



Sensors and Controls Potentiometers and Encoders DIP, Rotary, and Slide Switches



Conductive Plastic Precision Potentiometers

Series	Picture	Typical Applications	Rating	Resistance Range	Tolerance	Rotation
282 16 mm		Industrial Controls, HVAC, Position Sensor, Medical, Instrumentation	0.25 Watts @ 55°C IP54, IP67 2 Million Cycles*	5K ~ 500K Ω Linear 25K ~ 100K Ω Audio	± 10% ± 20%	250°, 300°, 360° Mechanical Rotation 240°, 280°, 340° Effective
284 16 mm		Industrial Controls, HVAC, Position Sensor, Medical, Instrumentation	0.25 Watts @ 55°C IP54, IP67 3 Million Cycles*	1K ~ 500K Ω Linear	± 10% ± 20%	250° Mechanical Up to 220° Effective

* Up to 5 million cycles available - consult factory

Encoders

Series	Picture	Typical Applications	Rating	Codes Available	Detents	Rotation
288 16 mm Mechanical		Test Equipment, Medical, Industrial, Audio; Optional Switch	20 VDC @ 5 mA 50,000 Cycles*	2 Bit Binary 4 Bit Gray 4 Bit Hex	16 Optional	360° Continuous
290 9 mm Mechanical		Test Equipment, Medical, Industrial, Audio; Optional Switch	12 VDC @ 10 mA 50,000 Cycles*	2 Bit Binary	20 Optional	360° Continuous
291 12 mm Optical		Medical, Aerospace, Security, A/V Equip.; Optional Switch and/or Harness	5 VDC @ 30 mA 3.3 VDC @ 24 mA IP 40 up to 3 Million Cycles	2 Bit Binary 6 or 8 PPR	0, 24, or 32 Optional	360° Continuous

* 100K cycles available - consult factory

Consult CTS for PPR or detent options not listed

Acceleration Module

Series	Picture	Typical Applications	Rating	Resistance Range	Tolerance	Rotation
576		Mobility Scooters	0.2 Watts IP64 2 Million Cycles	5K Ω	± 10% ± 20%	60° Mechanical 45° Effective

Rotary Position Sensor

Series	Picture	Typical Applications	Rating	Resistance Range	Tolerance	Rotation
500		Small Engine Throttle Position Sensing	0.8 Watts JIS D0203 JIS D0207-F2 2 Million Cycles	5K Ω	± 40%	122° Mechanical 105° Effective

Carbon Composition Rotary Potentiometers / Variable Resistors

Series	Picture	Typical Applications	Rating	Resistance Range	Tolerance	Rotation
450 24 mm		Dimmers, Musical Instruments, Industrial Controls; Optional Switches	0.50 Watts thru 100K Ω ; 0.33 Watts above 100K Ω @ 55°C	100 Ω ~ 10M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	300° Mechanical 320° with Switch
450G 24 mm		Guitars, Musical Instruments; Low Noise	0.25 Watts @ 55°C	25K Ω ~ 1M Ω	$\pm 10\%$ $\pm 20\%$	300° Mechanical
295 24 mm		Joystick Gaming Controls	0.125 Watts @ 50°C 1 Million Cycles	10K Ω ~ 1M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	300° Mechanical 50° Effective
280 16 mm		Audio / Video Amplifiers, Motor Speed Control	0.25 Watts @ 55°C IP54 Available	500 Ω ~ 5M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	300° Mechanical
280 16 mm No Shaft		Appliance Function Selector, Rotary Switch Alternative; Position Sensor	0.25 Watts @ 55°C	1K Ω ~ 1M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	300° Mechanical or Continuous
270 16 mm		Audio, Industrial Controls, Musical Instruments; Optional Switches	0.25 Watts thru 100K Ω ; 0.20 Watts above 100K Ω @ 55°C	100 Ω ~ 2M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	300° Mechanical 315° with Switch
296 12 mm		Audio / Video Amplifiers, Motor Speed Controls	0.15 Watts @ 50°C	500 Ω ~ 1M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	300° Mechanical
250 9 mm		Audio / Video Amplifiers, Motor Speed Control, Temperature Controls	0.05 Watts @ 50°C	500 Ω ~ 1M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	280° Mechanical
251 9 mm		Joystick Gaming Controls	0.01 Watts @ 50°C 1 Million Cycles	10K Ω ~ 200K Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	Mech: 180° Eff: 38°, 40° 50°, 60°, 70° 80°, 90°, 110°

