Technical Reference Note

ATA 10W Series

10 Watts
DC/DC Converter

Total Power: 10 Watts
Input Voltage: 9 to 36Vdc
18 to 75Vdc
# of Outputs: Single, dual

Special Features

- Ultra compact DIP Package 23.8*13.7*8.0 mm(0.94*0.54*0.31 Inches)
- Ultra-wide 4:1 input voltage range
- Efficiency up to 86%
- I/O Isolation 1500Vdc
- Operating Temp. Range –40 ^{O}C to +80^{O}C
- Input filter meets EN55022, Class A and FCC, Level A
- No minimum load requirement
- Overload voltage and short circuit protection
- Shielded Metal Case with Insulated Baseplate
- Conducted EMI meets EN55032/22 Class A & FCC Level A

Safety

UL/cUL/IEC/EN62368-1 (60950-1)

Product Descriptions

The ATA 10W series is the latest generation of high performance DC-DC converter modules setting a new standard concerning power density 65W/in^3. The product offers a full 10W isolated DC-DC converter within an small encapsulated DIP-16 package which occupies only 0.5 in^2 of PCB space. There are 16 models available for 24, 48Vdc with wide 4:1 input voltage range. Further features include under-voltage protection over current protection, short circuit protection, very low no load power consumption, and no minimum load requirement as well. An high efficiency allows operating temperatures range of -40 ^{O}C to +80^{O}C.

These DC-DC converters offer an economical solution for many critical applications in battery-powered equipment, instrumentation, distributed power architectures in communication, industrial electronics, energy facilities where PCB space is limited and offer designers the opportunity to reduce overall PCB layout area.

ARTESYN
EMBEDDED TECHNOLOGIES

Model Numbers

Model	Input Voltage	Output Voltage	Maximum Load	Efficiency	Output power
ATA03F18-L	9-36Vdc	3.3Vdc	2.7A	80%	8.9W
ATA03A18-L	9-36Vdc	5Vdc	2.0A	83%	10W
ATA03B18-L	9-36Vdc	12Vdc	0.833A	87%	10W
ATA03C18-L	9-36Vdc	15Vdc	0.666A	88%	10W
ATA03H18-L	9-36Vdc	24Vdc	0.416A	88%	10W
ATA03BB18-L	9-36Vdc	±12Vdc	±0.416A	87%	10W
ATA03CC18-L	9-36Vdc	±15Vdc	±0.333A	87%	10W
ATA03F36-L	18-75Vdc	3.3Vdc	2.7A	80%	8.9W
ATA03A36-L	18-75Vdc	5Vdc	2.0A	83%	10W
ATA03B36-L	18-75Vdc	12Vdc	0.833A	87%	10W
ATA03C36-L	18-75Vdc	15Vdc	0.666A	88%	10W
ATA03H36-L	18-75Vdc	24Vdc	0.416A	88%	10W
ATA03BB36-L	18-75Vdc	±12Vdc	±0.416A	87%	10W
ATA03CC36-L	18-75Vdc	±15Vdc	±0.333A	87%	10W

Options

None

Electrical Specifications

Absolute Maximum Ratings

Stress in excess of those listed in the "Absolute Maximum Ratings" may cause permanent damage to the power supply. These are stress ratings only and functional operation of the unit is not implied at these or any other conditions above those given in the operational sections of this TRN. Exposure to any absolute maximum rated condition for extended periods may adversely affect the power supply's reliability.

Table 1. Absolute Maximum Ratings:

Parameter	Model	Symbol	Min	Typ	Max	Unit
Input Surge Voltage 1 Sec.max	24V Input Models 48V Input Models	$V_{IN,DC}$	-0.7 -0.7	- -	50 100	Vdc Vdc
Maximum Output Power	All models	$P_{O,max}$	-	-	10	W
Isolation Voltage Input to output (60 seconds) (1 seconds)	 All models All models		 1500 1800	 - -	 - -	 Vdc Vdc
Isolation Resistance	All models		1000	-	-	Mohm
Isolation Capacitance	All models		-	-	1500	pF
Operating Ambient Temperature Range	Convection Cooling		-40		+80	^{O}C
Operating Case Temperature	All models	T_{CASE}	-	-	+105	^{O}C
Storage Temperature	All models	T_{STG}	-50		+125	^{O}C
Humidity (non-condensing) Operating Non-operating	 All models All models		 - -	 - -	 95 95	 % %
MTBF	MIL-HDBK-217F@25^{O}C, Ground Benign		2538785	-	-	Hours

