

SUCS1R5

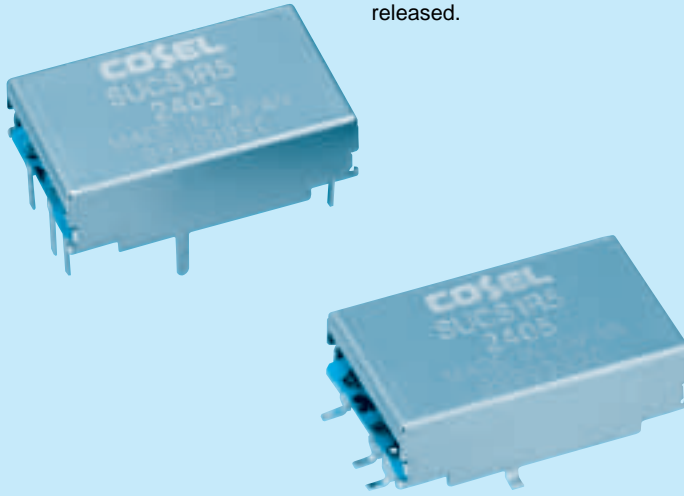
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① ② ③ ④ ⑤ ⑥



*This product will be released in November 2004 including 3.3V output model. Please see our HP for details when this product is released.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
- ⑤ Output voltage
- ⑥ Mounting type
B : SMD
C : DIP



| MODEL | SUCS1R50505 | SUCS1R50512 | SUCS1R50515 | SUCS1R51205 | SUCS1R51212 | SUCS1R51215 | SUCS1R52405 | SUCS1R52412 | SUCS1R52415 | SUCS1R54805 | SUCS1R54812 | SUCS1R54815 |
|-----------------------|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| MAX OUTPUT WATTAGE[W] | 1.5 | 1.56 | 1.5 | 1.5 | 1.56 | 1.5 | 1.5 | 1.56 | 1.5 | 1.5 | 1.56 | 1.5 |
| DC OUTPUT | VOLTAGE[V] *1 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 |
| | CURRENT[A] | 0.3 | 0.13 | 0.1 | 0.3 | 0.13 | 0.1 | 0.3 | 0.13 | 0.1 | 0.3 | 0.13 |

SPECIFICATIONS

| | MODEL | SUCS1R50505 | SUCS1R50512 | SUCS1R50515 | SUCS1R51205 | SUCS1R51212 | SUCS1R51215 | SUCS1R52405 | SUCS1R52412 | SUCS1R52415 | SUCS1R54805 | SUCS1R54812 | SUCS1R54815 | |
|------------------------------------|--------------------------------------|--|---------------|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-------------|---------------|---------------|--------|
| INPUT | VOLTAGE[V] | DC4.5 - 9 | | | DC9 - 18 | | | DC18 - 36 | | | DC36 - 76 | | | |
| | CURRENT[A] | *2 0.417typ | 0.433typ | 0.417typ | 0.169typ | 0.176typ | 0.169typ | 0.084typ | 0.087typ | 0.083typ | 0.042typ | 0.043typ | 0.042typ | |
| | EFFICIENCY[%] | *2 72typ | 72typ | 72typ | 74typ | 74typ | 74typ | 74typ | 75typ | 75typ | 74typ | 75typ | 75typ | |
| OUTPUT | VOLTAGE[V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | |
| | CURRENT[A] | 0.3 | 0.13 | 0.1 | 0.3 | 0.13 | 0.1 | 0.3 | 0.13 | 0.1 | 0.3 | 0.13 | 0.1 | |
| | LINE REGULATION[mV] | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | |
| | LOAD REGULATION[mV] | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | |
| | RIPPLE[mVp-p] | -20 to +55°C *3 | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max |
| | | -40 to -20°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +55°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | | -40 to -20°C *3 | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max |
| | TEMPERATURE REGULATION[mV] | -20 to +55°C | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max |
| | | -40 to +55°C | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max |
| DRIFT[mV] | *4 | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | |
| START-UP TIME[ms] | | 20max (Minimum input, I _o =100%) | | | | | | | | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | | Fixed (TRM pin open) ±5% adjustable by external VR | | | | | | | | | | | | |
| OUTPUT VOLTAGE SETTING[V] | | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | |
| OVERCURRENT PROTECTION | | Works over 105% of rating and recovers automatically | | | | | | | | | | | | |
| ISOLATION | INPUT-OUTPUT | AC500V 1minute. Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +71°C, 20 - 95%RH (Non condensing) (Required Derating), 3,000m (10,000feet) max | | | | | | | | | | | | |
| | STORAGE TEMP., HUMID. AND ALTITUDE | -40 to +85°C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max | | | | | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 98.0m/s ² (10G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 490.3m/s ² (50G), 11ms, once each along X, Y and Z axis | | | | | | | | | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL, EN60950-1 | | | | | | | | | | | | |
| OTHERS | CASE SIZE | 22.4 × 7.0 × 13.2mm (W × H × D) | | | | | | | | | | | | |
| | COOLING METHOD | Convection | | | | | | | | | | | | |

*1 SUCW1R5xx12/SUCW1R5xx15 is available as single output, +24V/+30V.
 *2 Rated input 5V, 12V, 24V or 48V DC I_o=100%
 *3 Ripple and Ripple Noise is measured by using measuring board with capacitor with in 25mm from output terminal.
 *4 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.
 * Parallel operation with other model is not possible.

