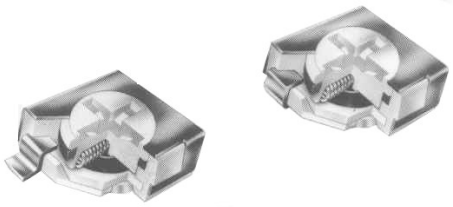
# Surface Mount Miniature Trimmers
# Single Turn Cermet Sealed



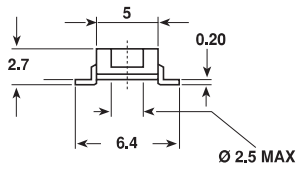
The TS53 trimming potentiometer has been designed for surface mount applications and offers volumetric efficiency (5 x 5 x 2.7 mm) with high performance and stability. The TS53 design is suitable for both manual or automatic operation, and can withstand waves,vapour phase and reflow soldering techniques.

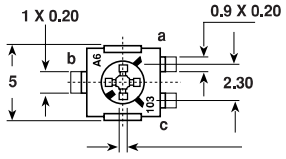
## FEATURES

- 0.20 Watt at 85°C
- GAM T1
- For PCB version see T53Y series
- Excellent stability
- Wide ohmic range
- Low temperature coefficient
- Low contact resistance variation
- Small size for optimum packing density

## DIMENSIONS in millimeters

### TS53YL

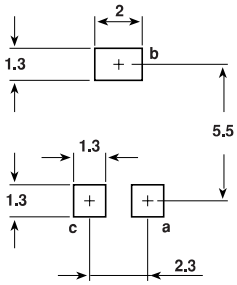


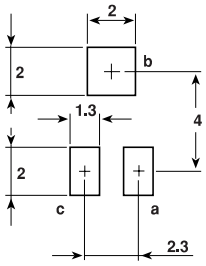

cruciform screwdriver slot
ø2.5, width 0.5
deep: 0.55
max deep (center): 0.7

### RECOMMENDED SOLDERING AREAS

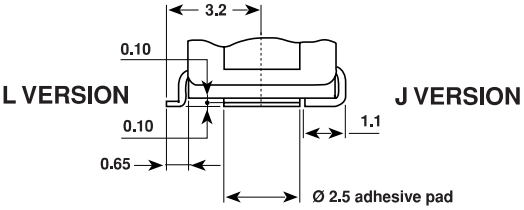
#### TS53YL



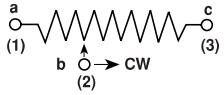

#### TS53YJ



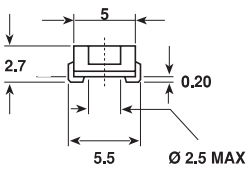

### ADHESIVE PAD (detail)

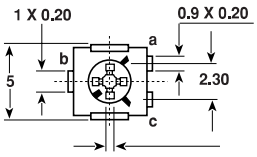



### CIRCUIT DIAGRAM




### TS53YJ




cruciform screwdriver slot
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For technical questions, contact sfer@vishay.com

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| ELECTRICAL SPECIFICATIONS | | |
|---|---|---|
| **Resistive Element** | | Cermet |
| **Electrical Travel** | | 220° ± 15° |
| **Resistance Range** | | 10Ω to 1MΩ |
| **Standard Series** | | 1 - 2 - 5 |
| **Tolerance Standard** | | ± 20% |
| **Power Rating** | **Linear** | 0.25W at 70°C |
| | **Logarithmic** | not applicable |
| **Temperature Coefficient** | | See Standard Resistance Element Table |
| **Limiting Element Voltage (Linear Law)** | | 200V |
| **Contact Resistance Variation** | | 1% or 3Ω |
| **End Resistance (Typical)** | | 0.1% or 3Ω |
| **Dielectric Strength (RMS)** | | 1000V |
| **Insulation Resistance** | | $10^6$MΩ |

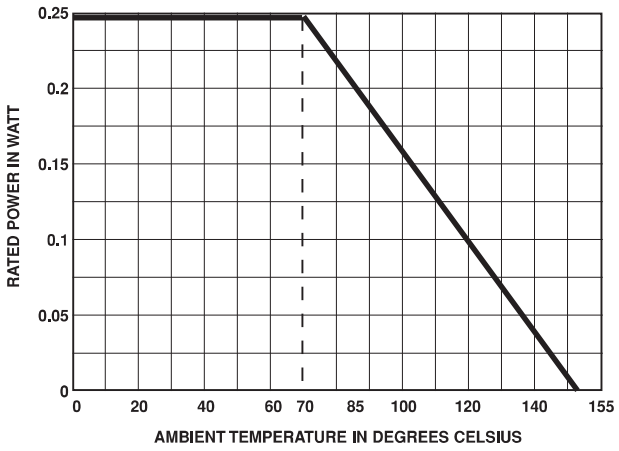
## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| **Mechanical Travel** | 270° ±10° |
| **Operating Torque (max. Ncm)** | 1.5 |
| **End Stop Torque (max. Ncm)** | 3.5 |
| **Unit Weight (max. g)** | 0.15 |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| **Temperature Range** | – 55°C + 125°C |
| **Climatic Category** | 55/125/56 |
| **Sealing** | sealed container<br>solder immersion<br>IP67 |