Input Specifications

Table 2. Input Specifications:

Parameter		Condition	Symbol	Min	Typ	Max	Unit
Operating Input Voltage, DC	24V Input Models 48V Input Models	All	$V_{IN,DC}$	9 18	24 48	36 75	Vdc Vdc
Start-Up Threshold Voltage	24V Input Models 48V Input Models	All	$V_{IN,ON}$	- -	- -	9 18	Vdc Vdc
Under Voltage Shutdown	24V Input Models 48V Input Models	All	$V_{IN,OFF}$	- -	8 16	- -	Vdc Vdc
Input Current	ATA03F18-L ATA03A18-L ATA03B18-L ATA03C18-L ATA03H18-L ATA03BB18-L ATA03CC18-L ATA03F36-L ATA03A36-L ATA03B36-L ATA03C36-L ATA03H36-L ATA03BB36-L ATA03CC36-L	$V_{IN,DC}=V_{IN,nom}$	$I_{IN,full\ load}$	- - - - - - - - - - - - - -	464 502 479 473 473 478 478 232 256 239 237 236 239 239	- - - - - - - - - - - - - -	mA mA mA mA mA mA mA mA mA mA mA mA mA mA
No Load Input Current (V_O On, I_O = 0A)	24V Input Models 48V Input Models	$V_{IN,DC}=V_{IN,nom}$	I_{IN,no_load}	- -	10 7	- -	mA mA
Efficiency @Max. Load	ATA03F18-L ATA03A18-L ATA03B18-L ATA03C18-L ATA03H18-L ATA03BB18-L ATA03CC18-L ATA03F36-L ATA03A36-L ATA03B36-L ATA03C36-L ATA03H36-L ATA03BB36-L ATA03CC36-L	$V_{IN,DC}=V_{IN,nom}$ $I_O=I_{O,max}$ T_A =25 ^OC	η	- - - - - - - - - - - - - -	80 83 87 88 88 87 87 80 83 87 88 88 87 87	- - - - - - - - - - - - - -	% % % % % % % % % % % % % %
Input Filter		All	Internal Pi Type				

Output Specifications

Table 3: Output Specifications

Parameter		Condition	Symbol	Min	Typ	Max	Unit
Output Voltage Set-Point		$V_{IN,DC}=V_{IN,nom}$ $I_O=I_{O,max}$ $T_A=25\ ^OC$	$\pm V_O$	-	-	1.0	%
Output Current	ATA03F18-L	Convection Cooling	I_O	-	-	2.7	A
	ATA03A18-L			-	-	2.0	A
	ATA03B18-L			-	-	0.833	A
	ATA03C18-L			-	-	0.666	A
	ATA03H18-L			-	-	0.416	A
	ATA03BB18-L			-	-	±0.416	A
	ATA03CC18-L			-	-	±0.333	A
	ATA03F36-L			-	-	2.7	A
	ATA03A36-L			-	-	2.0	A
	ATA03B36-L			-	-	0.833	A
	ATA03C36-L			-	-	0.666	A
	ATA03H36-L			-	-	0.416	A
	ATA03BB36-L			-	-	±0.416	A
	ATA03CC36-L			-	-	±0.333	A
Load Capacitance	ATA03F18-L	All	C_O	-	-	2600	uF
	ATA03A18-L			-	-	1300	uF
	ATA03B18-L			-	-	560	uF
	ATA03C18-L			-	-	560	uF
	ATA03H18-L			-	-	200	uF
	ATA03BB18-L			-	-	390#	uF
	ATA03CC18-L			-	-	200#	uF
	ATA03F36-L			-	-	2600	uF
	ATA03A36-L			-	-	1300	uF
	ATA03B36-L			-	-	560	uF
	ATA03C36-L			-	-	560	uF
	ATA03H36-L			-	-	200	uF
	ATA03BB36-L			-	-	390#	uF
	ATA03CC36-L			-	-	200#	uF
Line Regulation		$V_{IN,DC}=V_{IN,min}$ to $V_{IN,max}$	$\pm\%V_O$	-	0.2	0.8	%
Load Regulation		$I_O=I_{O,min}$ to $I_{O,max}$	$\pm\%V_O$	-	-	1.0	%
Switching Frequency		All	f_{SW}	-	420	-	KHz
Temperature Coefficient		All	$\pm\%/^OC$	-	0.01	0.02	%
Output Over Current Protection[1]		All	$\%I_{O,max}$	-	160	-	%
Output Short Circuit Protection		All		Hiccup Mode 0.5Hz type, Automatic Recovery			
Output Ripple, pk-pk		Measure with a 4.7uF ceramic capacitor in parallel with a 10uF tantalum capacitor, 0 to 20MHz bandwidth	V_O	-	-	80	mV