SUCS3

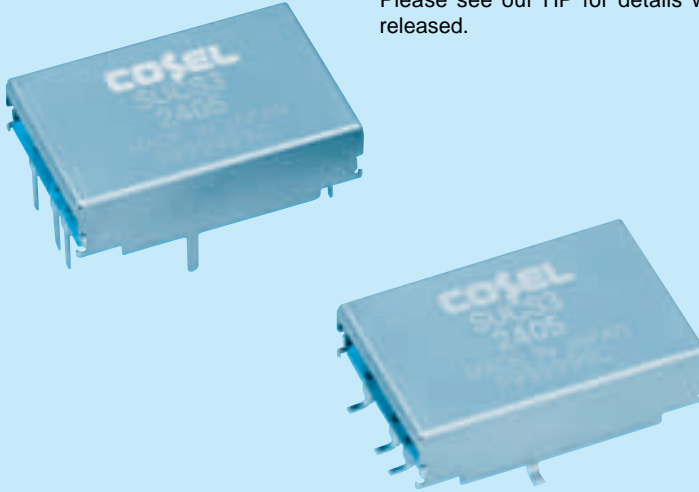
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① ② ③ ④ ⑤ ⑥ ⑦



*This product will be released in February 2005 including 3.3V output model. Please see our HP for details when this product is released.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
- ⑤ Output voltage
- ⑥ Mounting type
B : SMD
C : DIP
- ⑦ Optional
G : Capacitor between Input and Output is removed.



| MODEL | SUCS30505 | SUCS30512 | SUCS30515 | SUCS31205 | SUCS31212 | SUCS31215 | SUCS32405 | SUCS32412 | SUCS32415 | SUCS34805 | SUCS34812 | SUCS34815 |
|-----------------------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| DC OUTPUT | VOLTAGE[V] *1 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 |
| | CURRENT[A] | 0.6 | 0.25 | 0.2 | 0.6 | 0.25 | 0.2 | 0.6 | 0.25 | 0.2 | 0.6 | 0.25 |

SPECIFICATIONS

| | MODEL | SUCS30505 | SUCS30512 | SUCS30515 | SUCS31205 | SUCS31212 | SUCS31215 | SUCS32405 | SUCS32412 | SUCS32415 | SUCS34805 | SUCS34812 | SUCS34815 | |
|------------------------------------|--|--|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-----------|--------|
| INPUT | VOLTAGE[V] | DC4.5 - 9 | | | DC9 - 18 | | | DC18 - 36 | | | DC36 - 76 | | | |
| | CURRENT[A] *2 | 0.800typ | 0.780typ | 0.780typ | 0.325typ | 0.317typ | 0.321typ | 0.163typ | 0.159typ | 0.161typ | 0.082typ | 0.080typ | 0.080typ | |
| | EFFICIENCY[%] *2 | 75typ | 77typ | 77typ | 77typ | 79typ | 78typ | 77typ | 79typ | 78typ | 77typ | 79typ | 79typ | |
| OUTPUT | VOLTAGE[V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | |
| | CURRENT[A] | 0.6 | 0.25 | 0.2 | 0.6 | 0.25 | 0.2 | 0.6 | 0.25 | 0.2 | 0.6 | 0.25 | 0.2 | |
| | LINE REGULATION[mV] | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | |
| | LOAD REGULATION[mV] | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | |
| | RIPPLE[mVp-p] | -20 to +55°C *3 | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max |
| | | -40 to -20°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +55°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | | -40 to -20°C *3 | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max |
| | TEMPERATURE REGULATION[mV] | -20 to +55°C | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max |
| | | -40 to +55°C | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max |
| DRIFT[mV] *4 | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | | |
| START-UP TIME[ms] | 20max (Minimum input, Io=100%) | | | | | | | | | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open) ±5% adjustable by external VR | | | | | | | | | | | | | |
| OUTPUT VOLTAGE SETTING[V] | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 105% of rating and recovers automatically | | | | | | | | | | | | |
| | REMOTE ON/OFF | Provided (Negative logic L : ON, H : OFF) | | | | | | | | | | | | |
| ISOLATION | INPUT-OUTPUT | AC500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +71°C, 20 - 95%RH (Non condensing) (Required Derating), 3.000m (10.000feet) max | | | | | | | | | | | | |
| | STORAGE TEMP., HUMID. AND ALTITUDE | -40 to +85°C, 20 - 95%RH (Non condensing), 9.000m (30.000feet) max | | | | | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 98.0m/s ² (10G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 490.3m/s ² (50G), 11ms, once each along X, Y and Z axis | | | | | | | | | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL, EN60950-1 | | | | | | | | | | | | |
| OTHERS | CASE SIZE | 25 × 7.0 × 16.1mm (W × H × D) | | | | | | | | | | | | |
| | COOLING METHOD | Convection | | | | | | | | | | | | |

*1 SUCW3xx12/SUCW3xx15 is available as single output, +24V/+30V.
 *2 Rated input 5V, 12V, 24V or 48V DC Io=100%
 *3 Ripple and Ripple Noise is measured by using measuring board with capacitor with in 25mm from output terminal.
 *4 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.
 * Parallel operation with other model is not possible.

