Programmable
DC Electronic Load

MODEL 63200 Series

Key Features:

- Power Rating: 2600W,5200W,6500W,10400W, 15600W
- Voltage range: 1-80V/ 2.5-500V
- Current range: Up to 1000A
- CC, CR, CV, CP load modes
- Master/Slave paralleling control mode, allow synchronous load control under static and dynamic loading mode
- Dynamic loading: Up to 20KHz
- Only need 1V to draw rated current
- Programmable slew rate, up to 41A/uS
- Measurement: Voltage / Current Power/ Resistance
- Large LED/LCD display
- External loading waveform simulation
- Short circuit simulation and short circuit current measurement
- Full protection: OP,OC,OV,OT and reverse protection
- Versatile remote controller
- GPIB& RS-232C; RS-485C interface

Chroma

PROGRAMMABLE
DC ELECTRONIC LOAD

The Chroma Electronic Loads 63200 series are designed for DC power source, power electronic devices and components testing. The high power rating, parallel and synchronization capabilities make them the ideal tool for testing the high power UUT such as SMR,UPS, battery, and fuel cell.

The 63200 series offers 9 different models with power range from 2600 watts to 15600 watts, current from 50A to 1000A and up to 500V input voltage. The 4 load modes setup provide different load simulations for various application occasions. The CC/CR modes are designed to test constant voltage type of power supply. CV mode is used to test battery charger and current source, while CP mode is ideal for battery testing by simulating the real discharge curve.

The 63200 series can draw its rated current under very low voltage (1V typical) even under the highest specified slew rate. This unique feature guarantees the best loading performance to a low voltage power supply.

With the unique external waveform simulation and Master /Slave control capability, the 63200 series electronic loads allow users to parallel and synchronize more than one load together from an internal or external loading control signal. This feature provides unlimited load simulation and the possibility of power expansion.

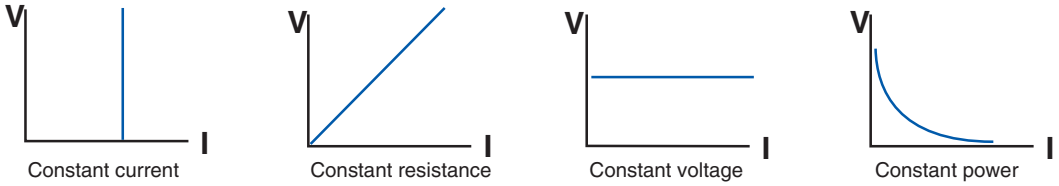
The 63200 series also supply necessary measurement functions and short circuit simulation that extend the test capability for even the most demanding engineering tests and ATE applications.

With the LCD display and rotary knob, the 63200 electronic loads offer versatile front panel operations. Users are able to control the 63200 family remotely via GPIB, RS-232C,RS-485 or APG (Analog Programming) interface.

Chroma 63200 series loads are built in fan speed control to minimize the audio noise. The self-diagnosis routine and the full protections against OPP, OCP, OVP, OTP and reverse polarity ensure the best quality and reliability.

1. Application specific load simulation

Chroma electronic loads 63200 series provide constant current, constant resistance, constant voltage and constant power modes for various application requirements.



The CC and CR mode loading simulation is helpful to test whether the output voltage of the UUT remains stable or regulated under different loading current or resistance conditions.

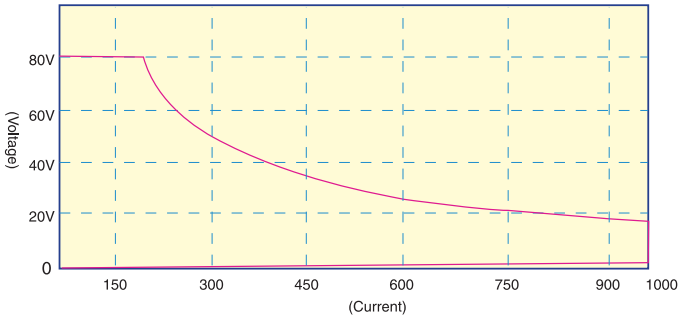
For battery chargers, CV mode may help to change the output voltage of a charger and therefore can test if the battery charger has correct charging current corresponding to its own output, or more precisely, the battery voltage.

