

# CC-E

## Insulation type DC-DC converter

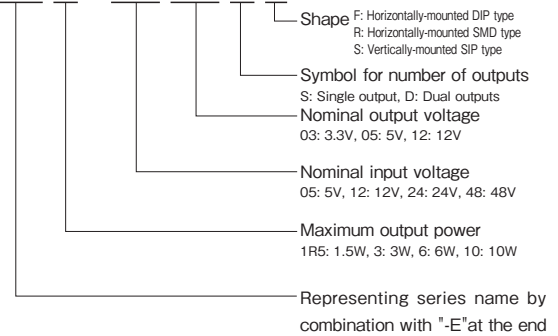


### Features

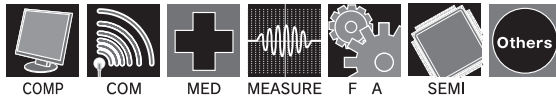
- Mounting area halved compared to existing products
- Nonuse of tantalum capacitor or aluminum electrolytic capacitor
- Remote On/Off function incorporated in all series of products
- High accuracy of  $\pm 3\%$  in output voltage (10W of lower single output)
- 5-side metal-shielded low noise design
- 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**



### Applications



### Conformity to RoHS Directive

### 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	-

All specifications are subject to change without notice.

# 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 <sup>2</sup> (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 <sup>2</sup> (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 <sup>2</sup> (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 <sup>2</sup> (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.

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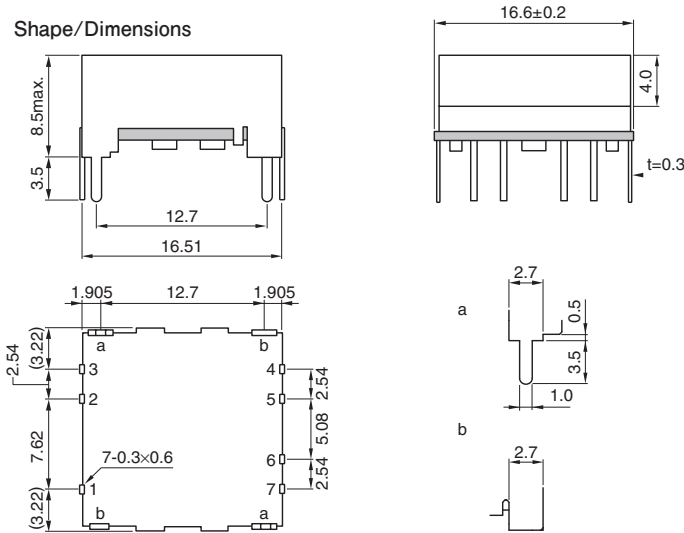
(\*5) In 50MHz, Ta=25°C.

(\*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.

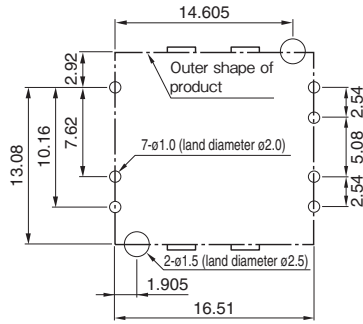
Outline Drawing

CC1R5-xxxxxF-E (DIP type)

Shape/Dimensions



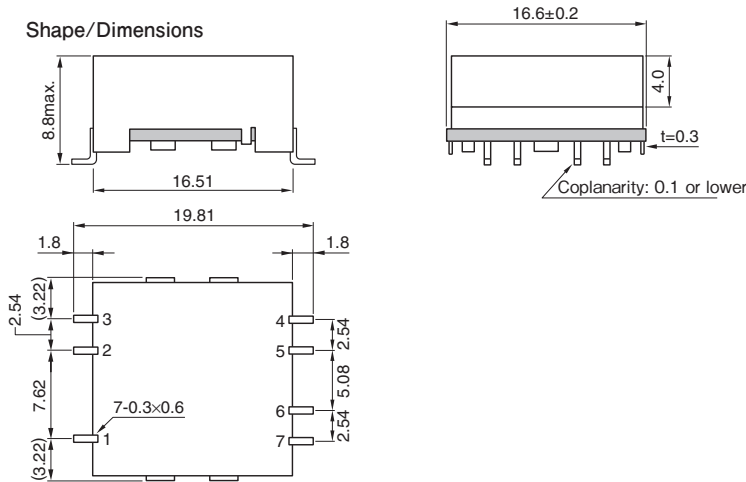
Recommended measurements for mounting board