SUCS6

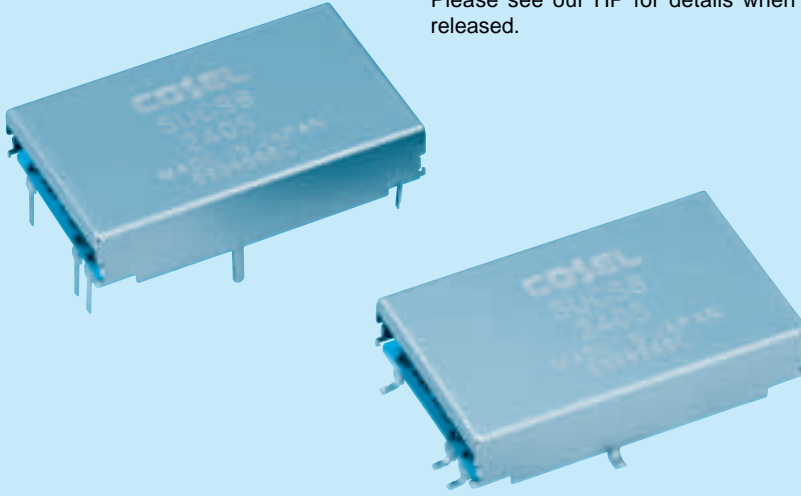
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① ② ③ ④ ⑤ ⑥ ⑦



*This product will be released in February 2005 including 3.3V output model. Please see our HP for details when this product is released.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
- ⑤ Output voltage
- ⑥ Mounting type
B : SMD
C : DIP
- ⑦ Optional
G : Capacitor between Input and Output is removed.



| MODEL | SUCS60505 | SUCS60512 | SUCS60515 | SUCS61205 | SUCS61212 | SUCS61215 | SUCS62405 | SUCS62412 | SUCS62415 | SUCS64805 | SUCS64812 | SUCS64815 | |
|-----------------------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
| MAX OUTPUT WATTAGE[W] | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | |
| DC OUTPUT | VOLTAGE[V] *1 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 |
| | CURRENT[A] | 1 | 0.5 | 0.4 | 1.2 | 0.5 | 0.4 | 1.2 | 0.5 | 0.4 | 1.2 | 0.5 | 0.4 |

SPECIFICATIONS

| | MODEL | SUCS60505 | SUCS60512 | SUCS60515 | SUCS61205 | SUCS61212 | SUCS61215 | SUCS62405 | SUCS62412 | SUCS62415 | SUCS64805 | SUCS64812 | SUCS64815 | |
|------------------------------------|--|--|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-----------|--------|
| INPUT | VOLTAGE[V] | DC4.5 - 9 | | | DC9 - 18 | | | DC18 - 36 | | | DC36 - 76 | | | |
| | CURRENT[A] *2 | 1.316typ | 1.500typ | 1.500typ | 0.617typ | 0.588typ | 0.588typ | 0.301typ | 0.291typ | 0.291typ | 0.154typ | 0.145typ | 0.145typ | |
| | EFFICIENCY[%] *2 | 76typ | 80typ | 80typ | 81typ | 85typ | 85typ | 83typ | 86typ | 86typ | 81typ | 86typ | 86typ | |
| OUTPUT | VOLTAGE[V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | |
| | CURRENT[A] | 1 | 0.5 | 0.4 | 1.2 | 0.5 | 0.4 | 1.2 | 0.5 | 0.4 | 1.2 | 0.5 | 0.4 | |
| | LINE REGULATION[mV] | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | |
| | LOAD REGULATION[mV] | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | |
| | RIPPLE[mVp-p] | -20 to +55°C *3 | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max |
| | | -40 to -20°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +55°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | | -40 to -20°C *3 | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max |
| | TEMPERATURE REGULATION[mV] | -20 to +55°C | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max |
| | | -40 to +55°C | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max |
| DRIFT[mV] *4 | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | | |
| START-UP TIME[ms] | 20max (Minimum input, Io=100%) | | | | | | | | | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open) ±5% adjustable by external VR | | | | | | | | | | | | | |
| OUTPUT VOLTAGE SETTING[V] | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 105% of rating and recovers automatically | | | | | | | | | | | | |
| | REMOTE ON/OFF | Provided (Negative logic L : ON, H : OFF) | | | | | | | | | | | | |
| ISOLATION | INPUT-OUTPUT | AC500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +71°C, 20 - 95%RH (Non condensing) (Required Derating), 3,000m (10,000feet) max | | | | | | | | | | | | |
| | STORAGE TEMP., HUMID. AND ALTITUDE | -40 to +85°C, 20 - 95%RH (Non condensing), 9,000m (30,000feet) max | | | | | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 98.0m/s ² (10G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 490.3m/s ² (50G), 11ms, once each along X, Y and Z axis | | | | | | | | | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL, EN60950-1 | | | | | | | | | | | | |
| OTHERS | CASE SIZE | 32.6 × 7.0 × 19.1mm (W × H × D) | | | | | | | | | | | | |
| | COOLING METHOD | Convection | | | | | | | | | | | | |

