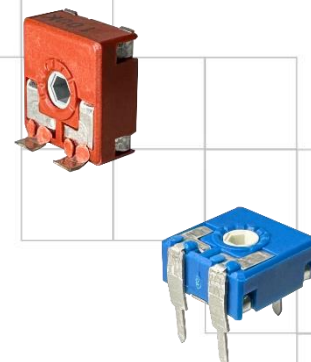




Series 09TR

9 mm Trimmer Potentiometer

- Terminals: tinned brass or tinned steel.
- Flexible gull-wing / through hole / "J" bend terminal configurations
- Various rotor types and with optional shaft & Wheel configurations
- IP 54 according to IEC 60529



Description

9 mm carbon potentiometers with plastic housing. Plastic materials can be self-extinguishable according to UL 94 V-0 upon request. This product is ideal for dimmers, volume/lighting regulation, timers and relays in industrial, electronics and automotive applications.

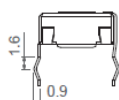
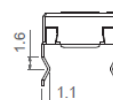
Ordering Information

Series	Rotor	Model	Taper	Resistance Value	Tol.	Terminal Material	Packg.	Special Request*	
09TR	01	A	A	101	A	P	R	Extra Features	Assembled Accessories
		Rotor type (Page 4)	Model type (Page 4-6)	Resistance Value	Tol.	Terminal Material	Packaging	Extra Features	Accessories
		01: C-type	A: H2.5	101:100Ω	A: ±5%	P: Tinned brass	Blank: Bulk	Life (standard 1,000 cycles)	Assembly (Shaft & Wheel)
		02: D-type	B: H3.8	201:200Ω	B: ±10%	S: Tinned steel (Only available for Through-hole models)	R: Tape&Reel	Track	Ref#
		03: E-type	C: HS3.8	...	C: ±20%			Detents	Color
		04: J-type	D: H5		D: ±30%			Housing	Flam
		05: K-type	E: HSMD		E: +50%/-30%			Rotor	Connect
		06: M-type	F: V7.5					Wiper	Operating temperature
		07: P-type	G: V10					Terminal Type: SNP or SNJ.	
		08: KA-type	H: VK10						
		09: MA-type	J: VR10						
		10: MT-type	K: VSMD						
		11: R-type							
		12: Y-type							
			Taper						
			A: Linear						
			B: Logarithmic						
			C: Antilogarithmic						

*Please contact CTS representatives for the special requests.

Standard Configuration:	Through-hole	SMD
Dimensions:	9mm	
Protection:	IP 54 (high level of protection against dust and also against water splashing) On request: Self-extinguishable, to meet UL 94 V-0	
Substrate:	Carbon technology	Carbon technology, special for high temperature
Color:	Blue housing + white rotor	Brown housing + grey rotor
Packaging:	Bulk or Tape & Reel	
Wiper position:	at 50% $\pm 15^\circ$	
Terminals: *	Straight, without crimping.	
Marking:	Resistive value marked on housing. Others on request.	

* By default, terminals are always straight. CTS can provide crimped terminals (with snap in, "SNP" or "SNJ") to better hold the component to the PCB during the soldering operation.

SNP

SNJ


Electrical Specifications

	Through-hole	SMD
Range of resistance values		
Lin (A)	$100\Omega \leq R_n \leq 5M\Omega$	$100\Omega \leq R_n \leq 1M\Omega$
Log (B) Antilog (C)	$1K\Omega \leq R_n \leq 2M2\Omega$	$1K\Omega \leq R_n \leq 1M\Omega$
Tolerance		
$R_n < 100\Omega$:	+50%, -30% (out of range)	-
$100\Omega \leq R_n \leq 100K\Omega$:	$\pm 20\%$	$\pm 30\%$
$100K\Omega < R_n \leq 1M\Omega$:	$\pm 20\%$	$\pm 40\%$
$1M\Omega < R_n \leq 5M\Omega$:	$\pm 30\%$	$\pm 50\%$
$R_n > 5M\Omega$:	+50%, -30% (out of range)	-
Variation laws	Lin (A), Log (B), Antilog (C). Other tapers available on request	
Residual Resistance	$R_n \leq 400\Omega \leq 2\Omega$; $R_n > 400\Omega$ $5 \cdot 10^{-3} \cdot R_n$	
CRV - Contact Resistance Variation (dynamic)	Lin (A) Electrical Angle $220^\circ \pm 20^\circ \leq 3\% R_n$. Other tapers, please inquire	
Max. Power Dissipation	at 50°C 0.15W Lin (A) 0.10W Log (B) Antilog (C)	
Max. Voltage	200VDC Lin (A) 150VDC Log (B) Antilog (C)	
Operating temperature	-25°C ... +70°C (+85°C on request)	
Temperature Coefficient		
$100\Omega \leq R_n \leq 10K\Omega$	+200 / -300 ppm	+200 / -500 ppm
$10K\Omega \leq R_n \leq 5M\Omega$	+200 / -500 ppm	+200 / -1000 ppm

* Out of range ohm values and tolerances are available on request.

