

CC-E

Insulation type DC-DC converter

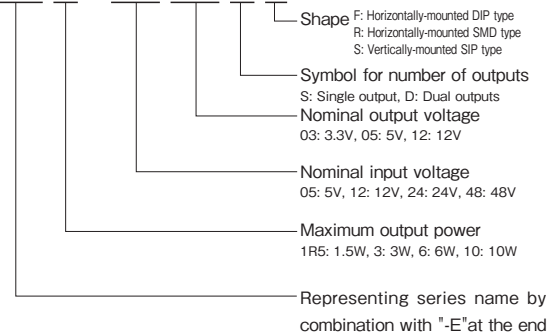


Features

- Mounting area halved compared to existing products
- Nonuse of tantalum capacitor or aluminum electrolytic capacitor
- Remote On/Off function incorporated in all series of products
- High accuracy of $\pm 3\%$ in output voltage (10W of lower single output)
- 5-side metal-shielded low noise design
- Lightweight design with no resin filled up
- Supports DIP insertion, SMD mounting and SIP vertical insertion (3W products)

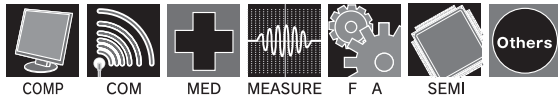
Model-naming method

CC 3 - 05 05 S F - E



Conformity to RoHS Directive

Applications



Product Line up

| Output power | Input voltage | Model name (output voltage: 3.3V) | | | Model name (output voltage: 5V) | | | | Model name (output voltage: 12V/15V) | | | | Model name (output voltage: $\pm 12V/\pm 15V$) | | | | |
|--------------|---------------|-----------------------------------|----------------|----------------|---------------------------------|----------------|----------------|----------------|--------------------------------------|----------------|----------------|----------------|---|----------------|----------------|----------------|--------------|
| | | Output current | DIP type | SMD type | SIP type | Output current | DIP type | SMD type | SIP type | Output current | DIP type | SMD type | SIP type | Output current | DIP type | SMD type | SIP type |
| 1.5W | 5V | 0.4A | CC1R5-0503SF-E | CC1R5-0503SR-E | - | 0.3A | CC1R5-0505SF-E | CC1R5-0505SR-E | - | 0.125A (0.1A) | CC1R5-0512SF-E | CC1R5-0512SR-E | - | 0.06A (0.05A) | CC1R5-0512DF-E | CC1R5-0512DR-E | - |
| | 12V | 0.4A | CC1R5-1203SF-E | CC1R5-1203SR-E | - | 0.3A | CC1R5-1205SF-E | CC1R5-1205SR-E | - | 0.125A (0.1A) | CC1R5-1212SF-E | CC1R5-1212SR-E | - | 0.06A (0.05A) | CC1R5-1212DF-E | CC1R5-1212DR-E | - |
| | 24V | 0.4A | CC1R5-2403SF-E | CC1R5-2403SR-E | - | 0.3A | CC1R5-2405SF-E | CC1R5-2405SR-E | - | 0.125A (0.1A) | CC1R5-2412SF-E | CC1R5-2412SR-E | - | 0.06A (0.05A) | CC1R5-2412DF-E | CC1R5-2412DR-E | - |
| | 48V | 0.4A | CC1R5-4803SF-E | CC1R5-4803SR-E | - | 0.3A | CC1R5-4805SF-E | CC1R5-4805SR-E | - | 0.125A (0.1A) | CC1R5-4812SF-E | CC1R5-4812SR-E | - | 0.06A (0.05A) | CC1R5-4812DF-E | CC1R5-4812DR-E | - |
| 3W | 5V | 0.8A | CC3-0503SF-E | CC3-0503SR-E | CC3-0503SS-E | 0.6A | CC3-0505SF-E | CC3-0505SR-E | CC3-0505SS-E | 0.25A (0.2A) | CC3-0512SF-E | CC3-0512SR-E | CC3-0512SS-E | 0.125A (0.1A) | CC3-0512DF-E | CC3-0512DR-E | CC3-0512DS-E |
| | 12V | 0.8A | CC3-1203SF-E | CC3-1203SR-E | CC3-1203SS-E | 0.6A | CC3-1205SF-E | CC3-1205SR-E | CC3-1205SS-E | 0.25A (0.2A) | CC3-1212SF-E | CC3-1212SR-E | CC3-1212SS-E | 0.125A (0.1A) | CC3-1212DF-E | CC3-1212DR-E | CC3-1212DS-E |
| | 24V | 0.8A | CC3-2403SF-E | CC3-2403SR-E | - | 0.6A | CC3-2405SF-E | CC3-2405SR-E | CC3-2405SS-E | 0.25A (0.2A) | CC3-2412SF-E | CC3-2412SR-E | CC3-2412SS-E | 0.125A (0.1A) | CC3-2412DF-E | CC3-2412DR-E | CC3-2412DS-E |
| | 48V | 0.8A | CC3-4803SF-E | CC3-4803SR-E | CC3-4803SS-E | 0.6A | CC3-4805SF-E | CC3-4805SR-E | CC3-4805SS-E | 0.25A (0.2A) | CC3-4812SF-E | CC3-4812SR-E | - | 0.125A (0.1A) | CC3-4812DF-E | CC3-4812DR-E | CC3-4812DS-E |
| 6W | 5V | 1.2A | CC6-0503SF-E | CC6-0503SR-E | - | 1A | CC6-0505SF-E | CC6-0505SR-E | - | 0.5A (0.4A) | CC6-0512SF-E | CC6-0512SR-E | - | 0.25A (0.2A) | CC6-0512DF-E | CC6-0512DR-E | - |
| | 12V | 1.2A | CC6-1203SF-E | CC6-1203SR-E | - | 1.2A | CC6-1205SF-E | CC6-1205SR-E | - | 0.5A (0.4A) | CC6-1212SF-E | CC6-1212SR-E | - | 0.25A (0.2A) | CC6-1212DF-E | CC6-1212DR-E | - |
| | 24V | 1.2A | CC6-2403SF-E | CC6-2403SR-E | - | 1.2A | CC6-2405SF-E | CC6-2405SR-E | - | 0.5A (0.4A) | CC6-2412SF-E | CC6-2412SR-E | - | 0.25A (0.2A) | CC6-2412DF-E | CC6-2412DR-E | - |
| | 48V | 1.2A | CC6-4803SF-E | CC6-4803SR-E | - | 1.2A | CC6-4805SF-E | CC6-4805SR-E | - | 0.5A (0.4A) | CC6-4812SF-E | CC6-4812SR-E | - | 0.25A (0.2A) | CC6-4812DF-E | CC6-4812DR-E | - |
| 10W | 5V | 2.5A | CC10-0503SF-E | CC10-0503SR-E | - | 2A | CC10-0505SF-E | CC10-0505SR-E | - | 0.8A (0.64A) | CC10-0512SF-E | CC10-0512SR-E | - | 0.4A (0.32A) | CC10-0512DF-E | CC10-0512DR-E | - |
| | 12V | 2.5A | CC10-1203SF-E | CC10-1203SR-E | - | 2A | CC10-1205SF-E | CC10-1205SR-E | - | 1A (0.8A) | CC10-1212SF-E | CC10-1212SR-E | - | 0.45A (0.36A) | CC10-1212DF-E | CC10-1212DR-E | - |
| | 24V | 2.5A | CC10-2403SF-E | CC10-2403SR-E | - | 2A | CC10-2405SF-E | CC10-2405SR-E | - | 1A (0.8A) | CC10-2412SF-E | CC10-2412SR-E | - | 0.45A (0.36A) | CC10-2412DF-E | CC10-2412DR-E | - |
| | 48V | 2.5A | CC10-4803SF-E | CC10-4803SR-E | - | 2A | CC10-4805SF-E | CC10-4805SR-E | - | 1A (0.8A) | CC10-4812SF-E | CC10-4812SR-E | - | 0.45A (0.36A) | CC10-4812DF-E | CC10-4812DR-E | - |

