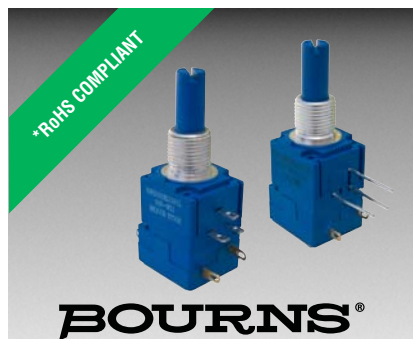




Features

- Virtually infinite electrical circuit isolation
- Metal or plastic shaft options
- DPST and DPDT switch options
- RoHS compliant*

Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

Potentiometer Specifications

Initial Electrical Characteristics ¹	Conductive Plastic Element	Cermet Element
Standard Resistance Range		
Linear Tapers (A, B, E, & H)	(B & E) 1 K ohms to 1 megohm	(A & H) 100 ohms to 1 megohm
Audio Tapers (C, D, F, G, S, & T)	(D, G, S, & T) 1 K ohms to 1 megohm	(C & F) 1 K ohms to 1 megohm
Total Resistance Tolerance	10 % or 20 %	5% or 10%
Independent Linearity	±5 %	±5 %
Absolute Minimum Resistance	2 ohms maximum	2 ohms maximum
Effective Electrical Angle	(Linear tapers) 240 ° ± 5 °	(Linear tapers) 240 ° ± 6 °
	(Audio tapers) 225 ° ± 5 °	(Audio tapers) 225 ° ± 6 °
Contact Resistance Variation	±1 %	±1 % or 3 ohms (whichever is greater)
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)		
Sea Level	1,500 VAC minimum	1,500 VAC minimum
70,000 Feet	500 VAC minimum	500 VAC minimum
Insulation Resistance (500 VDC)	1,000 megohms minimum	1,000 megohms minimum
Power Rating (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)		
+70 °C Single Section Assembly	(Linear tapers) 1 watt	(Linear tapers) 2 watts
	(Audio tapers) 0.5 watt	(Audio tapers) 1 watt
+70 °C Multiple Section Assembly	(Linear tapers) 0.5 watt/section	(Linear tapers) 1 watt/section
	(Audio tapers) 0.25 watt/section	(Audio tapers) 0.5 watt/section
+125 °C	0 watt	0 watt
Theoretical Resolution	Essentially infinite	Essentially infinite
Environmental Characteristics ¹		
Operating Temperature Range	-40 °C to +125 °C	-40 °C to +125 °C
Storage Temperature Range	-55 °C to +125 °C	-55 °C to +125 °C
Temperature Coefficient Over Storage		
Temperature Range	±1,000 ppm/°C	±150 ppm/°C
Vibration (Single Section)		
Total Resistance Shift	15 G	15 G
Voltage Ratio Shift	±2 % maximum	±2 % maximum
	±5 % maximum	±5 % maximum
Shock (Single Section)		
Total Resistance Shift	30 G	30 G
Voltage Ratio Shift	±2 % maximum	±2 % maximum
	±5 % maximum	±5 % maximum
Load Life		
Total Resistance Shift	1,000 hours	1,000 hours
	±10 % maximum	±5 % maximum
Rotational Life (No Load)		
Total Resistance Shift	100,000 cycles	100,000 cycles
	(Linear tapers) 10 ohms or ±15 % TRS max.	(All tapers) ±5 % TRS max.
	(whichever is greater)	
	(Audio tapers) ±20 % maximum	
Contact Resistance Variation		
@ 50,000 cycles	(Linear tapers) ±2 %	±2 %
	(Audio tapers) ±3 %	±3 %
Moisture Resistance (MIL-STD-202, Method 103, Condition B)		
Total Resistance Shift	(Linear tapers) ±10 % TRS maximum	(All tapers) ±5 % TRS maximum
	(Audio tapers) ±20 % TRS maximum	
Insulation Resistance (500 VDC)	100 megohms minimum	100 megohms minimum
IP Rating	IP 40	IP 40