ATA03F18-L Performance Curves

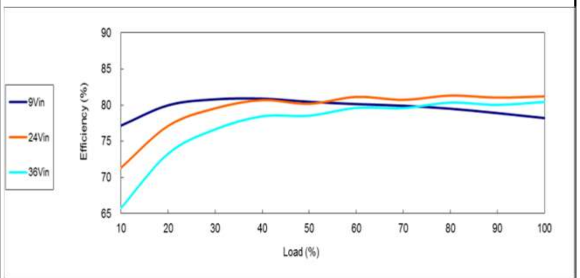


Figure 1: ATA03F18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to 2.7A

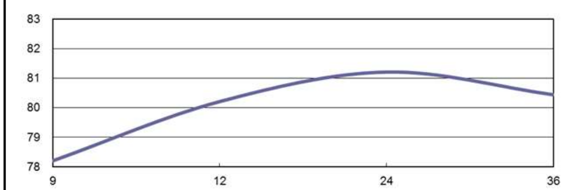


Figure 2: ATA03F18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = 2.7A

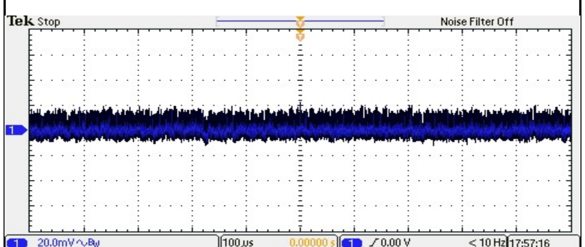


Figure 3 ATA03F18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = 2.7A
Ch 1: Vo

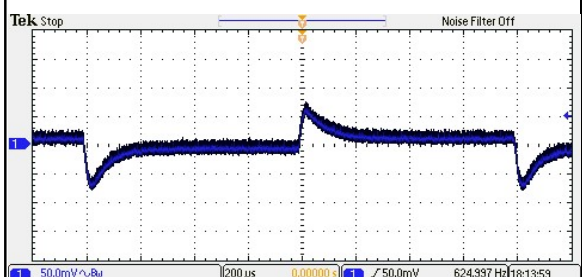


Figure 4: ATA03F18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

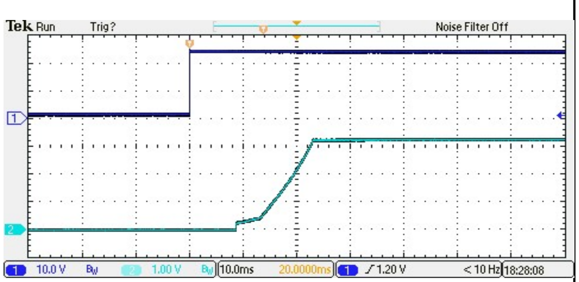


Figure 5: ATA03F18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = 2.7A
Ch1: Vo Ch3: Vin