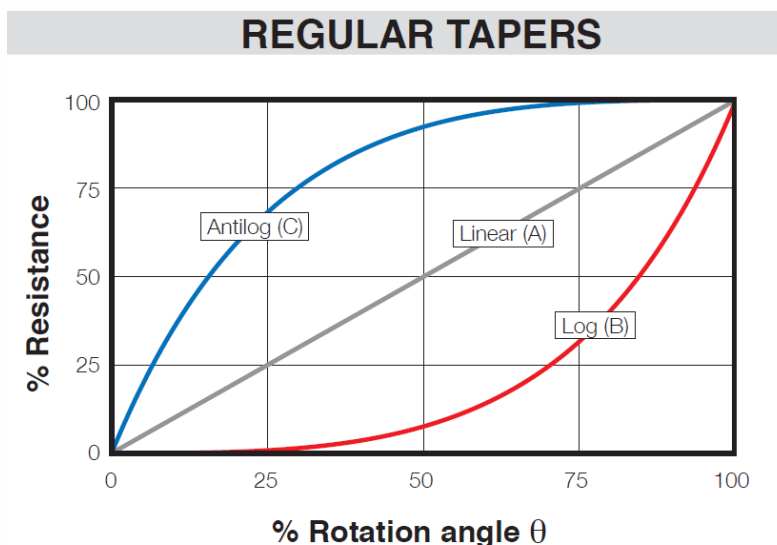
Mechanical and Environmental

Actuation Life	1,000 cycles. On Request: Long Life
Angle of rotation (mechanical)	240° ± 5°
Angle of rotation (electrical)	220° ± 20°
Wiper standard delivery position	50% ± 15°
Max. stop torque	5 Ncm
Max. push/pull on rotor	40 N
Wiper Torque	< 2Ncm
	Potentiometer with detents: < 2.5 Ncm

Recommended Soldering Conditions (Lead free, RoHS compliant)

Manual soldering	Reflow soldering SMD	Flow (wave) soldering
Soldering tools of 20W max.	Preheating temperature: Max 150°C; 60-90 s	Recommended Alloy: SnAgCu
Maximum temperature of soldering tools: 280°C	Temperature Ramp-up: 2-3°C / s.	Preheating stage: Max 100°C; 30-60 s.
Time: 3 s. max.	Over 220°C;<40 s.	Temperature Ramp-up:1.2-2.5°C/s.
	Solder temperature: 240°C for 5 ± 1 s.	Max. wave temp.: 260°C for 4s., (245°C recommended)
		Time within +0°-10°C of peak: 10s.
		Cooling rate: 5°C/s.

