

FR Series



Overview

Applications

embedded microprocessor systems with flash memory.

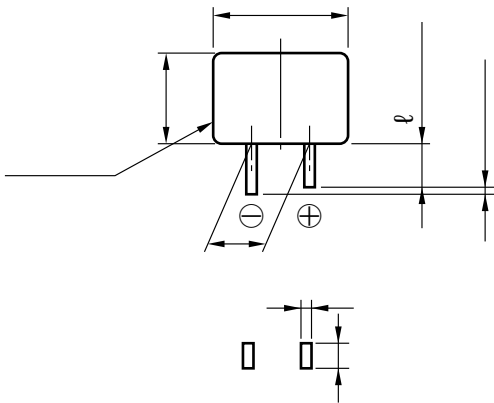
Benefits

- Wide range of temperature from -40°C to +85°C

Part Number System

FR	0H	104	Z	F
		significant figures. Third digit specifies number of zeros.	Z =	

Dimensions – Millimeters



Part Number	$\varnothing D$	H	P	ℓ	d_1	d_2

Specifications

Item		FR Type	Test Conditions (conforming to JIS C 5160-1)
		-40°C to +85°C	
		+80%, -20%	
			Measured at 1 kHz, 10 mA; See also
		> 90% of initial ratings	
		≤ 120% of initial ratings	0.022 F 560 Ω 0.047 F 300 Ω 0.068 F 240 Ω 0.10 F 150 Ω 0.22 F 56 Ω 0.47 F 30 Ω 1.0 F 15 Ω
		≤ 120% of initial ratings	0 Ω 70±2°C
		≥ 50% of initial value	
		≤ 400% of initial value	+25±2°C -25±2°C
		≥ 30% of initial value	-40±2°C
		≤ 700% of initial value	+25±2°C +70±2°C +25±2°C
		≤ 200% of initial value	
		≤ 1.5 CV (mA)	
		Within ±20% of initial value	
			10 to 55 Hz
			+245±5°C
			+260±10°C

Packaging Quantities

Part Number	Bulk Quantity per Box

List of Plating & Sleeve Type

- a. Iron + copper base + lead-free solder plating (Sn-1Cu)
- b. SUS nickel base + copper base + reflow lead-free solder plating (100% Sn, reflow processed)

Series	Part Number	Plating	Sleeve

Recommended Pb-free solder :

- Sn/3.5Ag/0.75Cu*
- Sn/3.0Ag/0.5Cu*
- Sn/0.7Cu*
- Sn/2.5Ag/1.0Bi/0.5Cu*

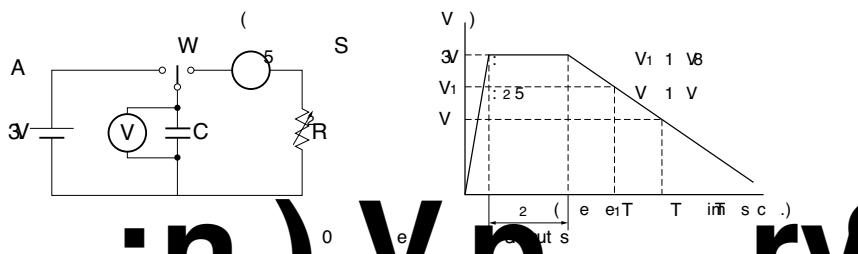
Measurement Conditions cont'd

Capacitance (Discharge System)

Note: The current value is 1 mA discharged per 1 F.

Capacitance (Discharge System – 3.5 V)

$$C = \frac{I \times T}{V_1 - V_2} \quad (F)$$



Capacitance (Discharge System – HV Series)


$$C = \frac{I \times T}{V_1 - V_2} \quad (F)$$



Measurement Conditions cont'd

Equivalent Series Resistance (ESR)

Current (at 30 minutes after charging)

<p>R_c: 1,000 Ω (0.010 F, 0.022 F, 0.047 F) 100 Ω (0.10 F, 0.22 F, 0.47 F) 10 Ω (1.0 F, 1.5 F, 2.2 F, 4.7 F) 2.2 Ω (HV Series)</p>	<p>e (A)</p>	
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Self-Discharge Characteristic (0H – 5.5 V Products)

The self-discharge characteristic is measured by charging a voltage of 5.0 VDC (charge protection resistance: 0 Ω)

pin voltage. The test should be carried out in an environment with an ambient temperature of 25° C or below and relative humidity of 70% RH or below.

4. Dismantling

the electrolyte will cause burning. This product should be treated as industrial waste and not is not to be disposed of by fre.

Notes on Using Supercapacitors or Electric Double-Layer Capacitors (EDLCs)

1. Circuitry Design

1.2 Fail rate in the field

Based on field data, the fail rate is calculated at approximately 0.006 Fit. We estimate that unreported failures are ten

Useful life of the supercapacitor will be significantly affected if used near heat emitting items (coils, power transistors

Notes on Using Supercapacitors or Electric Double-Layer Capacitors (EDLCs) cont'd

2. Mounting

2.1 Mounting onto a reflow furnace

Except for the FC series, it is not possible to mount this capacitor onto an IR / VPS reflow furnace. Do not immerse the

See Recommended Reflow Curves in Section – Precautions for Use

iron under 400°C and soldering time to within 3 seconds. Always make sure that the temperature of the tip is controlled.

3. Storage

Make sure that the supercapacitor is stored according to the following conditions: Temperature: 5 – 35°C (Standard 25°C), Humidity: 20 – 70% (Standard: 50%). Do not allow the build up of condensation through sudden temperature

fields.

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applications, but are not intended to constitute – and KEMET specifically disclaims – any warranty concerning suitability for a specific customer application or use.