CC1R5-E Specifications

| ITEMS/UNITS | | MODEL | CC1R5-0503Sx-E | CC1R5-0505Sx-E | CC1R5-0512Sx-E | | CC1R5-0512Dx-E | |
|-------------------------|--|------------------------------|--|----------------|----------------|--------|----------------|-------|
| Input | Nominal Voltage | V | DC5.0 | | | | | |
| | Voltage Range | V | DC4.5-9.0 | | | | | |
| | Efficiency (typ) (*1) | % | 71 | 77 | 80 | | 79 | |
| | Current (typ) (*1) | A | 0.372 | 0.390 | 0.375 | | 0.380 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 0.400 | 0.300 | 0.125 | 0.100 | 0.060 | 0.050 |
| | Maximum Power (*2) | W | 1.32 | | 1.5 | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 3.2 | | | | | |
| | Size (W x H x D) | mm | DIP: 16.51 x 8.5 x 16.6 / SMD: 16.51 x 8.8 x 16.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC1R5-1203Sx-E | CC1R5-1205Sx-E | CC1R5-1212Sx-E | | CC1R5-1212Dx-E | |
|-------------------------|--|------------------------------|--|----------------|----------------|--------|----------------|-------|
| Input | Nominal Voltage | V | DC12 | | | | | |
| | Voltage Range | V | DC9.0-18 | | | | | |
| | Efficiency (typ) (*1) | % | 73 | 78 | 82 | | 81 | |
| | Current (typ) (*1) | A | 0.151 | 0.160 | 0.152 | | 0.154 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 0.400 | 0.300 | 0.125 | 0.100 | 0.060 | 0.050 |
| | Maximum Power (*2) | W | 1.32 | | 1.5 | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 3.2 | | | | | |
| | Size (W x H x D) | mm | DIP: 16.51 x 8.5 x 16.6 / SMD: 16.51 x 8.8 x 16.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC1R5-2403Sx-E | CC1R5-2405Sx-E | CC1R5-2412Sx-E | | CC1R5-2412Dx-E | |
|-------------------------|--|------------------------------|--|----------------|----------------|-------|----------------|-------|
| Input | Nominal Voltage | V | DC24 | | | | | |
| | Voltage Range | V | DC18-36 | | | | | |
| | Efficiency (typ) (*1) | % | 72 | 77 | 81 | | 79 | |
| | Current (typ) (*1) | A | 0.076 | 0.081 | 0.077 | | 0.079 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 0.400 | 0.300 | 0.125 | 0.100 | 0.060 | 0.050 |
| | Maximum Power (*2) | W | 1.32 | | 1.5 | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 3.2 | | | | | |
| | Size (W x H x D) | mm | DIP: 16.51 x 8.5 x 16.6 / SMD: 16.51 x 8.8 x 16.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ±12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC1R5-4803Sx-E | CC1R5-4805Sx-E | CC1R5-4812Sx-E | | CC1R5-4812Dx-E | |
|-------------------------|--|------------------------------|--|----------------|----------------|-------|----------------|-------|
| Input | Nominal Voltage | V | DC48 | | | | | |
| | Voltage Range | V | DC36-76 | | | | | |
| | Efficiency (typ) (*1) | % | 70 | 76 | 80 | | 79 | |
| | Current (typ) (*1) | A | 0.039 | 0.041 | 0.039 | | 0.040 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 0.400 | 0.300 | 0.125 | 0.100 | 0.060 | 0.050 |
| | Maximum Power (*2) | W | 1.32 | | 1.5 | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 3.2 | | | | | |
| | Size (W x H x D) | mm | DIP: 16.51 x 8.5 x 16.6 / SMD: 16.51 x 8.8 x 16.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ±12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

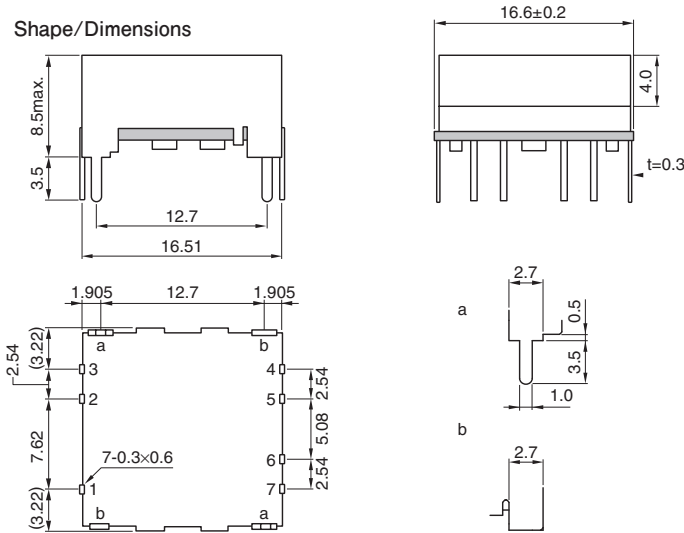
(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