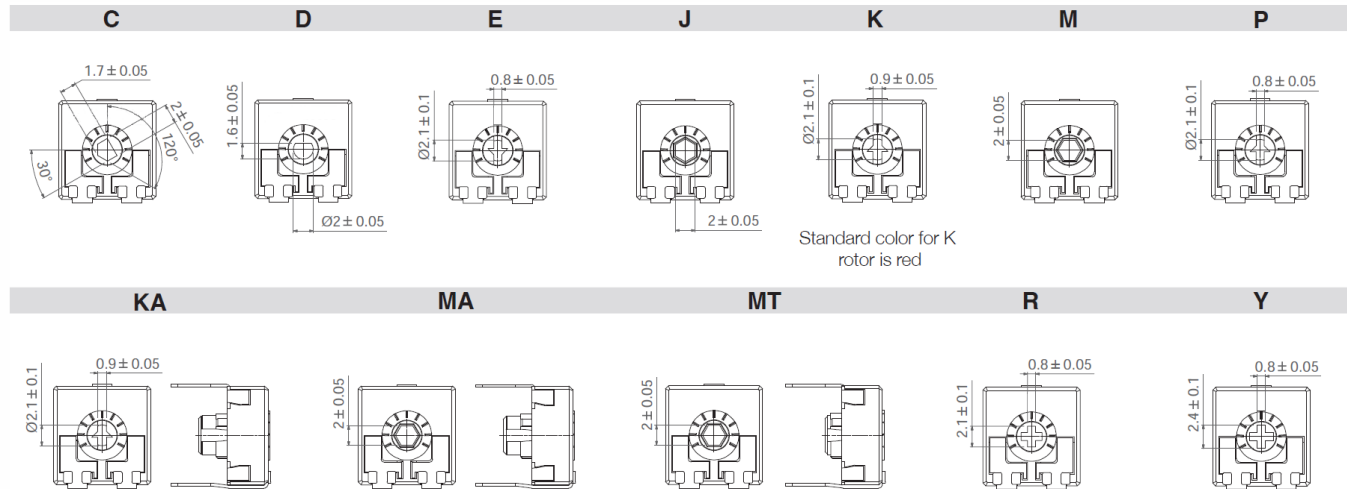
Tapers



Mechanical Specifications

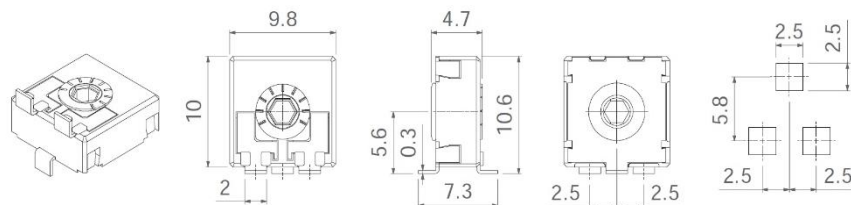
Rotor

Rotors are drawn in their standard positioning, 50% of rotation. Alternative delivery positioning can be requested. Accessories in this catalogue are designed for the M rotor, unless otherwise stated.