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

Model 97 & 99 - 5/8 " Square Single-Turn Panel Control with Rotary Switch

BOURNS®

Potentiometer Specifications

Mechanical Characteristics¹

Stop Strength (1/4 " D shaft).....	45.19 N-cm (4 lb.-in.)
(1/8 " D shaft)	33.89 N-cm (3 lb.-in.)
Mechanical Angle	300 ° ±5 °
Torque	
Starting	0.3 max. above average running torque
Running Torque	
Single or Dual Section (A & R Bushings).....	0.21 to 1.06 N-cm (0.3 to 1.5 oz.-in.)
Single or Dual Section (C & U Bushings)	0.14 to 1.06 N-cm (0.2 to 1.5 oz.-in.)
Mounting.....	1.7-2.0 N-m (15-18 lb.-in.) maximum
Variation.....	0.35 N-cm (0.5 oz.-in.) maximum in 45 ° shaft travel
Weight (Single Section, Metal Bushing)	12.7 grams nominal
(Each Additional Section)	4 grams nominal
Terminals.....	Printed circuit terminals, J-Hooks or solder lugs
Soldering Condition.....	Recommended hand soldering using Sn95/Ag5 no clean solder, 0.025 " wire diameter.
	Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux.
Marking.....	Manufacturer's trademark, date code, resistance, manufacturer's part number
Ganging (Multiple Section Potentiometers)	2 cups maximum
Hardware.....	One lockwasher and one mounting nut is shipped with each potentiometer, except where noted in the part number.

NOTE: Performance specifications do not apply to units subjected to printed circuit board cleaning procedures.

¹At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

Model 97 & 99 - 5/8 " Square Single-Turn Panel Control with Rotary Switch

BOURNS®

Rotary Switch Specifications

Initial Electrical Characteristics¹

Contacts:	
DPST	N.O./N.O., N.C./N.C. or N.O./N.C.
DPDT	2 N.O./N.C. (break before make)
Power Rating (Resistive Load):	
DPST	2 A @ 125 volts RMS-60 Hz or 2 A @ 28 VDC, 1 A @ 250 volts RMS-60 Hz
DPDT	1 A @ 125 volts RMS-60 Hz or 1 A @ 28 VDC
Contact Resistance (0.1 VDC-10 mA)	10 milliohms nominal
Contact Bounce	5 milliseconds maximum
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)	
Sea Level	1500 VAC minimum
Insulation Resistance	1000 megohms minimum

Environmental Characteristics¹

Operating Temperature Range	0 °C to +70 °C
Exposure Temperature Range	-65 °C to +125 °C
Vibration (Dual Section)	8 G
Contact Resistance	10 milliohms maximum
Contact Bounce	0.1 millisecond maximum
Shock (Dual Section)	20 G
Contact Resistance	10 milliohms maximum
Contact Bounce	0.1 millisecond maximum
Rotational Life	25,000 cycles
Switch Actuating Torque (50% Duty cycle @ Rated Power Load)	1.41 to 4.94 N-cm (2 to 7 oz.-in.)
Contact Resistance	100 milliohms maximum
Moisture Resistance (MIL-STD-202, Method 106, Condition B)	
Contact Resistance (0.1 VDC-10 mA)	10 milliohms maximum
Insulation Resistance (After 24 Hours @ Room Temperature) (500 VDC)	100 megohms minimum
Housing Material	High temperature, flame retardant, thermosetting plastic

Mechanical Characteristics¹

Actuating Torque (Each Section, Switch Module Only)	3.53 to 10.59 N-cm (5 to 15 oz.-in.)
Running Torque (Out of Detent, 2-4 Module Assembly)	0.21 to 1.41 N-cm (0.3 to 2 oz.-in.)
Detent	CW or CCW standard
Actuation Angle	20 ° ±5 °
Contact Materials	Fine silver with gold overlay
Terminal Styles	Solder lug only
Standard Orientation	In-line with control terminals
Optional	Rotated 90 ° CCW from standard
Terminal Strength (Before and After Soldering Heat Exposure)	0.9 kg (2 lbs.) minimum

NOTE: Performance specifications do not apply to units subjected to printed circuit board cleaning procedures.