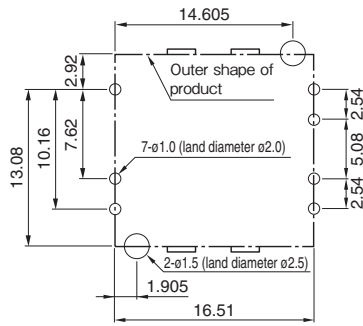
Outline Drawing

CC1R5-xxxxxF-E (DIP type)

Shape/Dimensions



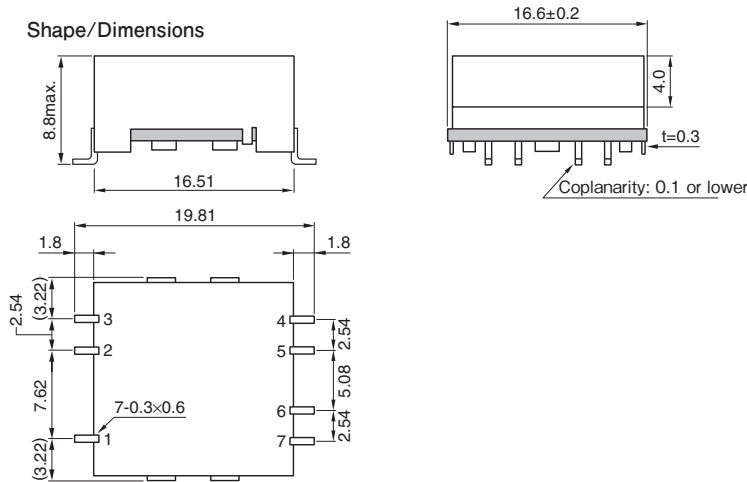
Recommended measurements for mounting board



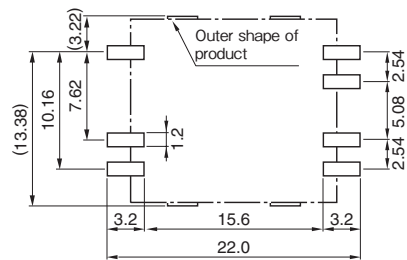
Unit: mm
Allowable tolerance is ±0.5 if not specified separately.

CC1R5-xxxxxR-E (SMD type)

Shape/Dimensions



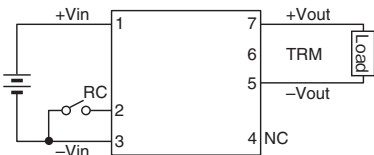
Recommended measurements for mounting board



Unit: mm
Allowable tolerance is ±0.5 if not specified separately.

Connection diagram

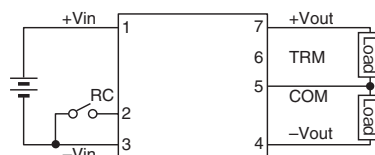
CC1R5-xxxxSx-E



Terminal connections

| | |
|------|-------|
| No.1 | +Vin |
| No.2 | RC |
| No.3 | -Vin |
| No.4 | NC |
| No.5 | -Vout |
| No.6 | TRM |
| No.7 | +Vout |

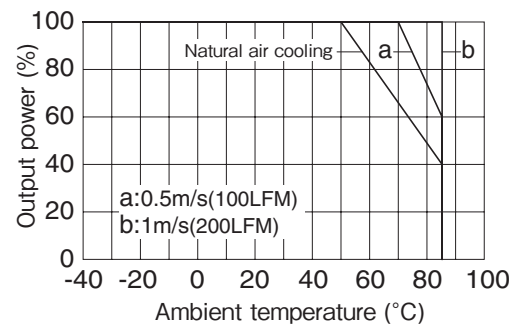
CC1R5-xxxxDx-E



Terminal connections

| | |
|------|------------|
| No.1 | +Vin |
| No.2 | RC |
| No.3 | -Vin |
| No.4 | -Vout |
| No.5 | Common out |
| No.6 | TRM |
| No.7 | +Vout |

Derating Curve



Output power derating by ambient temperature (common specification)

CC3-E Specifications

| ITEMS/UNITS | | MODEL | CC3-0503Sx-E | CC3-0505Sx-E | CC3-0512Sx-E | | CC3-0512Dx-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|--------|----------------|-------|--|
| Input | Nominal Voltage | V | DC5.0 | | | | | | |
| | Voltage Range | V | DC4.5-9.0 | | | | | | |
| | Efficiency (typ) (*1) | % | 73 | 77 | 82 | | 81 | | |
| | Current (typ) (*1) | A | 0.723 | 0.779 | 0.732 | | 0.741 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 0.800 | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 | |
| | Maximum Power (*2) | W | 2.64 | | 3 | | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | | |
| Over Voltage Protection | | | Not available | | | | | | |
| Remote ON/OFF Control | | | Available | | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, X/Y/Z 3 directions, 2h for each | | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | | |
| Mechanical | Weight (typ) | g | 4.5 | | | | | | |
| | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 16.6 / SMD: 22.86 x 8.8 x 16.6 | | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC3-1203Sx-E | CC3-1205Sx-E | CC3-1212Sx-E | | CC3-1212Dx-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|--------|----------------|-------|--|
| Input | Nominal Voltage | V | DC12 | | | | | | |
| | Voltage Range | V | DC9.0-18 | | | | | | |
| | Efficiency (typ) (*1) | % | 74 | 79 | 82 | | 81 | | |
| | Current (typ) (*1) | A | 0.297 | 0.316 | 0.305 | | 0.309 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 0.800 | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 | |
| | Maximum Power (*2) | W | 2.64 | | 3 | | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | | |
| Over Voltage Protection | | | Not available | | | | | | |
| Remote ON/OFF Control | | | Available | | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, X/Y/Z 3 directions, 2h for each | | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | | |
| Mechanical | Weight (typ) | g | 4.5 | | | | | | |
| | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 16.6 / SMD: 22.86 x 8.8 x 16.6 | | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC3-2403Sx-E | CC3-2405Sx-E | CC3-2412Sx-E | | CC3-2412Dx-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|-------|----------------|-------|--|
| Input | Nominal Voltage | V | DC24 | | | | | | |
| | Voltage Range | V | DC18-36 | | | | | | |
| | Efficiency (typ) (*1) | % | 73 | 78 | 82 | | 81 | | |
| | Current (typ) (*1) | A | 0.151 | 0.160 | 0.152 | | 0.154 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 0.800 | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 | |
| | Maximum Power (*2) | W | 2.64 | 3 | | | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | ± 5 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | | |
| Over Voltage Protection | | | Not available | | | | | | |
| Remote ON/OFF Control | | | Available | | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, X/Y/Z 3 directions, 2h for each | | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | | |
| Mechanical | Weight (typ) | g | 4.5 | | | | | | |
| | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 16.6 / SMD: 22.86 x 8.8 x 16.6 | | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/± 12V models, output voltage can be set to 15V/± 15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC3-4803Sx-E | CC3-4805Sx-E | CC3-4812Sx-E | | CC3-4812Dx-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|-------|----------------|-------|--|
| Input | Nominal Voltage | V | DC48 | | | | | | |
| | Voltage Range | V | DC36-76 | | | | | | |
| | Efficiency (typ) (*1) | % | 73 | 79 | 81 | | 80 | | |
| | Current (typ) (*1) | A | 0.075 | 0.079 | 0.077 | | 0.078 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 0.800 | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 | |
| | Maximum Power (*2) | W | 2.64 | 3 | | | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | ± 5 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | | |
| Over Voltage Protection | | | Not available | | | | | | |
| Remote ON/OFF Control | | | Available | | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, X/Y/Z 3 directions, 2h for each | | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | | |
| Mechanical | Weight (typ) | g | 4.5 | | | | | | |
| | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 16.6 / SMD: 22.86 x 8.8 x 16.6 | | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/± 12V models, output voltage can be set to 15V/± 15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