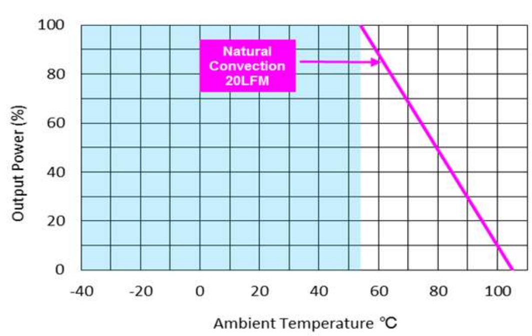


Figure 6: ATA03F18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = 2.7A

ATA03A18-L Performance Curves

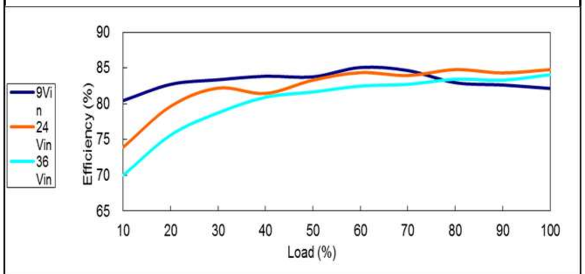


Figure 7: ATA03A18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to 2.0A

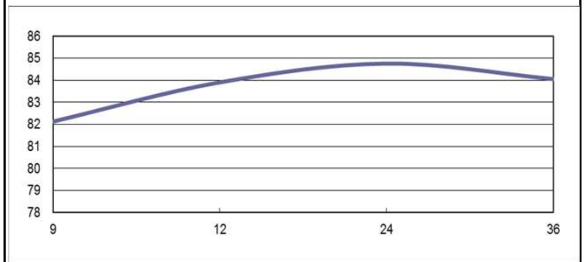


Figure 8: ATA03A18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = 2.0A

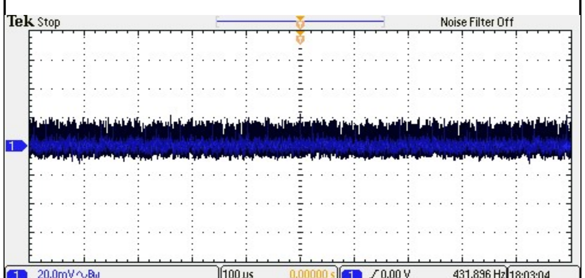


Figure 9: ATA03A18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = 2.0A
Ch 1: Vo

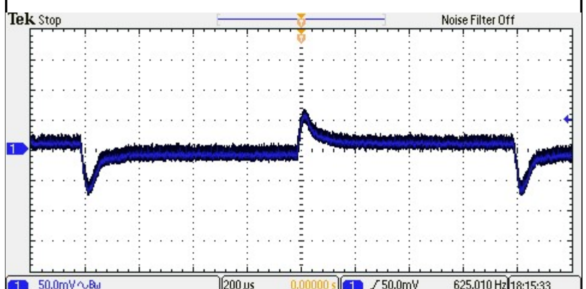


Figure 10: ATA03A18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

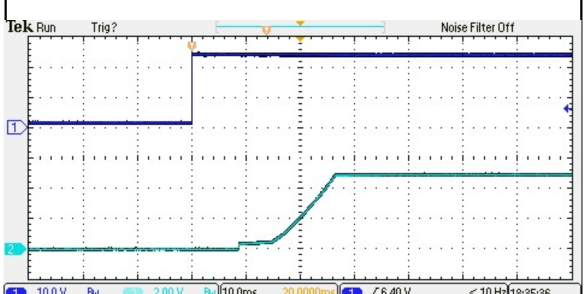


Figure 11: ATA03A18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = 2.0A
Ch1: Vo Ch3: Vin

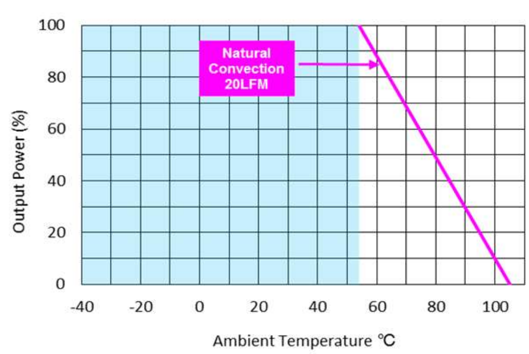


Figure 12: ATA03A18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = 2.0A

ATA03B18-L Performance Curves

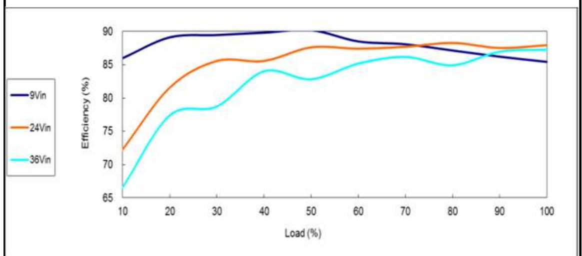


Figure 13: ATA03B18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to 0.833A