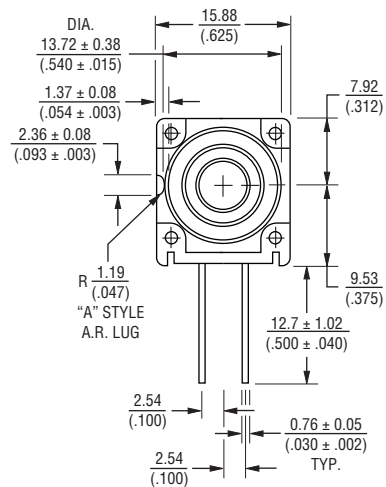
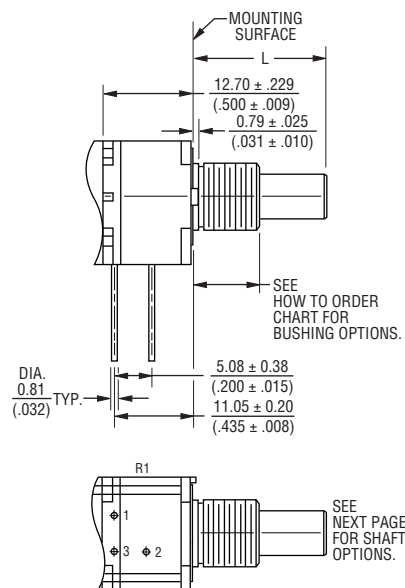
¹At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

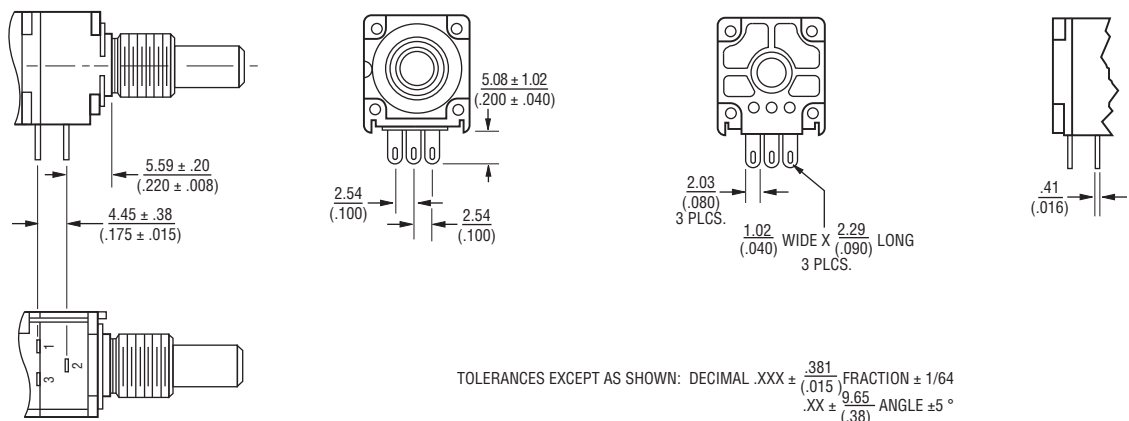
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Product Dimensions

