AA10U

10 Watts

AA10U Series

Total Power	***10 Watts***
Input Voltages	***12V, 24V, 48V***
# of Outputs	***Single, Dual***

SPECIAL FEATURES

- Unencapsulated
- Wide 4:1 input range
- 5 year warranty
- 1.0" x 2.0" x 0.38" case
- Meets EN55022A for conducted noise

ENVIRONMENTAL

Operating ambient temperaturerange:
-40°C to +75°C (no derating)

Baseplate: 105°C Max.

Storage Temperature: -55°C to +125°C

Humidity: 5% to 95% (non-condensing)

EMI/RFI Shielding: Five-Sided

MTBF: 361,000 hours (MIL-HDBK-217)

SAFETY

UL UL 1950 Recognized
UL CAN22.2-950 Recognized
TUV EN60950 Certified

View Technical Manual for:

AA10U-024L-033S
AA10U-048L-033S

ELECTRICAL SPECIFICATIONS

Input

Input range ..... 9 to 36 VDC; 18 to 75 VDC

Input capacitance ..... 48 models 1.5uF typical
24 models 2.7uF typical

No load input power ..... 150mW typical

Input reflected ripple (P-P) .... 48 Models 4mA
24 Models 10mA see Note 2

Efficiency ..... 82% (typ)

Output

Voltage tolerance ..... ±1.0% (main); ±2.0% (aux)
(factory set-point)

Line regulation ..... ±0.5% max (main); ±0.5% (aux)

Load regulation ..... ±0.5% (10% load to full load (singles))
±1.0% (10% load to full load (duals))

Noise/ripple ..... 1% p-p (See Note 1)

Short circuit protection ..... Continuous Power Cycle

Overvoltage protection ..... Zener clamp

Transient response ..... 1mS 50% Step load change to
within 1% Vout

Switching frequency ..... All models 380kHz except
150S & 150D Models 300kHz (typ.)

Temperature coefficient ..... ±0.02%/°C max.

Isolation

I/O isolation ..... 1500 VDC min

Isolation resistance ..... 1 x 10^9 Ohm

Isolation capacitance 220pF

ASTEC ASIA
6F., China Dyeing Works Building
382-392 Castle Peak Road
Tsuen Wan, N.T., Hong Kong
Telephone: 852-2437-9662
Facsimile: 852-2402-4426

ASTEC EUROPE
Astec House, Waterfront Business Park
Merry Hill, Dudley
West Midlands, DY5 1LX, UK
Telephone: 01384-842211
Facsimile: 01384-843355

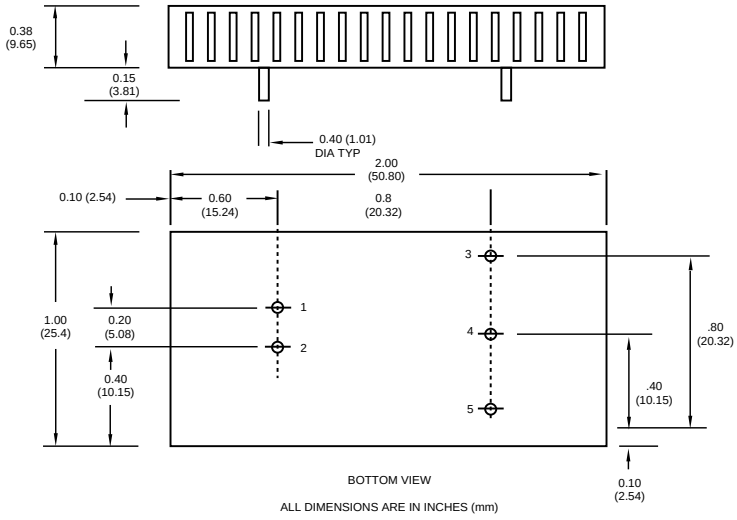
ASTEC AMERICA
5810 Van Allen Way
Carlsbad, CA 92008
Telephone: 760-930-4600
Facsimile: 760-930-0698