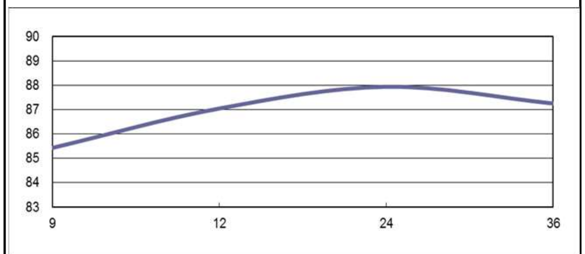


Figure 14: ATA03B18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = 0.833A

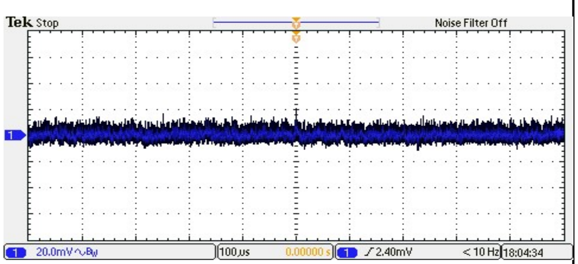


Figure 15: ATA03B18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = 0.833A
Ch 1: Vo

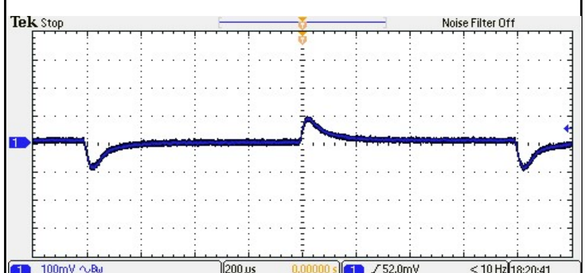


Figure 16: ATA03B18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

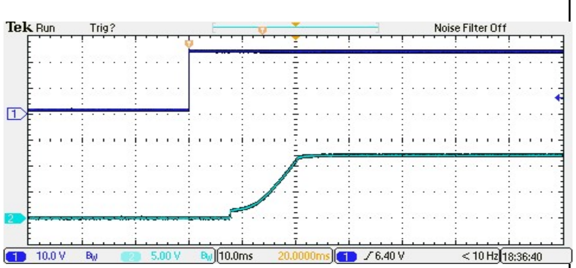


Figure 17: ATA03B18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = 0.833A
Ch1: Vo Ch3: Vin

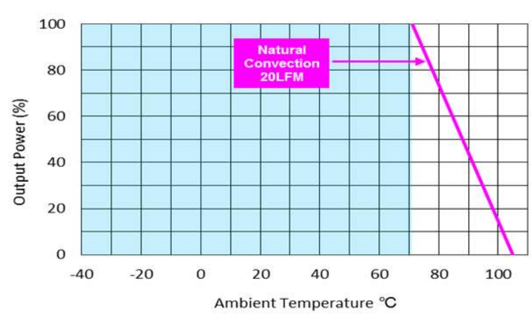


Figure 18: ATA03B18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = 0.833A

ATA03C18-L Performance Curves

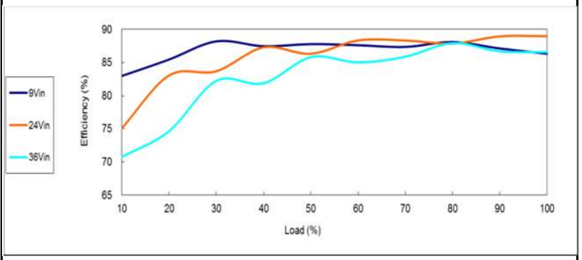


Figure 19: ATA03C18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to 0.666A

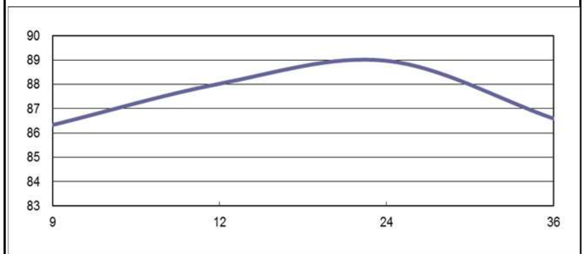


Figure 20: ATA03C18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = 0.666A

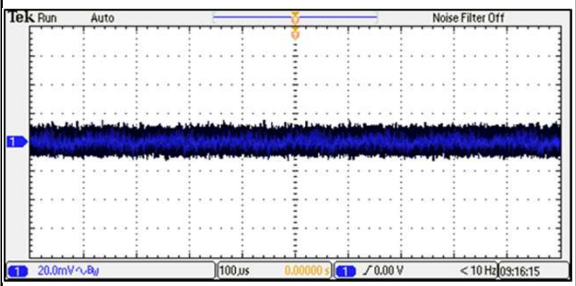


Figure 21: ATA03C18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = 0.666A
Ch 1: Vo