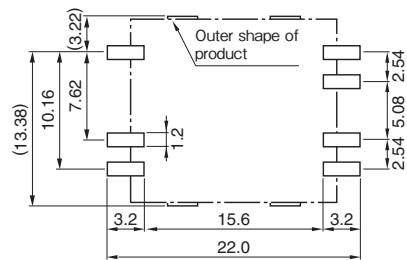
Unit: mm  
Allowable tolerance is ±0.5 if not specified separately.

CC1R5-xxxxxR-E (SMD type)

Shape/Dimensions



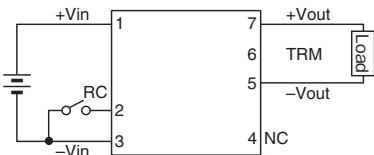
Recommended measurements for mounting board



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

Connection diagram

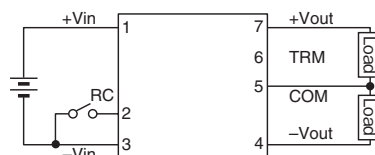
CC1R5-xxxxSx-E



Terminal connections

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

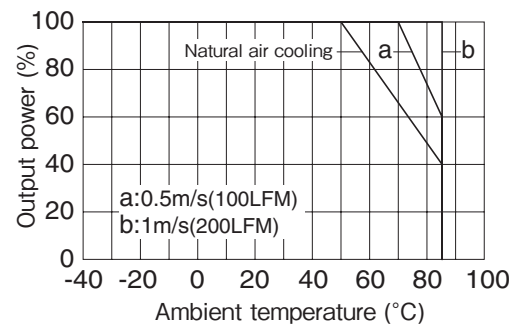
CC1R5-xxxxDx-E



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 <sup>2</sup> (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 <sup>2</sup> (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 <sup>2</sup> (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 <sup>2</sup> (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.

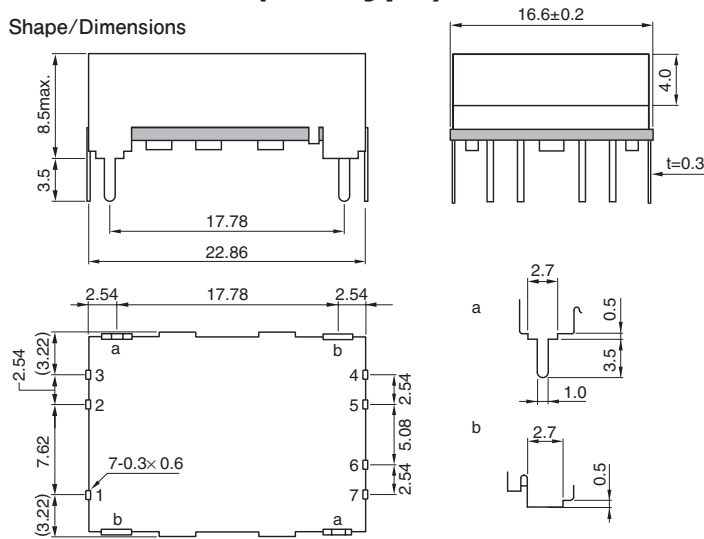
(\*5) In 50MHz, Ta=25°C.

(\*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.

