CAPACITOR LEAKAGE CURRENT/IR METER MODEL 11200

The 11200 Capacitor Leakage Current / IR Meter is Chroma's newest digital leakage current meter. It provides DC 1~650V, 0.5~500mA (150mA for V>100V) or DC1~800V, 0.5~500mA (50mA for V>100V) DC power source with voltage meter and nano-ampere meter. Mainly used for electrolytic capacitor leakage current testing, and aluminum-foil withstand voltage testing (EIAJ RC-2364A). And also can be used for active voltage checking or leakage current testing of absorber, zener diode, neon lamp, etc. Standard RS-232 interface, optional GPIB & Handler interface, high speed and stable measurement capabilities enable the Chroma 11200 can be used for both component evaluation on the production line and fundamental leakage current or IR testing for bench-top applications.

1~650V, 150mA/500mA or 1~800V, 50mA/500mA Low Noise DC Voltage Source

A low noise linear power supply is designed in the Chroma 11200. The DC output voltage range is from 1.0V to 650V/800V, which covers low WV capacitor leakage current testing and aluminum-foil withstand voltage testing range. The maximum charge current is 500mA/100V, 150mA/650V or 50mA/800V, provides quick charge for large capacitor testing.

Precision Low Constant Current Charge Capability (0.5mA ±0.05mA)

In general, the aluminum electrolytic capacitor's anode oxide-foil is using extremely low constant current (0.5mA, 1mA or 2mA ±10% depending on the type of the foil, defined by EIAJ RC-2364A standard) to test foil withstand voltage (Vt) and rise time (Tr). The Chroma 11200 provides constant charge current low to 0.5mA with high stability.

0.001μA~20.00mA Leakage Current Test Range with 4 Digits Resolution

A 0.001uA to 20mA test range nano-ampere meter is built in the Chroma 11200. It is proper to be used for leakage current or IR testing of electrolytic capacitor and high dielectric ceramic capacitors. And the extremely low input resistance (the lowest is 0 ohm) design enables high speed testing for high capacitance device LC or IR testing.

Output Voltage Monitor

The Chroma 11200 always keeps monitoring the real output voltage no matter in the test or setup operation status for safety of the operator. In addition to display the real output voltage in TEST page, an error message shows up in case the output voltage abnormally exceeds 10 volts in other operation pages.

65W/50W Semi-constant Power Discharge Circuit

A 65W/50W semi-constant power discharge circuit is built in the Chroma 11200 for high speed and complete discharge after test. It satisfies quick discharge requirement for charged large capacitors.

Built-in RS-232 Interface and Optional GPIB & Handler Interface

The Chroma 11200 built-in RS-232 interface can be used in R&D or QC for remote control and tested data fetch. And, GPIB & handler interface (A110235) is optional for automation.

MODEL 11200

KEY FEATURES

- Capacitor leakage current test function
- Insulation resistance (IR) test function
- Basic accuracy: 0.3%
- Constant current DC power source with discharge function
- Forward voltage function for diode, LED, zener diode and varistor
- Surge voltage test function for electrolytic capacitor (JIS C5101/5102/5140/5141)
- Option contact check function to improve test reliability
- Aluminum-foil withstand voltage and rise-time test function (for EIAJ RC-2364A)
- Precision low constant current charge capability (0.5mA ±0.05mA, meet EIAJ RC-2364A requirement for withstand voltage testing of lower WV aluminum-foil)
- Large charge current (500mA) capability to fasten charge speed
- 1.0V~650V/800V DC voltage source
- 0.001uA~20.00mA leakage current test range with 4 digits resolution
- Digital timer inside
- Comparator and pass/fail alarming beeper function
- Standard RS-232 interface
- Optional GPIB & handler interface

APPLICATIONS

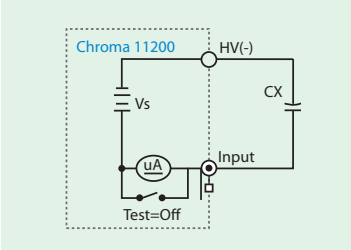
- Various electrolytic capacitors, high dielectric ceramic capacitor, etc.
- Aluminum-foil withstand voltage test (for EIAJ RC-2364A)
- Semiconductor component leakage current test or insulation resistance test
- Insulation resistance test of various anti-static electric materials or non-ultra-high insulation materials (IR<100GΩ)