*1 SUCW6xx12/SUCW6xx15 is available as single output, +24V/+30V.
 *2 Rated input 5V, 12V, 24V or 48V DC Io=100%
 *3 Ripple and Ripple Noise is measured by using measuring board with capacitor with in 25mm from output terminal.
 *4 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.
 * Parallel operation with other model is not possible.

SUCS10

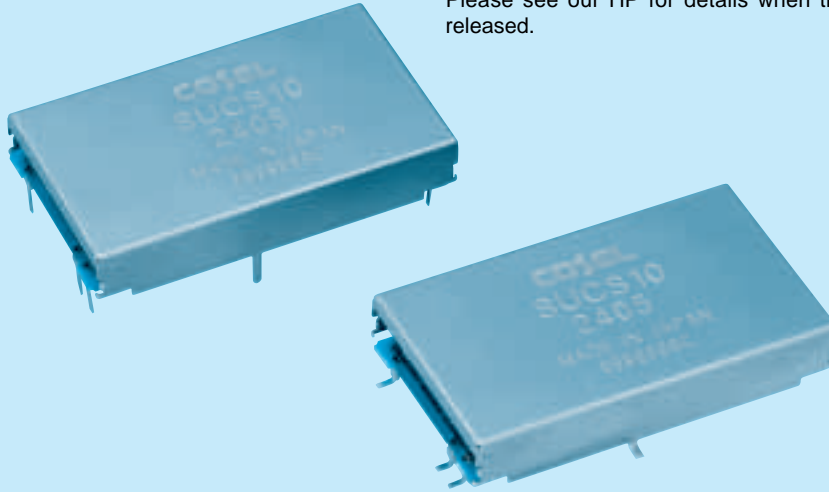
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① ② ③ ④ ⑤ ⑥ ⑦



*This product will be released in March 2005 including 3.3V output model. Please see our HP for details when this product is released.

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Input voltage
- ⑤ Output voltage
- ⑥ Mounting type
B : SMD
C : DIP
- ⑦ Optional
G : Capacitor between Input and Output is removed.



| MODEL | SUCS100505 | SUCS100512 | SUCS100515 | SUCS101205 | SUCS101212 | SUCS101215 | SUCS102405 | SUCS102412 | SUCS102415 | SUCS104805 | SUCS104812 | SUCS104815 |
|-----------------------|---------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 10 | 10.8 | 10.5 | 10 | 12 | 12 | 10 | 12 | 12 | 10 | 12 | 12 |
| DC OUTPUT | VOLTAGE[V] *1 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 |
| | CURRENT[A] | 2 | 0.9 | 0.7 | 2 | 1 | 0.8 | 2 | 1 | 0.8 | 2 | 1 |