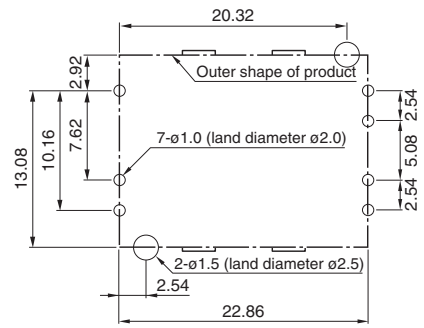
# Outline Drawing

## CC3-xxxxxF-E (DIP type)

Shape/Dimensions



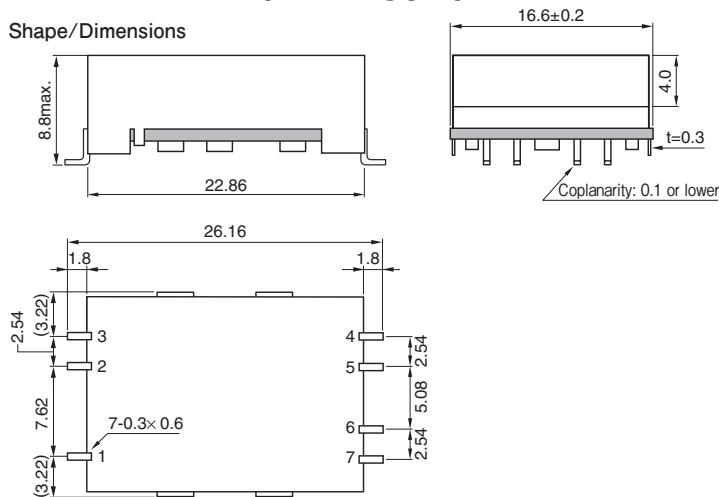
Recommended measurements for mounting board



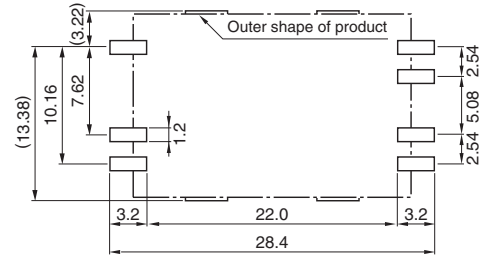
Unit: mm  
Allowable tolerance is ±0.5 if not specified separately.

## CC3-xxxxxR-E (SMD type)

Shape/Dimensions



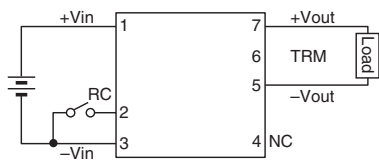
Recommended measurements for mounting board



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

Connection diagram

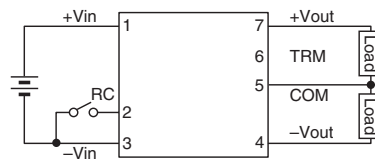
### CC3-xxxxSx-E



Terminal connections

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

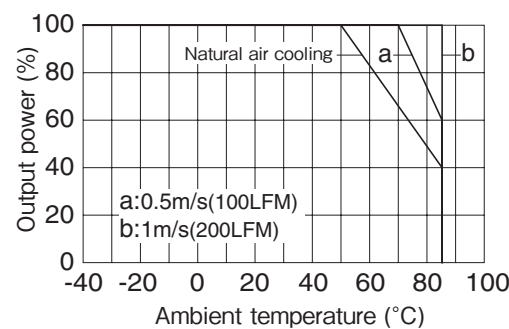
### CC3-xxxxDx-E



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	CC3-0503SS-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 <sup>2</sup> (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)					
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 <sup>2</sup> (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)					
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 <sup>2</sup> (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 <sup>2</sup> (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			

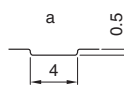
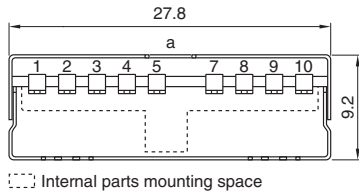
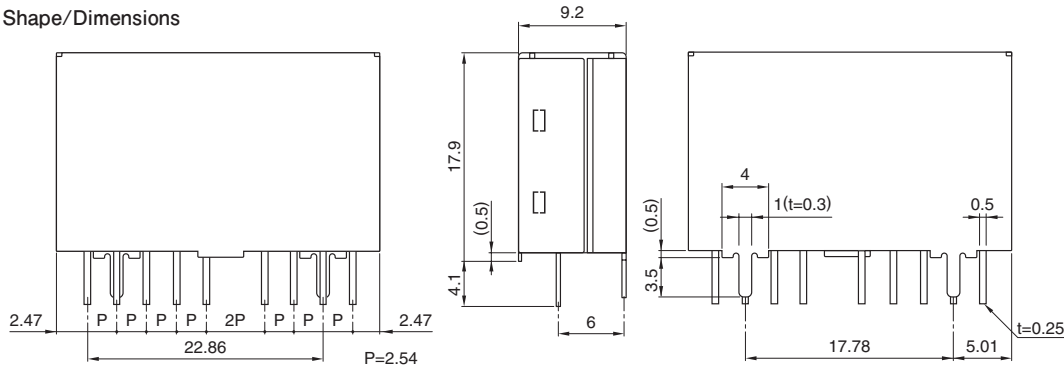
Note: With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.  
 Note: For 12V/±12V models, output voltage can be set to 15V/±15V by connecting the output adjustment terminal TRM to -Vout.  
 Note: For ±12V model, output voltage can be set to 24V or 30V single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