ORDERING INFORMATION

Input Voltage	Output 1 Voltage	Output 2 Voltage	Maximum Power	Model Number
9-36V	3.3V @ 2.42A		8W	AA10U-024L-033S
9-36V	5V @ 2.00A		10W	AA10U-024L-050S
9-36V	12V @ 0.830A		10W	AA10U-024L-120S
9-36V	15V @ 0.670A		10W	AA10U-024L-150S
9-36V	5V @ .750A	-5V @ .750A	7.5W	AA10U-024L-050D
9-36V	12V@ .375A	-12V @ 0.375A	9W	AA10U-024L-120D
9-36V	15V@.300A	-15V @ 0.300A	9W	AA10U-024L-150D
18-75V	3.3V @ 2.42A		8W	AA10U-048L-033S
18-75V	5V @ 2.00A		10W	AA10U-048L-050S
18-75V	12V @ 0.830A		10W	AA10U-048L-120S
18-75V	15V @ .670A		10W	AA10U-048L-150S
18-75V	5V@.750A	-5V @ 0.750A	7.5W	AA10U-048L-050D
18-75V	12V @ 0.375A	-12V @ 0.375A	9W	AA10U-048L-120D
18-75V	15V @ 0.300A	-15V @ 0.300A	9W	AA10U-048L-150D

Please contact Astec for information on other output voltages, power ranges and configurations.

DRAWINGS



Note: Pins 0.040 in Dia x 0.15 in min

Case material: Anodized aluminum and plastic
Weight: 0.60 oz/17 grams

PIN ASSIGNMENTS

Single Output

1. +Vin
2. -Vin
3. Output 1
4. No pin
5. COMM

Dual Output

1. +Vin
2. -Vin
3. Output 1
4. COMM
5. Output 2

NOTES

1. 20MHz bandwidth. An external 0.1uf ceramic capacitor is recommended to be placed from +V out to -V out.
2. Meets FCC class A and ETS300-386-1 requirements for conducted noise. Consult factory for filter recom-mendations to meet FCC class B, VDE or EIC specifications.
3. All specifications are typical at nominal line, full load, and 25°C unless otherwise noted.
4. All specifications subject to change without notice. Mechanical drawings are for reference only.
5. Calculated per MIL HDBK 217F, Ground Benign at 25°C, full load.

TRN-AA10U-024L-033S

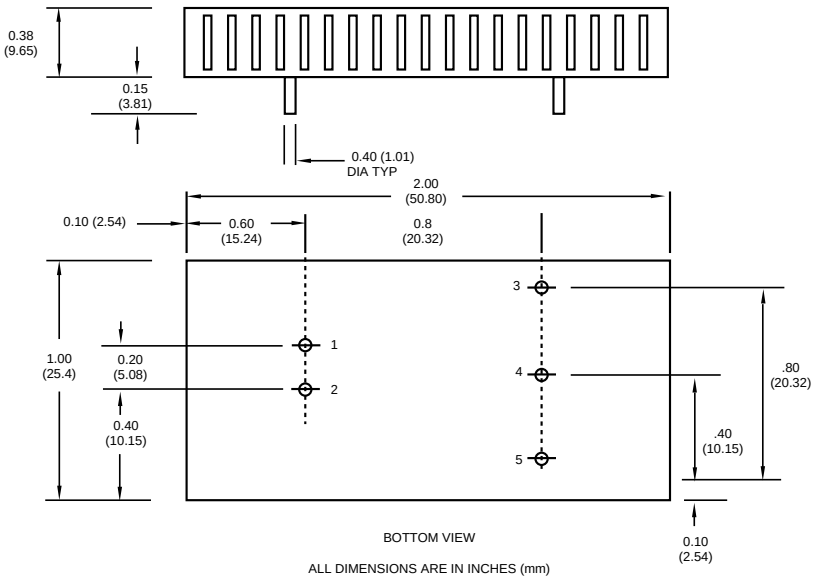
Electrical characteristics are guaranteed over the case temperature range (-40 to 105°C), for the full range of input voltage (V_I), and for the full load range ($I_{0\ min}$ to $I_{0\ rated}$) unless otherwise noted.

V_1, V_o and I_0 are actual operating conditions, $I_{o\ rated}$ is nominal rating.