CC3-E Specifications

| ITEMS/UNITS | | MODEL | CC3-0503SS-E | CC3-0505SS-E | CC3-0512SS-E | | CC3-0512DS-E | |
|-------------------------|--|------------------------------|--|--------------|--------------|--------|----------------|-------|
| Input | Nominal Voltage | V | DC5.0 | | | | | |
| | Voltage Range | V | DC4.5-9.0 | | | | | |
| | Efficiency (typ) (*1) | % | 73 | 77 | 82 | | 81 | |
| | Current (typ) (*1) | A | 0.723 | 0.779 | 0.732 | | 0.741 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 0.800 | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 |
| | Maximum Power (*2) | W | 2.64 | 3 | | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | ± 5 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 3.15-3.67 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 7 | | | | | |
| | Size (W x H x D) | mm | 27.8 x 17.9 x 9.2 | | | | | |

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.
 Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.
 Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

- (*1) With nominal input voltage, maximum output current, and Ta=25°C.
- (*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.
- (*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).
- (*4) Output voltage includes input change, load change (balanced load), and temperature change.
- (*5) In 50MHz, Ta=25°C.
- (*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC3-1205SS-E | CC3-1212SS-E | | CC3-1212DS-E | | |
|-------------------------|--|------------------------------|--|--------------|-------|----------------|-------|--|
| Input | Nominal Voltage | V | DC12 | | | | | |
| | Voltage Range | V | DC9.0-18 | | | | | |
| | Efficiency (typ) (*1) | % | 79 | 82 | | | | |
| | Current (typ) (*1) | A | 0.316 | 0.305 | | | | |
| Output | Nominal Voltage | VDC | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 | |
| | Maximum Power (*2) | W | 3 | | | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | ± 5 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 7 | | | | | |
| | Size (W x H x D) | mm | 27.8 x 17.9 x 9.2 | | | | | |

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.
 Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.
 Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

- (*1) With nominal input voltage, maximum output current, and Ta=25°C.
- (*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.
- (*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).
- (*4) Output voltage includes input change, load change (balanced load), and temperature change.
- (*5) In 50MHz, Ta=25°C.
- (*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC3-2403SS-E | CC3-2405SS-E | CC3-2412SS-E | CC3-2412DS-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|--------------|----------------|-------|
| Input | Nominal Voltage | V | DC24 | | | | | |
| | Voltage Range | V | DC18-36 | | | | | |
| | Efficiency (typ) (*1) | % | 73 | 78 | 82 | 81 | | |
| | Current (typ) (*1) | A | 0.151 | 0.160 | 0.152 | 0.154 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 0.800 | 0.600 | 0.250 | 0.200 | 0.125 | 0.100 |
| | Maximum Power (*2) | W | 2.64 | 3 | | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | ± 5 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.67 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 7 | | | | | |
| | Size (W x H x D) | mm | 27.8 x 17.9 x 9.2 | | | | | |

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.
 Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.
 Note: For ±12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

- (*1) With nominal input voltage, maximum output current, and Ta=25°C.
- (*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.
- (*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).
- (*4) Output voltage includes input change, load change (balanced load), and temperature change.
- (*5) In 50MHz, Ta=25°C.
- (*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC3-4803SS-E | CC3-4805SS-E | CC3-4812DS-E | | |
|-------------------------|--|------------------------------|--|--------------|----------------|-------|--|
| Input | Nominal Voltage | V | DC48 | | | | |
| | Voltage Range | V | DC36-76 | | | | |
| | Efficiency (typ) (*1) | % | 73 | 79 | 82 | | |
| | Current (typ) (*1) | A | 0.075 | 0.079 | 0.076 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | ± 12 | ± 15 | |
| | Maximum Current | A | 0.800 | 0.600 | 0.125 | 0.100 | |
| | Maximum Power (*2) | W | 2.64 | 3 | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | ± 5 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | |
| Over Voltage Protection | | | Not available | | | | |
| Remote ON/OFF Control | | | Available | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | |
| Mechanical | Weight (typ) | g | 7 | | | | |
| | Size (W x H x D) | mm | 27.8 x 17.9 x 9.2 | | | | |