## POWER RATING CHART




## PERFORMANCE

| TESTS | CONDITIONS | TYPICAL VALUES AND DRIFTS $\frac{\Delta RT}{RT}$ (%) | $\frac{\Delta R_{1-2}}{R_{1-2}}$ (%) |
|---|---|---|---|
| **Load Life** | 1000 hours at rated power<br>90'/30' - ambient temperature + 85°C | ± 2% | ± 3 %<br>Contact resistance variation : ΔR < 1% Rn |
| **Moisture Resistance** | MIL STD 202 Method 106<br>10 cycles of 24 hours constituted<br>with damp heat - cold - vibration | ± 2 %<br>Dielectric strength : 1000 V RMS<br>Insulation resistance : > $10^4$ MΩ | ± 3 % |
| **Long Term Damp Heat** | Temperature 40°C - RH 93 %<br>56 days | ± 2 %<br>Dielectric strength : 1000 V RMS<br>Insulation resistance : > $10^4$ MΩ | ± 3 % |
| **Thermal Shock** | - 55°C to + 125°C - 5 cycles | ± 1 % | $\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 2\%$ |
| **Rotational Life (Electrical and Mechanical)** | 100 cycles - rated power | ± 3 % | |
| **Shock** | MIL STD 202 Method 213/1<br>100 g - 6 ms<br>3 successive shocks in 3 directions | ± 1 % | $\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 1\%$ |
| **Vibration** | MIL STD 202 Method 204/D<br>20 g - 12 hours | ± 1 % | $\frac{\Delta V_{1-2}}{V_{1-3}} \leq \pm 1\%$ |

## STANDARD RESISTANCE ELEMENT DATA

| STANDARD RESISTANCE VALUES | LINEAR LAW | | | T.C. – 55°C + 125°C |
|---|---|---|---|---|
| | MAX. POWER AT 85°C | MAX. WORKING VOLTAGE | MAX. CUR. THROUGH ELEMENT | |
| Ω | W | V | mA | ppm/°C |
| 10 | 0.20 | 1.41 | 141 | |
| 20 | | 2 | 100 | 0 |
| 50 | | 3.16 | 63 | + 200 |
| 100 | | 4.47 | 45 | |
| 200 | | 6.32 | 32 | |
| 500 | | 10 | 20 | |
| 1k | | 14.1 | 14 | |
| 2k | | 20 | 10 | |
| 5k | | 31.6 | 6.3 | |
| 10k | | 44.7 | 4.5 | |
| 20k | | 63.2 | 3.2 | ± 100 |
| 50k | 0.2 | 100 | 2 | |
| 100k | 0.2 | 141 | 1.4 | |
| 200k | 0.2 | 200 | 1 | |
| 500k | 0.08 | 200 | 0.4 | |
| 1M | 0.04 | 200 | 0.2 | |

## MARKING

VISHAY trademark, ohmic value, manufacturing date.

The ohmic value is indicated by a 3 figure code, the first two are significant figures, the third one is the multiplier.

Example:
100 = 10Ω
101 = 100Ω
102 = 1000Ω
503 = 50000Ω

## SOLDERING RECOMMENDATION

Vapour phase: 215°C/20 to 40 seconds.

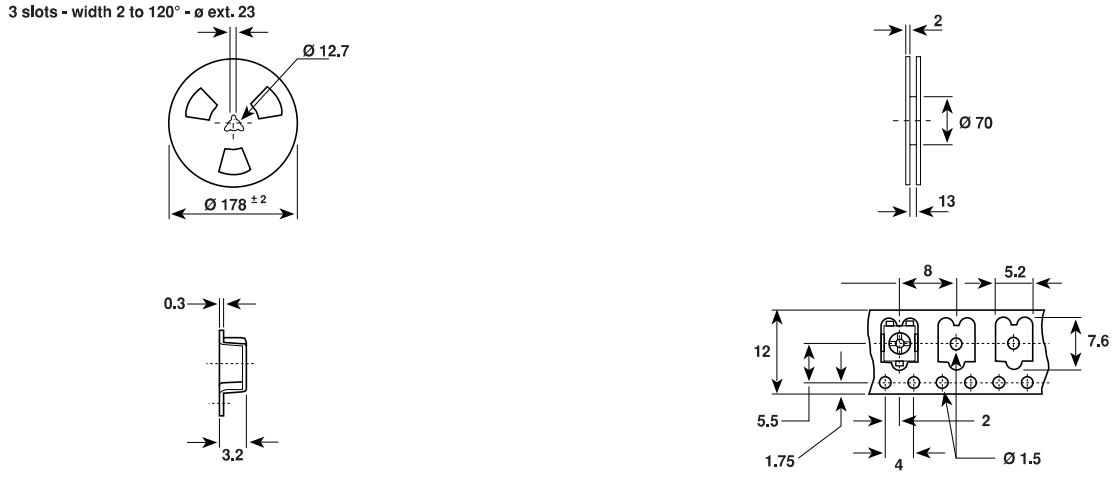
Reflow: 230°C/20 seconds.

Do not exceed peak: 260°C or with an IRON 40W: 3 seconds at 350°C

Soldering is possible by wave, reflow and vapor phase.

## PACKAGING

On tape and reel of 500 pieces, code TR and 2000 pieces, code TR1




Cover tape panel strength specifications EIA 481 A and CEI 60286-3.

## ORDERING INFORMATION

| TS53 | YL | 500KΩ | ± 20% | TR500 |
|---|---|---|---|---|
| SERIES | STYLE | OHMIC VALUE | TOLERANCE | PACKAGING |

TR500: Tape and reel 500 pcs.
TR2000: Tape and reel 2000 pcs.