If the UUT is battery, the electronic load is able to simulate the behavior of the device that uses the battery. For most of the electronic and electrical devices, their power consumption patterns are more likely constant power devices. Consequently, CP mode simulation will be essential for a battery discharge load.

2. Low voltage operating characteristics

For high power load, its high loading current may cause dramatic line drop between UUT and load terminal due to the line impedance of cabling. So, the lower operating voltage allows the 63200 series loads to draw sufficient current from a low volt output power supply directly.

Meanwhile, 63200 series loads use current close loop design, and connect all power MOSFET devices in parallel to insure high accuracy load control with minimum drift less than 0.15% of the current setting. The MOSFET technology accomplishes the input impedance to a minimum that enables the load to draw very high current even at very low voltage. For example, model 63209 is capable of drawing 1000A at only 1V input.



Model 63209(15600W) input characteristics

3. Measurements

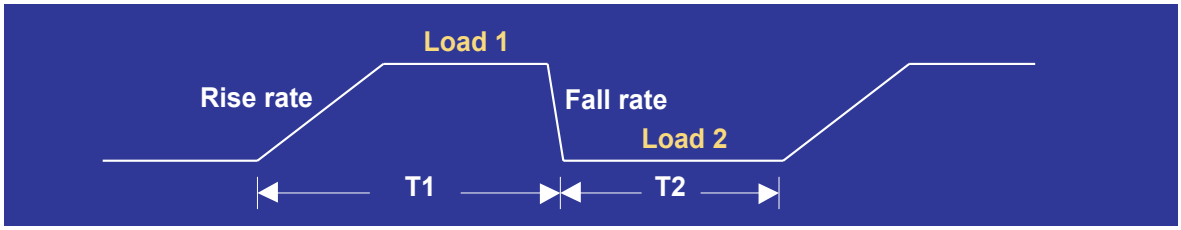
Chroma 63200 series are built in the15-bits precision A/D converter, thus can achieve 0.05%F.S., 0.1%F.S. and 0.3%F.S. accuracy for voltage, current and power measurement respectively. And they can be shown simultaneously on three big LED displays for user’s convenience.

In additional to standard measurements, they also provide voltage and current monitor outputs, which are useful when user needs to monitor the voltage and current waveform via scope.

4. Dynamic loading and control

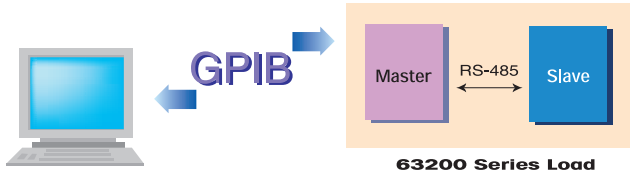
Modern electronic devices operate at very high speed, thus,it is important for an electronic load to perform well in the transient and dynamic response of power devices. To satisfy these testing applications, the 63200 loads offer high speed, programmable dynamic load simulation and control capability ever achieved before. The figure below shows the programmable parameters of the 63200 load modules.

The programmable slew rate makes the simulation of transient load change demanded by the requirement of real life application possible. The internal waveform generator of 63200 is capable of producing maximum slew rate at 25A/uS (63208), and dynamic cycling up to 20KHz. Its dedicated remote load senses and controls circuit guarantee the minimum waveform distortion during continuous load changes.



5. Master / Slave parallel control

When higher power is required,it is common to parallel two electronic loads together to draw higher current. 63200 series high power loads have smart Master / Slave control mode. When the loads are set to Master / Slave mode, users can program the loading (CC mode only) on master unit. The loading current values of the slave units will be calculated and downloaded by master unit automatically. In short, unlike the traditional design, users may consider several load units that work under Master / Slave mode as a single load unit. It simplifies the user operation dramatically.