SPECIFICATIONS

| | MODEL | SUCS100505 | SUCS100512 | SUCS100515 | SUCS101205 | SUCS101212 | SUCS101215 | SUCS102405 | SUCS102412 | SUCS102415 | SUCS104805 | SUCS104812 | SUCS104815 | |
|------------------------------------|--|--|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-------------|---------------|---------------|------------|--------|
| INPUT | VOLTAGE[V] | DC4.5 - 9 | | | DC9 - 18 | | | DC18 - 36 | | | DC36 - 76 | | | |
| | CURRENT[A] *2 | 2.41typ | 2.54typ | 2.47typ | 0.980typ | 1.15typ | 1.15typ | 0.490typ | 0.575typ | 0.575typ | 0.245typ | 0.287typ | 0.287typ | |
| | EFFICIENCY[%] *2 | 83typ | 85typ | 85typ | 85typ | 87typ | 87typ | 85typ | 87typ | 87typ | 85typ | 87typ | 87typ | |
| OUTPUT | VOLTAGE[V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | |
| | CURRENT[A] | 2 | 0.9 | 0.7 | 2 | 1 | 0.8 | 2 | 1 | 0.8 | 2 | 1 | 0.8 | |
| | LINE REGULATION[mV] | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | |
| | LOAD REGULATION[mV] | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | 40max | 100max | 120max | |
| | RIPPLE[mVp-p] | -20 to +55°C *3 | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max | 80max | 120max | 120max |
| | | -40 to -20°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | RIPPLE NOISE[mVp-p] | -20 to +55°C *3 | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max | 120max | 150max | 150max |
| | | -40 to -20°C *3 | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max | 200max |
| | TEMPERATURE REGULATION[mV] | -20 to +55°C | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max | 50max | 150max | 180max |
| | | -40 to +55°C | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max | 80max | 240max | 290max |
| DRIFT[mV] *4 | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | 20max | 48max | 60max | | |
| START-UP TIME[ms] | 20max (Minimum input, Io=100%) | | | | | | | | | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | Fixed (TRM pin open) ±5% adjustable by external VR | | | | | | | | | | | | | |
| OUTPUT VOLTAGE SETTING[V] | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | 4.85 - 5.25 | 11.40 - 12.60 | 14.25 - 15.75 | | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 105% of rating and recovers automatically | | | | | | | | | | | | |
| | REMOTE ON/OFF | Provided (Negative logic L : ON, H : OFF) | | | | | | | | | | | | |
| ISOLATION | INPUT-OUTPUT | AC500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C) | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP., HUMID. AND ALTITUDE | -40 to +71°C, 20 - 95%RH (Non condensing) (Required Derating), 3.000m (10.000feet) max | | | | | | | | | | | | |
| | STORAGE TEMP., HUMID. AND ALTITUDE | -40 to +85°C, 20 - 95%RH (Non condensing), 9.000m (30.000feet) max | | | | | | | | | | | | |
| | VIBRATION | 10 - 55Hz, 98.0m/s ² (10G), 3minutes period, 60minutes each along X, Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 490.3m/s ² (50G), 11ms, once each along X, Y and Z axis | | | | | | | | | | | | |
| SAFETY | AGENCY APPROVALS | UL60950-1, C-UL, EN60950-1 | | | | | | | | | | | | |
| OTHERS | CASE SIZE | 40.2 × 7.0 × 22.7mm (W × H × D) | | | | | | | | | | | | |
| | COOLING METHOD | Convection | | | | | | | | | | | | |

*1 SUCW10xx12/SUCW10xx15 is available as single output, +24V/+30V.
 *2 Rated input 5V, 12V, 24V or 48V DC Io=100%
 *3 Ripple and Ripple Noise is measured by using measuring board with capacitor with in 25mm from output terminal.
 *4 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C.
 * Parallel operation with other model is not possible.

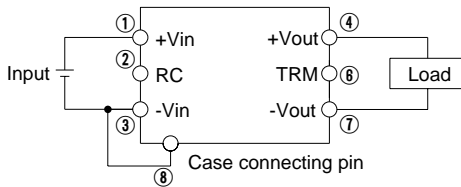
| | | |
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| 2 | Function | G-38 |
| 2.1 | Input voltage range | G-38 |
| 2.2 | Overcurrent protection(ocp) | G-38 |
| 2.3 | Isolation | G-38 |
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| 5 | Input Voltage/Current Range | G-40 |
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1 Pin Configuration

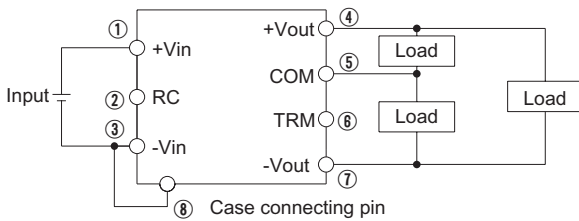
Table 1.1 Pin configuration and function

| No. | Pin connection | Function |
|-----|---------------------|--|
| ① | +Vin | +DC input |
| ② | RC | Remote ON/OFF (excluding 1R5) |
| ③ | -Vin | -DC input |
| ④ | +Vout | +DC output |
| ⑤ | COM | GND of output voltage (Only applicable for Dual output) |
| ⑥ | TRM | Adjustment voltage range |
| ⑦ | -Vout | -DC output |
| ⑧ | Case connecting pin | If connected to -side of input, the case potential can be fixed and the value of radiation noise can be reduced. (only applicable for SUC) |

Single Output



Dual(±)Output



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Fig.1.1 Pin configuration

Case connecting pin

Case connecting pin is available. By connecting the pin to -side of input, the radiation noise from main body can be reduced. Solder the case connecting pin with the substrate for the reliability improvement.

2 Function

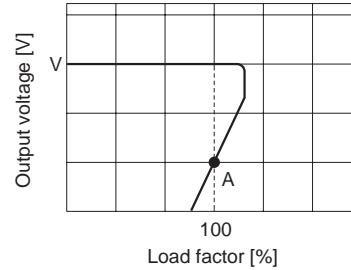
2.1 Input voltage range

If the wrong input is applied, the unit will not operate properly and/or may be damaged.