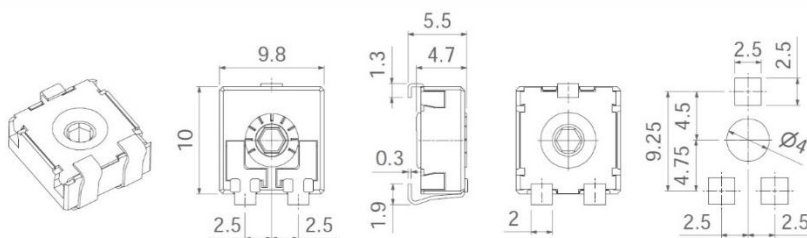
Surface Mount Gull wing Terminal

HSMD

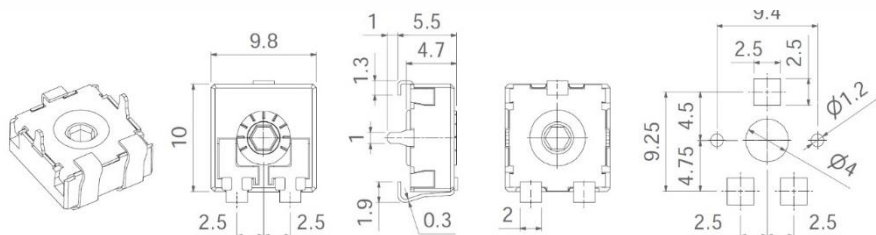


Surface Mount J-bend Terminal

VSMD

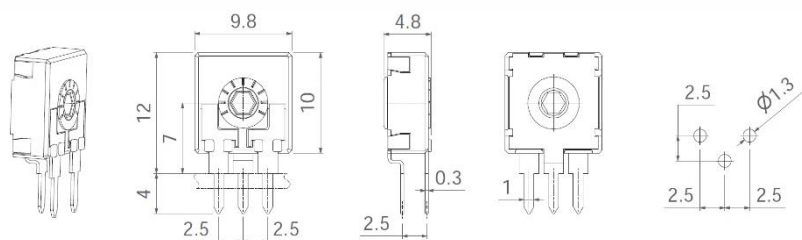


VSMD...CY

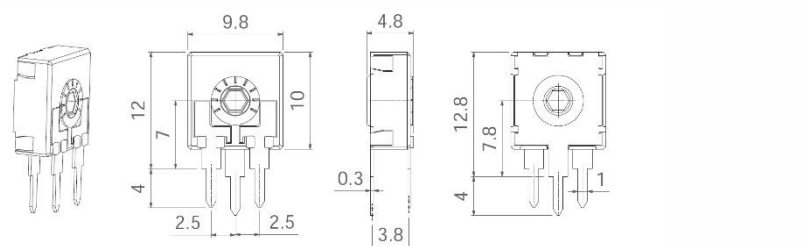


Through-Hole Terminal

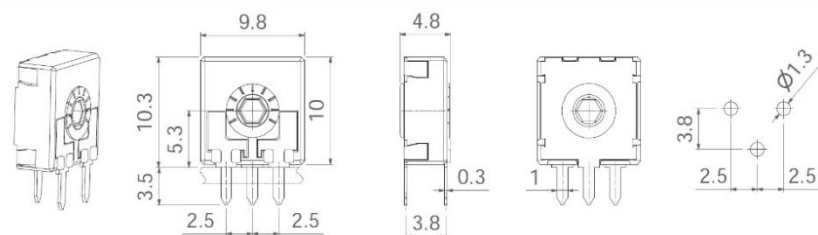
H2.5



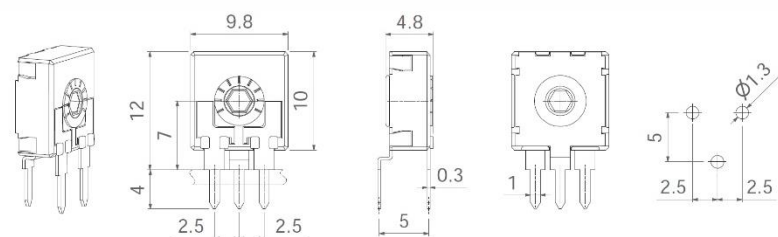
H3.8



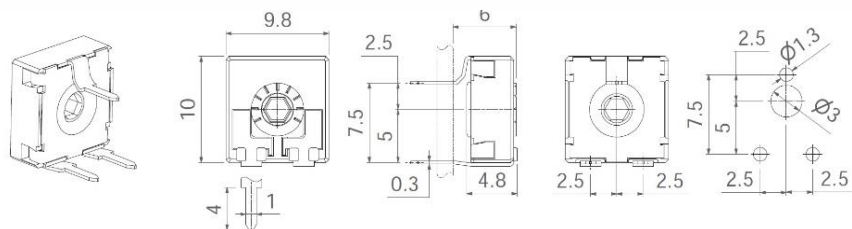
HS3.8



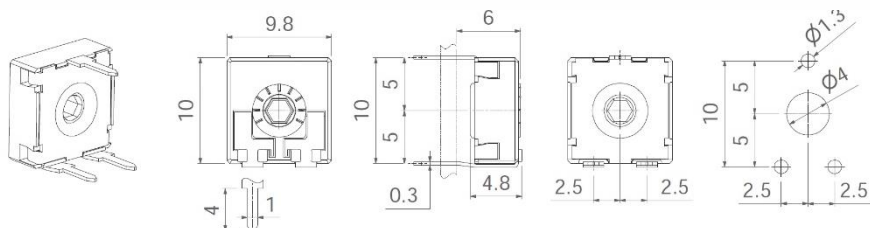
H5



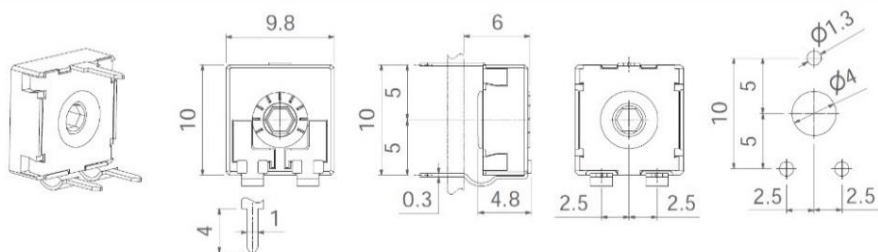
V7.5



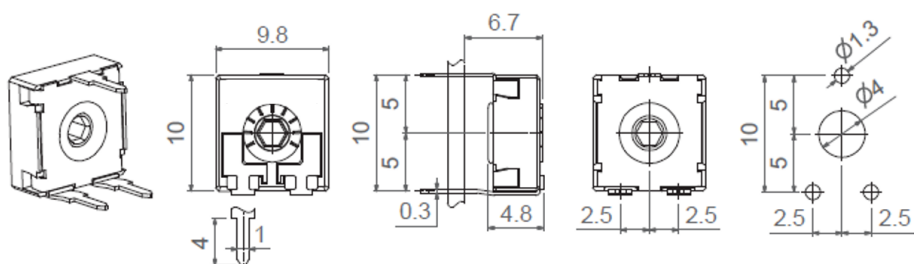
V10



VR10



VK10



Shaft

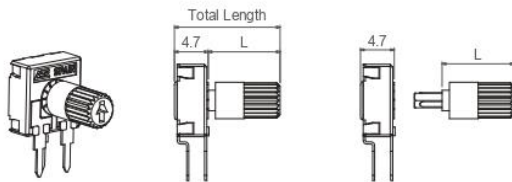
Shafts are available in different colors and with self-extinguishable property, according to UL 94 V-0, under request. CTS can study special shaft designs.

