

PRODUCT : CARBON FILM FIXED RESISTOR

TYPE : CF-12.5/25/50/100/200/300

1. APPLICABLE SCOPE :

1.1 This specification is for use in CARBON FILM FIXED RESISTORS

1.2 Characteristics and Specifications are according to those of :

MIL-STD-105

MIL-STD-202

JIS C 5202

GB 5731-85

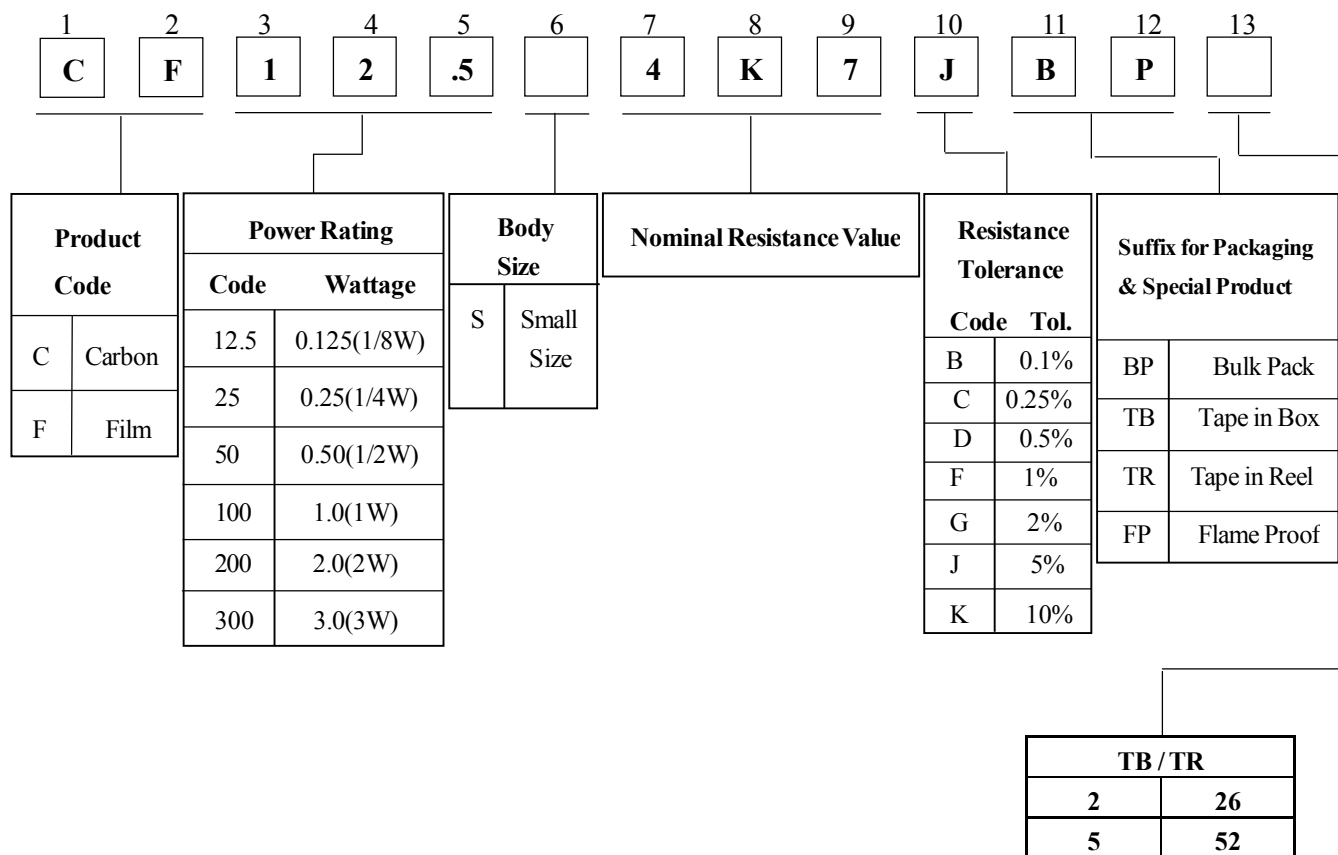
IEC 115-2-1-1982

QC 400101

2. TYPE

It is composed of description , rated wattage , nominal resistance , tolerance and packaging.

2.1 Explanation of part numbers :



2.2 Example of expression :

Miniature type (small size) and Flame Proof type are also available.

Part Number

Description

CF 12.5 4K7 J BP

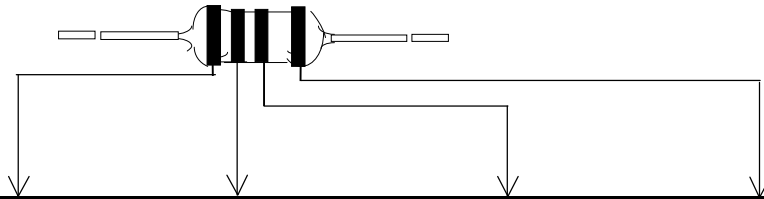
Carbon Film Fixed Resistor , 1/8W , 4.7KΩ , +/-5% tolerance , bulk pack.