2.2 Overcurrent protection

Overcurrent protection circuit is built-in and comes into effect at over 105% of the rated current. Overcurrent protection prevents the unit from short circuit and over current condition of less than 20 sec. The unit automatically recovers when the fault condition is cleared.

The power supply has a current foldback characteristics, it may not start up when connected to nonlinear load such as a lamp, motor or constant current load. See the characteristics below.



—: Load characteristics of power supply.
 - - - - -: Characteristics of load (lamp, motor, constant current load, etc.).
 Note: In case of nonlinear load, the output is locked out at A point.

Fig.2.1 Current foldback characteristics

2.3 Isolation

For a receiving inspection, such as Hi-Pot test, gradually increase (decrease) the voltage for the start (shut down). Avoid using Hi-Pot tester with the timer because it may generate voltage a few times higher than the applied voltage, at ON/OFF of a timer.

2.4 Adjustable voltage range

The output voltage is adjustable by external potentiometer (Refer to Table 2.1).

Output voltage is increased by turning potentiometer clockwise and is decreased by turning potentiometer counterclockwise.

The wiring to the potentiometer should be as short as possible. The temperature coefficient varies depending on the type of resistor and potentiometer.

It is recommended that the following types be used.
 Resistor.....Metal film type, coefficient of less than $\pm 300\text{ppm}/^\circ\text{C}$
 Potentiometer.....Cermet type, coefficient of less than $\pm 100\text{ppm}/^\circ\text{C}$

When the output voltage adjustment is not used, open the TRM pin.

Dual output is simultaneously adjustment of \pm .

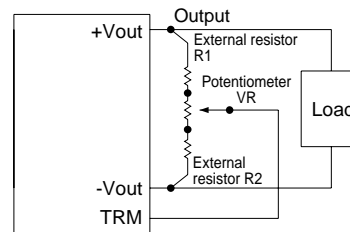


Fig.2.2 Connection devices outside the power supply

Table 2.1 Devices outside the power supply (Adjustable ±5%)

| No. | Output voltage | The constant value of devices outside the power supply (Unit:Ω) | | |
|-----|----------------|---|-----|------|
| | | VR | R1 | R2 |
| 1 | 5V | 1K | 100 | 270 |
| 2 | 12V | 5K | 10K | 1.2K |
| 3 | 15V | 5K | 10K | 470 |
| 4 | ±12V | 5K | 18K | 470 |
| 5 | ±15V | 5K | 18K | 470 |

2.5 Remote ON/OFF(excluding 1R5)

Remote ON / OFF circuits is built-in on input side.

●SU3/SUC3, SU6/SUC6

Remote ON / OFF connection and specification refer to below.

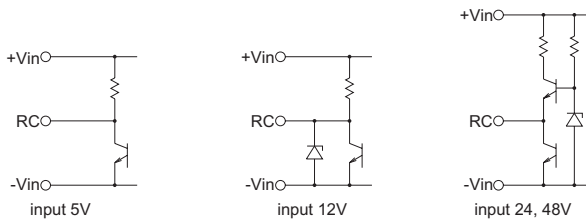


Fig.2.3 RC connection example

Table 2.2 Specification of Remote ON / OFF

| Between RC and -Vin (VRC) | Output voltage |
|----------------------------------|----------------|
| Short or $0V \leq VRC \leq 0.4V$ | ON |
| $1.0V \leq VRC \leq 9.0V$ | OFF |

When remote ON / OFF function is not used, please short between RC and -Vin.

●SU10,SUC10

Remote ON / OFF connection and specification refer to below.

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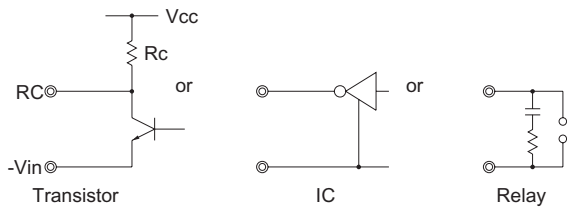


Fig.2.4 RC connection example

Table 2.3 Specification of Remote ON / OFF

| Between RC and -Vin (VRC) | Output voltage |
|-----------------------------------|----------------|
| Short or $0V \leq VRC \leq 1.2V$ | ON |
| Open or $2.4V \leq VRC \leq 7.0V$ | OFF |

When RC pin is "Low" level, fan out current is 0.5mA typ. When Vcc is applied, use $Vcc \leq 7V$.

When remote ON/OFF function is not used, please short between RC and -Vin.

3 Wiring to Input/Output Pin

Basically, SU / SUC series do not require any external capacitor. However, as pi filter is composed by connecting capacitor: C_i close to the input pin, reflected input noise from converter can be reduced.

It is recommended to use high performance (temperature compensation and high frequency characteristics) capacitor.

If abnormal voltage like a high surge is applied to the input side, C_i is effective to reduce its level. However, C_i life time should be considered.

When the external filter which contains L(inductance) is installed on input line, or the length of wire from input source to converter is greatly long, the reflected input noise might be increased, the input voltage might get several times higher than a normal level and also output voltage might be unstable when turned on. In this case, C_i should be connected to the input pin.

