



Surface Mount Chip Resistor Networks — Series EXB-A, EXB-E, EXB-D and EXB-Q

FEATURES: • High Density: Bussed 8 resistors for pull up/down circuit in EXB-A Type 2512 (6.4mm x 3.1mm x 0.55mm), EXB-E Type 1608 (4.0mm x 2.1mm x 0.55mm), EXB-D Type 1206 (3.2mm x 1.6mm x 0.55mm) size and EXB-Q Type 1506 (3.8mm x 1.6mm x 0.45mm)
 • Automatic Placement: Taped and reeled packaging is suitable for high speed automatic placement machine • EXB-Q has available direct placing on the bus line by means of half pitch spacing without through-holes on PWB. It also features high speed mounting by conventional placing machine.

SPECIFICATIONS: • Resistance Range: 47Ω – 1MΩ (EXB-Q: 100Ω – 470KΩ)
 • Resistance Tolerance: ±5% • Number of Terminals: 10 Terminals (EXB-Q: 16 Terminals) • Number of Resistors: 8 Resistors (EXB-Q: 15 Resistors)
 • Power Rating at 70°C: 63mW/element (EXB-D: 50mW/element; EXB-Q: 25mW/element) • Maximum Rated Continuous Working Voltage V : EXB-A: 50V; EXB-E, EXB-D and EXB-Q: 25V • Maximum Overload Voltage: EXB-A: 100V; EXB-E, EXB-D and EXB-Q: 50V • Temperature Characteristic Range: ±200 ppm/°C • Operating Temperature Range: -55°C – 125°C

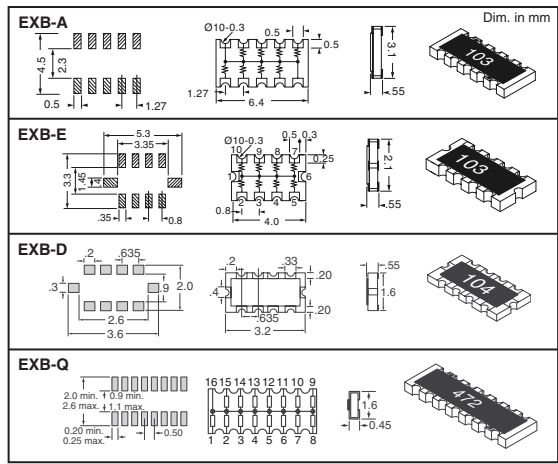
† Rated continuous working voltage (RCWV) shall be determined from RCWV = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$, or maximum RCWV listed above, whichever is less.

Resistance Codes for EXB-A, EXB-E and EXB-D (Values listed in ohms)

Value (Code)	Value (Code)	Value (Code)	Value (Code)
47 (470)	680 (681)	10K (103)	150K (154)
56 (560)	820 (821)	12K (123)	180K (184)
68 (680)	1.0K (102)	15K (153)	220K (224)
82 (820)	1.2K (122)	18K (183)	270K (274)
100 (101)	1.5K (152)	22K (223)	330K (334)
120 (121)	1.8K (182)	27K (273)	390K (394)
150 (151)	2.2K (222)	33K (333)	470K (474)
180 (181)	2.7K (272)	39K (393)	560K (564)
220 (221)	3.3K (332)	47K (473)	680K (684)
270 (271)	3.9K (392)	56K (563)	820K (824)
330 (331)	4.7K (472)	68K (683)	1M (105)
390 (391)	5.6K (562)	82K (823)	
470 (471)	6.8K (682)	100K (104)	
560 (561)	8.2K (822)	120K (124)	

Resistance Codes for EXB-Q (Values listed in ohms)

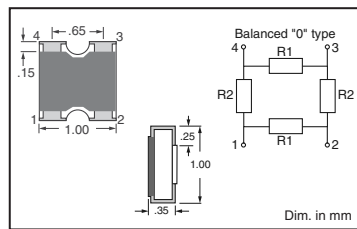
Value (Code)	Value (Code)	Value (Code)	Value (Code)
100 (101)	1K (102)	10K (103)	100K (104)
150 (151)	1.5K (152)	15K (153)	150K (154)
220 (221)	2.2K (222)	22K (223)	220K (224)
330 (331)	3.3K (332)	33K (333)	330K (334)
470 (471)	4.7K (472)	47K (473)	470K (474)
680 (681)	6.8K (682)	68K (683)	



Digi-Key* Part No.	Cut Tape Pricing				Digi-Key* Part No.	Tape and Reel Pricing			Panasonic* Part No.		
	1	10	100	500		1,000	4,000	8,000		10,000	
U7(Code)CT-ND	.33	3.09	25.05	104.36	166.98	U7(Code)TR-ND	150.29/M	—	125.60/M	—	EXB-A10P(Code)J
U8(Code)CT-ND	.30	2.82	22.57	95.29	152.46	U8(Code)TR-ND	111.08/M	—	92.93/M	—	EXB-E10C(Code)J
U9(Code)CT-ND	.32	2.93	23.74	98.92	159.27	U9(Code)TR-ND	—	111.08/M	—	92.93/M	EXB-D10C(Code)J
U6(Code)CT-ND	.44	4.02	32.62	135.90	217.44	U6(Code)TR-ND	—	196.02/M	—	163.35/M	EXB-Q16P(Code)J