Carbon Composition Trimmer Potentiometers

201 15 mm		PCB Assemblies	0.25 Watts below 5K Ω ; 0.20 Watts above 5K Ω @ 55°C	100 Ω ~ 5M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	260° Mechanical
262 10 mm		PCB Assemblies	0.15 Watts @ 40°C	500 Ω ~ 2M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	265° Mechanical

Mini-Joystick Controllers

Series	Picture	Typical Applications	Rating	Resistance Range	Tolerance	Rotation
252 Mini-Joystick 21x20x13 mm		Industrial, Medical, Navigation, Pipette, Cursor Control, Gaming Joystick; Optional Switch	0.0125 Watts @ 50°C 1 Million Cycles	10K Ω ~ 200K Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	53° ~ 60° Mechanical
254 Ultra-Mini Joystick 11x11x5 mm		Handheld Electronics, Cursor/Game Controls, Joystick Remote Controls; Optional Switch	0.0125 Watts @ 50°C 1 Million Cycles	10K Ω ~ 100K Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	55° max. Mechanical

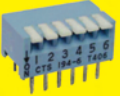
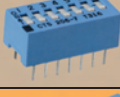
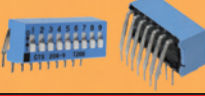
Wire Wound Variable Resistors / Potentiometers

026 24 mm		Industrial Controls; High Power; Optional Switches	5 Watts @ 25°C	5 Ω ~ 25K Ω	$\pm 5\%$ $\pm 10\%$ $\pm 20\%$ Others Available	300° Mechanical
115 19 mm		HVAC Industrial Trimmer	2 Watts @ 55°C	5 Ω ~ 20K Ω	$\pm 5\%$ $\pm 10\%$ $\pm 20\%$	270° Mechanical
118 19 mm		Industrial Controls; High power	2 Watts @ 55°C	5 Ω ~ 20K Ω	$\pm 5\%$ $\pm 10\%$ $\pm 20\%$	270° Mechanical

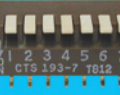
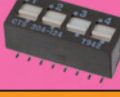
Carbon Composition Slide Variable Resistors / Potentiometers

Series	Picture	Typical Applications	Rating	Resistance Range	Tolerance	Travel
442 Slide Closed Frame		Lighting Controls, e-Book Readers, Temp. & Metering Controls, Audio Equipment	0.25 Watts @ 55°C	200 Ω ~ 5M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	31.7 mm
448 Slide Open Frame		Power Tools, e-Book Readers, Lighting/Fan Controls, Temperature Controls; Optional Switch	0.05 ~ 0.50 Watts; Power is Travel and Taper Dependent; Up to 25,000 Cycles	500 Ω ~ 1M Ω	$\pm 10\%$ $\pm 20\%$ $\pm 30\%$	10 mm, 15 mm 20 mm, 30 mm 45 mm, 60 mm