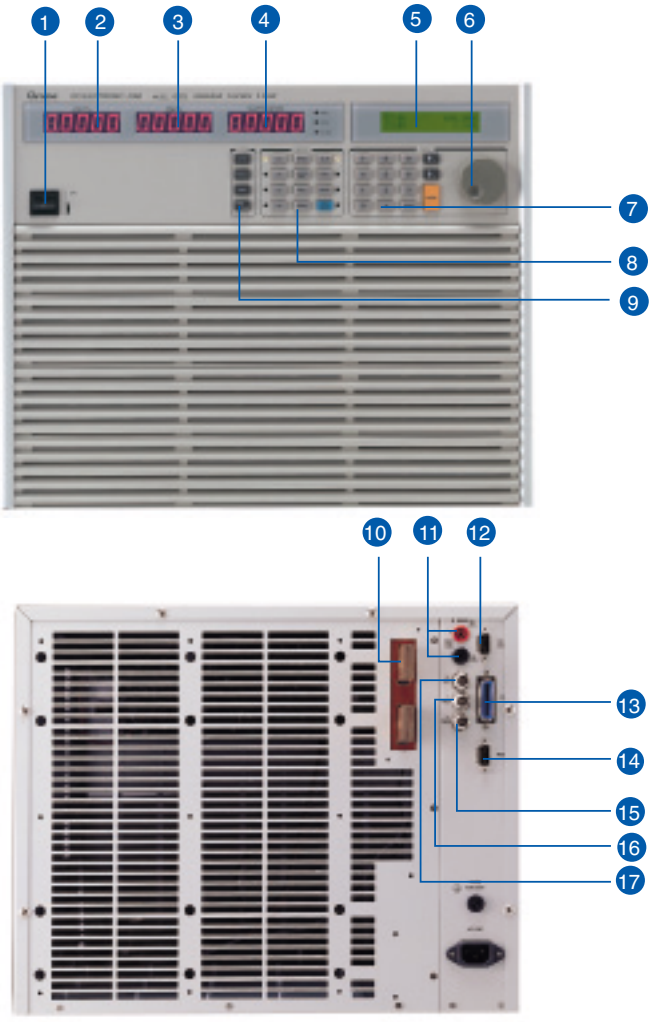


6. External loading waveform simulation

The 63200 series electronic loads can be controlled by external analog control signal, which is generated by any kind of signals or arbitrary waveform generator. Thus, it is capable of simulating any loading waveforms observed in the field.

7. Short circuit simulation

63200 series electronic loads can also simulate short circuit condition. Owing to this capability, it can short DC power source or any power supplies that have built in current limit function, and measure their short circuit currents. So that users can verify if the UUT current limit is functional.



Model: 63203, 63204

1. **Power Switch**
2. **LED Display:**
   Voltage read back.
3. **LED Display:**
   Current/ ohm read back.
4. **LED Display:**
   Power read back.
5. **LCD Display:**
   For setting and editing.
6. **Rotary knob:**
   To adjust the loading and parameter setting.
7. **Numeric key:**
   For data setting.
8. **Function key:**
   To select load mode, control mode, and define the reading specification.
9. **System key:**
   For system config and data store, recall.
10. **Load terminal**
11. **Voltage sense terminal**
12. **RS-485 connector**
13. **GPIB connector**
14. **RS-232C connector**
15. **External V reference:**
    External programming voltage input.
16. **Voltage monitor output:**
    Analog output which indicates the voltage waveform.
17. **Current monitor output:**
    Analog output which indicates the current waveform.

Applications

1. Power supply testing

Power supplies have played a critical role on electrical and electronic devices. They are diversified into several different configurations for different applications. For example, AC/AC power supplies are for UPS and AVR, AC/DC power supplies are for PC power supplies, and DC/AC power supplies are for inverters that transfer battery power to AC for home appliances. As to DC/DC converters, they are widely used in battery powered devices such as cellular phones and laptop computers.
With four different load modes, Chroma 63200 series electronic loads are capable of testing all sorts of DC output power supplies directly or via rectifier, they can also be used to test the AC output power supplies.

2. Electronic & Electrical devices testing

Almost all modern electronic and electrical devices are built in with power supply. Therefore, DC electronic load is an important instrument for these devices during R/D and Q/A phases. For example, A/D, D/D and D/A stages are normally integrated in a UPS. Consequently, Chroma 63200 electronic loads are helpful to test the internal A/D and D/D boards of the UPS.

3. Battery testing

For most of the electronic and electrical devices, their power consumption patterns are constant power. Therefore, the CP mode in 63200 series electronic loads is ideal to use as a discharge load for battery testing.

4. System integration

Chroma 63200 series electronic loads provide GPIB, RS-232C and RS-485 PC controllable interfaces. The external waveform simulation and voltage / current monitoring capability make Chroma 63200 family ideal for automatic system integration.