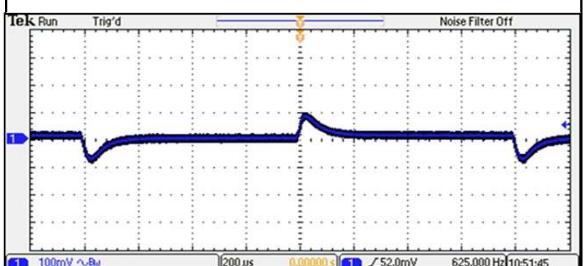


Figure 22: ATA03C18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

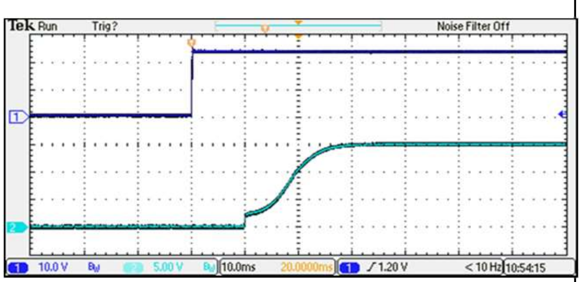


Figure 23: ATA03C18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = 0.666A
Ch1: Vo Ch3: Vin

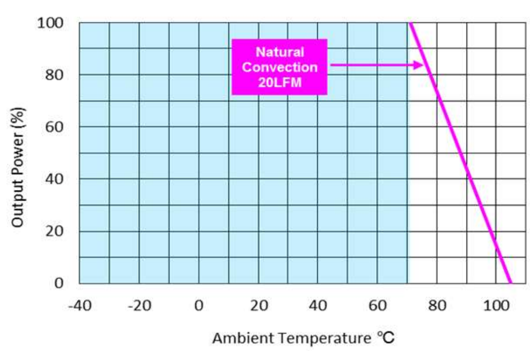


Figure 24: ATA03C18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = 0.4A

ATA03H18-L Performance Curves

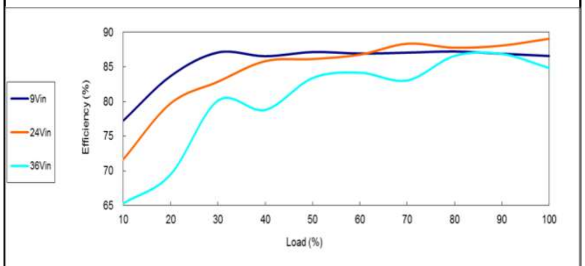


Figure 25: ATA03H18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to 0.416A

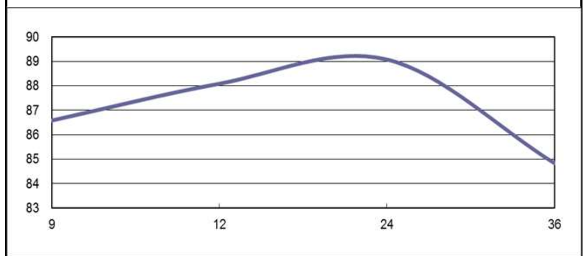


Figure 26: ATA03H18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = 0.416A

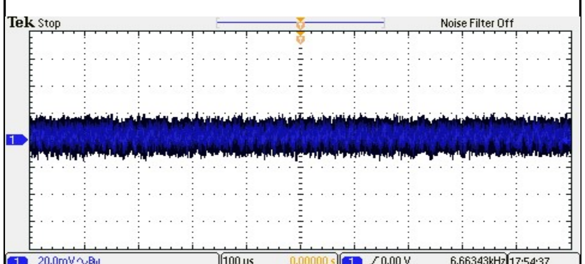


Figure 27: ATA03H18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = 0.416A
Ch 1: Vo