Shafts can be sold separately or delivered already mounted on the potentiometer at CTS.

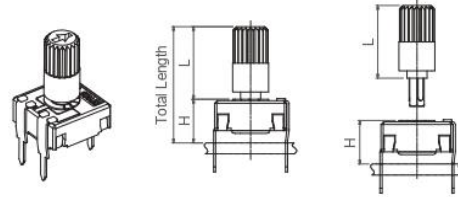
Unless otherwise stated, the arrow in the shafts is in line with the wiper and it points to 50% when assembled with M rotors.

When a shaft is mounted, the distance from the top of the potentiometer to the top of the shaft is marked with "L" in the table below, as shown in the drawings:

H potentiometer + shaft

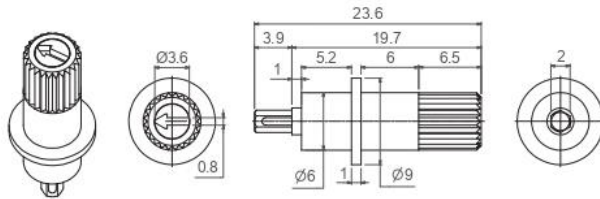


V potentiometer + shaft

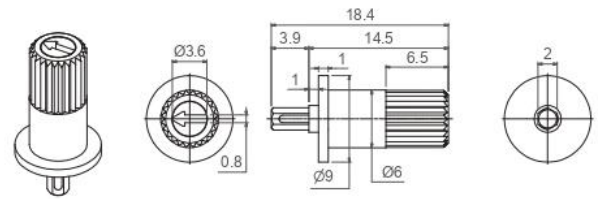


Shaft	9071	9067	9072	9074	9054	9004	9005	9064	9055	9070	9076	9053	9018	9039	9048	9066	9009	9059	9063	9010	9051	9006	9019	9073	9020	9047
L Dimension	3.5	5.5	6.5	9.3	9.5	10	10	10	10.8	11.9	12	12.1	12.8	12.8	12.8	12.8	14.5	14.5	14.5	15	15	19.7	19.9	25.5	25.9	29.8

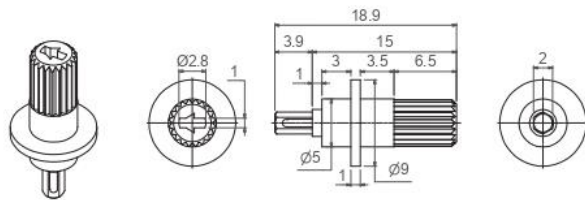
9006



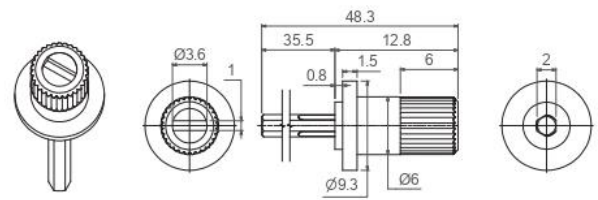
9009



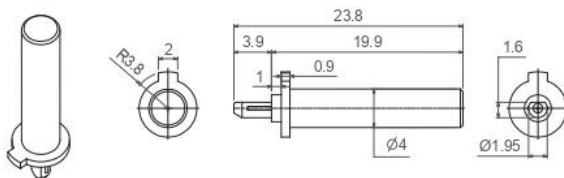
9010



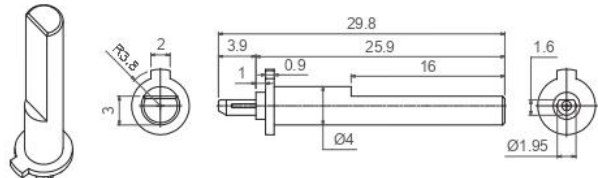
9018 (for 6 ganged potentiometers)



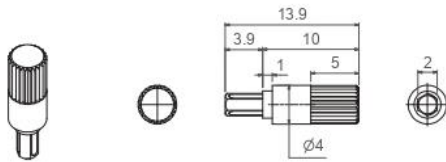
9019 (Designed for D rotor)