Model 97 PC Pin Terminals, "L" Pattern



Model 99 Solder Lug Terminals, "Triangular" Pattern

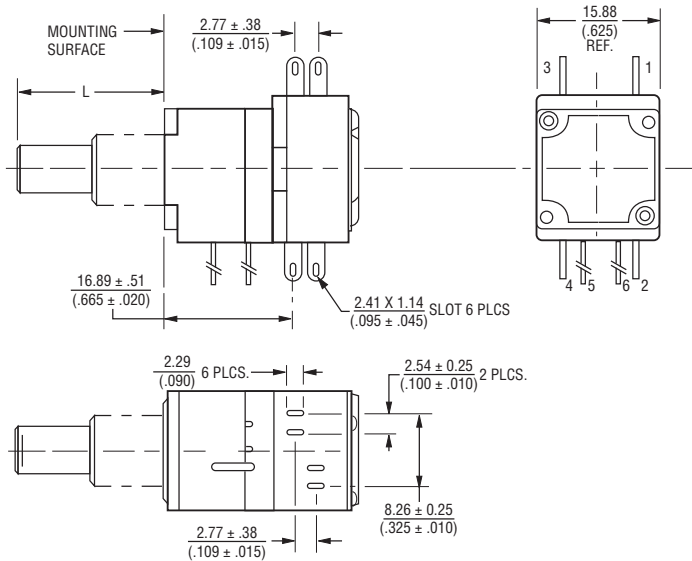


Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

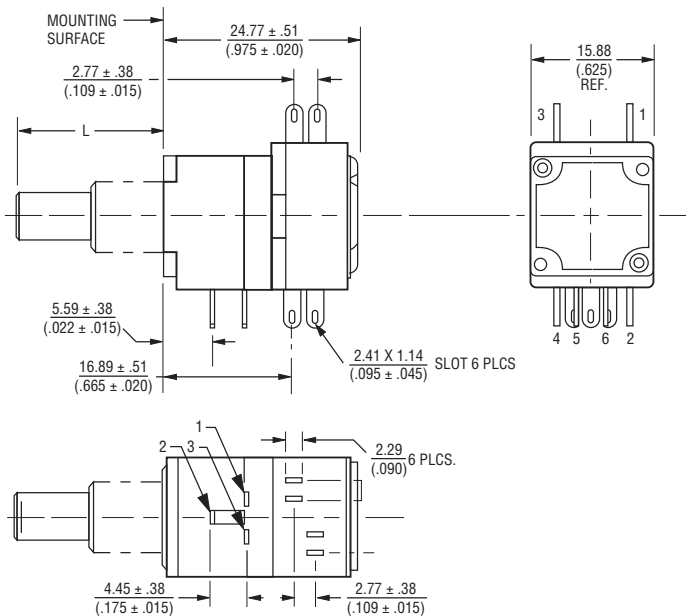
BOURNS®

Product Dimensions

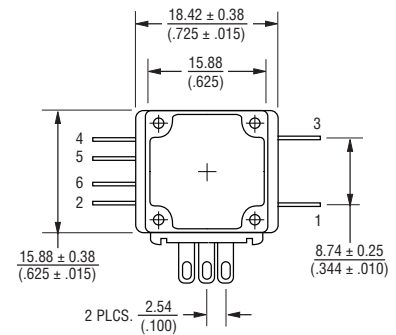
Model 97 (2nd Cup - Switch)



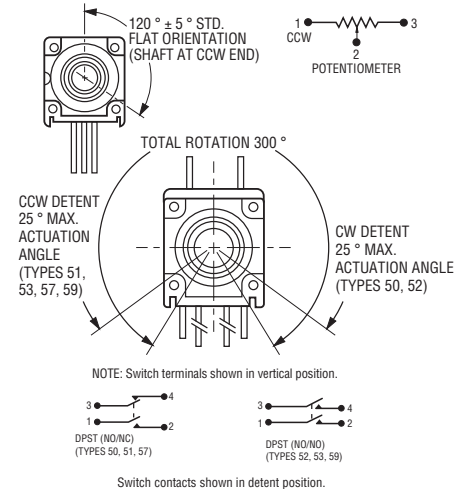
Model 99 (2nd Cup - Switch)



Horizontal Term. (Switch Types R57, R59)



Switch Module Variations Shaft Flat Orientation



TOLERANCES EXCEPT AS SHOWN: DECIMAL .XXX ± $\frac{.381}{.015}$ FRACTION ± 1/64
XX ± $\frac{9.65}{.38}$ ANGLE ± 5°

DIMENSIONS: $\frac{MM}{(INCHES)}$

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

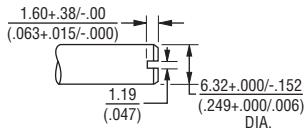
Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

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Product Dimensions

Plastic Shaft Styles

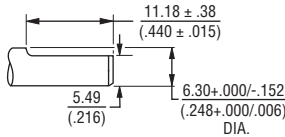
SHAFT TYPE "B" (USES BUSHING A)



STD. LENGTHS:

12.70 (.500)	15.88 (.625)	19.05 (.750)	22.23 (.875)
-----------------	-----------------	-----------------	-----------------