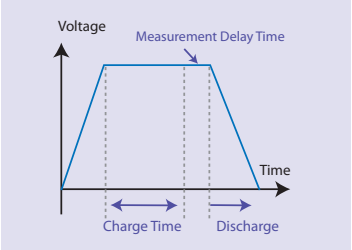
Chroma

APPLICATIONS

Standard Leakage Current Testing for Various Electrolytic Capacitors

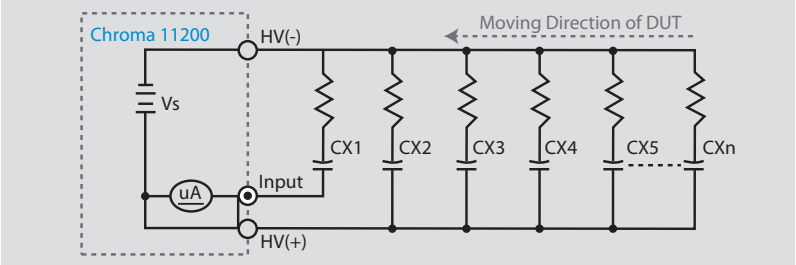
Capacitor leakage current is defined in standards. In general, the leakage current is after charged (the Chroma 11200 is using 98% for identity) plus a period time (for example 60 sec. ±10 sec.). And, the Chroma 11200 provides a semi-constant-power discharge circuit for quick discharge after testing. Therefore, selecting [SEQuence] test mode for this application is recommended. It will follow the preset time to charge, test and then discharge. After that, it will display the tested result and judge pass/fail.





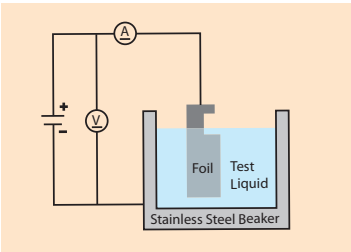
Automatic Production Test for Various Electrolytic Capacitors

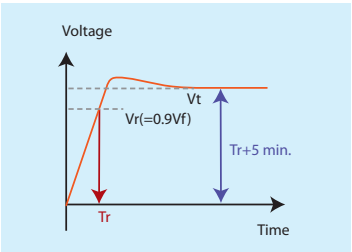
On the automatic production line of electrolytic capacitors, generally, several pre-charging station are built with a current limit series resistor in each station. When set the meter in [STEP] test mode, TEST status, measure the leakage current via an external trigger. The Chroma 11200 provides up to 500mA (below 100 volts) large output current and low noise voltage source which can be used as charging and testing voltage source. The tested result will be displayed including pass/fail judgment. In addition, it can be controlled through the GPIB interface and handler interface for automation.



Aluminum-foil Withstand Voltage Testing

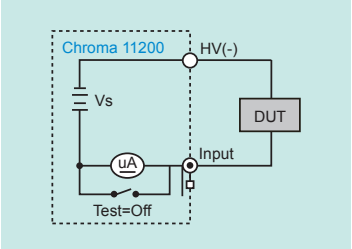
Generally, the withstand voltage (Vt) and the rise time (Tr) testing of aluminum oxide foil follows EIAJ RC-2364A standard, to drive a constant current (0.5mA, 1mA or 2mA, depending on the type of the foil) to test. The needed constant charge current is very low, and the permitted tolerance of the current is very small (±0.05mA). And it also needs high speed voltage sampling with a built-in timer. The Chroma 11200 provides WV (withstand voltage) test function for complete solution. And 220 points of tested WV curve data can be fetched via built-in RS-232 interface.





Low Capacitance Device Leakage Current or IR Testing

In leakage current or IR testing of low capacitance device, because the charge time needed is shorter, normally the charge process can be skipped. Select [STEP] test mode, TEST status for direct testing is recommended. "INTernal" trigger is proper to be selected for quality check, and "EXTernal" trigger is proper to be selected for automatic production test.



