



CARBON FILM FIXED RESISTOR

PART NUMBER DESCRIPTION (for order booking)

<u>CR25</u>	<u>S</u>	<u>PS</u>	<u>4K7</u>	<u>J</u>	<u>TR</u>
Material Type & Wattage	SIZE	Lead Style	Resistance Value	Res. Tol.	Package

(1) Material Type & Wattage: Carbon Film Fixed Resistors

CR12 (1/8W)	CR25 (1/4W)	CR50 (1/2W)	CR100 (1W)
CR16 (1/6W)	CR25S (1/4W)	CR50S (1/2W)	CR200 (2W)

(2) Lead Style: PS, Horizontal Type
PF, Vertical Type
PM, Cut and Formed for PCB Mounting

(3) Resistance Value: in Ohm (Ω)

Ohm	0.47	1	4.7	10	100	1000	4700	10000	1000000
Code No.	R47	1	4R7	10	100	1K	4K7	10K	1M

(4) Resistance Tolerance: G= $\pm 2\%$, J= $\pm 5\%$

(5) Package: It is omitted when the resistors are in bulk package.

TR: Tape/Reel, TB: Tape/Box

SPECIFICATIONS:

TYPE	POWER RATING AT 70°C	MAX. WORKING VOLTAGE	MAX OVERLOAD VOLTAGE	OPERATING TEMP. RANGE	RESISTANCE RANGE	
					G ($\pm 2\%$)	J ($\pm 5\%$)
CR12 CR16	1/8W (0.125W) 1/6W (0.16W)	150V	300V	-55°C~+155°C	10 Ω ~470K Ω	1 Ω ~10M Ω
CR25S CR25	1/4W (0.25W) 1/4W (0.25W)	200V 250V	400V 500V		10 Ω ~1M Ω	1 Ω ~10M Ω
CR50S CR50	1/2W (0.5W) 1/2W (0.5W)	300V 350V	600V 700V		10 Ω ~1M Ω	1 Ω ~10M Ω
CR100 CR200	1W 2W	500V 500V	1000V 1000V		10 Ω ~1M Ω	1 Ω ~10M Ω

SERIES FOR STANDARD VALUES:

E-24: 10 11 12 13 15 16 18 20 24 27 30 33 36 39 43 47 51 56 62 68 75 82 91

ZERO OHM RESISTOR:

TYPE	RESISTANCE	OPERATING TEMP. RANGE	MAX AMPERAGE	RATING AMBIENT TEMP.	COLOR CODE MAKRING
CR16 CR25	Less than 0.02 Ω	-55°C~+155°C	1.5A	70°C	by one Black band
			2.5A		

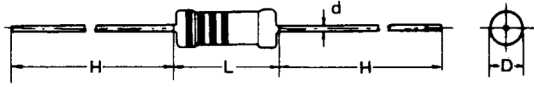


CARBON FILM FIXED RESISTOR

TYPES (LEAD STYLE) AND DIMENSIONS

(unit: mm)

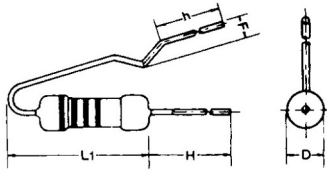
1. PS STYLE



TYPE	L	D	H	d
CR12, CR16, CR25S	3.3±0.4	1.8±0.3	28±2.0	0.43±0.05
CR25, CR50S	6.5±0.5	2.3±0.3	28±2.0	0.52±0.05
CR50	9.0±0.5	3.2±0.5	26±2.0	0.56±0.05
CR100	11.5±1.0	4.5±0.5	35±2.0	0.76±0.05
CR200	15.5±1.0	5.0±0.5	35±2.0	0.76±0.05

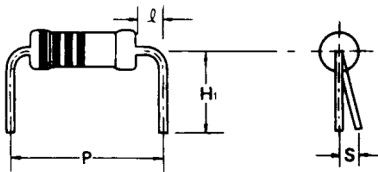
2. PF STYLE

For types:
CR25, 50S, 50



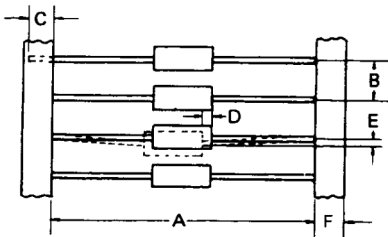
TYPE	L1	H	h	F
CR25, CR50S	9.5±1.0	28±2.0	16±2.0	1.8±0.5
CR50	12.5±1.0	28±2.0	12±2.0	1.8±0.5

3. PM STYLE



TYPE	P	H1	I	S
CR12, CR16, CR25S	5.0±0.5	6±1.0	0.5±0.3	Max. 1.7
CR25, CR50S	10.0±0.5	6±1.0	2.5±0.5	Max. 1.7
	12.5±0.5			
CR50	12.5±1.0	7±1.0	2.5±0.5	Max. 2.0
	17.5±1.0			

