"Ultra-high-precision" that fit in your shirt pocket.

2.5V±0.02%(max), 5kΩ±0.01%(max)

F0101VR Pocket Reference

Ultra-high-precision Voltage and Resistance Reference
with reference capacitor and resistive temperature detector

General description

F0101VR is a pocket sized, Ultra-High-Precision, Voltage and Resistance Reference, which is especially suitable for pre-operation inspection of digital multimeters of upto 4-1/2 digits precision. You can make one point calibratin of Voltage of 2.5V, Resistance of 5kΩ and Capacitance of 5nF, with confidence of the case-temperature that can be measured by the on-board resistive temerature detector. ***F0101VR*** can be delivered with an optional tag of the calibration data (Opt.T) of which is done at the factory delivery with calibrated equipments that have the traceability to the National standards.

Specifications

Warranty period	1 year (Opt.T)
Operating temperature range	+25±15℃ (0～80%R.H.)
Storage temperature range	-20～+60℃ (0～80%R.H.)
Size	W38.6 × H15.5 × D78.6 [mm]
Weight	40 [g]
Battery	CR2032 × 1
Power dissipation	≈3mW (No load)
Terminals	M3×3.5 Brass, Nickel base, gold plated. (Standard tightening torque 0.315 [N·m]) ⚠ If the tightening torque exceeds 0.5[N·m] , there is a risk of permanent damage of the circuit board.

Pilot lumps (LED)

Good	Wthite	Power good ($V_{battery}$≥2.7V±1%)
Low	Red	Low battery, or over load

Voltatge (2.5V-terminal — 0V-terminal)

Nominal voltage	2.5V	T_c=+25℃
Tolerance	±500μV	T_c=+25℃
Calibration value accuracy	±20ppm	T_c=T_{cal}, $V_{battery}$=3V | Opt.T
Stabilization time	1s(max)	T_c=+25℃, V_o≤V_{on}±100uV, R_L≥1MΩ
Temperature coefficient	±3ppm/℃(max)	0℃≤T_c≤+60℃
Long-term stability	±20ppm/1000hours(typ)	T_c=+25℃
Maximum load current	±1mA	T_c=+25℃
Load regulation	±50μV/mA(max)	T_c=+25℃, $V_{battery}$=3V
Line regulation	±6μV(max)	T_c=+25℃, $V_{battery}$=3V±10%
Noise voltage	1.45μV_{P-P}(typ)	f = 0.1 to 10Hz
	45nV/√Hz(typ)	f = 1kHz

Resistance (5kΩ-termianl — 2.5V-terminal)

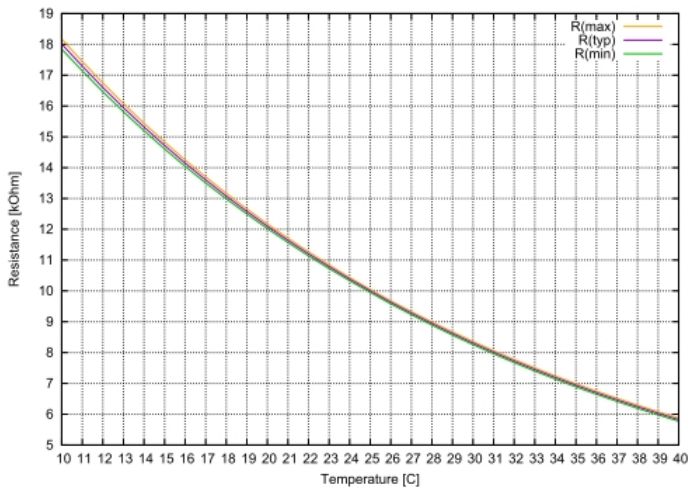
Nominal resistance	5kΩ	T_c=+25℃	
Tolerance	±0.5Ω	T_c=+25℃	
Calibration value accuracy	±50ppm	T_c=T_{cal} | Opt.T	
Stabilization time	1s(max)	T_c=+25℃, R≤R_{cal}±10ppm	
Temperature coefficient	±1.8ppm/℃(max)	0℃≤T_c≤+60℃	
Maximum power dissipation	20mW	ΔR≤1ppm	
Long-term stability		50ppm/2000hours(typ)	T_c=70℃

Capacitance (5nF-terminal — 0V-termianl)

Nominal capacitance	5nF	T_c=+25℃
Tolerance	±80pF	T_c=+25℃
Calibration value accuracy	±0.6%	T_c=T_{cal} | Opt.T
Temperature coefficient	+0|-30ppm/℃(max)	0℃≤T_c≤+60℃
Maximum voltage	25V(max)	
Insulation resistance	10GΩ(min)	

Resistive-Temperature-Detector (Rtd-terminal — 0V-terminal)

T_c ℃	R_{min} kΩ	R_{typ} kΩ	R_{max} kΩ
20	12.023	12.099	12.176
21	11.571	11.642	11.712
22	11.139	11.204	11.269
23	10.725	10.785	10.845
24	10.329	10.384	10.439
25	9.9500	10.000	10.050
26	9.5816	9.6323	9.6830
27	9.2288	9.2800	9.3313
28	8.8908	8.9425	8.9942
29	8.5670	8.6190	8.6711
30	8.2566	8.3089	8.3613



Abbreviations

- ΔR : Variation of R
- ΔV : Variation of V_o
- C : Capacitance between 5nF-terminal and 0V-termianl
- f : Frequency
- R : Resistance between 5kΩ-termianl and 2.5V-terminal
- R_{cal} : R value at the calibration
- R_L : Load resistance connected between 2.5V-terminal and 0V-terminal
- R_{td} : Resistive Temperature Detector
- T_c : Case temperature
- T_{cal} : Ambient temperature at the calibration
- $V_{battery}$: Battery voltage
- V_{cal} : V at the calibration$_{on}$
- V_o : Voltage between 2.5V-termianl and 0V-terminal when the Power switch is pressed
- V_{on} : V_o at no-load steady state

Product information Web-site

F0101VR Pocket Reference
http://www.finetune.co.jp/products/f0101vr/