Diode, LED, Zener Diode, Varistor Testing

The voltage and nano-ampere measurement functions of Chroma 11200 can be applied in I-V characteristic testing of diode, LED, zener diode, varistor, etc. For bench-top application, [C.C. Power] test mode supports dynamic output current adjustment. The display will show the real-time voltage measurements. The data can be fetched by optional soft panel for plotting the forward I-V curve. On the automatic production line, there are only few specified points needed to test. Selecting [Forward Volt] test mode for this application is recommended. The tested result will be including pass/fail judgment.

DIGITAL FUNCTIONS

Null

Eliminates the measurement error caused by leakage current of outside test jigs and offset voltage of inside circuit.

Compare

Selection of comparator function ON and OFF. The limit can be set to single upper or lower, or both, depending on test requirement. For example, for general insulation material and capacitor, lower than the upper limit of leakage current is pass. However, for anti-static electric material, upper than the lower limit of leakage current or between the upper and lower limits is pass.

Contact Check

On the automatic production line, the contact fail caused by wear of test probes may easily happen. If setting the upper limit of leakage current only, the tested results will always be pass because of the open circuit. It is very serious risk for product quality control. The contact check function of Chroma 11200 can quickly measure the capacitance by high frequency in the test process to ensure device against sorting error.

SOFT PANEL

Chroma 11200's soft panel provides control function for six test modes (Leakage Current/IR, Null, Withstand Voltage, C.C. power, forward volt, and surge) and system configuration. Users can set detailed condition for test and control Chroma 11200 test steps through soft panel. The report function is able to export test results including a curve to a printer or save it to an excel file. The excel file can be used for more applications, like calculating capacitance with setting constant current, time, and voltage measurement data at withstand voltage test (C = I*Δt/ΔV).

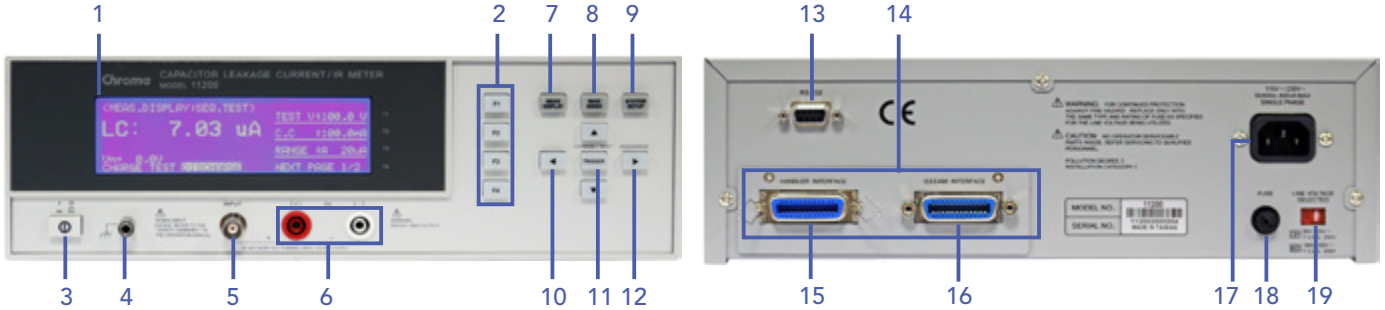
TEST MODES

SEQ. Test Mode	It provides sequence test of charge, test, and discharge by a single trigger.
STEP Test Mode	The each step of charge, test, and discharge is controlled by manual.
W.V. Test Mode	This mode is for aluminum-foil withstand voltage (Vt) and rise time (Tr) testing.
C.C. Power Test Mode	It provides precision and low noise constant current like a DC power supply. Users can adjust the output current and voltage dynamically.
Forward Volt Test Mode	This mode is for diode forward voltage (VF) testing and judging.
Surge Test Mode	Users can set charge and discharge time to perform loop test (max. 9999 times) for reliability verifying.

SYSTEM CONFIG FUNCTIONS

Beeper	The beeper function is for Pass/Fail judgment and key-pressed echo. There are settings of volume, sound mode, and alarm mode.
Trig. Delay	The delay time is between test start and external trigger, generally used for automatic equipment timing adjustment or waiting a real leakage current.
Trig. Edge	A selection of rising or falling edge trigger for automation.
RS-232 Baudrate	There are 600, 1200, 4800, 9600, 19200, 28800 for RS-232 baud rate selecting.
Key Lock	The function is designed to avoid the setup information is changed and the keypad is touched by mistake.
Line Frequency	The function is to filter the selected line frequency noise by advanced power noise filtering technology for accurate measurement.
Charge Time	The function is to filter the selected line frequency noise by advanced power noise filtering technology for accurate measurement.
Range Dwell	The dwell time is to avoid the test result is affected by RC delay after range changes.