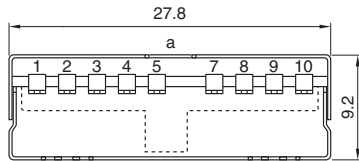
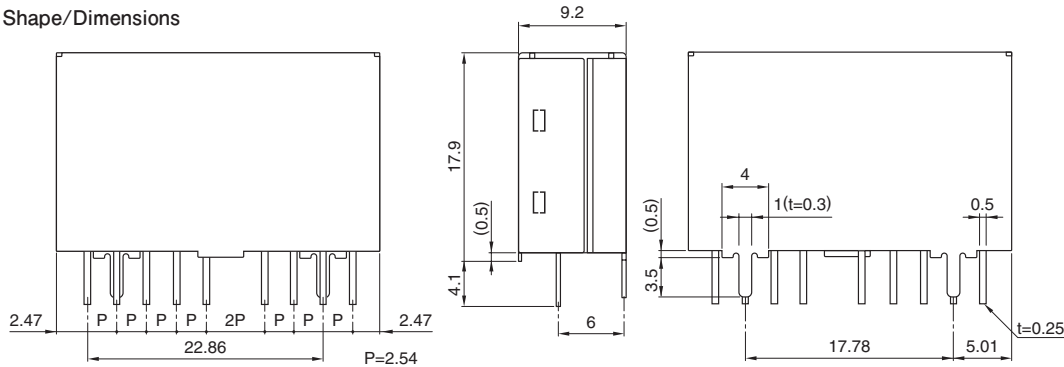
Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.
 Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.
 Note: For ±12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

- (*1) With nominal input voltage, maximum output current, and Ta=25°C.
- (*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.
- (*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).
- (*4) Output voltage includes input change, load change (balanced load), and temperature change.
- (*5) In 50MHz, Ta=25°C.
- (*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

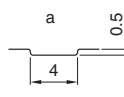
Outline Drawing

CC3-xxxxS-E (SIP type)

Shape/Dimensions



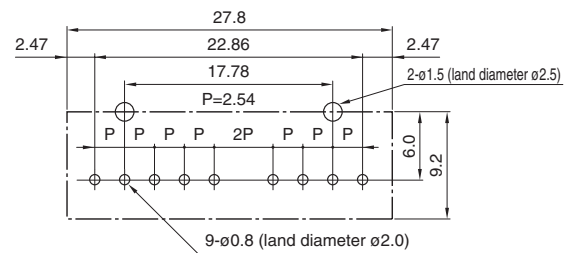
Internal parts mounting space



Unit: mm

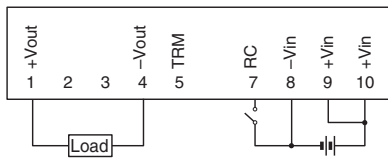
Allowable tolerance is ±0.5 if not specified separately.

Recommended measurements for mounting board



Connection diagram

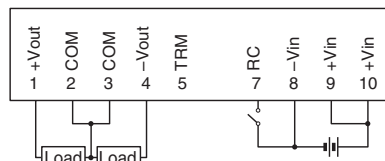
CC3-xxxxSS-E



Terminal connections

| | |
|-------|-------|
| No.1 | +Vout |
| No.2 | NC |
| No.3 | NC |
| No.4 | -Vout |
| No.5 | TRM |
| No.6 | NC |
| No.7 | RC |
| No.8 | -Vin |
| No.9 | +Vin |
| No.10 | +Vin |

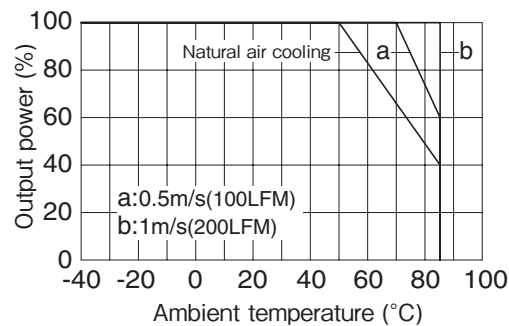
CC3-xxxxDS-E



Terminal connections

| | |
|-------|-------|
| No.1 | +Vout |
| No.2 | COM |
| No.3 | COM |
| No.4 | -Vout |
| No.5 | TRM |
| No.6 | NC |
| No.7 | RC |
| No.8 | -Vin |
| No.9 | +Vin |
| No.10 | +Vin |

Derating Curve



Output power derating by ambient temperature (common specification)

CC6-E Specifications

| ITEMS/UNITS | | MODEL | CC6-0503Sx-E | CC6-0505Sx-E | CC6-0512Sx-E | | CC6-0512Dx-E | |
|-------------------------|--|------------------------------|--|--------------|--------------|-------|----------------|-------|
| Input | Nominal Voltage | V | DC5.0 | | | | | |
| | Voltage Range | V | DC4.5-9.0 | | | | | |
| | Efficiency (typ) (*1) | % | 76 | 79 | 82 | | | |
| | Current (typ) (*1) | A | 1.042 | 1.266 | 1.463 | | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 1.200 | 1.000 | 0.500 | 0.400 | 0.250 | 0.200 |
| | Maximum Power (*2) | W | 3.96 | 5 | 6 | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | | | | | ± 3 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| Isolation | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| Standards | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| | Weight (typ) | g | 5.8 | | | | | |
| Mechanical | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 21.1 / SMD: 22.86 x 8.8 x 21.1 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC6-1203Sx-E | CC6-1205Sx-E | CC6-1212Sx-E | | CC6-1212Dx-E | |
|-------------------------|--|------------------------------|--|--------------|--------------|-------|----------------|-------|
| Input | Nominal Voltage | V | DC12 | | | | | |
| | Voltage Range | V | DC9.0-18 | | | | | |
| | Efficiency (typ) (*1) | % | 78 | 82 | 85 | | | |
| | Current (typ) (*1) | A | 0.423 | 0.610 | 0.588 | | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | | 1.200 | 0.500 | 0.400 | 0.250 | 0.200 |
| | Maximum Power (*2) | W | 3.96 | | 6 | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | | | | | ± 3 | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| Isolation | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| Standards | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| | Weight (typ) | g | 5.8 | | | | | |
| Mechanical | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 21.1 / SMD: 22.86 x 8.8 x 21.1 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC6-2403Sx-E | CC6-2405Sx-E | CC6-2412Sx-E | | CC6-2412Dx-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|-------|----------------|-------|--|
| Input | Nominal Voltage | V | DC24 | | | | | | |
| | Voltage Range | V | DC18-36 | | | | | | |
| | Efficiency (typ) (*1) | % | 77 | 81 | 87 | | 86 | | |
| | Current (typ) (*1) | A | 0.214 | 0.309 | 0.287 | | 0.291 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 1.200 | | 0.500 | 0.400 | 0.250 | 0.200 | |
| | Maximum Power (*2) | W | 3.96 | 6 | | | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | | |
| Over Voltage Protection | | | Not available | | | | | | |
| Remote ON/OFF Control | | | Available | | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | | |
| Mechanical | Weight (typ) | g | 5.8 | | | | | | |
| | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 21.1 / SMD: 22.86 x 8.8 x 21.1 | | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC6-4803Sx-E | CC6-4805Sx-E | CC6-4812Sx-E | | CC6-4812Dx-E | | |
|-------------------------|--|------------------------------|--|--------------|--------------|-------|---------------|-------|--|
| Input | Nominal Voltage | V | DC48 | | | | | | |
| | Voltage Range | V | DC36-76 | | | | | | |
| | Efficiency (typ) (*1) | % | 77 | 81 | 86 | | 86 | | |
| | Current (typ) (*1) | A | 0.107 | 0.154 | 0.145 | | 0.145 | | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 | |
| | Maximum Current | A | 1.200 | | 0.500 | 0.400 | 0.250 | 0.200 | |
| | Maximum Power (*2) | W | 3.96 | 6 | | | | | |
| | Maximum Line Regulation(Within input voltage range) | mV | 20 | | 40 | | 80 | | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 5.0 | | |
| | Function | Over Current Protection (*6) | | Available | | | | | |
| Over Voltage Protection | | | Not available | | | | | | |
| Remote ON/OFF Control | | | Available | | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | | |
| Mechanical | Weight (typ) | g | 5.8 | | | | | | |
| | Size (W x H x D) | mm | DIP: 22.86 x 8.5 x 21.1 / SMD: 22.86 x 8.8 x 21.1 | | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

