# imall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832 Email & Skype: info@chipsmall.com Web: www.chipsmall.com Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



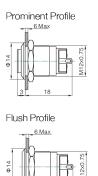
### 12mm Switches Miniature Stainless Steel Vandal Resistant

Prominent Button / Flush Profile

### MAV0120



- O Prominent and Flush Profile
- O 12mm Diameter
- 🔿 2A, 36 dc
- IP67 (Front of Panel Only)





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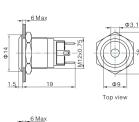
Specification	MAV0120/3	MAV0120/1	0 12 12 12 12 12
Terminations:	P - Solder Tabs	P - Solder Tabs	1.5 18
Switching:	S.P. Push to make	S.P. Push to make	
Max Rating:	2A, 36Vdc	2A, 36Vdc	
Contact Resistance:	≥50MΩ	≥50MΩ	
Insulation Resistance:	≥1000MΩ	≥1000MΩ	
Dielectric Strength:	1500V, AC 50Hz, 5 Secs	1500V, AC 50Hz, 5 Secs	
Operating Temp Range:	*-25°C ~ +55°C	*-25°C ~ +55°C	
Operations			
Mechanical:	500,000 (min)	500,000 (min)	
Electrical:	200,000 (min)	200,000 (min)	
Sealing (Front of Panel Only)	IP67	IP67	
Shock Resistance	IK08	IK08	
Rear Nut Fixing Torque:	0.6Nm	0.6Nm	
Materials			
Mouldings:	PA	PA	
Tags/Terminations:	Copper, Gold Plated	Copper, Gold Plated	
Switch Body & Button:	Stainless Steel	Stainless Steel	
Contacts:	Silver Alloy	Silver Alloy	
Thread size:	M12x0.75	M12x0.75	
RoHS	Compliant	Compliant	

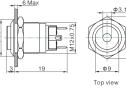
### 12mm Switches Miniature Stainless Steel Illuminated Vandal Resistant