PANEL DESCRIPTION



1. LCD Display
2. Function Keys
3. Power Switch
4. Ground Terminal
5. Current Input Terminal
6. Voltage Output Terminals
7. MEAS DISPLAY Key
8. MAIN INDEX Key
9. SYSTEM SETUP Key
10. Cursor Keys
11. Trigger/Charge/Test Key
12. Right Cursor/Discharge Key
13. RS-232 Interface
14. GPIB and Handler Interface (Option A110235)
15. Handler Interface
16. GPIB Interface
17. AC Line Input
18. Fuse
19. Line Voltage Selector

SPECIFICATIONS

Model		11200 (650V)	11200 (800V)
Main Function		Capacitor Leakage Current / IR Meter	
Test Parameter		LC, IR	
Test Signals Information			
Voltage		1.0 V~100 V, step 0.1 V; 101V~650 V,step 1V; ±(0.5% + 0.2V)	1.0 V~100 V, step 0.1 V; 101V~800V,step 1V; ±(0.5% + 0.2V)
Charge Current Limit		V ≦ 100V: 0.5mA~500mA, 50W max. V > 100V: 0.5mA~150mA, 97.5W max. step 0.5mA; ±(3% + 0.05mA)	V ≦ 100V: 0.5mA~500mA, 50W max. V > 100V: 0.5mA~50mA, 40W max. step 0.5mA; ±(3% + 0.05mA)
Measurement Display Range		LC : 0.001μA~20.00mA	
Basic Measurement Accuracy *1		LC Reading : ±(0.3% + 0.005μA)	
Measurement speed (Ext. Trigger, Hold Range, Line Frequency 60Hz)	Fast	77 ms	
	Medium	143 ms	
	Slow	420 ms	
Function			
Correction		Null zeroing	
Test Voltage Monitor		Vm: 0.0 V~660.0V; ±(0.2% of reading + 0.1V)	Vm: 0.0 V~900.0V; ±(0.2% of reading + 0.1V)
Charge Timer		0~999 sec.	
Dwell Timer		0.2~999 sec.	
Foil WV Tester			
Test Parameter		Tr (Rise Time), Vt (Foil Withstand Voltage)	
Test Signals	Voltage Limit	650 V typical	800V typical
	Constant Charge Current	0.5mA~150mA, step 0.5mA; ±(3% of reading + 0.05mA)	0.5mA~50mA, step 0.5mA; ±(3% of reading + 0.05mA)
Test Display Range	Tr (Rise Time)	0.05~600.0 sec.	
	Charge Voltage	0.1V~660.0V	0.1V~900.0V
Test Time		30~600 sec.	
Interface		RS-232(Standard), Handler, GPIB (Optional)	
Display		240 x 64 dot-matrix LCD display	
Trigger		Internal, External, Manual, BUS	
General			
Operation Environment		Temperature : 10˚C~40˚C Humidity : < 90 % RH	
Power Consumption		400 VA max.	
Power Requirement		90 ~ 132Vac or 180 ~ 264Vac, 47 ~ 63Hz	
Dimension (H x W x D)		100 x 320 x 346.1 mm / 3.94 x 12.6 x 13.63 inch	
Weight		8 kg / 17.62 lbs	

Note*1 : 23 ± 5˚C after null correction. Refer to Operation Manual for detail measurement accuracy descriptions.
*All specifications are subject to change without notice. Please visit our website for the most up to date specifications.

ORDERING INFORMATION

11200 : Capacitor Leakage Current / IR Meter 650V
11200 : Capacitor Leakage Current / IR Meter 800V
11200 : Capacitor Leakage Current / IR Meter with contact check function 650V
A110235 : GPIB & Handler Interface
A110236 : 19" Rack Mounting Kit
A112001 : Triangle Test Fixture
A112004 : Softpanel for Model 11200

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