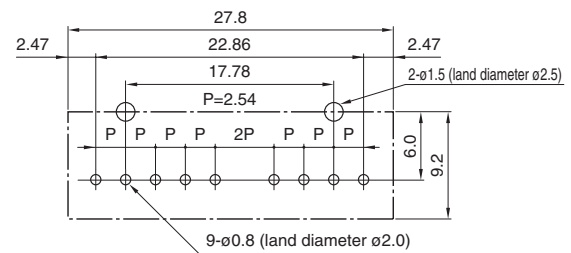
# Outline Drawing

## CC3-xxxxS-E (SIP type)

Shape/Dimensions



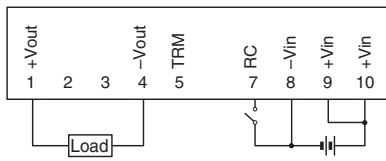
Recommended measurements for mounting board



Unit: mm  
Allowable tolerance is  $\pm 0.5$  if not specified separately.

Connection diagram

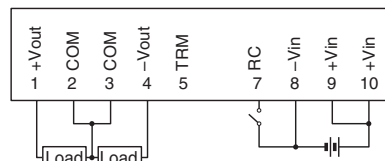
CC3-xxxxSS-E



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

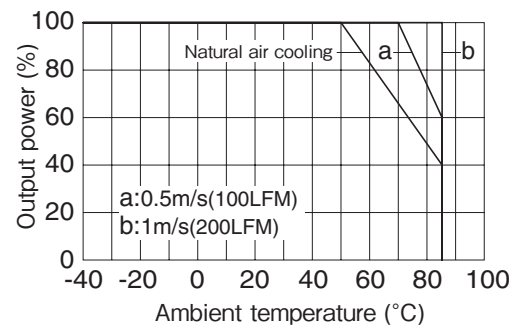
CC3-xxxxDS-E



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 <sup>2</sup> (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 <sup>2</sup> (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					± 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, 3 directions, 2h for each						
Isolation	Shock		980m/s <sup>2</sup> (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-short 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				
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					± 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- ± 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 <sup>2</sup> (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).

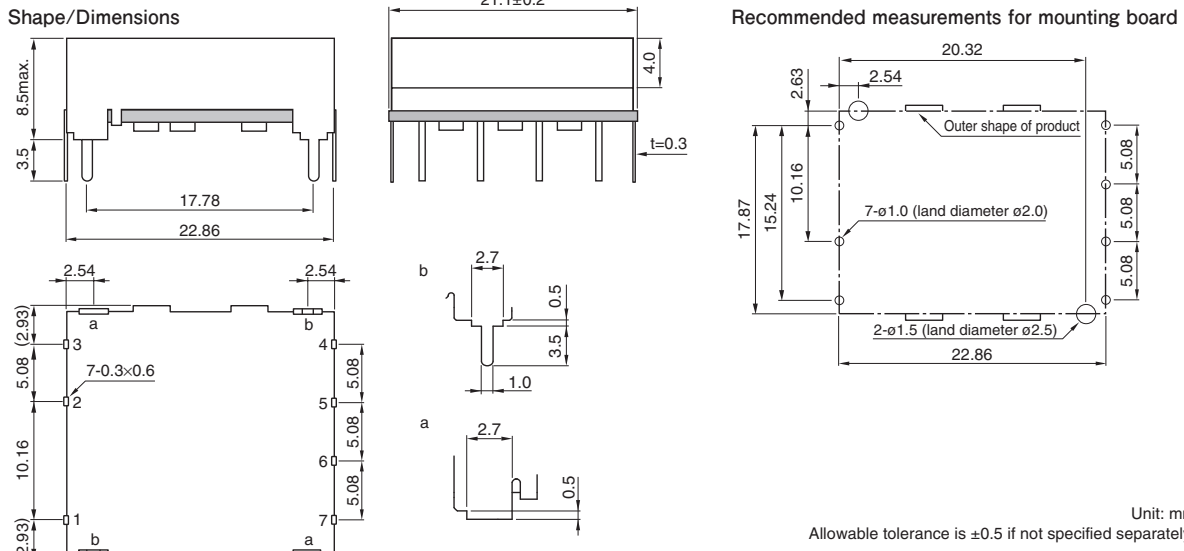
(\*4) Output voltage includes input change, load change (balanced load), and temperature change.