Electrical Specifications - AA10U-024L-033S 9 - 36V in; 3.3V / 2.4A out

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Input Characteristics						
V_I	Input voltage		9	24	36	V
P_{IL}	No load input power	V_I=V_{Inom}		0.15		W
C_{IN}	Input capacitance (internal)			3.2		µF
I_I	Input ripple current	V_I=$V_{nom,}$ $I_{o=}I_{o\ rated}$		10		mA p-p
Output Characteristics						
$P_{O\ max}$	Total output power				8	W
$V_{O1\ nom}$ $V_{O2\ nom}$ $V_{O3\ nom}$	Nominal (factory set) output voltage Output 1 Output 2 Output 3		3.27	3.30	3.33	 V V V
$I_{O1\ rated}$ $I_{O2\ rated}$ $I_{O3\ rated}$	Rated output current Output 1 Output 2 Output 3	$T_{Baseplate}$= 105°C	0.24		2.4	 A A A
	Noise and ripple Output 1 Output 2 Output 3	Pk-pk, 20MHz bandwidth with a 0.1 µF ceramic capacitor connected across +V out and -V out.		25	50	 mV mV mV
V_{O1} V_{O2} V_{O3}	Load regulation	From 10% to 100% of rated output current			0.50	$\%V_{O1}$ $\%V_{02}$ $\%V_{03}$
V_{O1} V_{O2} V_{O3}	Line regulation	V_{Imin} to V_{Imax} I_O = $I_{O\ typ}$			0.50	$\%V_{01}$ $\%V_{02}$ $\%V_{03}$
$I_{O1\ lim}$ $I_{O2\ lim}$ $I_{O3\ lim}$	Current limit	V_I = 24V		4.7		 A A A
	Temperature coefficient	Per °C baseplate temperature			±0.02	$\%V_{O\ nom/°C}$
	Input - Output Capacitance			220		pF
η	Efficiency	V_I = 24V, I_O = $I_{O\ rated}$	74.5	76.5		%

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Output Characteristics - continued						
t_{on}	Turn-on time	V_I = 0 to V_{Inom}		70		mS
		V_I = 0 to $V_{I\ min}$		77		mS
		V_I = 0 to $V_{I\ max}$		70		mS
	Transient response (V_{O1} only) positive or negative step	I_O = 25 to 75% $I_{O\ rated}$@ 15 µs/A		3.0% 1 ms		%$V_{O1\ nom}$
	External Load Capacitance				240	µF
Isolation						
	Input-output isolation resistance	1500 VDC	50			M Ohm
	Input-case isolation resistance	500 VDC	50			M Ohm
	Output-case isolation resistance	1500 VDC	50			M Ohm
Control Signals						
V_{Out}	Output Voltage	2.5 < V_c <5.5 or open circuit V_C < 0.8V		3.3 0		V V
V adj	Output Voltage	External resistor attached	2.97	3.3	3.63	V



