

General Description

The C Series power supplies are configurable with combinations of insertable DC modules for various single, multiple, or parallel output.

Features and Benefits

- High reliability with low noise and low leakage current
- Medical and information equipment approval to UL60950-1, C-UL, EN60950 and EN60601-1 3rd
- Higher withstand voltage and lower leakage current
- OCP, OVP and OHP, remote sensing, control, and alarm (AC power fail, fan alarm, and low output)

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Sample Test Conditions

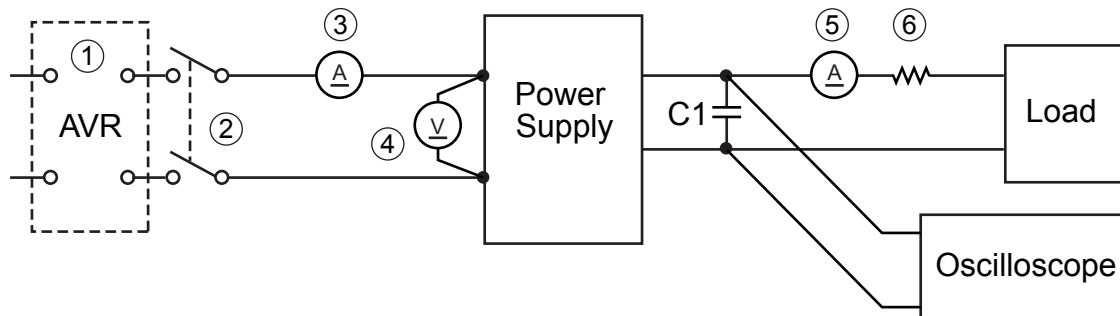
Input Voltage, V_{IN}

| Min. (V) | Nom. (V) | Max. (V) |
|----------|----------|----------|
| - | - | - |

Load Current, I_{LOAD} (Output Circuit: 5 V)

| Min. (A) | Nom. (A) | Max. (A) |
|----------|----------|----------|
| 0 | 10 | 10 |

Sample Test Circuit Diagram



| Key | Description | Remarks |
|-----|-----------------------------|---|
| - | Measuring instrument | Output voltage is measured with a digital multimeter |
| 1 | Automatic Voltage Regulator | - |
| 2 | Circuit breaker | - |
| 3 | Ammeter | - |
| 4 | Volt meter | - |
| 5 | Ammeter | - |
| 6 | Shunt resistor | - |
| C1 | Load capacitor | Electrolytic capacitor: 47 μ F Film capacitor: 0.1 μ F |

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Figure 1. Efficiency (By Load Current)