(\*5) In 50MHz, Ta=25°C.

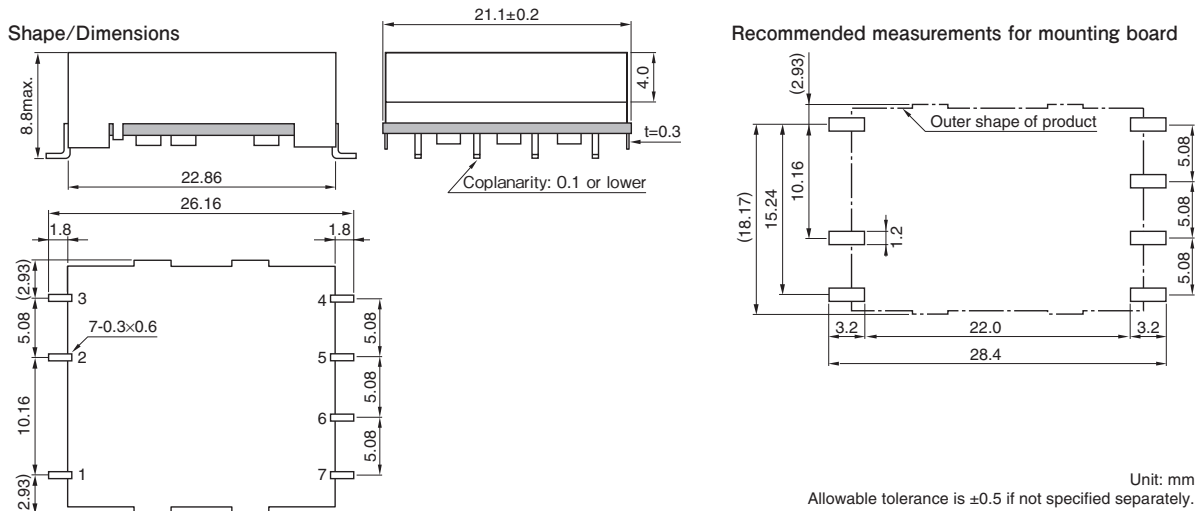
(\*6) Output current restriction method. Automatically resumes when the causes are removed. Never operate the unit under output-short or overload conditions for over 30 seconds.

# Outline Drawing

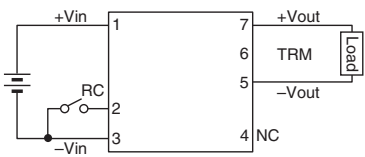
## CC6-xxxxF-E (DIP type)



## CC6-xxxxR-E (SMD type)



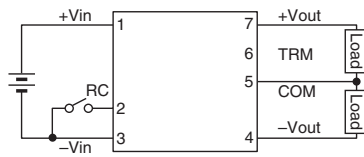
**Connection diagram**  
**CC6-xxxxSx-E**



**Terminal connections**

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

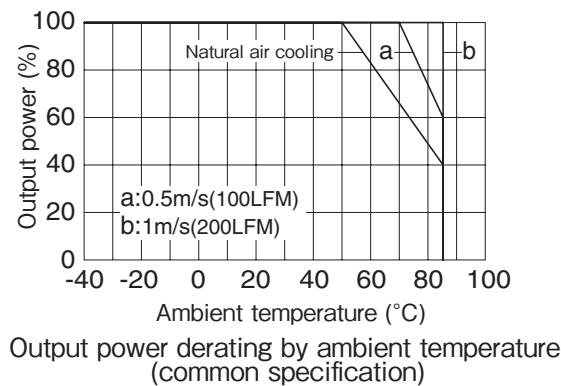
**CC6-xxxxDx-E**



**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



# 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 <sup>2</sup> (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 <sup>2</sup> (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 <sup>2</sup> (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 <sup>2</sup> (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.