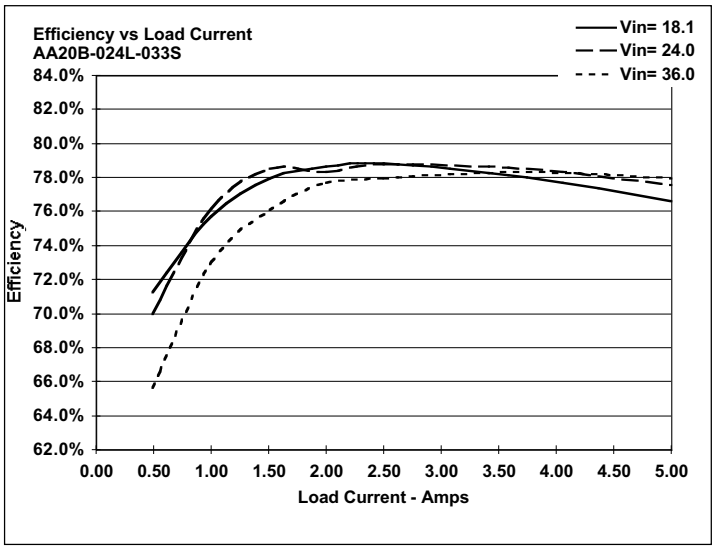
Pin Assignment

Single Output

1. +Vin
2. -Vin
3. Output 1
4. No Pin
5. Comm

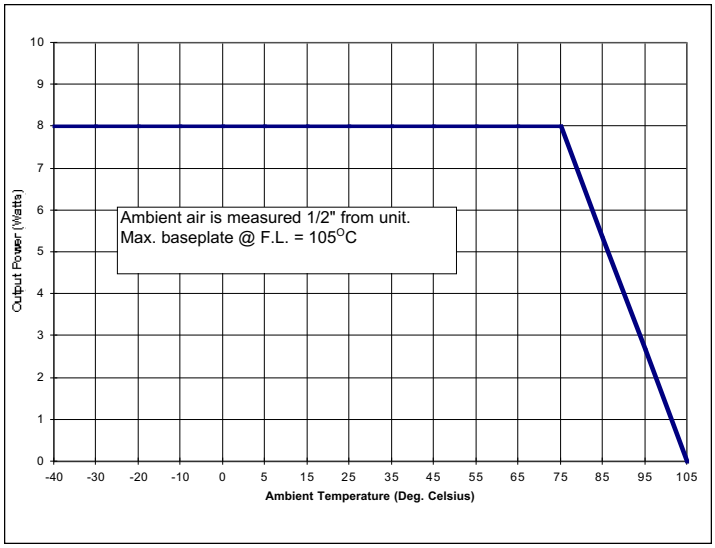
Efficiency (Typ)

Figure 2



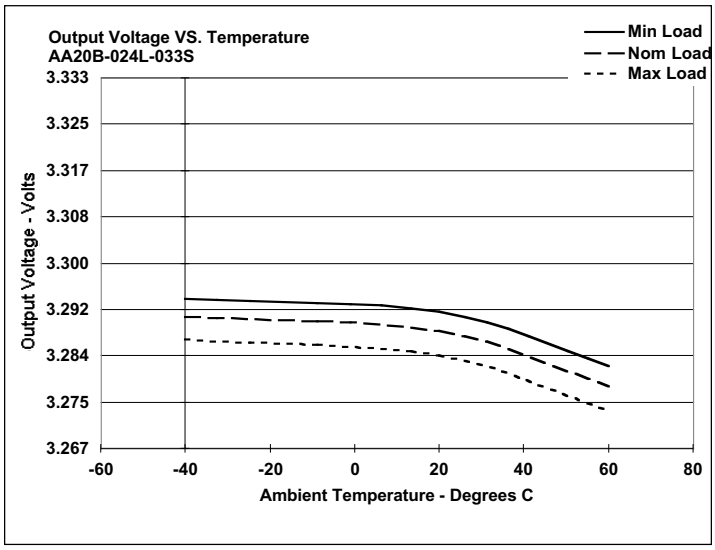
Output Power Derating

Figure 3



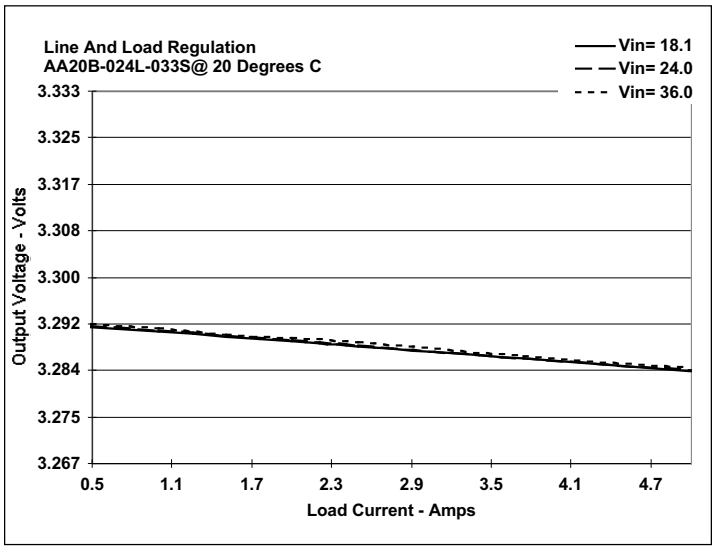
Output Regulation vs. Temperature and Loading (Typ)