Through Hole DIP Switches

Series	Picture	Description	Actuation	Plating	Options	Life	Operating Temperature
194		Side Actuated .100" X .300" Terminal Spacing Bottom Epoxy Seal	SPST	Contacts - Gold Terminals - Tin	Top Tape Seal Shipping Position Custom Marking	7,000 Cycles	-40°C to + 85°C
195		Side Actuated .100" X .300" Terminal Spacing Bottom Epoxy Seal	SPST	Contacts - Tin Terminals - Tin	Top Tape Seal Shipping Position Custom Marking	2,000 Cycles	-40°C to + 85°C
206		Top Actuated Multifunction .100" X .300" Terminal Spacing ESD Protection	SPST, SPDT, DPST, DPDT, 3PST, 4PST	Contacts - Gold Terminals - Tin	Bottom Epoxy Seal Top Tape Seal 3 Actuator Heights Custom Marking	10,000 Cycles	-55°C to + 85°C
206RA 208RA		Right Angle Actuated Multifunction .100" X .100" Terminal Spacing ESD Protection	SPST, SPDT, DPST, DPDT, 3PST, 4PST	206RA -See 206 208RA -See 208	Bottom Epoxy Seal Top Tape Seal 3 Actuator Heights Custom Marking	206 - 10K Cycles 208 - 2K Cycles	-55°C to + 85°C
208		Top Actuated Multifunction .100" X .300" Terminal Spacing ESD Protection	SPST, SPDT, DPST, DPDT, 3PST, 4PST	Contacts - Tin Terminals - Tin	Bottom Epoxy Seal Top Tape Seal 3 Actuator Heights Custom Marking	2,000 Cycles	-55°C to + 85°C
209		Auto Insertable Low Profile, Top Actuated .100" Pitch Terminal Spacing Bottom Seal	SPST	Contacts - Gold Terminals - Tin	Top Tape Seal 3 Actuator Heights Terminal Forming Custom Marking	2,000 Cycles	-40°C to + 85°C
210		Auto Insertable Low Profile, Top Actuated .100" Pitch Terminal Spacing Bottom Seal	SPST	Contacts - Gold Flash Terminals - Tin	Top Tape Seal 3 Actuator Heights Terminal Forming Custom Marking	1,000 Cycles	-40°C to + 85°C

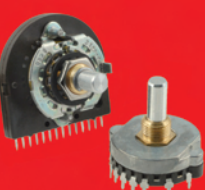
Surface Mount DIP Switches

193		Side Actuated Gull Wing .100" Pitch Terminal Spacing Bottom Epoxy Seal	SPST	Contacts - Gold Terminals - Tin	Custom Marking	7,000 Cycles	-40°C to + 85°C
204		Top Actuated Gull Wing, Multifunction .100" Pitch Terminal Spacing ESD Protection	SPST, SPDT, DPST, DPDT, 3PST, 4PST	Contacts - Gold Terminals - Tin	Bottom Epoxy Seal Top Tape Seal 3 Actuator Heights Custom Marking	10,000 Cycles	-55°C to + 85°C
218		Low Profile Gull Wing, Top Actuated .050" Pitch Terminal Spacing Bottom Seal	SPST	Contacts - Gold Terminals - Gold Flash	Top Tape Seal J-Bend Terminals	1,000 Cycles	-55°C to + 85°C
219		Low Profile Gull Wing, Top Actuated .100" Pitch Terminal Spacing Bottom Seal	SPST	Contacts - Gold Terminals - Tin	Top Tape Seal 3 Actuator Heights J-Bend Terminals Custom Marking	2,000 Cycles	-55°C to + 85°C

Slide Switch

065		Miniature Slide Switch 1 Amp Dustproof	SPST (UL, CSA) SPDT (UL, CSA) DPST (Top Act. Only) DPDT (Top Act. Only)	Contacts -Silver Plated Terminals - Silver Plated	Top Actuation Side Actuation Actuator Length	6,000 Cycles Minimum	0°C to + 70°C
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Rotary Selector Switches

212		1 1/8" Diameter Steel Construction Hill-and-Valley Detent Glass Thermoset Molded Wafer	Up to 12 Positions/Pole Non-Shorting	Contacts and Terminals - Silver Plated Brass	Adjustable Stop Terminal Styles Custom Switching IP67 Waterseal	10,000 Cycles Minimum	-20°C to + 110°C
227		1 1/8" Diameter Die Cast Construction Hill-and-Valley Detent Glass Thermoset Molded Wafer	Up to 11 Positions/Pole Shorting		Terminal Styles Custom Switching		