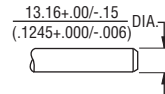
SHAFT TYPE "C" (USES BUSHING A)



STD. LENGTHS:

19.05 (.750)	22.23 (.875)
-----------------	-----------------

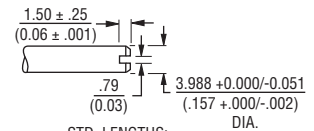
SHAFT TYPE "D" (USES BUSHING C)



STD. LENGTHS:

12.70 (.500)	15.88 (.625)	19.05 (.750)
-----------------	-----------------	-----------------

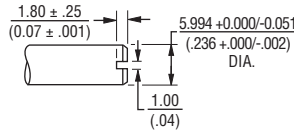
SHAFT TYPE "T" (USES BUSHING U)



STD. LENGTHS:

16.0 (.630)	22.0 (.866)
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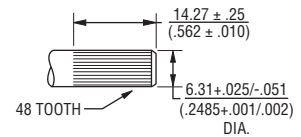
SHAFT TYPE "R" (USES BUSHING R)



STD. LENGTHS:

16.0 (.630)	22.0 (.866)
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SHAFT TYPE "W" (USES BUSHING A)

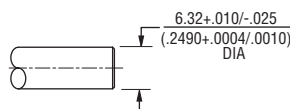


STD. LENGTHS:

25.40 (1.00)

Metal Shaft Styles

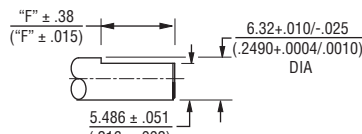
SHAFT TYPE "A" (USES BUSHING A)



STD. LENGTHS:

12.70 (.500)	15.88 (.625)	19.05 (.750)	22.23 (.875)	25.4 (1.000)
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SHAFT TYPE "H" (USES BUSHING A)



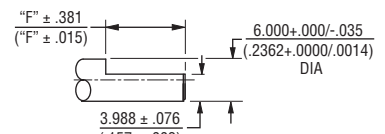
STD. LENGTHS:

19.05 (.750)	22.23 (.875)
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FLAT LENGTH "F":

7.95 (.313)	11.13 (.438)
----------------	-----------------

SHAFT TYPE "S" (USES BUSHING R)



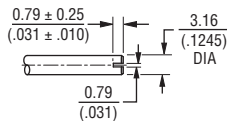
STD. LENGTHS:

19.05 (.750)	22.23 (.875)
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FLAT LENGTH "F":

9.98 (.393)	12.98 (.511)
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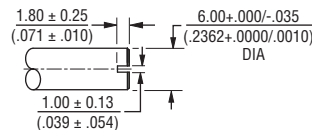
SHAFT TYPE "E" (USES BUSHING C)



STD. LENGTHS:

12.0 (.500)	16.0 (.625)	19.0 (.750)
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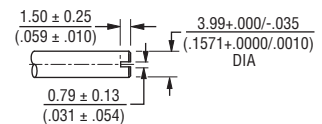
SHAFT TYPE "J" (USES BUSHING R)



STD. LENGTHS:

16.0 (.630)	22.0 (.866)
----------------	----------------

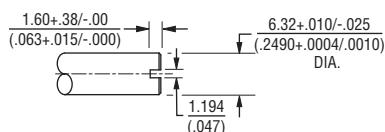
SHAFT TYPE "V" (USES BUSHING U)



STD. LENGTHS:

19.05 (.750)	22.23 (.875)
-----------------	-----------------

SHAFT TYPE "G" (USES BUSHING A)



STD. LENGTHS:

12.70 (.500)	15.88 (.625)	19.05 (.750)	22.23 (.875)
-----------------	-----------------	-----------------	-----------------

TOLERANCES EXCEPT AS SHOWN: .XX = ± .02
(.050)
.XXX = ± .005
(.127)
.XXXX = ± .0005
(.0127)

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

How to Order Model 97 & 99 Panel Controls

BOURNS®

99	A	2	A	-	B	28	-	A	15	/	R51	L
-----------	----------	----------	----------	----------	----------	-----------	----------	----------	-----------	----------	------------	----------