Figure 4



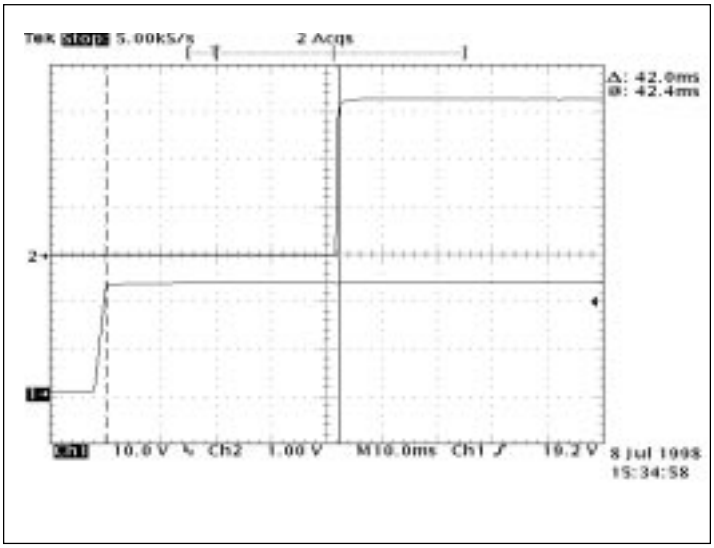
Output line and load regulaton (20°C Typ)

Figure 5



Turn on Characteristics
(Typ)

Figure 6



TRN-AA10U-048L-033S

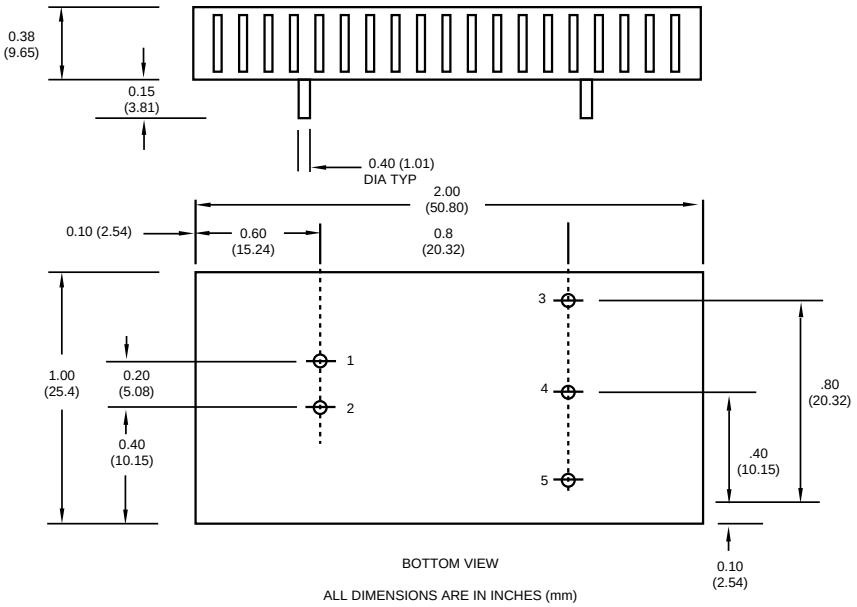
Electrical characteristics are guaranteed over the case temperature range (-40 to 105°C), for the full range of input voltage (V_I), and for the full load range ($I_{0\ min}$ to $I_{0\ rated}$) unless otherwise noted.

V_I , V_o and I_0 are actual operating conditions, $I_{o\ rated}$ is nominal rating.