SPECIFICATIONS

Model	63201		63202		63203	
power*1	260W	2600W	260W	2600W	520W	5200W
Current	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Voltage	1-80V		2.5-500V		1-80V	
Min. Operating voltage	1V@30A	1V@300A	2.5V@5A	2.5V@50A	1V@60A	1V@600A
Constant Current mode						
Range	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Resolution	7.5mA	75mA	1.25mA	12.5mA	15mA	150mA
Accuracy	0.1%+0.1%F.S.	0.2%+0.1%F.S.	0.1%+0.1%F.S.	0.2%+0.1%F.S.	0.1%+0.1%F.S.	0.2%+0.1%F.S.
Constant Resistance Mode						
Range	0.005-20ohm	0.25-1000ohm	0.25-1000ohm	10-40000ohm	0.0025-10ohm	0.125-500ohm
Resolution	12bits	12bits	12bits	12bits	12bits	12bits
*Accuracy*2*	0.6mho+0.35%	0.9mho+0.1%	0.012mho+0.35%	0.04mho+0.1%	1.2mho+0.35%	1.2mho+0.1%
*Accuracy*3(Vin>7V)*	0.6mho+0.35%	0.012mho+0.35%	0.012mho+0.35%	112.5u mho+0.35%	1.2mho+0.35%	0.024mho+0.35%
Constant Voltage mode						
Range	1-16V	1-80V	2.5-125V	2.5-500V	1-16V	1-80V
Resolution	4mV	20mV	31mV	125mV	4mV	20mV
Accuracy	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.
Constant Power mode						
Range	0.6-260W	6-2600W	0.625-260W	6.25-2600W	1.2-520W	12-5200W
Resolution	7.5mW	75mW	3.125mW	31.25mW	22.5mW	225mW
Accuracy	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.
Dynamic mode						
Timing						
T1&T2	0.025-10mS	1mS-30S	0.025-10mS	1mS-30S	0.025-10mS	1mS-30S
Resolution	1μS	1mS	1μS	1mS	1μS	1mS
Accuracy	1μS+100ppm	1mS+100ppm	1μS+100ppm	1mS+100ppm	1μS+100ppm	1mS+100ppm
Slew arte	5mA-1.25A/μS	50mA-12.5A/μS	0.8mA-0.2A/μS	8mA-2A/μS	10mA-2.5A/μS	100mA-25A/μS
Resolution	5mA/μS	50mA/μS	0.8mA/μS	8mA/μS	10mA/μS	100mA/μS
Current						
Range	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Resolution	7.5mA	75mA	1.25mA	12.5mA	15mA	150mA
Accuracy	0.4%F.S.		0.4%F.S.		0.4%F.S.	
Measurement						
Voltage read back						
Range	0-16V	0-80V	0-125V	0-500V	0-16V	0-80V
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Current read back						
Range	0-30A	0-300A	0-5A	0-50A	0-60A	0-600A
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power read back						
Range	0-260W	0-2600W	0-260W	0-2600W	0-520W	0-5200W
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.	
General						
Short circuit						
current	30A	300A	5A	50A	60A	600A
Size(mm)	440(W)x 177(H)x 644(D)		440(W)x 177(H)x 644(D)		440(W)x 353(H)x 644(D)	
Weight	35kg		35kg		58kg	
Safety & EMC	CE		CE		CE	

Selection Guide :

Model / Power / Voltage	2600W	5200W	6500W	10400W	15600W
80V	63201	63203	63205	63206/ 63207	63208/ 63209
500V	63202	63204	--------	--------	--------