PRODUCT : CARBON FILM FIXED RESISTOR
TYPE : CF -12.5/25/50/100/200/300

2.3 Color code indication for nominal resistance value and tolerance

Fixed resistors of which the nominal resistance value and tolerance are indicated by color codes following the standard as below:

TABLE - 1

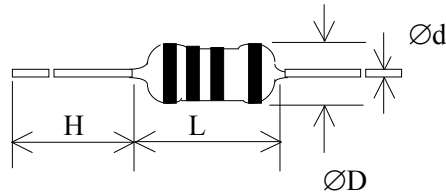


COLOR	1 ST DIGIT	2 ND DIGIT	MULTIPLIER	TOLERANCE
BLACK	0	0	1	
BROWN	1	1	10	F(±1%)
RED	2	2	100	G(±2%)
ORANGE	3	3	1,000	
YELLOW	4	4	10,000	
GREEN	5	5	100,000	D(±0.50%)
BLUE	6	6	1000,000	C(±0.25%)
VIOLET	7	7	10,000,000	B(±0.10%)
GREY	8	8		
WHITE	9	9		
GOLD			0.1	J(±5%)
SILVER			0.01	K(±10%)

PRODUCT : CARBON FILM FIXED ESISTOR	TYPE : CF -12.5/25/50/100/200/300
--	--

3. DIMENSIONS :

TABLE - 2



Unit : mm

TYPE	BODY		LEAD WIRE	
	L	D	H	d
CF-12.5(CF -25S)	3.5±0.5	1.7±0.5	28(24)±1	0.43(0.40)±0.05
CF-25(CF -50S)	6.5±0.5	2.3±0.5	27(23)±1	0.52 (0.43/ 0.48)±0.05
CF-50(CF -100S)	9.0±0.5	3.0±0.5	26±1	0.60±0.05
CF-100(CF -200S)	11.0±1	4.0±0.5	26(30)±1	0.60±0.05
CF-200(CF -300S)	15.0±1	5.0±0.5	24(35)±1	0.78±0.05
CF-300	17.0±1	6.0±0.5	24(35)±1	0.78±0.05

PRODUCT : CARBON FILM FIXED RESISTOR	TYPE : CF -12.5/25/50/100/200/300
---	--

4. SPECIFICATIONS

TABLE - 3

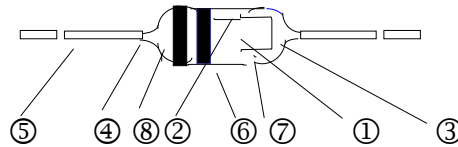
DESCRIPTION 內容	CF-12.5	CF-25 (CF-50S)	CF-50 (CF-50S)	CF-100 (CF-100S)	CF-200 (CF-200S)	CF-300 (CF-300S)
STANDARD RESISTANCE VALUE RANGE 標準阻值範圍	1 Ω-4.7M Ω	1 Ω-4.7M Ω	1 Ω-4.7M Ω	1 Ω-4.7M Ω	1 Ω-4.7M Ω	1 Ω-4.7M Ω
POWER RATING AT 70°C 額定功率(70°C)	1/8W	1/4W	1/2W	1W	2W	3W
MAX WORKING VOLTAGE 最高使用電壓	200V	250V	350V	500V	500V	500V
MAX OVERLOAD VOLTAGE 最高過負荷電壓	400V	500V	700V	1,000V	1,000V	1,000V
OPERATING TEMPERATURE RANGE 使用溫度範圍	-55°C~+135°C	-55°C~+135°C	-55°C~+135°C	-55°C~+155°C	-55°C~+155°C	-55°C~+155°C
TEMPERATURE COEFFICIENT 溫度特性						
≤10 Ω	±300PPM	±300PPM	±300PPM	±300PPM	±300PPM	±300PPM
10 Ω- 220K Ω	-500PPM	-500PPM	-500PPM	-400PPM	-400PPM	-400PPM
230K Ω- 1M Ω	-1,000PPM	-1,000PPM	-700PPM	-600PPM	-600PPM	-600PPM
OVER 1M Ω	-1,500PPM	-1,500PPM	-1,000PPM			
TEMPERATURE CYCLING 溫度循環	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)
VOLTAGE COEFFICIENT 電壓特性	MAX. 50PPM/V	MAX. 50PPM/V	MAX. 50PPM/V	MAX. 50PPM/V	MAX. 50PPM/V	MAX. 50PPM/V
INSULATION RESISTANCE 絕緣電阻	MIN. 1,000M Ω	MIN. 1,000M Ω	MIN. 1,000M Ω	MIN. 1,000M Ω	MIN. 1,000M Ω	MIN. 1,000M Ω
HUMIDITY 耐濕負荷壽命	±3%	±3%	±3%	±3%	±3%	±3%
SHORT-TIME OVERLOAD 短時間過負荷	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)
SOLDERABILITY 焊錫性	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED	MIN. 95% COVERED
VIBRATION 耐震性	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)	±(1R%+0.05 Ω)
LOAD LIFE 負載壽命	MAX. ±5%	MAX. ±5%	MAX. ±5%	MAX. ±5%	MAX. ±5%	MAX. ±5%