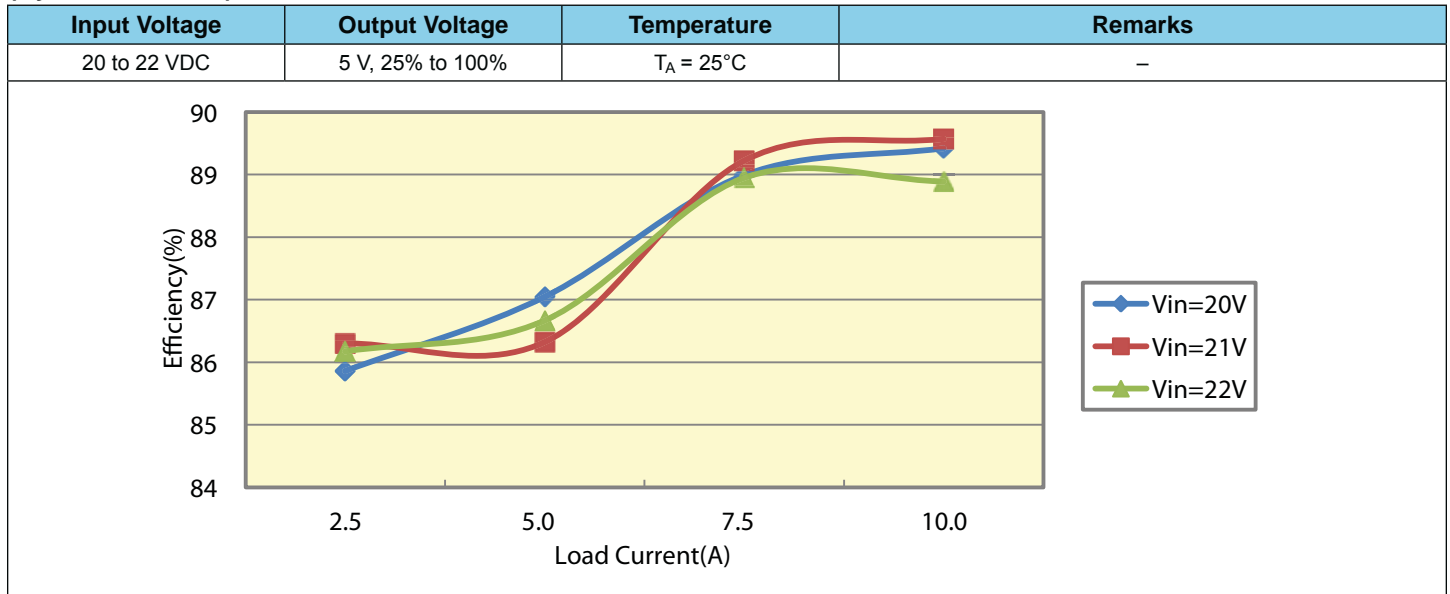


Figure 2. Output Voltage Accuracy (By Load Current)

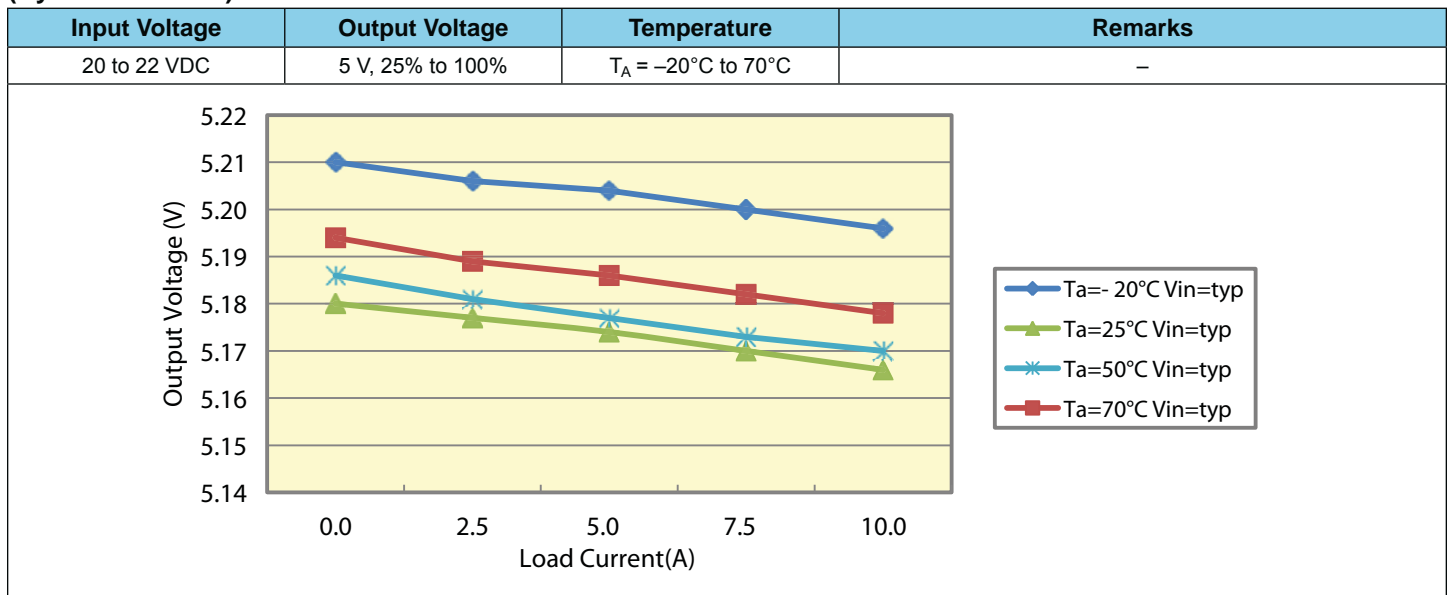


Figure 3. Warm-Up Drift

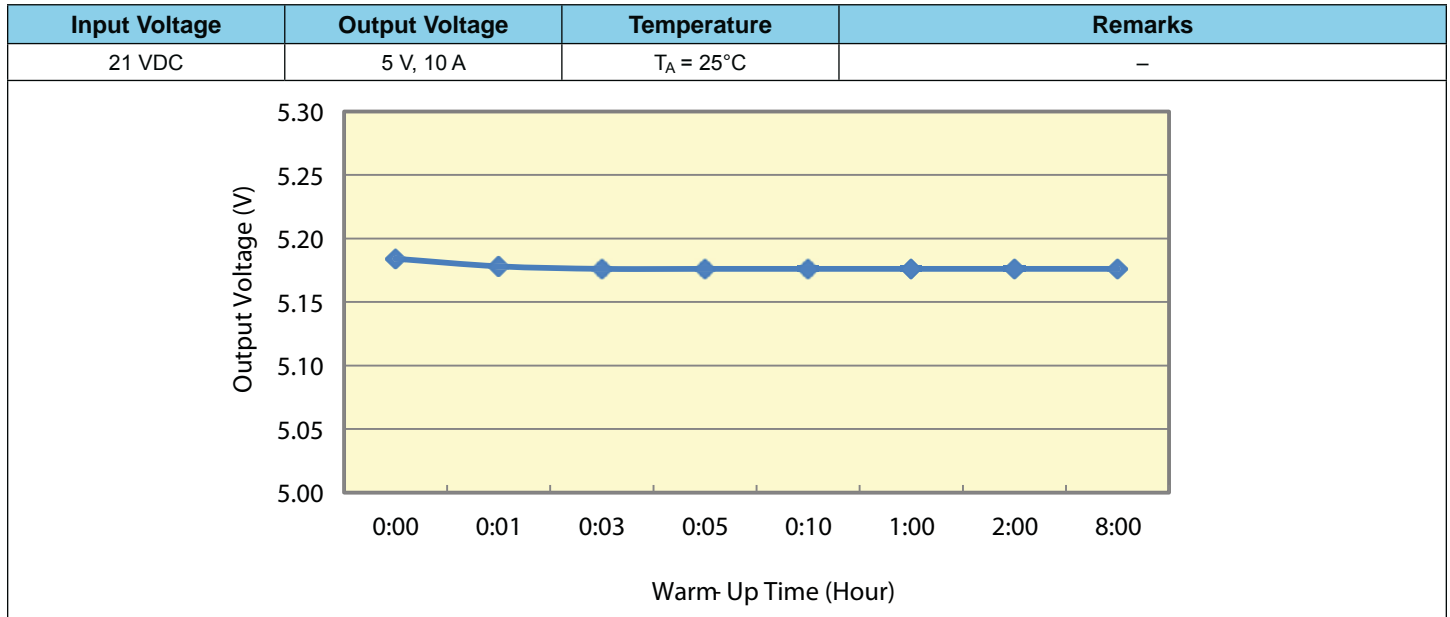


Figure 4. Ripple Voltage (By Load Current)

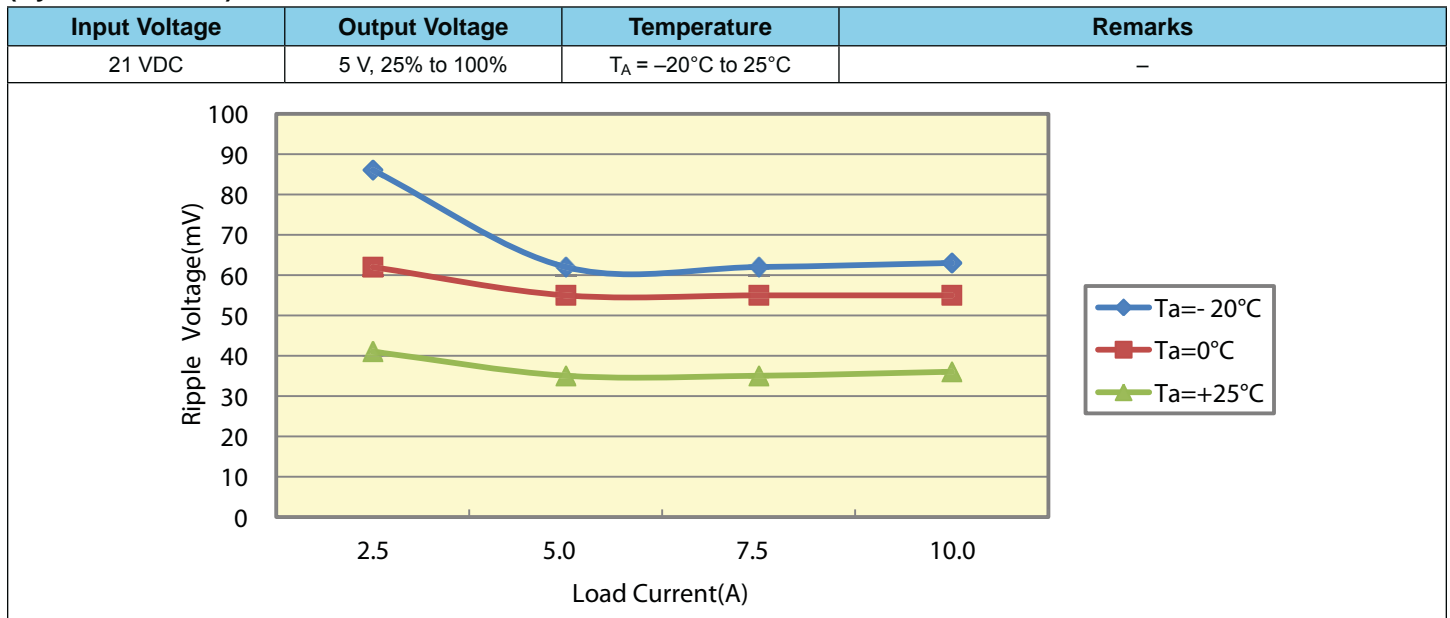


Figure 5. Ripple Noise Voltage
(By Load Current)

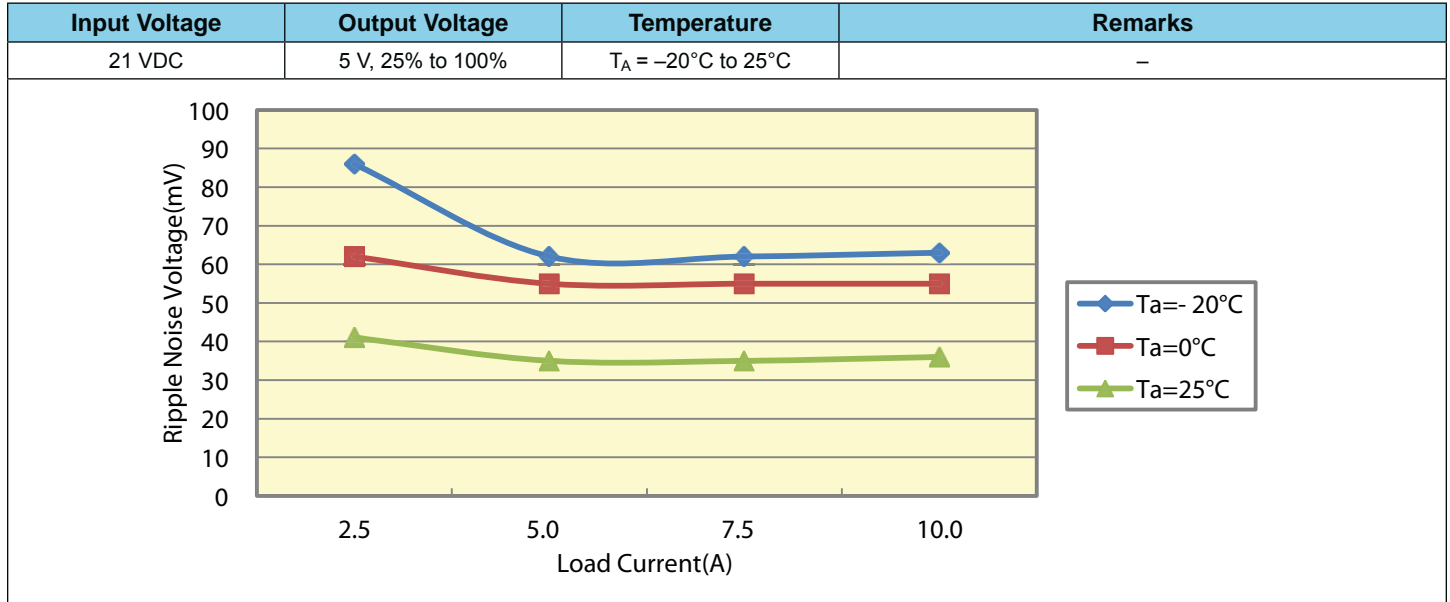


Figure 6. Overcurrent Protection
(By Load Current)

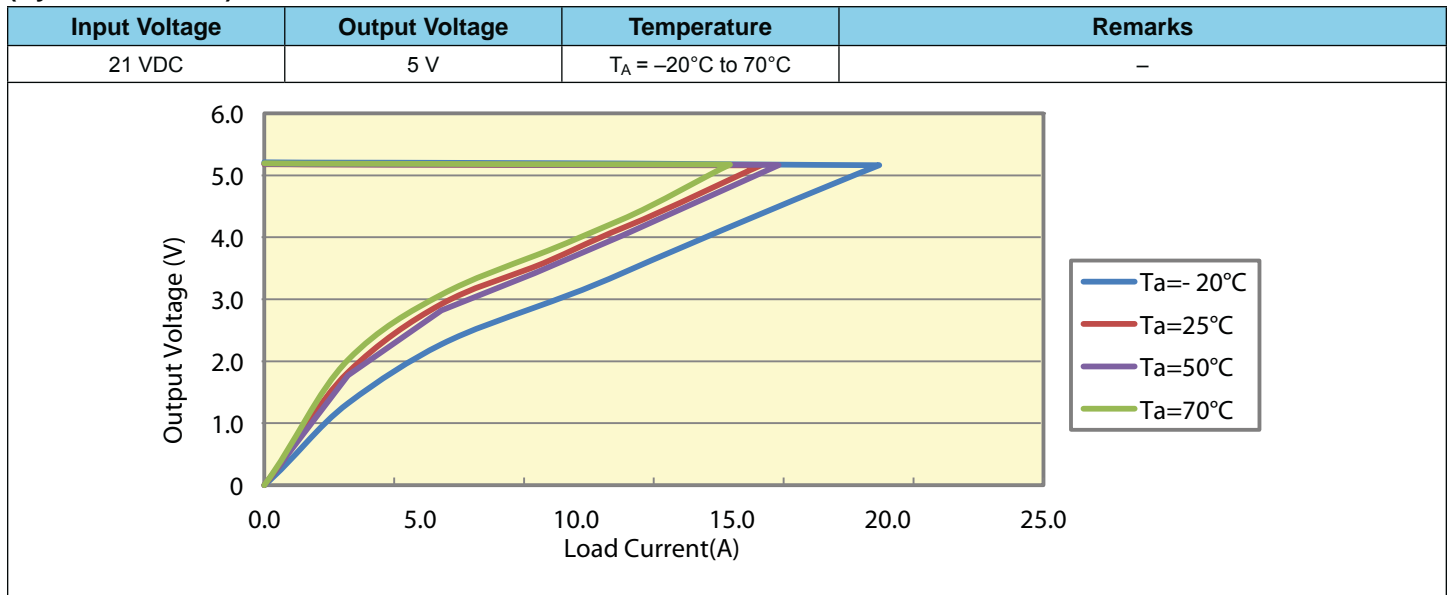
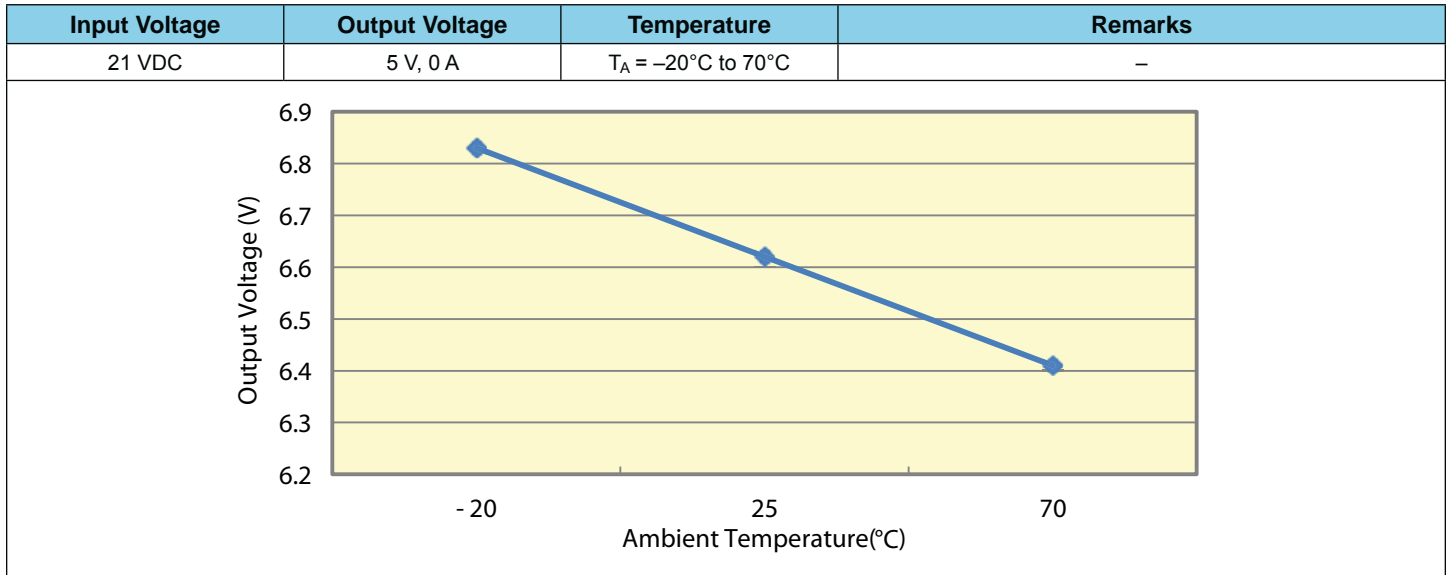


Figure 7. Overvoltage Protection
(By Temperature)



Tables

Table 1. Input Characteristics
 (At $T_A = 25^\circ\text{C}$)

| Test Item | Conditions | | Test Results | | | Specification | Remarks |
|------------|------------|------------|------------------------|--|--|---------------|----------|
| | V_{IN} | I_{LOAD} | $V_{IN} = 21\text{ V}$ | | | | |
| Efficiency | Nom | Nom | 89.6% | | | 88.0% | Figure 1 |

