-------------------------------------|-------------|---------------------|---|--|---|---|--|--|--|--|
| T | 1 | 3 | Y | 1 | 0 | 5 | M | A | B | 2 | 5 | | | | |
| MODEL | STYLE | OHMIC VALUE | | | TOLERANCE | TAPER | PACKAGING CODE | | SPECIAL NUMBER | | | | | | |
| T13 | Y | From 22 Ω to 10 MΩ 103 = 10 kΩ | | | M = 20 % On request: K = 10 % | A L F | B25 = Box 50 pieces | | (If applicable) Given by Vishay for custom design | | | | | | |

| DESCRIPTION (for information only) | | | | | | | | | | |
|------------------------------------|-------|-------|-----------|-------|---------|-----------|-------------|--|--|--|
| T13 | Y | 1M | 20 % | A | | BL50 | e3 | | | |
| MODEL | STYLE | VALUE | TOLERANCE | TAPER | SPECIAL | PACKAGING | LEAD FINISH | | | |



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