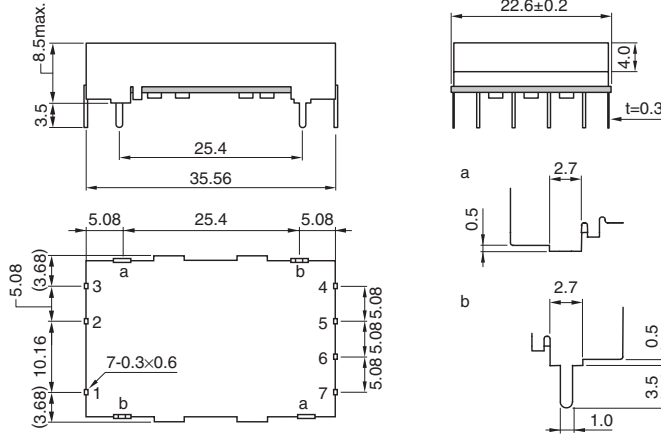
(\*5) In 50MHz, Ta=25°C.

(\*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.

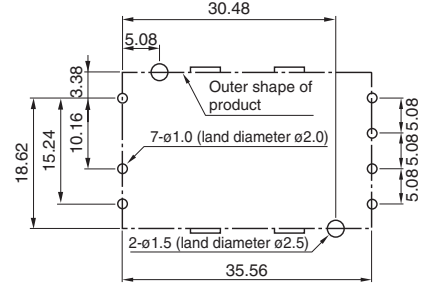
# Outline Drawing

## CC10-xxxxxF-E (DIP type)

Shape/Dimensions



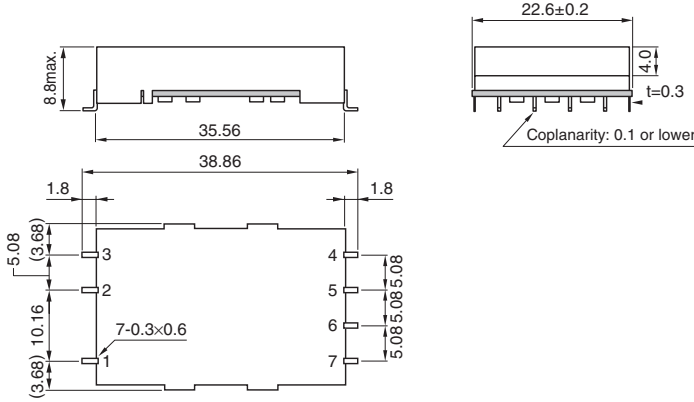
Recommended measurements for mounting board



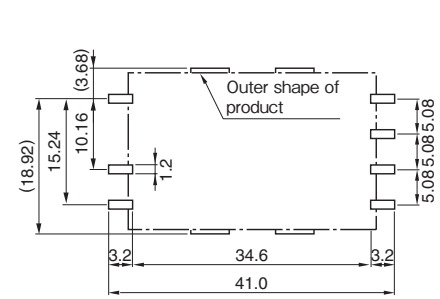
Unit: mm  
Allowable tolerance is ±0.5 if not specified separately.

## CC10-xxxxxR-E (SMD type)

Shape/Dimensions



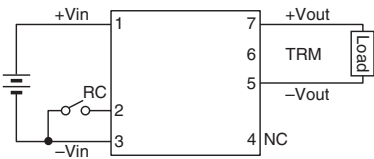
Recommended measurements for mounting board



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

Connection diagram

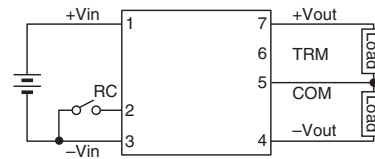
CC10-xxxxSx-E



Terminal connections

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

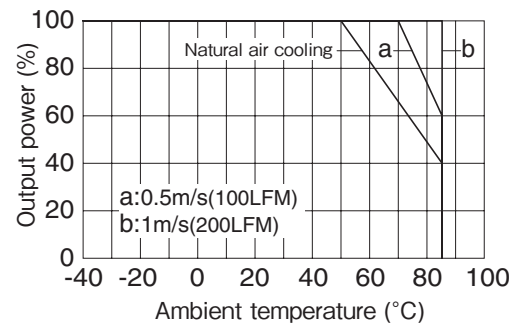
CC10-xxxxDx-E



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)