ANTI-ROTATION LUG	
A	Single .305 " (7.8 mm) R, 90 °CW
D	No Lug

SECTIONS
2 Dual 2nd Section is a Switch

BUSHING	
A	Metal Plain 3/8 " (9.53 mm) D x 3/8 " (9.53 mm) L
C	Metal Plain 1/4 " (6.35 mm) D x 1/4 " (6.35 mm) L
R	Metal Plain 10 mm D x 9 mm L

MODEL	
97	Single-Turn, L-Pattern PC Pins w/Switch
99	Single-Turn, Triangle-Pattern Solder Lugs w/Switch

SHAFT LENGTH (FMS)		AVAILABLE ONLY IN BUSHING
Code	Description	Code
16	1/2 "L	A, C
20	5/8 "L	A, C
24	3/4 "L	A, C
28	7/8 "L	A
32	1 "L	A
METRIC		
16	16 mmL	R
22	22 mmL	R

RoHS IDENTIFIER	
L	Compliant

SWITCH TYPE	
(R50)	DPST N.O./N.C. CW Detent In-Line Term
(R51)	DPST N.O./N.C. CCW Detent In-Line Term
(R52)	DPST N.O./N.O. CW Detent In-Line Term
(R53)	DPST N.O./N.O. CCW Detent In-Line Term
(R57)	DPST N.O./N.C. CCW Detent Horz Term
(R59)	DPST N.O./N.O. CCW Detent Horz Term

SHAFT TYPE	AVAILABLE ONLY IN	
	LENGTHS (CODE)	BUSHINGS (CODE)
B Plastic Single Slotted 1/4 " (6.35 mm) D	16, 20, 24, 28	A
C Plastic Single Flatted 1/4" (6.35 mm) D	24, 28	A
D Plastic Single Plain 1/8" (3.18 mm) D	16, 20, 24	C
R Plastic Single Slotted 6 mm D	Metric 16, 22	R
T Plastic Single Slotted 4 mm D	Metric 16, 22	U
W Plastic Single Knurled 1/4" (6.35 mm) D	32	A
A Metal Single Plain 1/4" (6.35 mm) D	16, 20, 24	A
E Metal Single Slotted 1/8" (3.18 mm) D	16, 20, 24	C
G Metal Single Slotted 1/4" (6.35 mm) D	16, 20, 24, 28	A
H Metal Single Flatted 1/4" (6.35 mm) D	24, 28	A
J Metal Single Slotted 6 mm D	Metric 16, 22	R
S Metal Single Flatted 6 mm D	Metric 16, 22	R
V Metal Single Slotted 4 mm D	Metric 16, 22	U

ELEMENT TAPER TYPE/TOLERANCE		RESISTANCE CODE VALUE IN OHMS	
(A) (H)	Linear Cermet ±10 % Linear Cermet ±5 %	(05) - 100	(30) - 15 K
		(28) - 150	(16) - 20 K
		(06) - 200	(17) - 25 K
		(07) - 250	(18) - 50 K
		(08) - 500	(20) - 100 K
		(10) - 1 K	(21) - 200 K
(B) (E)	Linear C-P ±20 % Linear C-P ±10 %	(11) - 2 K	(22) - 250 K
		(12) - 2.5 K	(23) - 500 K
		(13) - 5 K	(25) - 1 M
		(15) - 10 K	
		(10) - 1 K	(18) - 50 K
		(12) - 2.5 K	(20) - 100 K
(C) (D) (F) (G) (S) (T)	CW Audio Cermet ±10 % CW Audio C-P ±20 % CCW Audio Cermet ±10 % CCW Audio C-P ±20 % CW Audio C-P ±10 % CCW Audio C-P ±10 %	(13) - 5 K	(22) - 250 K
		(15) - 10 K	(23) - 500 K
		(17) - 25 K	(25) - 1 M
		(10) - 1 K	(18) - 50 K
		(12) - 2.5 K	(20) - 100 K
		(13) - 5 K	(22) - 250 K

*Boldface features are Bourns standard options.
All others are available with higher minimum order quantities.*

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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