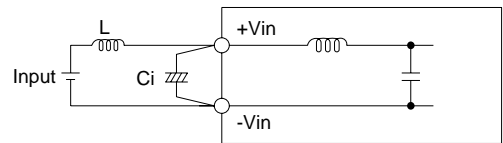


Fig.3.1 Connection method of capacitor at input pin

Table 3.1 Recommended capacitance C_i [μF]

| Model Input voltage(V) | SU/SUC1R5 | SU/SUC3 | SU/SUC6 | SU/SUC10 |
|---------------------------|-----------|---------|---------|----------|
| 5 | 100 | 220 | 470 | 470 |
| 12 | 47 | 100 | 220 | 220 |
| 24 | 33 | 47 | 100 | 100 |
| 48 | 10 | 22 | 47 | 47 |

*The capacitance can be increased and decreased depending on effect.

Avoid the reverse polarity input voltage. It will damage the power supply.

It is possible to protect the unit from the reverse input voltage by installing an external diode as shown in Fig.3.2.

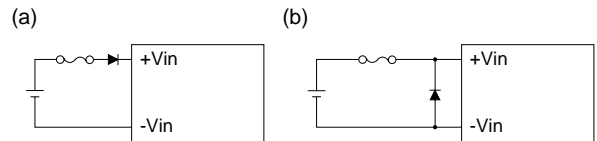


Fig.3.2 Reverse input voltage protection

Basically, SU / SUC series do not require any external capacitor. However, the output ripple voltage can be reduced by connecting capacitor : C_o to the output pin as follows.

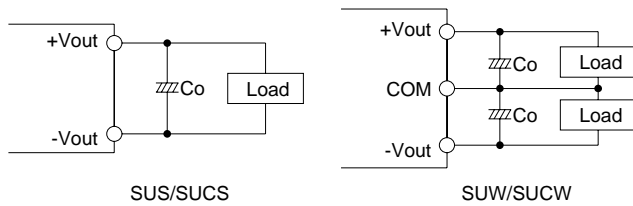


Fig.3.3 Connection method of external capacitor at output pin

Table 3.2 Recommended capacitance Co [μ F]

| Model Output voltage(V) | SU/SUC1R5 | SU/SUC3 | SU/SUC6 | SU/SUC10 |
|----------------------------|-----------|---------|---------|----------|
| 5 | 100 | 220 | 220 | 220 |
| 12 | 100 | 100 | 100 | 100 |
| 15 | 100 | 100 | 100 | 100 |

*The capacitance can be increased and decreased depending on effect.

■When the distance between load and DC output is long, please install capacitor at load as shown below.

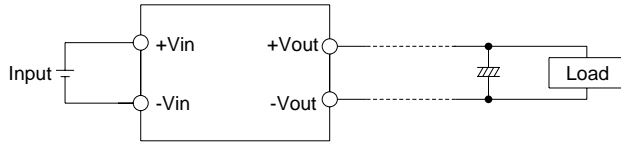


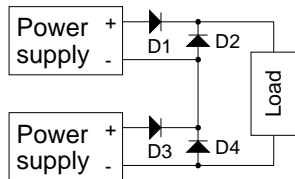
Fig.3.4 Connection method of capacitor at load

4 Series and Parallel Operation

4.1 Series operation

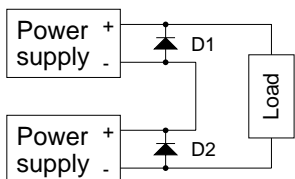
■Series operation is available by connecting the outputs of two or more power supplies, as shown below. Output currents in series connection should be lower than the lowest rated current in each unit.

(a) When the output voltage is less than 5V.



D1 - D4: Please use Schottky Barrier Diode.

(b) When the output voltage is more than 12V.



D1, D2: Please use Schottky Barrier Diode.

(c)

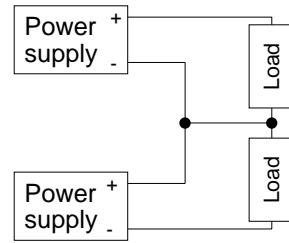


Fig.4.1 Series operation

4.2 Parallel redundancy operation

■Parallel redundancy operation is available by connecting the units as shown below.

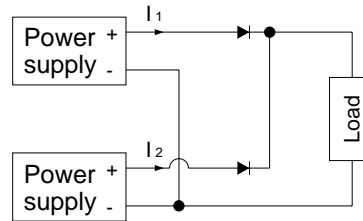


Fig.4.2 Parallel redundancy operation

■Values of I_1 and I_2 become unbalanced by a slight different of the output voltage. Make sure that the output voltage of units is of equal value and the output current from each power supply does not exceed the rated current.

$$I_1, I_2 \leq \text{the rated current value}$$

5 Input Voltage/ Current Range

■When a non-regulated source is used as a front end, make sure that the voltage fluctuation together with the ripple voltage will not exceed the input voltage range.