* For complete part number, substitute the corresponding resistance Code

Surface Mount 0404 Balanced 0 Type Chip Attenuator — Series EXB-24AB

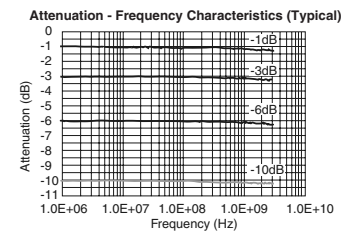


FEATURES: • Balanced "0" type attenuator circuit in one 0404 chip (1.0mm x 1.0mm) • Mounting occupation area reduction: ~approximately 65% reduction compared with the attenuator circuit and consists of four discrete 0402 chip resistors: ~approximately 26% reduction compared with the attenuator circuit and consists of four discrete 0201 chip resistors • Mounting time reduction: 4 times >>> 1 time • Attenuation: 0dB to 10dB **APPLICATIONS:** • Attenuation-level control/impedance matching of high frequency signals of communication equipment — cellular phones (GSM, CDMA, PDC, etc.), PHS, PDA, for example. **SPECIFICATIONS:** • Rated Power: 0.040W (40mW)/package • Frequency Range: DC to 2.5GHz • VSWR (Voltage Standing Wave Ratio) 1.2 maximum (typical), 1.5 maximum (0dB, typical) • Operating Temperature Range: -55°C – 125°C

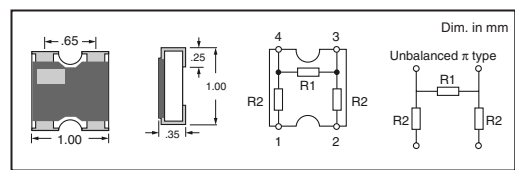
Tolerance of Attenuation	Attenuation Value (dB)	R1 (Ω)	R2 (Ω)	Characteristic Impedance (Ω)	Digi-Key Part No.	Cut Tape Pricing			Digi-Key Part No.	T & R Pricing	Panasonic Part No.
						10	500	10,000			
±0.8	0	0	open	0	P11153CT-ND	1.77	15.49	55.31	P11153TR-ND	59.54/M	EXB-24AB00R8X
	1	5.77	1.74k	100	P11154CT-ND	1.77	15.49	55.31	P11154TR-ND	59.54/M	EXB-24AB1CR8X
	2	11.6	872	100	P11155CT-ND	1.77	15.49	55.31	P11155TR-ND	59.54/M	EXB-24AB2CR8X
±1.0	3	17.6	585	100	P11156CT-ND	1.77	15.49	55.31	P11156TR-ND	59.54/M	EXB-24AB3CR8X
	6	37.4	301	100	P11157CT-ND	1.77	15.49	55.31	P11157TR-ND	59.54/M	EXB-24AB61RX
	10	71.2	192	100	P11158CT-ND	1.77	15.49	55.31	P11158TR-ND	59.54/M	EXB-24ABAC2RX
±0.8	1	11.5	3.48k	200	P11159CT-ND	1.77	15.49	55.31	P11159TR-ND	59.54/M	EXB-24AB1ER8X
	2	23.2	1.74k	200	P11160CT-ND	1.77	15.49	55.31	P11160TR-ND	59.54/M	EXB-24AB2ER8X
	3	35.2	1.17k	200	P11161CT-ND	1.77	15.49	55.31	P11161TR-ND	59.54/M	EXB-24AB3ER8X
±1.0	6	74.7	602	200	P11162CT-ND	1.77	15.49	55.31	P11162TR-ND	59.54/M	EXB-24AB61RX
	10	142	395	200	P11163CT-ND	1.77	15.49	55.31	P11163TR-ND	59.54/M	EXB-24ABAE2RX
	1	17.3	5.22k	300	P11164CT-ND	1.77	15.49	55.31	P11164TR-ND	59.54/M	EXB-24AB1GR8X
±0.8	2	34.8	2.62k	300	P11165CT-ND	1.77	15.49	55.31	P11165TR-ND	59.54/M	EXB-24AB2GR8X
	3	52.8	1.75k	300	P11166CT-ND	1.77	15.49	55.31	P11166TR-ND	59.54/M	EXB-24AB3GR8X
	6	112	903	300	P11167CT-ND	1.77	15.49	55.31	P11167TR-ND	59.54/M	EXB-24AB61RX
±2.0	10	213	577	300	P11168CT-ND	1.77	15.49	55.31	P11168TR-ND	59.54/M	EXB-24ABAG2RX