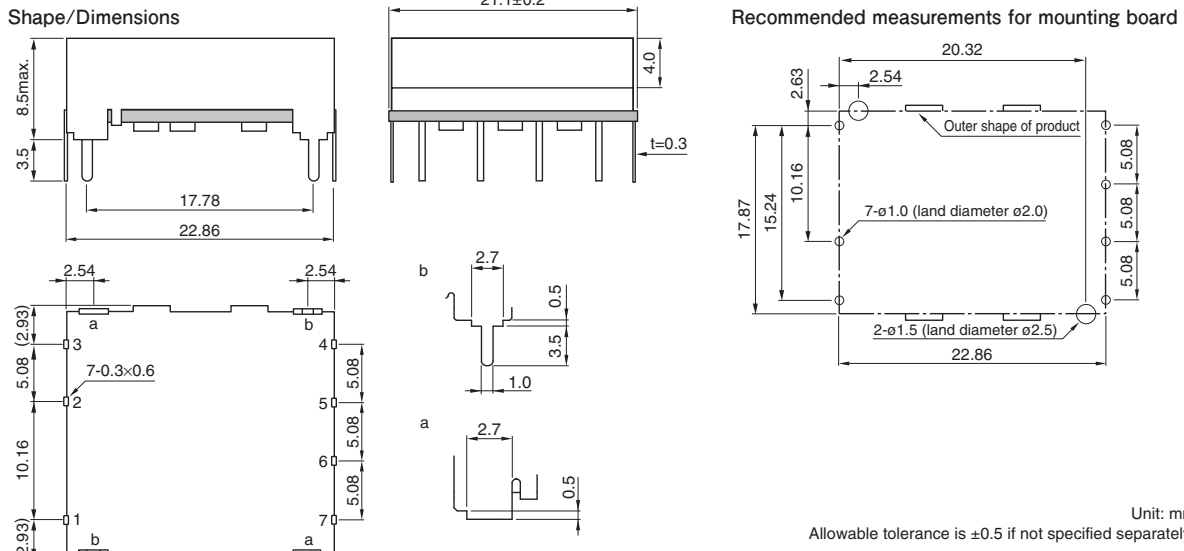
(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

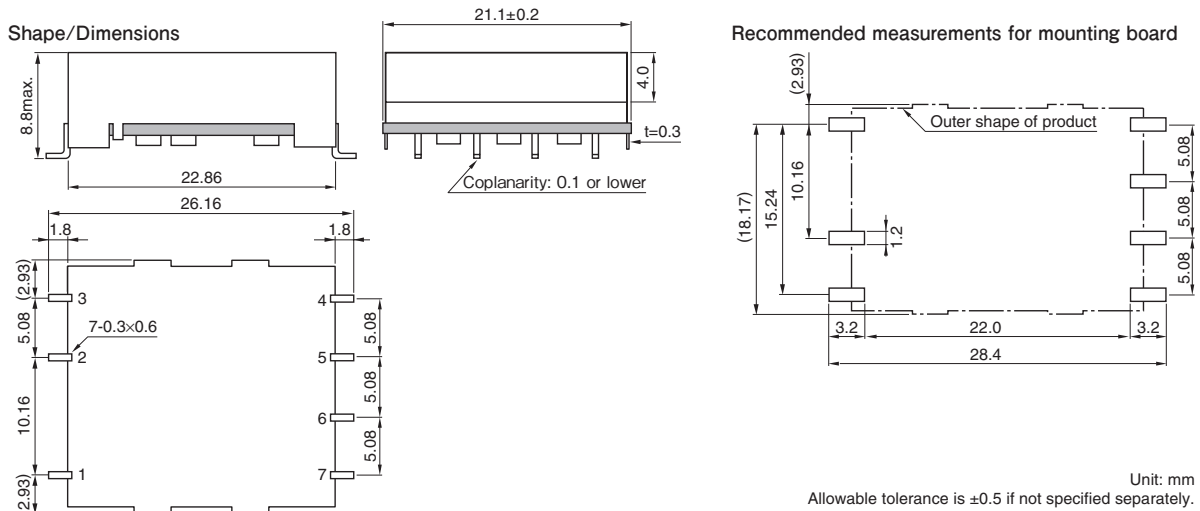
(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

Outline Drawing

CC6-xxxxF-E (DIP type)

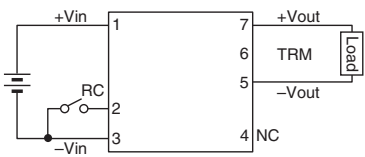


CC6-xxxxR-E (SMD type)