■Select the converter that is able to handle the start-up current (I_p).

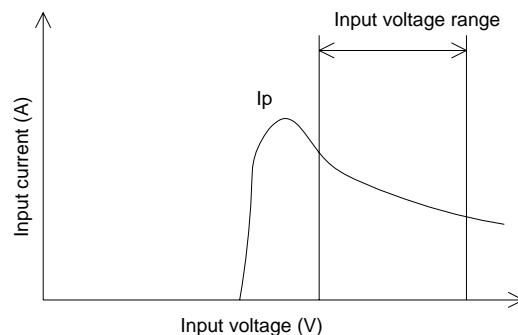


Fig.5.1 Input current characteristics

6 Implementation · Mounting Method

6.1 Installation method

- The unit can be mounted in any direction. Position them with proper intervals to allow enough air ventilation. Ambient temperature around each power supply should not exceed the temperature range shown in derating curve.
- Avoid placing pattern layout in hatched area in Fig.6.1 to insulate between pattern and power supply.

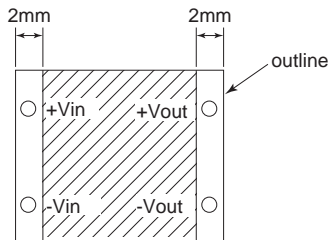


Fig.6.1 Prohibition area of pattern layout

6.2 Automatic mounting

- SU/SUC series (TYPE:B) is designed to have a large flat area in the center of the top surface to serve as a pick up point for automated vacuum pick and place equipment.
- An excessively low bottom dead point of the suction nozzle imposes great force on the core during mounting, causing cracked core. So during mounting, take enough care. Refer to External view.

6.3 Input/Output Pin

- When too much stress is applied on the input/output pins of the unit, the internal connection may be weakened. As below Fig. 6.2, avoid applying stress of more than 19.6N (2kgf) vertically.
- The input/output pins are soldered on PCB internally, therefore, do not pull or bend them with abnormal forces.
- When additional stress is expected to be put on the input/output pins because of vibration or impacts, fix the unit on PCB (using silicone rubber or fixing fittings) to reduce the stress onto the input/output pins.

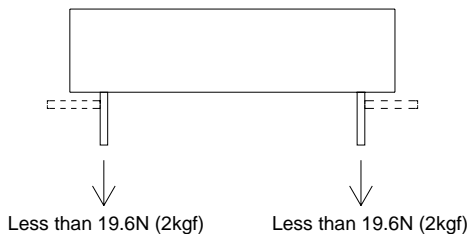


Fig.6.2 Stress onto the pins

6.4 Cleaning

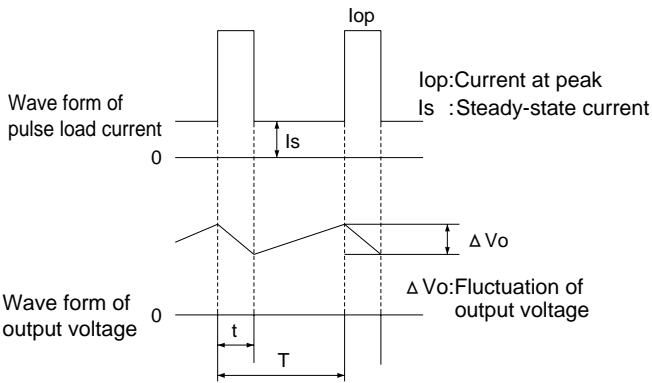
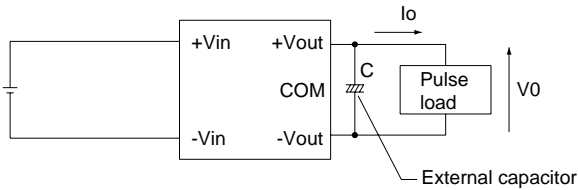
- When cleaning is necessary, follow the undermentioned condition.
 - Method: Varnishing, ultrasonic wave and vapor
 - Cleaning agents: IPA (Solvent type)
 - Total time: 2 minutes or less
- After cleaning, dry them enough.
- In case of ultrasonic wave cleaning, the ultrasonic should be less than 15kw/m³

7 Safety Considerations

- To apply for safety standard approval using this power supply, the following conditions must be met.
 - This unit must be used as a component of the end-use equipment.
 - The equipment does neither contain any basic nor double / reinforced insulation between input and output. If the input voltage is greater than 60VDC, this has to be provided by the end-use equipment according to the final build in condition.

8 Peak Current (Pulse Load)

■ It is possible to supply the pulse current for the pulse load by connecting the capacitor externally at the output side.



■ The average current Iav of output is shown in below formula.

$$I_{av} = I_s + \frac{(I_{op} - I_s)t}{T}$$

■ The required electrolytic capacitor C is found by below formula.

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$$C = \frac{(I_{op} - I_{av})t}{\Delta V_o}$$