SPECIFICATIONS

Model	63204		63205		63206	
power*1	520W	5200W	650W	6500W	1040W	10400W
Current	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Voltage	2.5-500V		1-80V		1-80V	
Min. Operating voltage	2.5V@10A	2.5V@100A	1V@18A	1V@180A	1V@60A	1V@600A
Constant Current mode						
Range	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Resolution	2.5mA	25mA	4.5mA	45mA	15mA	150mA
Accuracy	0.1%+0.1%F.S.	0.2%+0.1%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode						
Range	0.125-500ohm	5-20000ohm	0.08-32ohm	0.4-1600ohm	0.0025-10ohm	0.125-500ohm
Resolution	12bits	12bits	12bits	12bits	12bits	12bits
*Accuracy*2*	0.024mho+0.35%	0.08mho+0.1%	0.375mho+0.35%	0.75mho+0.1%	1.2mho+0.35%	1.2mho+0.1%
*Accuracy*3(Vin>7V)*	0.024mho+0.35%	225u mho+0.35%	0.375mho+0.35%	0.075mho+0.35%	1.2mho+0.35%	0.024mho+0.35%
Constant Voltage mode						
Range	2.5-125V	2.5-500V	1-16V	1-80V	1-16V	1-80V
Resolution	31mV	125mV	4mV	20mV	4mV	20mV
Accuracy	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.
Constant Power mode						
Range	1.25-520W	12.5-5200W	0.36-650W	3.6-6500W	1.2-1040W	12-10400W
Resolution	6.25mW	62.5mW	4.6mW	46mW	22.5mW	225mW
Accuracy	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.
Dynamic mode						
Timing						
T1&T2	0.025-10mS	1mS-30S	0.025-10mS	1mS-30S	0.025-10mS	1mS-30S
Resolution	1μS	1mS	1μS	1mS	1μS	1mS
Accuracy	1μS+100ppm	1mS+100ppm	1μS+100ppm	1mS+100ppm	1μS+100ppm	1mS+100ppm
Slew arte	1.6mA-0.4A/μS	16mA-4A/μS	3mA-0.75A/μS	30mA-7.5A/μS	10mA-2.5A/μS	100mA-25A/μS
Resolution	1.6mA/μS	16mA/μS	3mA/μS	30mA/μS	10mA/μS	100mA/μS
Current						
Range	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Resolution	2.5mA	25mA	4.68mA	46.8mA	15mA	150mA
Accuracy	0.4%FS		0.4%FS		0.4%FS	
Measurement						
Voltage read back						
Range	0-125V	0-500V	0-16V	0-80V	0-16V	0-80V
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Current read back						
Range	0-10A	0-100A	0-18A	0-180A	0-60A	0-600A
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power read back						
Range	0-520W	0-5200W	0-650W	0-6500W	0-1040W	0-10400W
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.	
General						
Short circuit						
current	10A	100A	18A	180A	60A	600A
Size (mm)	440(W)x 353(H)x 644(D)		440(W)x 310(H)x 644(D)		440(W)x 443.7(H)x 644(D)	
Weight	58kg		64kg		90kg	
Safety & EMC	CE		CE		CE	

Order Information :

63201 : High Power DC Electronic Load 2.6KW/ 300A/ 80V

63202 : High Power DC Electronic Load 2.6KW/ 50A/ 500V

63203 : High Power DC Electronic Load 5.2KW/ 600A/ 80V

63204 : High Power DC Electronic Load 5.2KW/ 100A/ 500V

63205 : High Power DC Electronic Load 6.5KW/ 180A/ 80V

63206 : High Power DC Electronic Load 10.4KW/ 600A/ 80V

63207 : High Power DC Electronic Load 10.4KW/ 300A/ 80V

63208 : High Power DC Electronic Load 15.6KW/ 600A/ 80V

63209 : High Power DC Electronic Load 15.6KW/ 1000A/ 80V

A600009 : GPIB Cable (200 cm)

A600010 : GPIB Cable (60 cm)