TAPING DIMENSIONS



TAPING SPACING	RESISTOR SPACE	LEAD IN TAPE	COMPONENT ALIGNMENT		TAPE WIDTH
A *	B	C	D	E	F
52±1.0	5±0.5	3 min.	0.8 MAX	1.2 MAX	6±1.0

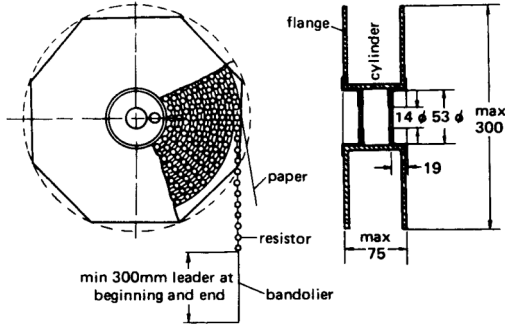
* A=26 also available for Pana-vert



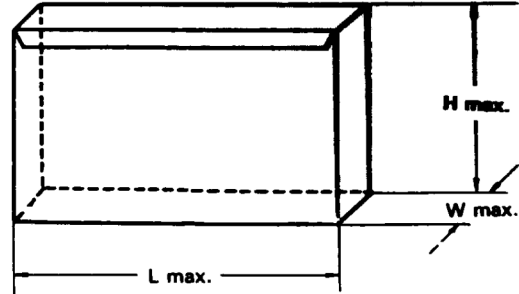
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TAPE/REEL, TAPE/BOX PACKAGING AND DIMENSIONS

REEL PACKAGING:



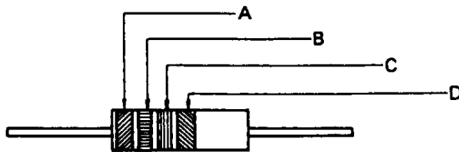
AMMUNITION (BOX) PACKAGING



TYPE	QTY'S/REEL
CR12, CR16, CR25, CR25S, CR50S	5,000
CR50	2,500
CR100	2,000
CR200	1,000

TYPE	L	W	H	QTY'S/BOX
CR12, CR16, CR25, CR25S, CR50S	264	78	110	5,000
CR50	264	78	55	1,000
CR100	265	103	110	1,000
CR200	265	103	110	1,000

COLOR CODE



Color Code	A 1 st band Resistance In Ohms	B 2 nd band Resistance In Ohms	C Multiple Of Resistance	D Tolerance
Black	0	0	10	—
Brown	1	1	10	±1%
Red	2	2		±2%
Orange	3	3		
Yellow	4	4		—
Green	5	5		—
Blue	6	6		—
Violet	7	7		—
Gray	8	8		—
White	9	9		—
Gold	—	—		±5%
Silver	—	—		±10%



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ELECTRICAL PERFORMANCE

TEST ITEM	TEST CONDITIONS	MAX. RESISTANCE CHANGES	TEST METHOD	
			JIS C5205	MIL-STD-202
Dielectric Withstanding Voltage	No evidence of flashover or breakdown		5.7	METHOD 301
Short Time Overload	2.5 times of rated voltage for 5 sec.	±1%	5.5	—
Temperature Cycling	-30°C ~ +85°C 5 cycles	±0.5%	7.10	METHOD 107
Resistance to Soldering Heat	350°C ±10°C, 3±0.5 sec.	±0.5%	7.10	METHOD 210
Resistance to solvents	Permanent marking no physical or electrical damage or deterioration		—	METHOD 215
Load Life	70°C on-off cycle 1,000 hours	±3%	7.10	METHOD 108
Moisture Resistance	40°C 95% RH on-off cycle 1,000 hours	±5%	7.9	METHOD 106

Requirments	PERFORMANCE					TEST METHOD	
						JIS C5202	MIL-STD-202
Temperature Coefficient (ppm/°C)	T.C.R.	±350	-150	-150	-150	5.2	METHOD 304
	TYPE						
	0.125W	Under 1KΩ	1.1KΩ-47KΩ	51KΩ-510KΩ	560KΩ-1MΩ		
	0.25W	Under 10KΩ	1.1KΩ-150KΩ	160KΩ-2.2MΩ	2.4MΩ-5.1MΩ		
Noise (μV/V)	NOISE	0.1	0.3	0.6	1.0	5.9-11	METHOD 308
	TYPE						
	0.125W & 0.16W	—	Under 10KΩ	11KΩ-100KΩ	Over 110KΩ		
	0.25W & over	Under 100KΩ	110K-510KΩ	560KΩ-2.2MΩ	Over 2.4MΩ		

PERFORMANCE CHARACTERISTICS:

