

RFB300/350 Series

24 Vin and 48 Vin single output

- High efficiency topology
- Wide temperature range, -40 °C to +100 °C @ full power
- High power density (160 W/in³ in 0.4" tall version)
- Input voltage range: 18-36 Vdc or 36-75 Vdc
- Output voltage range: 7.2-13.2 Vdc or 16.8-29.4 Vdc
- Remote ON/OFF
- Operational insulation system
- Available RoHS compliant

NEW Product



RFB300/350 series is a high efficiency, enclosed, isolated dc-dc converter series in an industry standard half-brick package that provides up to 350 W of output power. The series delivers very high usable output power for today's high performance RF power amplifier and similar applications. The four models in the series feature an input voltage range of 18 Vdc to 36 Vdc and 36 Vdc to 75 Vdc and an output voltage of 12 V and 28 V. The output voltage is adjustable from 7.2 Vdc to 13.2 Vdc or 16.8 Vdc to 29.4 Vdc (not to exceed 308 W for the RFB300 [300 W for the RFB300-24S12] and 350 W for the RFB350). The series also has a remote ON/OFF capability. Overcurrent, overvoltage and overtemperature protection features are included as standard. Negative logic remote ON/OFF and other options are also available. Full international safety approval including EN/IEC60950 VDE and UL/cUL60950 reduces compliance costs and time to market.



2 YEAR WARRANTY

All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.
External output capacitance required (See Note 4)

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS

| | | |
|---|------------------|-----------------------------|
| Input voltage - peak (100 ms max., 1.0 % duty cycle max.) | 24 Vin 48 Vin | -0.5-50 Vdc -0.5-100 Vdc |
| Input voltage continuous | 24 Vin 48 Vin | -0.5-40 Vdc -0.5-80 Vdc |
| Adjust pin voltage (with respect to -sense pin) | | -0.5-12 Vdc |

OUTPUT SPECIFICATIONS

| | | |
|--|--------------------|--|
| Voltage adjustability | 12 Vout 28 Vout | 7.2-13.2 Vdc 16.8-29.4 Vdc |
| Min./max. load | 12 Vout 28 Vout | 0/25 A, 0/29.2 A 0/11 A, 0/12.5 A |
| Output load capacitance (See Note 10) | 12 Vout 28 Vout | 470 µF to 4,700 µF 330 µF to 3,300 µF |
| Rise time | (See Note 12) | 5 ms typ. |

INPUT SPECIFICATIONS

| | | |
|--|--|---|
| Input current (See Note 3) | 24 Vin 48 Vin RFB300 48 Vin RFB350 | 23.8 A max. @ Io max. 11.2 A max. @ Io max. 13 A max. @ Io max. |
| Input reflected ripple (See Note 4) | 24 Vin 48 Vin 12 V model 48 Vin 28 V model | 12 mA (pk-pk) 42 mA (pk-pk) 28 mA (pk-pk) |
| Input capacitance - Internal filter | 24 Vin 48 Vin | 39 µF 13 µF |
| Inrush current | (See Note 11) | 2 A ² s |

EMC CHARACTERISTICS

| | | |
|---------------------|---------|--------------------------|
| Conducted emissions | EN55022 | See Application Note 167 |
| Radiated emissions | EN55022 | See Application Note 167 |

GENERAL SPECIFICATIONS

| | | |
|--|--|--|
| Efficiency | 24 Vin 12 V model 24 Vin 28 V model 48 Vin 12 V model 48 Vin 28 V model | 86% 90% 88% 91% |
| Approvals and standards | VDE IEC60950 IECEE CB, UL/cUL60950 | |
| Material Flammability | UL94V-0 | |
| Weight | 0.5 inch tall version | 110 g (3.88 oz.) |
| MTBF @ 55 °C Telcordia SR-332 Issue 1 | 12 V model 28 V model | 1,900,000 hours min. 2,400,000 hours min. |

ENVIRONMENTAL SPECIFICATIONS

| | | |
|---------------------|---|--|
| Thermal performance | Operating baseplate, temperature Non-operating | -40 °C to +100 °C -40 °C to +100 °C |
|---------------------|---|--|

RC PIN ELECTRICAL INTERFACE

| | | |
|----------------------------|--------------------------------|--------------------------------|
| Open collector compatible | (See AN 167 for remote ON/OFF) | |
| RC: | | |
| ON voltage | (See Note 13) | 5 V min. |
| Open circuit voltage | | 5 V min, 11 V typ 13 V max. |
| High level leakage current | (See Note 14) | -25 µA max. |
| OFF voltage | (See Note 15) | 1.2 V max. |
| Low level input current | (See Note 16) | -250 µA max. |

International Safety Standard Approvals

VDE0805/EN60950/IEC950 File No. 10401-3336-0198
Licence No. 40005395

UL/cUL CAN/CSA 22.2 No. 60950
UL 60950 File No. E135734

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24 Vin and 48 Vin single output

DC-DC CONVERTERS | 300-350 W Half-Brick

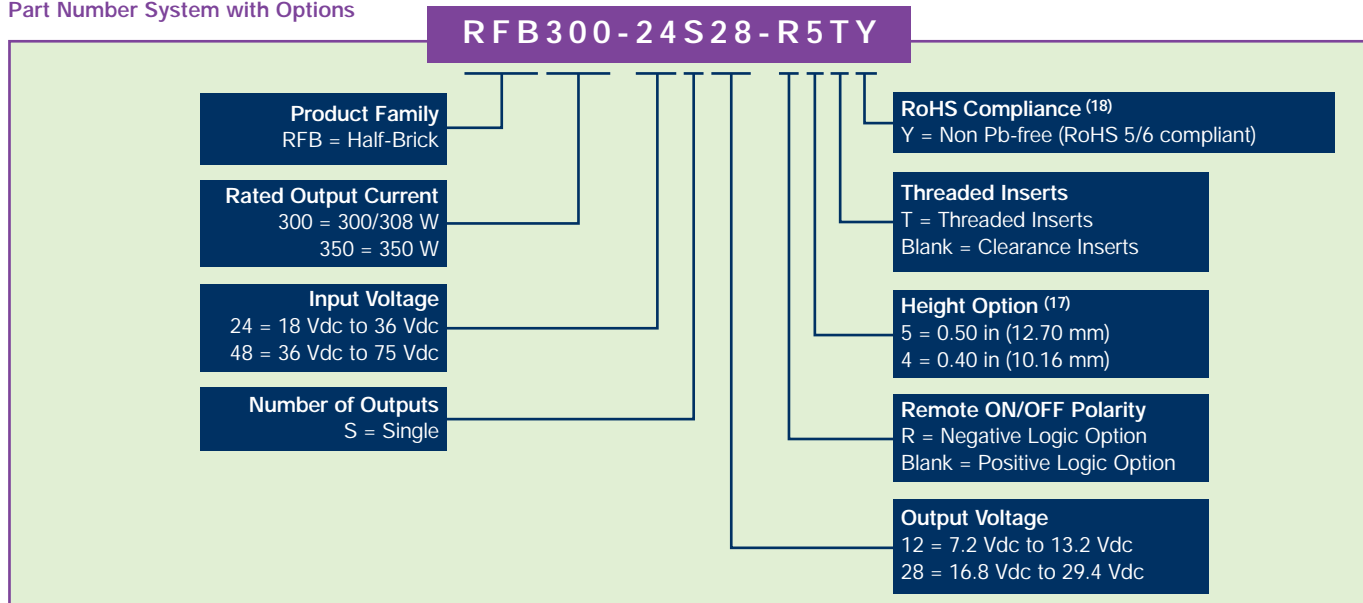
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For the most current data and application support visit www.artesyn.com/powergroup/products.htm

NEW Product

| OUTPUT POWER (MAX.) | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT (MIN.) | OUTPUT CURRENT (MAX.) | EFFICIENCY (TYP.) | REGULATION | | MODEL NUMBER ^(18,19) |
|---------------------|---------------|----------------|-----------------------|-----------------------|-------------------|------------|-------|---------------------------------|
| | | | | | | LINE | LOAD | |
| 300 W | 18-36 Vdc | 7.2-13.2 Vdc | 0 A | 25 A | 86% | ±0.15% | ±0.2% | RFB300-24S12Y |
| 308 W | 18-36 Vdc | 16.8-29.4 Vdc | 0 A | 11 A | 90% | ±0.15% | ±0.2% | RFB300-24S28Y |
| 308 W | 36-75 Vdc | 16.8-29.4 Vdc | 0 A | 11 A | 91% | ±0.15% | ±0.2% | RFB300-48S28Y |
| 350 W | 36-75 Vdc | 7.2-13.2 Vdc | 0 A | 29.2 A | 88% | ±0.15% | ±0.2% | RFB350-48S12Y ⁽¹⁷⁾ |
| 350 W | 36-75 Vdc | 16.8-29.4 Vdc | 0 A | 12.5 A | 91% | ±0.15% | ±0.2% | RFB350-48S28Y |

Part Number System with Options



Notes

- Measurement Bandwidth: 20 MHz; Measured with 1 μ F ceramic and a 330 μ F (470 μ F for 12 V output model) aluminum or solid tantalum capacitor across the output terminals.
- $di/dt = 1$ A/ μ s; $I_{out} = \pm 25\%$ I_{out} (max); $V_{in} = V_{nom}$; $I_{out} = I_{nom}$. Tested with a 1 μ F ceramic and a 330 μ F (470 μ F for 12 V output model) aluminum electrolytic capacitor across the output.
- External input fusing required. Use a fast acting fuse: 40 A (24 V model), 15 A (48 V, 350 W model).
- $I_{out} = I_{out}$ (max) Measured with the input capacitor, $C_{bypass} = 330$ μ F, and 6 μ H inductor in series with the power source. Frequencies >100 kHz.
- Signal line assumed <3 m in length.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand-alone product.
- Negative remote ON/OFF option also available. Add suffix '-R' to part number, for example see part numbering system.
- With the enable signal asserted, this is the time from when the input current reaches 10 % of the final steady state value until the output voltage reaches 10 % of the nominal output value. Start-up into resistive load.
- With $V_{in} > V_{in}$ (min.) applied for a minimum of 1 second, this is the time from when the primary ON/OFF signal is activated until the output voltage reaches 10 % of the nominal output voltage.
- Minimum effective ESR is 1 m Ω . Minimum phase margin is 35°.
- Measured per ETSI 300 132-2 Section 4.7.2.
- From 10% to 90% of V_{out} (nom). Full resistive load. 1 μ F ceramic and 330 μ F (470 μ F for 12 V model) electrolytic capacitors across the output.

Notes Contd.

- Minimum effective ESR is 1 m Ω . Minimum phase margin is 35°.
- Measured per ETSI 300 132-2 Section 4.7.2.
- From 10% to 90% of V_{out} (nom). Full resistive load. 1 μ F ceramic and 330 μ F (470 μ F for 12 V model) electrolytic capacitors across the output.
- Converter guaranteed ON for positive option.
- Maximum driver leakage to insure converter is ON.
- Converter guaranteed OFF for positive option.
- Driver sink current @ $V_{rc} = 1.2$ V.
- 0.40 in height option is not available on the 12 V output model.
- The 'Y' suffix indicates that these parts are TSE ToHS 5/6 (non-Pb-free) compliant
- NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at <http://www.artesyn.com/powergroup/products.htm> to find a suitable alternative

PROTECTION

| | | |
|--|-------------------------|--------|
| Short-circuit (Brickwall current limiting) | 12 V model RFB300 | 29.4 A |
| | 12 V model RFB350 | 34.4 A |
| | 28 V model RFB300 | 12.9 A |
| | 28 V model RFB350 | 14.7 A |
| Overvoltage protection (Output shutdown) | 12 V model | 15 V |
| | 28 V model | 33.2 V |
| Overtemperature shutdown | (midpoint of baseplate) | 110 °C |

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24Vin and 48Vin single output

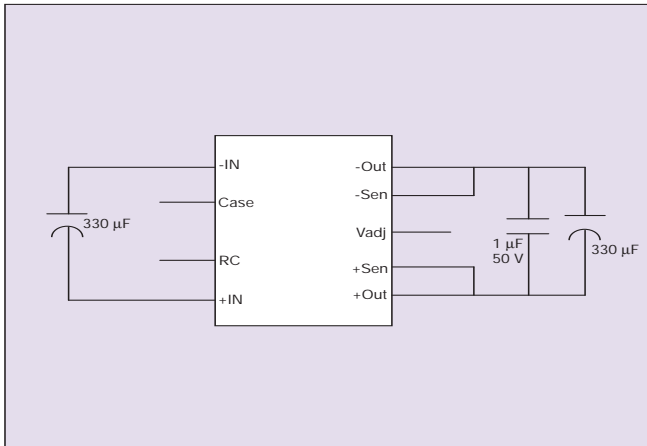


Figure 1 - Standard Application - 28 V Models

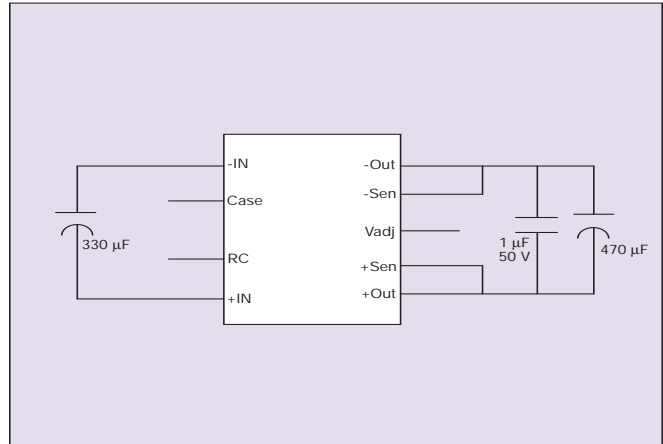


Figure 2 - Standard Application - 12 V Models

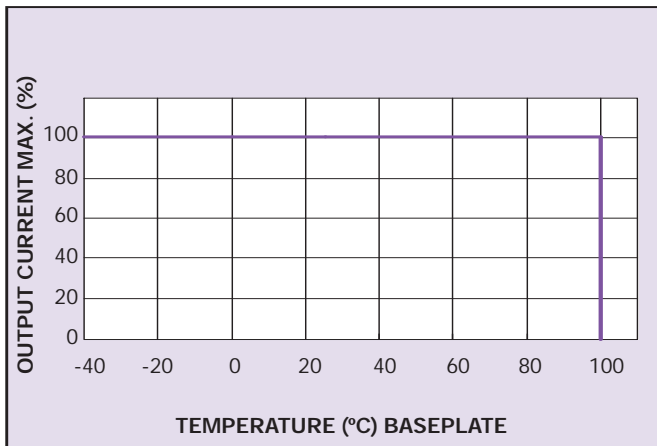


Figure 3 - Derating Curve - All Models

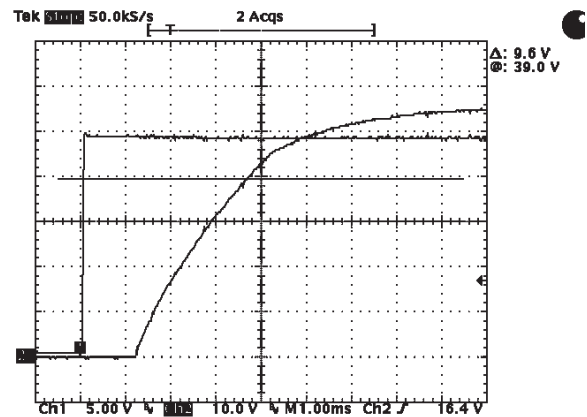


Figure 4 - Typical Turn-on Delay and Risetime RFB350-48S28Y
Channel 1: Output Voltage, Channel 2: Input Voltage

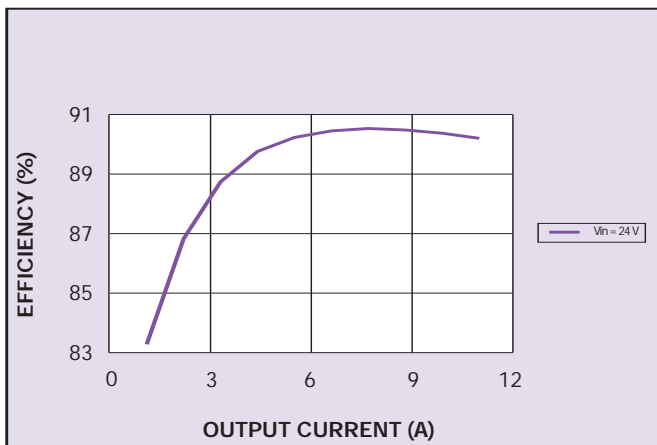


Figure 5 - Typical Efficiency vs. Output Current - RFB300-24S28Y

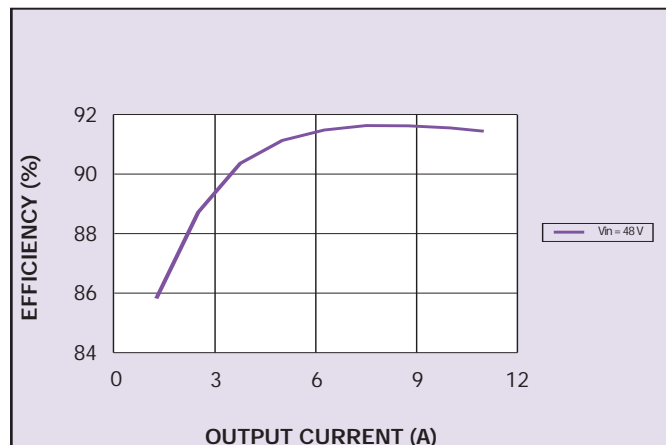


Figure 6 - Typical Efficiency vs. Output Current - RFB300-48S28Y

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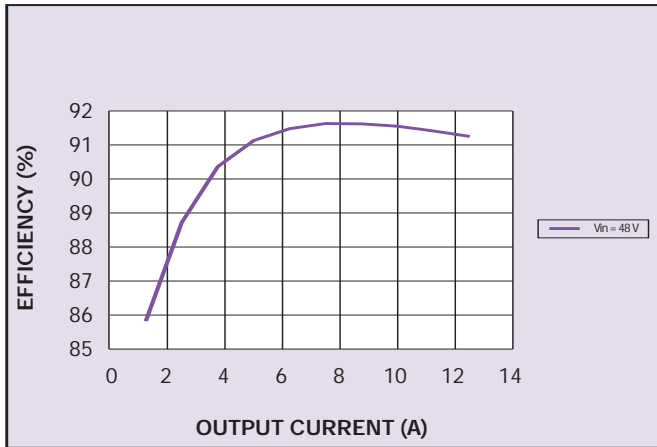


Figure 7 - Typical Efficiency vs. Output Current - RFB350-48S28Y

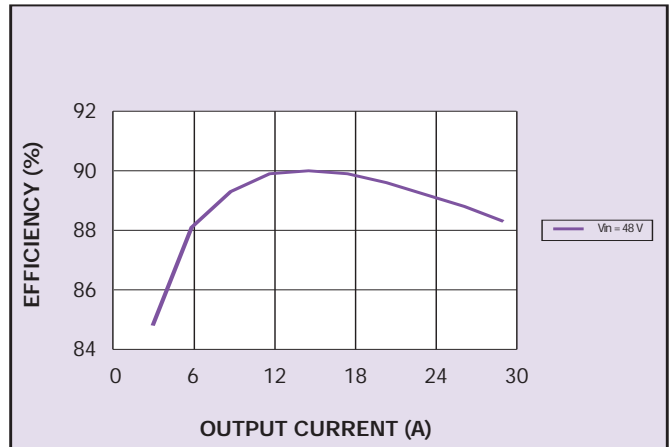


Figure 8 - Typical Efficiency vs. Output Current - RFB350-48S12Y

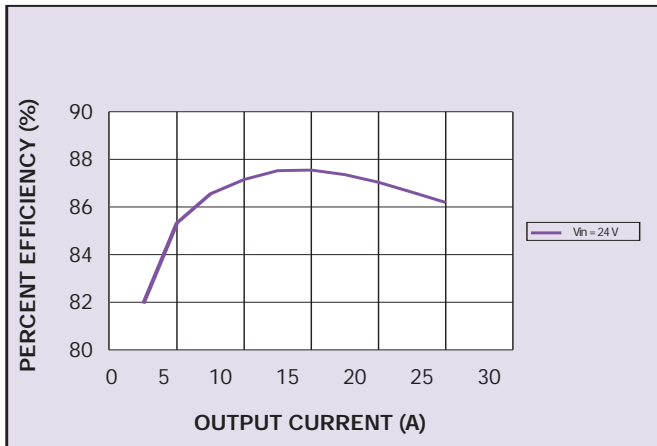


Figure 9 - Typical Efficiency vs. Output Current - RFB300-24S12Y

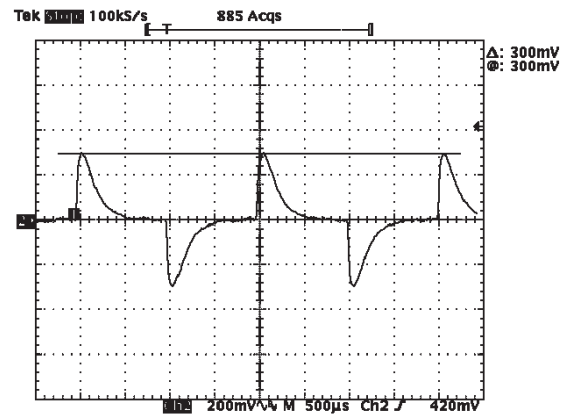


Figure 10 - RFB350-48S28Y Transient Response
Load 6.25-9.38 A

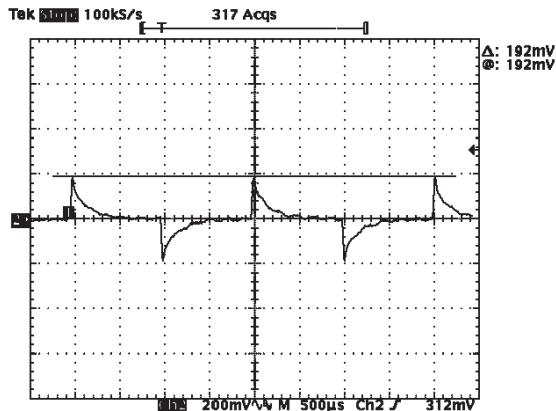
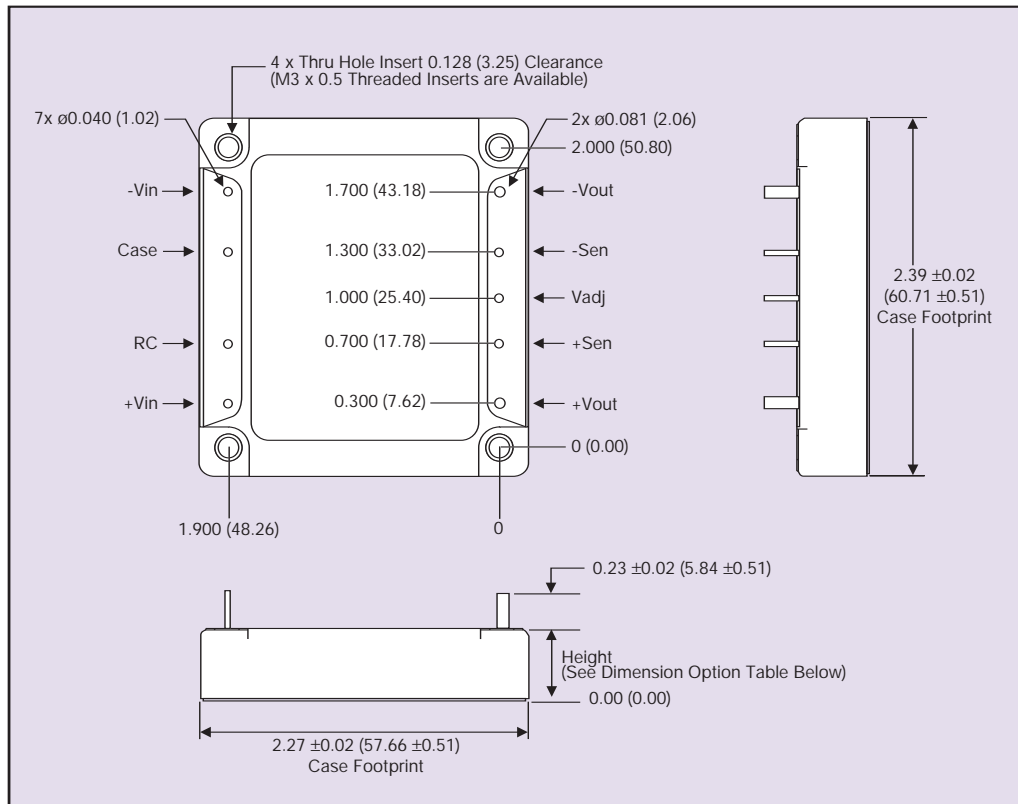


Figure 11 - RFB350-48S12Y Transient Response
Load 14.5-21.75 A

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24Vin and 48Vin single output



| DIMENSION OPTIONS | |
|-------------------|-------------------------------------|
| OPTION | HEIGHT |
| 5 | 0.50 ± 0.02 (12.70 ± 0.51) |
| 4 | 0.40 ± 0.02 (10.16 ± 0.51) |

| PIN CONNECTIONS | |
|-----------------|----------------------------|
| PIN NUMBER | FUNCTION |
| -Vin | Negative Input Terminal |
| Case | |
| RC | ON/OFF Control Terminal |
| +Vin | Positive Input Terminal |
| +Vout | Positive Output Terminal |
| +Sen | Positive Remote Sense |
| Vadj | Output Adjustment Trim Pin |
| -Sen | Negative Remote Sense |
| -Vout | Negative Output Terminal |

Figure 12 - Mechanical Drawing, Dimension Options and Pin-Out Table

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