A632001 : Remote Controller

A632001

SPECIFICATIONS

Model	63207		63208		63209	
power*1	1040W	10400W	1560W	15600W	1560W	15600W
Current	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A
Voltage	1-80V		1-80V		1-80V	
Min. Operating voltage	1V@30A	1V@300A	1V@60A	1V@600A	1V@100A	1V@1000A
Constant Current mode						
Range	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A
Resolution	9.3mA	75mA	15mA	150mA	31.25mA	250mA
Accuracy	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.	0.1%+0.2%F.S.
Constant Resistance Mode						
Range	0.005-20ohm	0.25-1000ohm	0.0025-10ohm	0.125-500ohm	0.0025-10ohm	0.125-500ohm
Resolution	12bits	12bits	12bits	12bits	12bits	12bits
*Accuracy*2*	0.6mho+0.35%	0.9mho+0.1%	1.2mho+0.35%	1.2mho+0.1%	1.2mho+0.35%	1.2mho+0.1%
*Accuracy*3(Vin>7V)*	0.6mho+0.35%	0.012 mho+0.35%	1.2mho+0.35%	0.024mho+0.35%	1.2mho+0.35%	0.024mho+0.35%
Constant Voltage mode						
Range	1-16V	1-80V	1-16V	1-80V	1-16V	1-80V
Resolution	4mV	20mV	4mV	20mV	4mV	20mV
Accuracy	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.	0.05%+0.1%F.S.
Constant Power mode						
Range	0.744-1040W	6-10400W	1.2-1560W	12-15600W	2.5-1560W	20-15600W
Resolution	9.3mW	75mW	22.5mW	225mW	31.255mW	225mW
Accuracy	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.	0.5%+0.5%F.S.
Dynamic mode						
Timing						
T1&T2	0.025-10mS	1mS-30S	0.025-10mS	1mS-30S	0.025-10mS	1mS-30S
Resolution	1μS	1mS	1μS	1mS	1μS	1mS
Accuracy	1μS+100ppm	1mS+100ppm	1μS+100ppm	1mS+100ppm	1μS+100ppm	1mS+100ppm
Slew arte	6mA-1.5A/μS	50mA-12.5A/μS	12mA-3A/μS	100mA-25A/μS	20mA-5A/μS	166mA-41.6A/μS
Resolution	6mA/μS	50mA/μS	10mA/μS	100mA/μS	20mA/μS	166mA/μS
Current						
Range	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A
Resolution	9.37mA	75mA	15mA	150mA	31.25mA	250mA
Accuracy	0.4%FS		0.4%FS		0.4%FS	
Measurement						
Voltage read back						
Range	0-16V	0-80V	0-16V	0-80V	0-16V	0-80V
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Current read back						
Range	0-30A	0-300A	0-60A	0-600A	0-100A	0-1000A
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.1%+0.1%F.S.		0.1%+0.1%F.S.		0.1%+0.1%F.S.	
Power read back						
Range	0-1040W	0-10400W	0-1560W	0-15600W	0-1560W	0-15600W
Resolution	15bits	15bits	15bits	15bits	15bits	15bits
Accuracy	0.3%+0.3%F.S.		0.3%+0.3%F.S.		0.3%+0.3%F.S.	
General						
Short circuit						
current	30A	300A	60A	600A	100A	1000A
Size (mm)	440(W)x 443.7(H)x 644(D)		546(W)x 843.7(H)x 700(D) (Cabinet)		546(W)x 843.7(H)x 700(D) (Cabinet)	
Weight	90kg		150kg		150kg	
Safety & EMC	CE		CE		CE	

All specifications are subject to change without notice.

Note*1: The power rating specifications at ambient temperature=25℃And see the diagram below for power derating.(Derate power by 1.53% per℃ from 25℃ to 40℃)

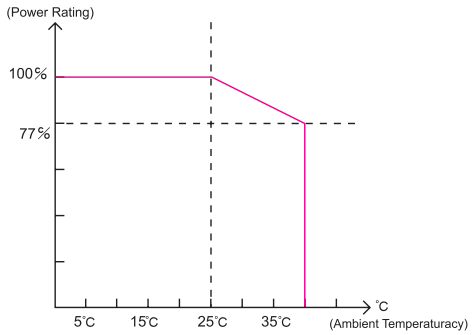
Note*2: The Vin is greater than min. operating voltage of each model.

Note*3: The Vin is greater than 7V of each model.

All CR mode of accuracy should be refer to the CC mode of accuracy.

Product Availability Information:

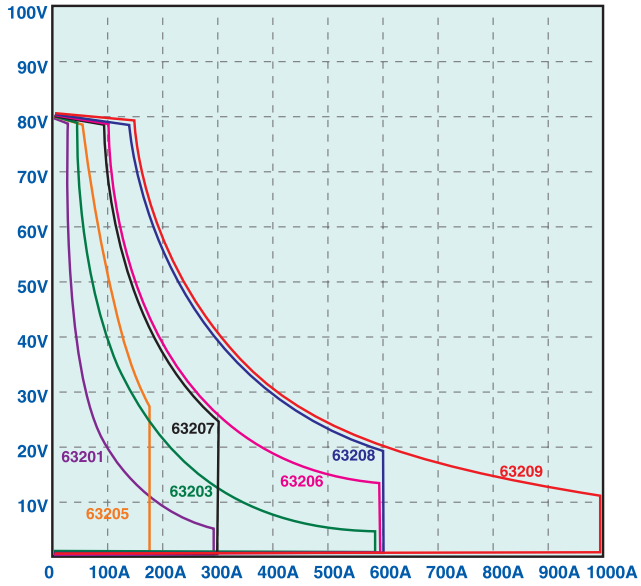
Model 63206, 63208, 63209 are under developing.