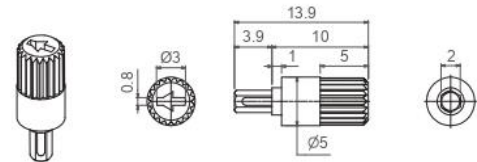
9020 (Designed for D rotor)



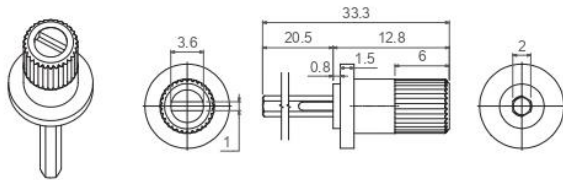
9004



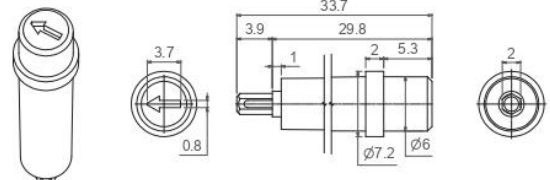
9005



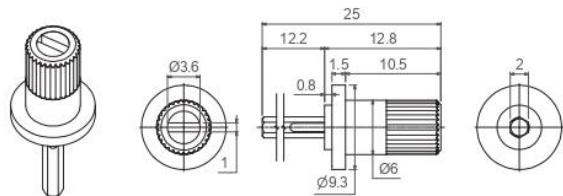
9039 (for 4 ganged potentiometers)



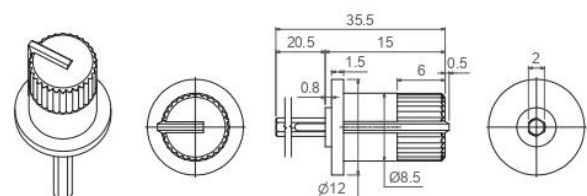
9047



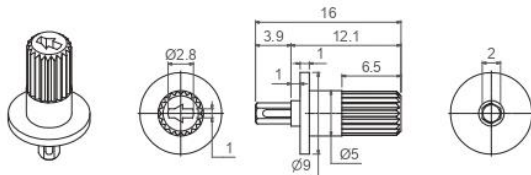
9048 (for 2 ganged potentiometers)



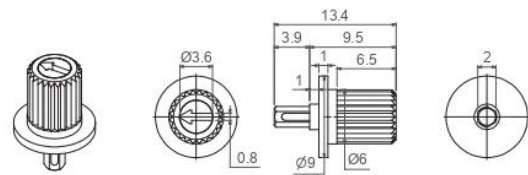
9051 (for 4 ganged potentiometers)



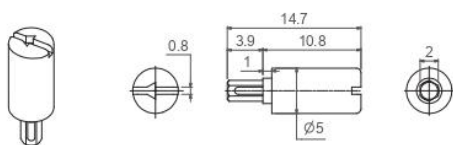
9053



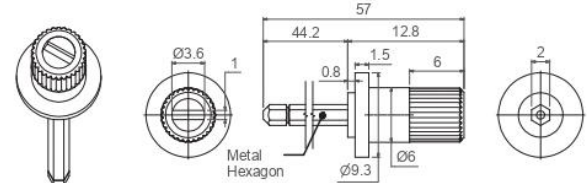
9054



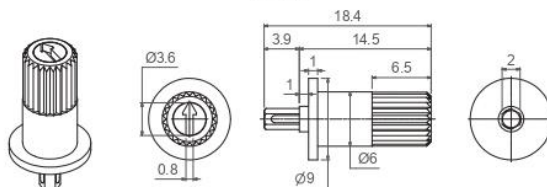
9055



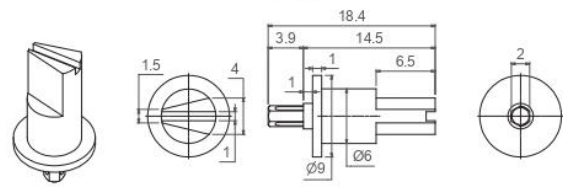
9056 (for 8 ganged potentiometers)