Table 2. Output Characteristics
 (At $T_A = 25^\circ\text{C}$)

| Test Item | Conditions | | Test Results | | | Specification | Remarks |
|---|------------|------------|-----------------------------------|--|--|---------------|------------------|
| | V_{IN} | I_{LOAD} | $V_{IN} = 5\text{ V}$ | | | | |
| Output Setting Voltage | Nom | Nom | 5.166 V | | | | – |
| Input/Output Voltage Change Fluctuation | Min | Min | 5.166 V | | | | Note 1, figure 2 |
| | Max | Max | 5.18 V | | | | |
| Temperature Drift | Nom | Nom | 0 mV to +30 mV | | | | Note 1, figure 2 |
| Warm-Up Drift | Nom | Nom | –8 mV | | | | Note 1, figure 3 |
| Total Regulation | – | – | 5.158 to 5.21 V | | | | Note 1 |
| Static Load Regulation | – | – | $\pm 150\text{ mV}$ | | | | Note 2 |
| Ripple Voltage | Nom | Nom | 36 mV at $T_A = 25^\circ\text{C}$ | | | 180 mV | Note 3, figure 4 |
| Ripple Noise Voltage | Nom | Nom | 36 mV at $T_A = 25^\circ\text{C}$ | | | 180 mV | Note 4, figure 5 |
| Output Voltage Variable Range | – | – | | | | 4.0 to 5.5 V | – |

1. Total Regulation (output regulation) is the sum of: Input/Output Voltage Change Fluctuation, Temperature Drift, and Warm-Up Drift.
2. This shows the static load regulation against the output voltage value set within the Output Variable Voltage Range.
3. Used probe = Ripple Voltage 1:1.
4. Used probe = Ripple Noise Voltage 1:1.

Table 3. Protection Characteristics
 (At $V_{IN} = +5\text{ V}$)

| Test Item | Conditions | | Test Results | | | Specification | Remarks |
|------------------------|------------|------------|---------------------------|--------------------------|--|----------------------|----------|
| | V_{IN} | I_{LOAD} | $T_A = -20^\circ\text{C}$ | $T_A = 25^\circ\text{C}$ | Overcurrent $T_A = 50^\circ\text{C}$ Overvoltage $T_A = 70^\circ\text{C}$ | | |
| Overcurrent Protection | Min | Max | 19.7 A | 16.0 A | 16.6 A | $\geq 10.5\text{ A}$ | Figure 6 |
| Overvoltage Protection | Nom | Min | 6.8 V | 6.6 V | 6.4 V | $\geq 5.8\text{ V}$ | Figure 7 |

Table 4. Environment Tests
(At $T_A = 25^\circ\text{C}$)

| Test Item | Conditions | | Test Results | Specification | Remarks |
|------------------------------|------------|------------|---|------------------|---------|
| | V_{IN} | I_{LOAD} | | | |
| Vibration (Non-Operating) | – | – | Frequency = 10 to 55 Hz, Sweep Cycle = 3 minutes, Acceleration = 19.6 m/s ² , Direction = x,y, and z axes at 60 minutes per axis | Normal operation | – |
| Power-On at High Temperature | Nom | Max | Power-off for 1 hour at 65°C, then power-on | Normal operation | – |
| Power-On at Low Temperature | Nom | Max | Power-off for 1 hour at –15°C, then power-on | Normal operation | – |
| Shock | – | – | Product is dropped from a height of 50 mm (98 m/s ²) onto a flat surface of wood (10 mm or thicker); the test is performed three times on each edge of the bottom side of the product | Normal operation | – |

Table 5. Other Characteristics
(At $T_A = 25^\circ\text{C}$)

| Test Item | Conditions | | Test Results | | | Specification | Remarks |
|--------------------------------------|------------|------------|--------------|-----|----------|--|---------|
| | V_{IN} | I_{LOAD} | P–S | P–E | S–E | | |
| Withstand Voltage | – | – | – | – | 0.6 kV | S–E 500 V for 1 minute, 600 V for 1 second | – |
| Leakage Current at Withstand Voltage | – | – | – | – | 0 mA | S–E ≤15 mA | – |
| Insulation Resistance | – | – | – | – | ≥1000 MΩ | ≥50 MΩ at 500 VDC Megger | – |

Important Information



- The products described in this document are built-in type DC stabilized power supplies with special structures and are designed for installation in equipment. Be sure to use the products only for installation in equipment.
- The products should be handled only by persons who have competent electrical knowledge.
- Be sure to read through all safety precaution and operation manuals before installation, operation, or maintenance and to use the products only for the intended use and in accordance with all applicable safety standards and regulations in the location of use.

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