Low Voltage & V-I Curve Operating Characteristics (Typical) of 63200 Series

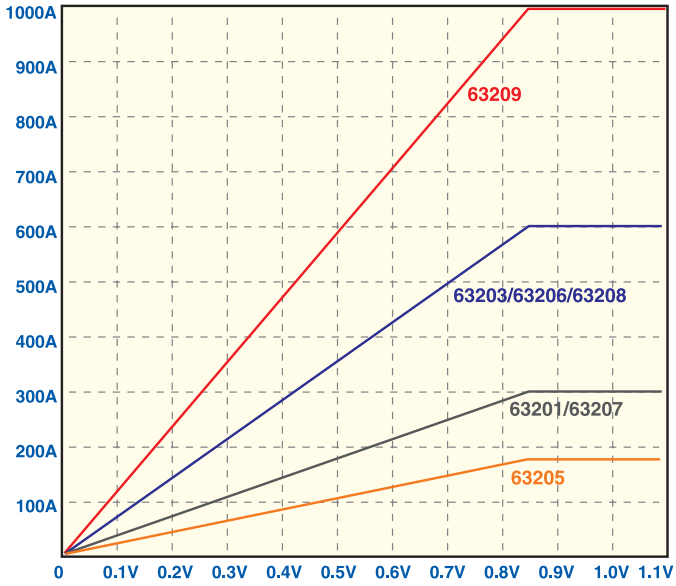
V-I Curve:

Model 63201/ 63203/ 63205/ 63206/ 63207/ 63208/ 63209



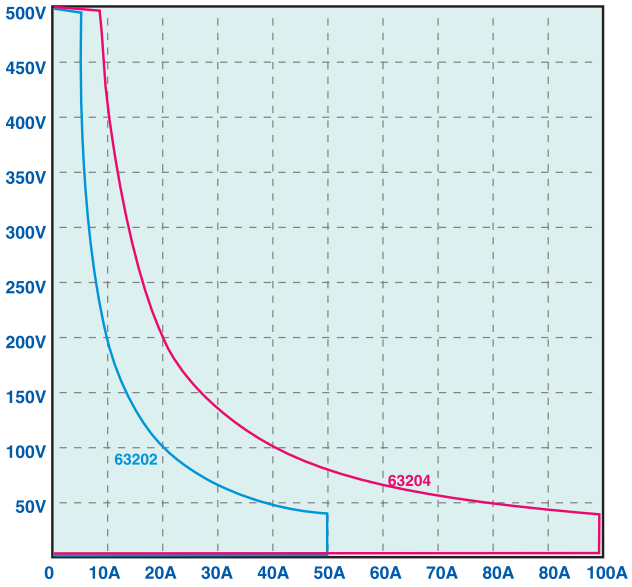
Low Voltage Operating:

Model 63201/ 63203/ 63205/ 63206/ 63207/ 63208/ 63209



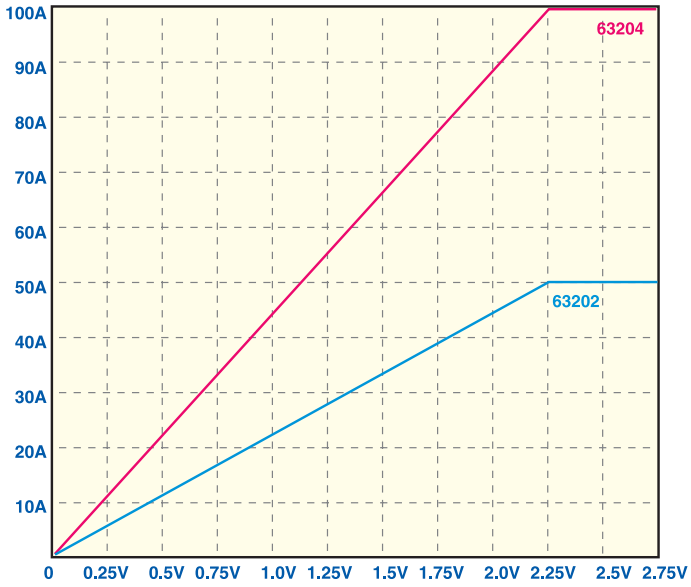
V-I Curve:

Model 63202/63204



Low Voltage Operating:

Model 63202/63204



Note: All specifications are measured at load input terminals.
(Ambient temperature of +40℃)

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