◆ RoHS Compliant

Surface Mount 0404 Chip Attenuator — Series EXB-24AT



FEATURES: • Unbalanced π type attenuator circuit in one chip (1.0mm x 1.0mm) • Mounting occupation area reduction: about 50% reduction compared with attenuator circuit consisting of three 0402 chip resistors • Mounting Times reduction: 3 time >>> 1 time • Attenuation: 1dB to 10dB
APPLICATIONS: • Attenuation/level control/impedance matching of high frequency signals of communication equipment — cellular phones (GSM, CDMA, PDC, etc.), PHS, PDA, for example.
SPECIFICATIONS: • Characteristic Impedance: 50Ω • Rated Power: 0.040W (40mW)/package • Frequency Range: DC to 2GHz • VSWR (Voltage Standing Wave Ratio) 1.3 maximum



Tolerance of Attenuation	Attenuation Value (dB)	R1 (Ω)	R2 (Ω)	Digi-Key Part No.	Cut Tape Pricing			Digi-Key Part No.	Tape and Reel Pricing	Panasonic Part No.
					10	500	10,000			
±0.3	1	5.77	870	P11103CT-ND	1.28	11.18	39.93	P11103TR-ND	42.84/M	EXB-24AT1AR3X
	2	11.6	436	P11104CT-ND	1.28	11.18	39.93	P11104TR-ND	42.84/M	EXB-24AT2AR3X
	3	17.5	292	P11105CT-ND	1.19	10.42	37.21	P11105TR-ND	39.93/M	EXB-24AT3AR3X
	4	23.9	221	P11106CT-ND	1.28	11.18	39.93	P11106TR-ND	42.84/M	EXB-24AT4AR3X
	5	30.4	179	P11107CT-ND	1.28	11.18	39.93	P11107TR-ND	42.84/M	EXB-24AT5AR3X
±0.5	6	37.4	151	P11108CT-ND	1.28	11.18	39.93	P11108TR-ND	42.84/M	EXB-24AT6AR3X
	10	71.2	96.3	P11109CT-ND	1.29	11.28	40.29	P11109TR-ND	43.56/M	EXB-24ATAAR3X

2% Thick Film Resistor Networks Low Profile, Single-In-Line Package, Highly Stable, Equivalent to MIL-R-83401

GENERAL SPECIFICATIONS:

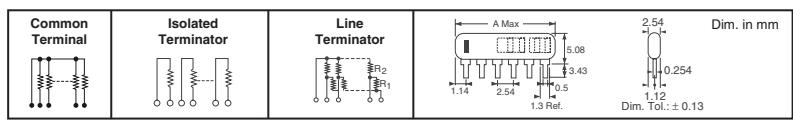
Rated Power: Common: 125mW (70°C); Isolated: 200mW (60°C); Line Terminator: 75mW (70°C)

Rated Continuous Working Voltage (RCWV): $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$ or 100V, whichever is less.

Operating Temperature Range: -55°C – 125°C

Storage Temperature Range: -55°C – 150°C

Value (Code)	Value (Code)	Value (Code)
100 (101)	6.8K (682)	150K (154)
150 (151)	3.2K (322)	220K (224)
220 (221)	15K (153)	330K (334)
330 (331)	22K (223)	560K (564)
560 (561)	33K (333)	680K (684)
680 (681)	47K (473)	
820 (821)	56K (563)	
1.5K (152)	68K (683)	
5.6K (562)	82K (823)	



Type	Res. Elements	No. of Pins	Dim. A (mm)	Digi-Key Part No.	Pricing			Panasonic Part No.		
					1	10	5,000			
Common Terminal	5	6	14.88	05(Code)-ND	18	1.47	11.06	74.05	66.80/M	EXB-F6E(Code)G
	7	8	19.96	07(Code)-ND	24	1.94	14.51	96.56	87.85/M	EXB-F8E(Code)G
	9	10	25.04	09(Code)-ND	30	2.43	18.25	121.97	110.36/M	EXB-F10E(Code)G
Isolated Terminator	3	6	14.88	02(Code)-ND	18	1.47	11.06	74.05	66.80/M	EXB-F6V(Code)G
	4	8	19.96	04(Code)-ND	24	1.94	14.51	96.56	87.85/M	EXB-F8V(Code)G
	5	10	25.04	06(Code)-ND	30	2.43	18.25	121.97	110.36/M	EXB-F10V(Code)G
Line Terminator	8	6	14.88	00(Code)-ND	29	2.34	17.58	116.89	106.73/M	EXB-F8WT(Code)G
	12	8	19.96	01(Code)-ND	39	3.14	23.52	156.82	142.30/M	EXB-F8WT(Code)G
	16	10	25.04	03(Code)-ND	49	3.91	29.51	195.29	177.87/M	EXB-F10WT(Code)G

* For complete part number, substitute the corresponding resistance Code.

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