9059



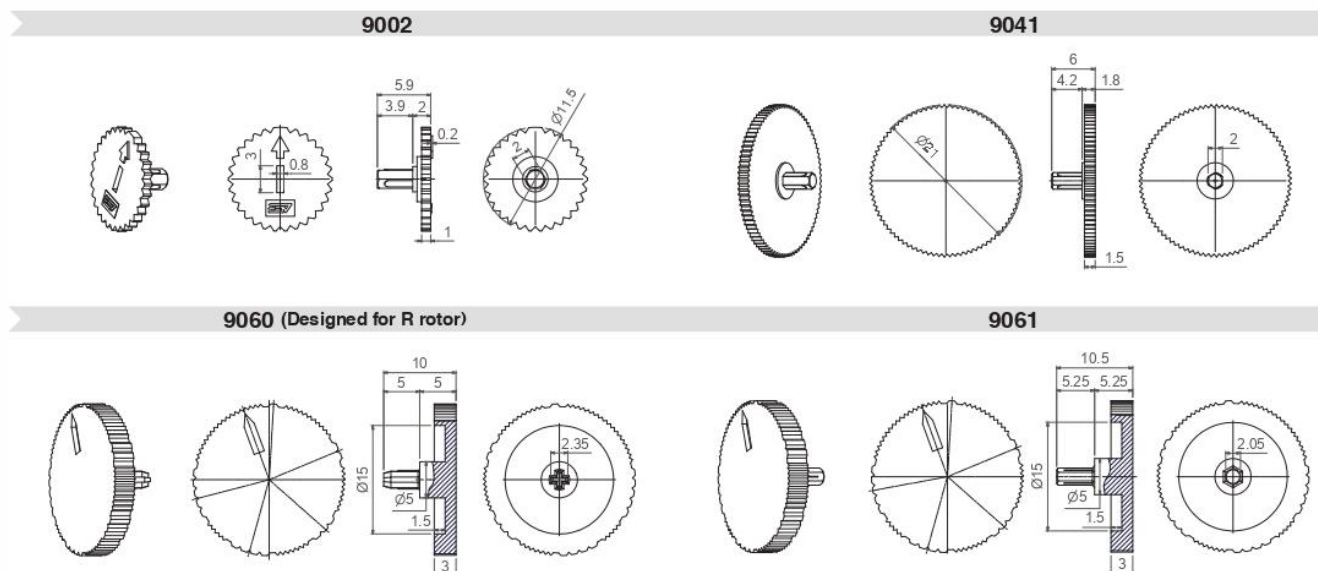
9063



The arrow is in line with the wiper when potentiometer has rotor J (with M rotor, there is a 30° difference).

Wheel

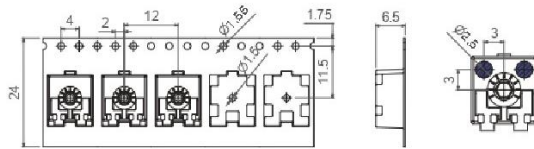
Thumbwheels are available in different colors and with self-extinguishable property according to UL 94 V-0, under request. Thumbwheels can be mounted on the potentiometers at CTS or sold separately. CTS can study special thumbwheel designs.



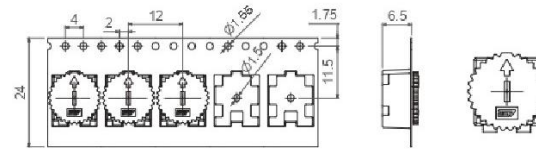
Packaging

Bulk packaging:	With shaft or thumbwheel inserted	Pieces per box
H2,5 - H3,8 - HS3,8 - H5 HSMD - V7,5 - V10 VK10 - VR10 - VSMD	None, only potentiometers.	1000
	9002	750
	9004, 9005, 9006, 9009, 9010, 9018, 9039, 9041, 9047, 9048, 9051, 9053, 9055, 9056, 9059, 9060, 9061, 9063, 9064, 9067, 9070.	450
	9054	500
Tape & Reel packaging:	With thumbwheel inserted?	13" Reel (Standard), with 24mm width tape
VSMD	None, only potentiometers.	900 pcs per reel, 12mm step between cavities.
	9002	700 pcs per reel, 12mm step between cavities.
VSMD...CY	None, only potentiometers.	750 pcs per reel, 12 mm step between cavities
	9002	To be determined
HSMD		350 pcs per reel, 16 mm step between cavities
H2,5...PIP TP25 - H5...PIP TP25 - HS3,8... PIP		250
V7,5...PIP - V10...PIP - V10...PIP TP25 - VR10...PIP	None, only potentiometers or 9002.	250