Electrical Specifications - AA10U-048L-033S 36-75V in; 3.3 / 2.4A out

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Input Characteristics						
V_I	Input voltage		18	48	75	V
P_{IL}	No load input power	V_I=V_{Inom}		0.15		W
C_{IN}	Input capacitance (internal)			1.8		µF
I_I	Input ripple current	V_I=$V_{nom,}$ $I_{o=}I_{o\ rated}$		4		mA p-p
Output Characteristics						
$P_{O\ max}$	Total output power				8	W
$V_{O1\ nom}$ $V_{O2\ nom}$ $V_{O3\ nom}$	Nominal (factory set) output voltage Output 1 Output 2 Output 3		3.27	3.30	3.33	 V V V
$I_{O1\ rated}$ $I_{O2\ rated}$ $I_{O3\ rated}$	Rated output current Output 1 Output 2 Output 3	$T_{Baseplate}$= 105°C	0.24		2.4	 A A A
	Noise and ripple Output 1 Output 2 Output 3	Pk-pk, 20MHz bandwidth with a 0.1 µF ceramic capacitor connected across +V out and -V out.		25	50	 mV mV mV
V_{O1} V_{O2} V_{O3}	Load regulation	From 10% to 100% of rated output current			0.50	$\%V_{O1}$ $\%V_{02}$ $\%V_{03}$
V_{O1} V_{O2} V_{O3}	Line regulation	V_{Imin} to V_{Imax} I_O = $I_{O\ typ}$			0.50	$\%V_{01}$ $\%V_{02}$ $\%V_{03}$
$I_{O1\ lim}$ $I_{O2\ lim}$ $I_{O3\ lim}$	Current limit			4.2		A A A
	Temperature coefficient	Per °C baseplate temperature			±0.02	$\%V_{O\ nom/°C}$
	Input - Output Capacitance			220		pF
η	Efficiency	V_I = 48V, I_O = $I_{O\ rated}$	75.5	77.5		%

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Output Characteristics - continued						
t_{on}	Turn-on time	V_I = 0 to V_{Inom}		55		mS
		V_I = 0 to $V_{I\ min}$		330		mS
		V_I = 0 to $V_{I\ max}$		44		mS
	Transient response (V_{O1} only) positive or negative step	I_O = 25 to 75% $I_{O\ rated}$@ 15 µs/A		3.0% 200µS		%$V_{O1\ nom}$
	External Load Capacitance				240	µF
Isolation						
	Input-output isolation resistance	1500 VDC	50			M Ohm
	Input-case isolation resistance	500 VDC	50			M Ohm
	Output-case isolation resistance	1500 VDC	50			M Ohm
Control Signals						
V_{Out}	Output Voltage	2.5 < V_c <5.5 or open circuit V_C < 0.8V		3.3 0		V V
V adj	Output Voltage	External resistor attached	2.97	3.3	3.63	V