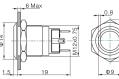
Illuminated traditional

## bulgin a brand of Elektron Technolog

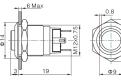












Top view

Specification       MAV0120         Terminations:       P - Solder Tabs         Switching:       S.P. Push to make         Max Rating:       2A, 36Vdc         Profile:       2A, 36Vdc         Profile:       Prominent /3 Flush /1         Illumination Type       /1       Dot /2         LED Ratings Part No. Colours       /1       Dot /2         Very Parkings Part No. Colours       /RD       /GN       /BL       /OR       /AM Proward Current         Moulding Current       /1       Dot /2       1.8V       2.8V       1.8V       1.8V         Forward Current       15mA       15mA       15mA       15mA       15mA       15mA         Illumination Voltage       /12       12V /24       24V       1.8V       1.8V       1.8V         Contact Resistance:       >500,000 (min)       1.500       AC 50Hz, 5 Secs       -25°C + 45°C       -25°C + 45°C       -25°C + 45°C       -25°C       -25°C + 45°C       -25°C       -25°C + 45°C       -25°C + 45°C <th></th> <th>MAV0120</th>		MAV0120
Terminations:       P - Solder Tabs         Switching:       S.P. Push to make         Max Rating:       2A, 36Vdc         Profile:       Prominent /3 Flush /1         Illumination Type       /1       Dot /2         LED Ratings Part No. Colours       /1       Dot /2         Forward Voltage Forward Voltage       //1       Dot /2         Forward Current       15mA       15mA         Muluinination Voltage       //1       15mA         Forward Current       15mA       15mA         Illumination Voltage       /12       12V         Contact Resistance:       >50000         Insulation Resistance:       >50000         Insulation Resistance:       >500000         Dielectric Strength:       >500.000 (min)         Sealing (Front of Panel Only)       IP67         Shock Resistance       IK08         Rear Nut Fixing Torque:       0.6Nm         Materials       PA         Gorper, Goid Plated         Switch Body & Button:       Silver Alloy		
Switching:       S.P. Push to make         Max Rating:       2A, 36Vdc         Profile:       Prominent /3 Flush /1         Illumination Type       /1       Dot /2         LED Ratings Part No.       /1       Dot /2         Colours       /1       Dot /2         LED Ratings Part No.       /1       Dot /2         Forward Current       /RD       /GN         Moulding Current       15mA       15mA         Illumination Voltage       /no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user.         Forward Current       15mA       15mA         Illumination Voltage       /no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user.         Contact Resistance:       >500,000 (min)         Dielectric Strength:       200000 (min)         Sealing (Front of Panel Only)       IP67         Shock Resistance       IK08         Rear Nut Fixing Torque:       0.6Nm         Materials       Copper, Gold Plated Stainless Steel         Switch Body & Button:       Silver Alloy         Thread size:       M12x0.75	Specification	MAV0120
Max Rating:       2A, 36Vdc         Profile:       Prominent /3 Flush /1         Illumination Type       /1       Dot /2       Ring         LED Ratings Part No. Colours       //1       //1       //1         Proward Voltage Forward Ourent       //1       //1       //1         No. Voltage Forward Current       15mA       15mA       15mA         Illumination Voltage       //12       12V       //2       2//2         Contact Resistance:       250MΩ       1000MΩ       1500V, AC 50Hz, 5 Secs       1500V, AC 50Hz, 5 Secs         Operating Temp. Range:       200,000 (min)       1500V, AC 50Hz, 5 Secs       1500V, AC 50Hz, 5 Secs       1500V, AC 50Hz, 5 Secs         Operating Temp. Range:       500,000 (min)       1600V, AC 50Hz, 5 Secs       1500V, AC 50Hz, 5 Secs       1500V, AC 50Hz, 5 Secs         Sealing (Front of Panel Only)       IP67       INA       INA       INA       INA         Sealing (Front of Panel Only)       IP67       INA       INA       INA       INA	Terminations:	P - Solder Tabs
Profile:     Prominent /3 Flush /1       Illumination Type     /1     Dot /2       LED Ratings Part No.     /1     Dot /2       Colours     /RD     /GN     /BL       Luminous Intensity Forward Voltage Forward Current     /RD     /GN     /BL     /OR       Moulding Current     1.8V     2.8V     2.8V     1.8V     1.8V       Illumination Voltage     /no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user.     Voltages as above       /12     12V /24     24V       Contact Resistance:     >500MQ       parations     *-25°C ~ +55°C       Operations     *-25°C ~ +55°C       Operations     500,000 (min)       Sealing (Front of Panel Only)     IP67       Shock Resistance     IK08       Rear Nut Fixing Torque:     0.6Nm       Materials     Copper, Gold Plated Stainless Steel       Mouldings:     PA Copper, Gold Plated Stainless Steel       Contacts:     Silver Alloy	Switching:	S.P. Push to make