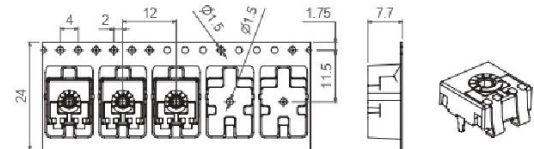
VSMD-T&R



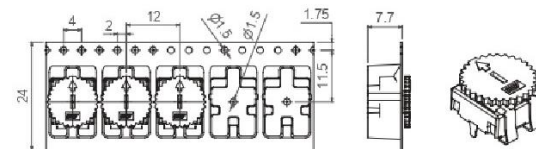
VSMD-T&R...WT-9002



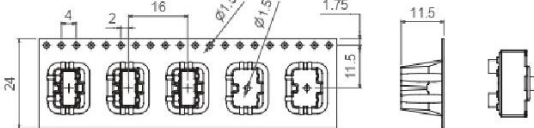
VSMD-T&R ...CY



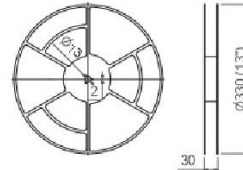
VSMD-T&R...CY WT-9002



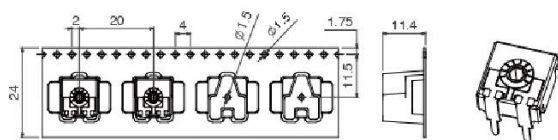
HSMD-T&R



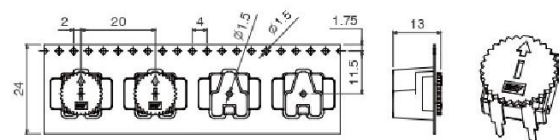
13" Reel



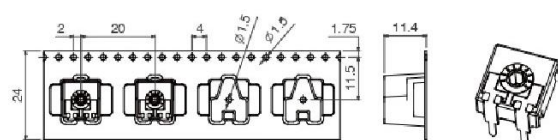
V7,5-T&R...PIP



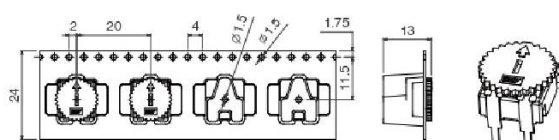
V7,5-T&R... PIP WT-9002



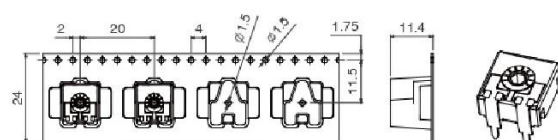
V10-T&R... PIP



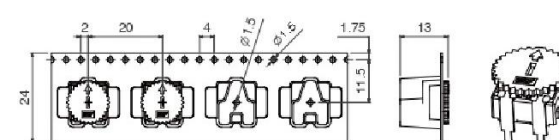
V10-T&R...PIP WT-9002



V10-T&R...PIP TP25

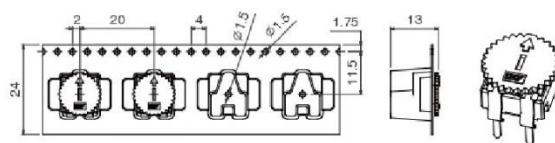
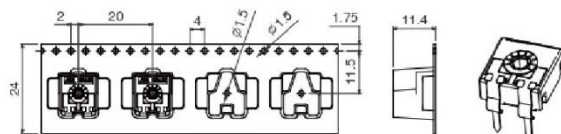


V10-T&R...PIP TP25 WT-9002



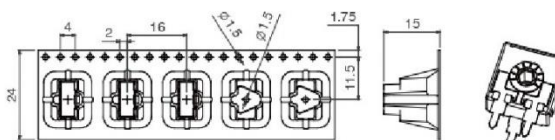
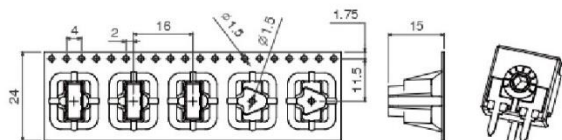
VR10-T&R...PIP

VR10-T&R... PIP WT-9002

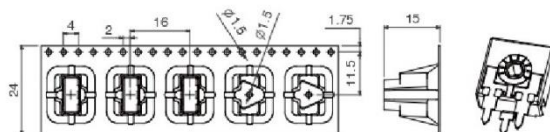


HS3,8-T&R... PIP

H5-T&R...PIP TP25



H2,5-T&R...PIP TP25



Mouser Electronics

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[09TR07AA503CP](#) [09TR07GA503CP](#) [09TR11KA103DPR](#)