PRODUCT : CARBON FILM FIXED RESISTOR

TYPE : CF -12.5/25/50/100/200/300

5. STRUCTURE DIAGRAM

TABLE - 4



- | | |
|------------------------|---|
| (1) CORE | CERAMIC ROD |
| (2) RESISTANCE FILM | CARBON FILM |
| (3) TERMINAL | TINNED IRON CAP |
| (4) CONNECTION | ELECTRIC WELDING |
| (5) LEAD WIRE | SOLDERED OR TINNED ANNEALED COPPER WIRE |
| (6) UNDERCOAT | ELECTRIC INSULATION VARNISH |
| (7) FINISHING PAINTING | ELECTRIC INSULATION PAINT |
| (8) INDICATION | COLOR CODE INK |

RATED RESISTANCE VALUE	MAX. TESTING VOLTAGE	
	0.125W / 0.25W	0.5W / 1W / 2W / 3W
$1\ \Omega \leq R < 10\ \Omega$	0.3	0.3
$10\ \Omega \leq R < 100\ \Omega$	0.3	1
$100\ \Omega \leq R < 1K\ \Omega$	1	3
$1K\ \Omega \leq R < 10K\ \Omega$	3	10
$10K\ \Omega \leq R < 100K\ \Omega$	10	30
$100K\ \Omega \leq R < 1M\ \Omega$	30	50
$1M\ \Omega \leq R$	50	100

PRODUCT : CARBON FILM FIXED RESISTOR

TYPE : CF -12.5/25/50/100/200/300

6. CHARACTERISTICS

TABLE – 5

DC RESISTANCE VALUE	TEST METHOD MIL-STD-202 ITEM 303	VOLTAGE AS TABLE -4. TEMPERATURE 25°C±2°C. AQL 0.25%.
VOLTAGE WITHSTAND	TEST METHOD MIL-STD-202 ITEM 301	V-BLOCK METHOD. VOLTAGE AS TABLE -3 $\times 1.42$, 1 MIN. AQL 1%.
SHORT TIME OVERLOAD	TEST METHOD JIS C 5202 ITEM 5.5	RATED VOLTAGE $\times 2.5$ TIMES OR MAX. WORKING VOLTAGE $\times 2$ TIMES. ABOVE TEST 5 SEC. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(1\%R+0.05 \Omega)$.
TERMINAL STRENGTH	TEST METHOD MIL-STD-202 ITEM 211	TENSILE STRENGTH : 1K TENSIONAL STRENGTH : 180°, 2 CYCLES. BENDING STRENGTH : 0.5KG, 2 TIMES. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(0.5\%R+0.05 \Omega)$.
SOLDERABILITY OF TERMINAL	TEST METHOD MIL-STD-202 ITEM 210	260°C±5°C 10±1SEC. AFTER TESTING, LEAVE FOR 3 HOURS. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(1\%R+0.05 \Omega)$.
TEMPERATURE CYCLE	TEST METHOD MIL-STD-202 ITEM 107	LOW SIDE TEMPERATURE : -55°C±3°C 30MIN. ROOM TEMPERATURE : 10-15MIN. HIGH SIDE TEMPERATURE : +125°C±3°C 30MIN. ROOM TEMPERATURE : 10-15MIN. ABOVE TEST 5 CYCLES AFTER LAST CYCLE, LEAVE FOR 1-3 HOURS. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(1\%R+0.05 \Omega)$.
VIBRATION WITHSTAND	TEST METHOD MIL-STD-202 ITEM 204	X, Y, Z-EACH DIRECTION 2 HOURS. AMPLITUDE 0.75MM. RANGE : 10HZ ~ 500HZ. THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(1\%R+0.05 \Omega)$.
LOAD LIFE	TEST METHOD MIL-STD-202 ITEM 108	70°C±2°C. 1000 HOURS RATED VOLTAGE (1.5 HOURS ON, 0.5 HOUR OFF). THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(5\%R+0.1 \Omega)$.
RESISTANCE TEMPERATURE COEFFICIENT	TEST METHOD MIL-STD-202 ITEM 304	THE RESISTANCE VALUE CHANGE RATE SHALL BE AS TABLE – 3.
LOAD LIFE IN HUMIDITY	TEST METHOD MIL-STD-202 ITEM 103	THE RESISTANCE VALUE CHANGE RATE SHALL BE WITHIN $\pm(5\%R+0.1 \Omega)$.

NOTE : RESISTORS SHALL BE EXAMINED FOR EVIDENCE OF NO MECHANICAL DAMAGE , ARCING AND BREAKDOWN AFTER THE TEST.

PRODUCT : CARBON FILM FIXED RESISTOR**TYPE : CF -12.5/25/50/100/200/300**

7. LOT NO. (Coding System)