Flush /1       Dot         Illumination Type       /1       Dot         /2       Ring         LED Ratings       /RD       /GN         Part No.       Colours       /RD       /GN         Colours       /RD       /GN       /BL       /OR         Luminous Intensity       Red       Green       Blue       Orange       Yellow         Forward Voltage       1.8V       2.8V       2.8V       1.8V       1.8V         Forward Current       15mA       15mA       15mA       15mA         Moulding Current       15mA       15mA       15mA       15mA         Illumination Voltage       /no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user.       Voltages as above       //2         /12       12V       /24       24V       24V         Contact Resistance:       ≥50MΩ       ≥1000MΩ       Dielectric Strength:       15000,MO OlynQ         Dielectric Strength:       21000MΩ       ≥1000MΩ       200,000 (min)       200,000 (min)         Sealing (Front of Panel Only)       IP67       Shock Resistance       IK08       Rear Nut Fixing Torque:       0.6Nm         Materials       Mouldings:       PA       Copper, Gold	Max Rating:	2A, 36Vdc
1/2       Ring         LED Ratings Part No. Colours Luminous Intensity Forward Voltage Forward Current Moulding Current       /RD       /GN       /BL       /OR       /AM         Illumination Voltage       /RD       /GR       Blue       Orange       Yellow         Forward Current Moulding Current       15mA       15mA       15mA       15mA       15mA         Illumination Voltage       /no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user. Voltages as above       /12       12V         V24       24V       24V       24V       ////////////////////////////////////	Profile:	
Part No. Colours/RD/GN/BL/OR/AM AM VellowLuminous Intensity Forward Voltage Forward Current Moulding Current15mA15mA15mA15mA15mA15mA15mA15mA15mA15mA15mA15mAIllumination Voltage//no suffix - No resistor fitted. An Appropriate resistor must be series connected by the user. Voltages as above/1212V /2424VContact Resistance: Dielectric Strength: Operations≥50MΩ ≥1000MΩ 1500V, AC 50Hz, 5 Secs *-25°C ~ +55°COperations*-25°C ~ +55°COperations500,000 (min) 200,000 (min) 200,000 (min)Sealing (Front of Panel Only)IP67Shock ResistanceIK08Rear Nut Fixing Torque: Switch Body & Button:PA Copper, Gold Plated Stainless SteelMouldings: Tags/ferminations: Switch Body & Button:PA Copper, Gold Plated Stainless SteelContacts: Silver AlloySilver Alloy	Illumination Type	
series connected by the user. Voltages as above/1212V/2424VContact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range:≥50MΩ ≥1000MΩ 1500V, AC 50Hz, 5 Secs *-25°C ~ +55°COperations*-25°C ~ +55°CMechanical: Electrical:500,000 (min) 200,000 (min)Sealing (Front of Panel Only)IP67Shock ResistanceIK08Rear Nut Fixing Torque: Materials0.6NmMaterialsPA Copper, Gold Plated Stainless SteelContacts:Silver AlloyThread size:M12x0.75	Part No. Colours Luminous Intensity Forward Voltage Forward Current Moulding Current	Red Green Blue Orange Yellow 1.8V 2.8V 2.8V 1.8V 1.8V 15mA 15mA 15mA 15mA 15mA
Insulation Resistance: Dielectric Strength: Operating Temp. Range:≥1000MΩ 1500V, AC 50Hz, 5 Secs *-25°C ~ +55°COperations*-25°C ~ +55°CMechanical: Electrical:500,000 (min) 200,000 (min)Sealing (Front of Panel Only)IP67Shock ResistanceIK08Rear Nut Fixing Torque: Materials0.6NmMaterialsPA Copper, Gold Plated Stainless SteelMouldings: Tags/Terminations: Switch Body & Button:PA Silver AlloyContacts:Silver Alloy	numination voitage	series connected by the user. Voltages as above /12 12V
Mechanical: Electrical:500,000 (min) 200,000 (min)Sealing (Front of Panel Only)IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.6NmMaterials0.6NmMouldings: Switch Body & Button:PA Copper, Gold Plated Stainless SteelContacts:Silver AlloyThread size:M12x0.75	Insulation Resistance: Dielectric Strength:	≥1000MΩ 1500V, AC 50Hz, 5 Secs
Electrical:200,000 (min)Sealing (Front of Panel Only)IP67Shock ResistanceIK08Rear Nut Fixing Torque:0.6NmMaterialsVMouldings: Tags/Terminations: Switch Body & Button:PA Copper, Gold Plated Stainless SteelContacts:Silver AlloyThread size:M12x0.75	Operations	
Shock ResistanceIK08Rear Nut Fixing Torque:0.6NmMaterials		
Rear Nut Fixing Torque:     0.6Nm       Materials     PA       Mouldings:     PA       Tags/Terminations:     Copper, Gold Plated       Switch Body & Button:     Stainless Steel       Contacts:     Silver Alloy       Thread size:     M12x0.75	Sealing (Front of Panel Only)	IP67
Materials     PA       Mouldings:     PA       Tags/Terminations:     Copper, Gold Plated       Switch Body & Button:     Stainless Steel       Contacts:     Silver Alloy       Thread size:     M12x0.75	Shock Resistance	IK08
Mouldings:PATags/Terminations:Copper, Gold PlatedSwitch Body & Button:Stainless SteelContacts:Silver AlloyThread size:M12x0.75	Rear Nut Fixing Torque:	0.6Nm
Tags/Terminations:Copper, Gold PlatedSwitch Body & Button:Stainless SteelContacts:Silver AlloyThread size:M12x0.75	Materials	
Thread size: M12x0.75	Tags/Terminations:	Copper, Gold Plated
	Contacts:	Silver Alloy

# 12mm Switches Miniature Domed Metal Vandal Resistant

None Illuminated - Metal Dome

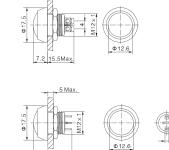
### MMP0120





- 2A, 36Vac
  IP65 or IP67 (Front of Panel Only)

MMP0120



Top View

Terminal Arrangement

<u>5 Max</u>.

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Specification	MMP0120/S	MMP0120/N
Terminations:	P - Solder Tabs S - Screw Terminal	P - Solder Tabs S - Screw Terminal
Switching:	S.P. Push to make	S.P. Push to make
Max Rating:	2A, 36Vdc	2A, 36Vdc
Contact Resistance:	≥50MΩ	≥50MΩ
Insulation Resistance:	≥1000MΩ	≥1000MΩ
Dielectric Strength:	1500V, AC 50Hz, 5 Secs	1500V, AC 50Hz, 5 Secs
Operating Temp Range:	*-25°C ~ +55°C	*-25°C ~ +55°C
Operations		
Mechanical:	500,000 (min)	500,000 (min)
Electrical:	200,000 (min)	200,000 (min)
Sealing (Front of Panel Only)	IP65 or IP67	IP65 or IP67
Shock Resistance	IK08	IK08
Rear Nut Fixing Torque:	0.3Nm	0.3Nm
Materials		
Mouldings:	PBT	PBT
Tags/Terminations:	Brass, Silver Plated	Brass, Silver Plated
Switch Body & Button:	/SS Stainless Steel	/N - Nickel Plated Brass
Contacts:	Silver Alloy	Silver Alloy
Thread size:	M12x1	M12x1
RoHS	Compliant	Compliant

# 12mm Switches Miniature Domed PBT Pushbutton

MMP0120/A

MMP0120/A

Non Illuminated - PBT

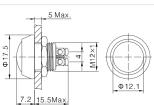
### MMP0120/A

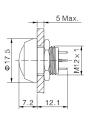
**Specification** 



C Raised	Domed	Profile
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- PBT Material
- 0 12mm Diameter
- 2A, 36Vac
  IP65 or IP67 (Front of Panel Only)







Φ12

Top View

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Terminal Arrangement

opcomodition					
Terminations:	P - Solder Tabs				
Switching:	S.P. Push to make				
Max Rating:	2A, 36Vdc				
Contact Resistance:	≥50MΩ				
Insulation Resistance:	≥1000MΩ				
Dielectric Strength:	1500V, AC 50Hz, 5 Secs				
Operating Temp Range:	*-25°C ~ +55°C				
Operations					
Mechanical:	1,000,000 (min)				
Electrical:	200,000 (min)				
Sealing (Front of Panel Only)	IP65 or IP67				
······································					
Shock Resistance	IK08				
Rear Nut Fixing Torque:	0.3Nm				
Materials					
Mouldings:	PBT				
Tags/Terminations:	Brass, Silver Plated				
Switch Body	/A Black Anodised				
Switch Button:	/NB Nickel Plated Brass /RD RED PBT /GN GREEN PBT /BL BLUE PBT /BK BLACK PBT				
Contacts:	Silver Alloy				
Thread size:	M12x1				
RoHS	Compliant				

### 12mm Switches Miniature Domed Illuminated Pushbutton

Stainless Steel and PBT



MMPI0120	<ul> <li>Raised Domed Profile</li> <li>Dot Illumination</li> <li>Bright daylight LEDs</li> <li>12mm Diameter</li> <li>2A, 36Vac</li> <li>IP65 (Front of Panel Only)</li> </ul>	5 Max. 0 0 12.6 Top View Terminal Arrangement
MMPI0120		Arrangement

Specification	MMPI0120				
Terminations:	P - Solder Tabs				
Switching: Max Rating:	S.P. Push to make 2A, 36Vdc				
LED Ratings					
Part No. Colours Luminous Intensity	SS-RD Red	SS-GN Green	NN-RD Red	ABK-RD Red	AG-RD Red
Forward Voltage Forward Current	1.8V	2.8V	1.8V	1.8V	1.8V
Moulding Current	15mA	15mA	15mA	15mA	15mA
Illumination Voltage	Voltages as above	itted. An Appropriate	resistor must be series co	nnected by the user.	
	/12				
Contact Resistance: Insulation Resistance: Dielectric Strength: Operating Temp. Range:	≥50MΩ ≥1000MΩ 1500V, AC 50Hz, 5 Secs *-25°C ~ +55°C	5			
Operations Mechanical: Electrical:	1,000,000 (min) 200,000 (min)				
Sealing (Front of Panel Only)	IP65				
Shock Resistance	IK08				
Rear Nut Fixing Torque:	0.3Nm				
Materials					
Mouldings: Tags/Terminations: Switch Body & Button:	PBT Brass, Silver Plated Stainless Steel	Stainless Steel	Nickel Plated Brass	Black Anodized Body, Black PBT Button	Black Anodized Body, Green PBT Button
Contacts: Thread size: RoHS	Silver Alloy M12x1 Compliant				



#### 12mm Miniature Vandal Resistant Stainless Steel Switch

MAV0120	/	X	/	X	/	X	/	X	/	X
Series MAV0120		<b>Button</b> 1 = Flush 3 = Prominent		Switching Type D = Momentary		<b>Type of Illumination</b> Blank = None 1 = Dot 2 = Ring		Illumination Colour Blank = None RD = RED GN = GREEN BL = BLUE AM = AMBER/YELLOW OR = ORANGE		Lamp Voltage Blank = None 012 = 12V 024 = 24V

#### Examples:

MAV0120/3D = 12mm Prominent Actuator, Momentary, Non Illuminated MAV0120/3D1BL024 = 12mm Prominent Actuator, Momentary, Blue Dot Illuminated, 24V

MAV0120/3D2GN012 = 12mm Prominent Actuator, Momentary, Green Ring Illuminated, 12V

### 12mm Miniature Metal/Plastic Domed Pushbutton Switch

MMPXXX	/ <b>x</b>	/ <b>x</b>	/ x	/ x	/ × ,	/ x
Series MMP0120 = Non Illuminated MMPI0120 = Illuminated	Body Material S = Stainless Steel N = Nickel Plated Brass A = Black Anodized	Button Material & Colour SS = Nickel Plated Brass RD = RED PBT GN = GREEN PBT BL = BLUE PBT BK = BLACK PBT	Sealing Blank = IP65 67 = IP67 IP67 (non-illuminated only)	Illumination Colour Blank = None RD = RED GN = GREEN BL = BLUE AM = AMBER/VELLOW OR = ORANGE	Lamp Voltage Blank = None 012 = 12V 024 = 24V Other voltages require external resistor	<b>Termination</b> S = Screw Terminals P= Solder Terminals (2.0mm x 0.5mm)

#### Examples:

MMP0120/SSSS = 12mm, Non Illuminated, All Stainless Steel, IP65, Screw Terminals MMP0120/ARD67/S = 12mm, Non Illuminated, Black anodized body, Red PBT button, IP67, screw terminals MMPI0120/NNBRD012P = 12mm, Illuminated , All Nickel Plated Brass with 12V Red Dot illumination, IP65, Pin Terminals