Connection diagram

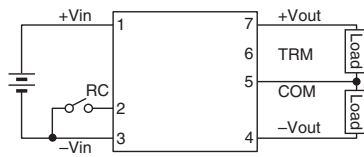
CC6-xxxxSx-E



Terminal connections

| | |
|------|-------|
| No.1 | +Vin |
| No.2 | RC |
| No.3 | -Vin |
| No.4 | NC |
| No.5 | -Vout |
| No.6 | TRM |
| No.7 | +Vout |

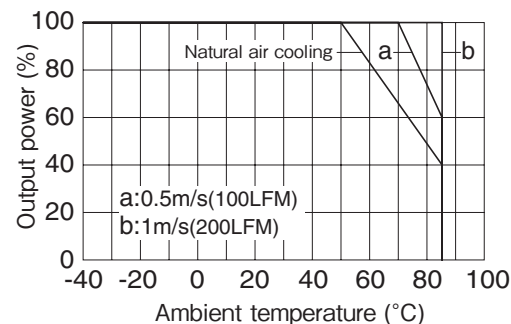
CC6-xxxxDx-E



Terminal connections

| | |
|------|------------|
| No.1 | +Vin |
| No.2 | RC |
| No.3 | -Vin |
| No.4 | -Vout |
| No.5 | Common out |
| No.6 | TRM |
| No.7 | +Vout |

Derating Curve



Output power derating by ambient temperature (common specification)

CC10-E Specifications

| ITEMS/UNITS | | MODEL | CC10-0503Sx-E | CC10-0505Sx-E | CC10-0512Sx-E | | CC10-0512Dx-E | |
|-------------------------|--|------------------------------|--|---------------|---------------|--------|----------------|-------|
| Input | Nominal Voltage | V | DC5.0 | | | | | |
| | Voltage Range | V | DC4.5-9.0 | | | | | |
| | Efficiency (typ) (*1) | % | 84 | | | | | |
| | Current (typ) (*1) | A | 1.964 | 2.381 | 2.286 | | 2.313 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 2.500 | 2.000 | 0.800 | 0.640 | 0.400 | 0.320 |
| | Maximum Power (*2) | W | 8.25 | 10 | 9.6 | | | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| Standards | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| | Weight (typ) | g | 10 | | | | | |
| Mechanical | Size (W x H x D) | mm | DIP: 35.56 x 8.5 x 22.6 / SMD: 35.56 x 8.8 x 22.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ±12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC10-1203Sx-E | CC10-1205Sx-E | CC10-1212Sx-E | | CC10-1212Dx-E | |
|-------------------------|--|------------------------------|--|---------------|---------------|--------|----------------|------|
| Input | Nominal Voltage | V | DC12 | | | | | |
| | Voltage Range | V | DC9.0-18 | | | | | |
| | Efficiency (typ) (*1) | % | 84 | 86 | 88 | | 86 | |
| | Current (typ) (*1) | A | 0.318 | 0.969 | 1.136 | | 1.047 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 2.500 | 2.000 | 1000 | 800 | 450 | 360 |
| | Maximum Power (*2) | W | 8.25 | 10 | 12 | | 10.8 | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | | 30/120 | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| Standards | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| | Weight (typ) | g | 10 | | | | | |
| Mechanical | Size (W x H x D) | mm | DIP: 35.56 x 8.5 x 22.6 / SMD: 35.56 x 8.8 x 22.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ±12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC10-2403Sx-E | CC10-2405Sx-E | CC10-2412Sx-E | | CC10-2412Dx-E | |
|-------------------------|--|------------------------------|--|---------------|---------------|-------|----------------|-------|
| Input | Nominal Voltage | V | DC24 | | | | | |
| | Voltage Range | V | DC18-36 | | | | | |
| | Efficiency (typ) (*1) | % | 84 | 86 | 87 | | 86 | |
| | Current (typ) (*1) | A | 0.409 | 0.484 | 0.575 | | 0.523 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 2.500 | 2.000 | 1.000 | 0.800 | 0.450 | 0.360 |
| | Maximum Power (*2) | W | 8.25 | 10 | 12 | | 10.8 | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 10 | | | | | |
| | Size (W x H x D) | mm | DIP: 35.56 x 8.5 x 22.6 / SMD: 35.56 x 8.8 x 22.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

| ITEMS/UNITS | | MODEL | CC10-4803Sx-E | CC10-4805Sx-E | CC10-4812Sx-E | | CC10-4812Dx-E | |
|-------------------------|--|------------------------------|--|---------------|---------------|-------|----------------|-------|
| Input | Nominal Voltage | V | DC48 | | | | | |
| | Voltage Range | V | DC36-76 | | | | | |
| | Efficiency (typ) (*1) | % | 84 | 86 | 88 | | 86 | |
| | Current (typ) (*1) | A | 0.205 | 0.242 | 0.284 | | 0.262 | |
| Output | Nominal Voltage | VDC | 3.3 | 5 | 12 | 15 | ± 12 | ± 15 |
| | Maximum Current | A | 2.500 | 2.000 | 1.000 | 0.800 | 0.450 | 0.360 |
| | Maximum Power (*2) | W | 8.25 | 10 | 12 | | 10.8 | |
| | Maximum Line Regulation (Within input voltage range) | mV | 20 | | 40 | | 80 | |
| | Maximum Load Regulation (0-100% load) (*3) | mV | 40 | | 100 | | 600 | |
| | Temperature Coefficient (Ambient temperature -40°C to +50°C) | | 80mV | | 200mV | | 300mV | |
| | Max Power Total Regulation (max)(*4) | % | ± 3 | | | | | |
| | Maximum Ripple & Noise (typ/max) (*5) | mVp-p | 40/120 | | 30/120 | | | |
| | Voltage Adjustable Range | VDC | 3.15-3.6 | 4.75-6.0 | 11.4-15.0 | | ± 11.4- ± 15.0 | |
| | Function | Over Current Protection (*6) | | Available | | | | |
| Over Voltage Protection | | | Not available | | | | | |
| Remote ON/OFF Control | | | Available | | | | | |
| Environment | Operating Ambient Temperature | °C | -40 to +85 | | | | | |
| | Storage Ambient Temperature | °C | -40 to +85 | | | | | |
| | Operating Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Storage Ambient Humidity | % RH | 5-95 (the conditions of maximum 38°C in wet bulb temperature and non-condensation should be ensured.) | | | | | |
| | Vibration | | 10-55Hz, 15 minutes sweep and 1.52mm total amplitude, 3 directions, 2h for each | | | | | |
| Isolation | Shock | | 980m/s ² (100G), 6ms, 6 directions, 3 times for each, in non-operation | | | | | |
| | Withstand Voltage | | Between input terminal and case, between input terminal and output terminal, and between output terminal and case: 500VAC (for 1 minute) | | | | | |
| Standards | Isolation Resistance | | Between input terminal and output terminal: 500VDC, 50MΩ min | | | | | |
| | Safety Standards | | Approved by UL62368-1, CSA62368-1, EN62368-1, UL60950-1, CSA60950-1, EN60950-1. (Expire date of 60950-1: 20/12/2020) | | | | | |
| Mechanical | Weight (typ) | g | 10 | | | | | |
| | Size (W x H x D) | mm | DIP: 35.56 x 8.5 x 22.6 / SMD: 35.56 x 8.8 x 22.6 | | | | | |