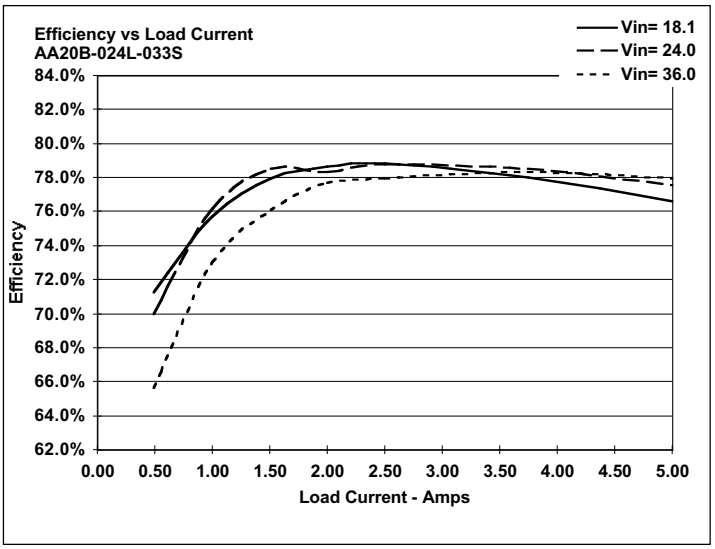
Pin Assignment

Single Output

1. +Vin
2. -Vin
3. Output 1
4. No Pin
5. Comm

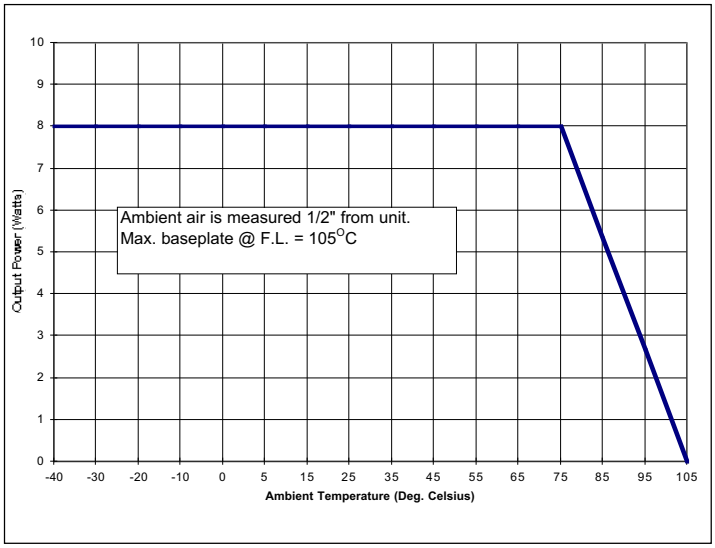
Efficiency (Typ)

Figure 2



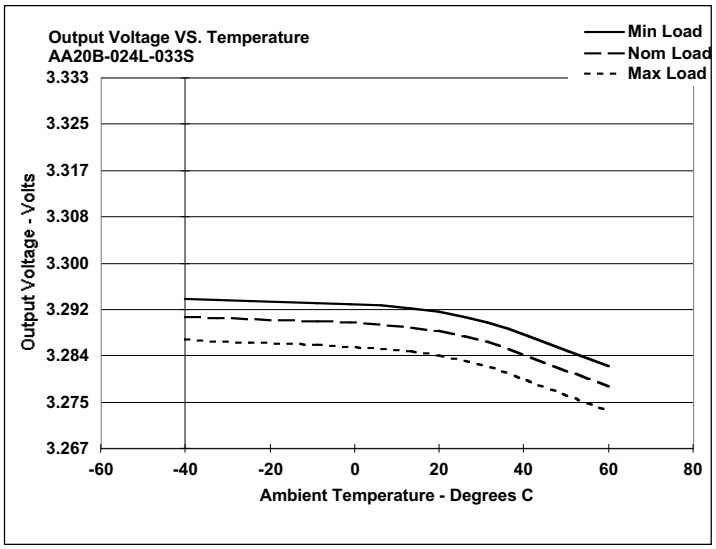
Output Power Derating

Figure 3



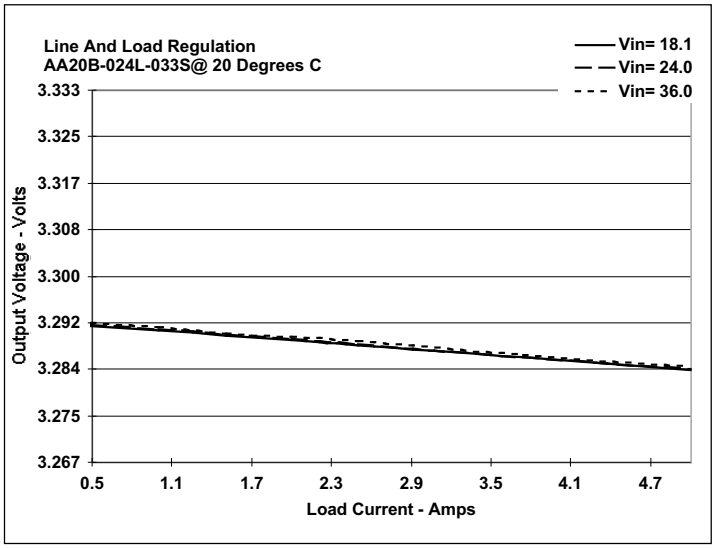
Output Regulation vs. Temperature and Loading (Typ)

Figure 4



Output line and load regulaton (20°C Typ)

Figure 5



Turn on Characteristics
(Typ)

Figure 6