Note: "x" in model names is to be replaced by a symbol which represents the terminal configuration (F: DIP/R: SMD) for actual model names.

Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.

Note: For 12V±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.

Note: For ± 12V model, output voltage can be set to 24V or 30V single output by making the COM terminal open.

(*1) With nominal input voltage, maximum output current, and Ta=25°C.

(*2) The maximum output power value is between -40°C and +50°C. For use in outside this temperature range, derating is needed.

(*3) In balanced load for dual outputs ("balanced load" means a condition where the +output and -output of load current are equal).

(*4) Output voltage includes input change, load change (balanced load), and temperature change.

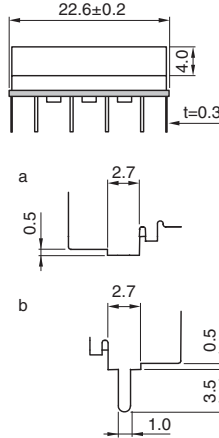
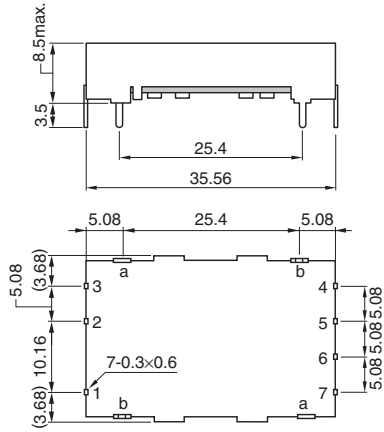
(*5) In 50MHz, Ta=25°C.

(*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-shortened or overload conditions for over 30 seconds.

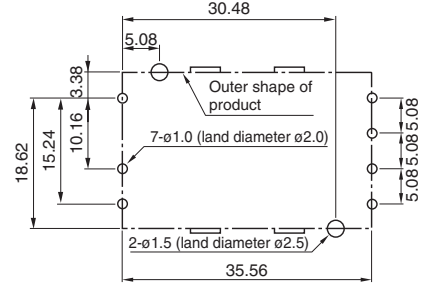
Outline Drawing

CC10-xxxxxF-E (DIP type)

Shape/Dimensions



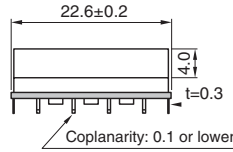
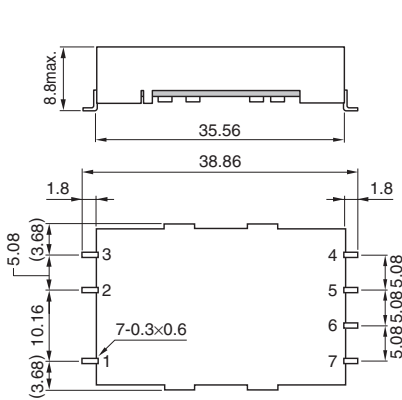
Recommended measurements for mounting board



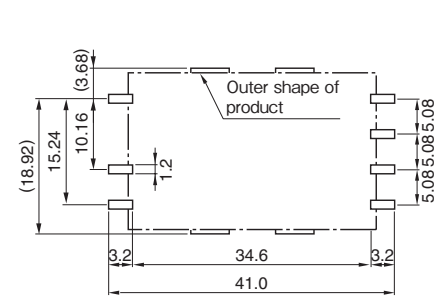
Unit: mm
Allowable tolerance is ±0.5 if not specified separately.

CC10-xxxxxR-E (SMD type)

Shape/Dimensions



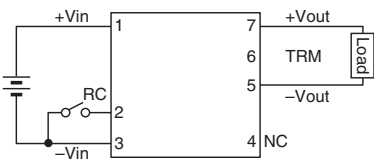
Recommended measurements for mounting board



Unit: mm
Allowable tolerance is ±0.5 if not specified separately.

Connection diagram

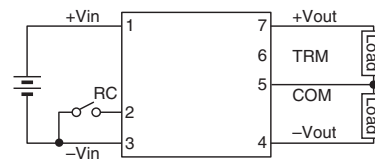
CC10-xxxxSx-E



Terminal connections

| | |
|------|-------|
| No.1 | +Vin |
| No.2 | RC |
| No.3 | -Vin |
| No.4 | NC |
| No.5 | -Vout |
| No.6 | TRM |
| No.7 | +Vout |

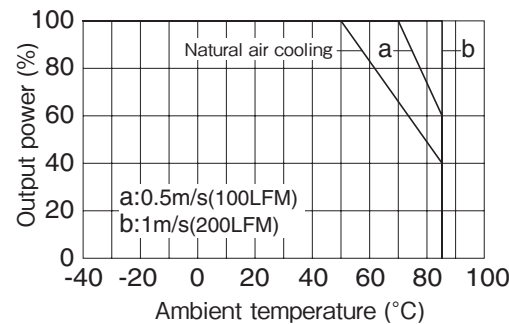
CC10-xxxxDx-E



Terminal connections

| | |
|------|------------|
| No.1 | +Vin |
| No.2 | RC |
| No.3 | -Vin |
| No.4 | -Vout |
| No.5 | Common out |
| No.6 | TRM |
| No.7 | +Vout |

Derating Curve



Output power derating by ambient temperature (common specification)