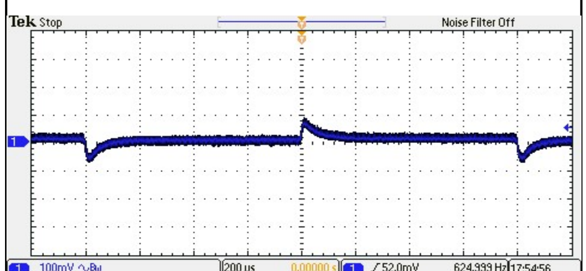


Figure 28: ATA03H18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

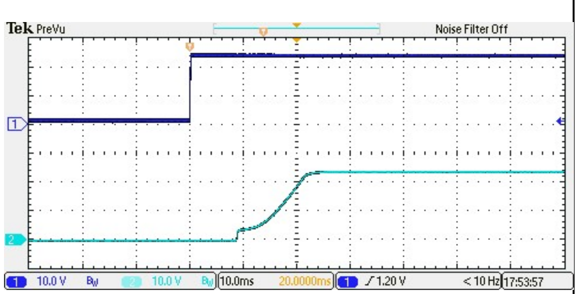


Figure 29: ATA03H18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = 0.416A
Ch1: Vo Ch3: Vin

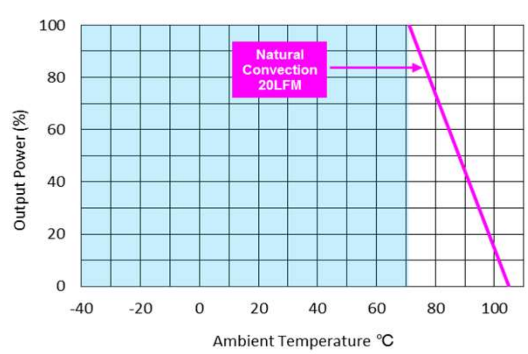


Figure 30: ATA03H18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = 0.416A

ATA03BB18-L Performance Curves

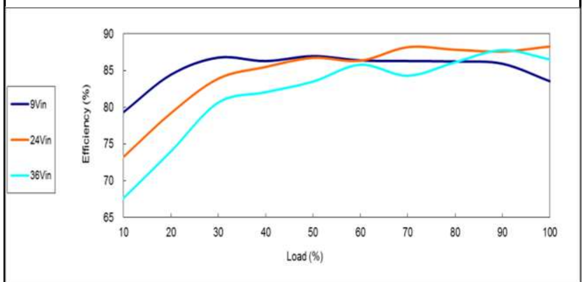


Figure 31: ATA03BB18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to ±0.416A

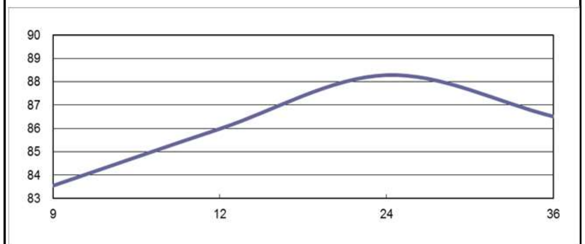


Figure 32: ATA03BB18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = ±0.416A

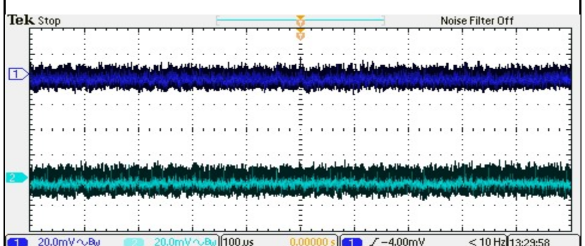


Figure 33: ATA03BB18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = ±0.416A
Ch 1: Vo1 Ch 2: Vo2

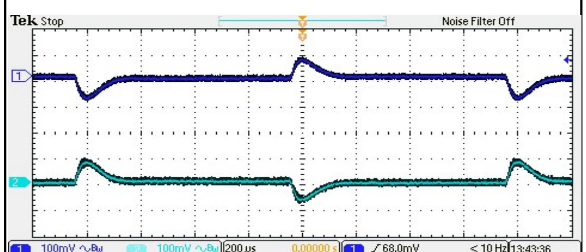


Figure 34: ATA03BB18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo1 Ch 2: Vo2

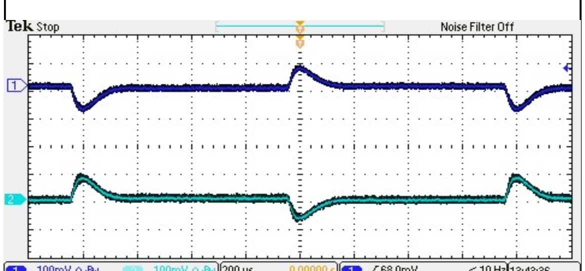


Figure 35: ATA03BB18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = ±0.416A
Ch1: Vo1 Ch2:Vo2 Ch3: Vin

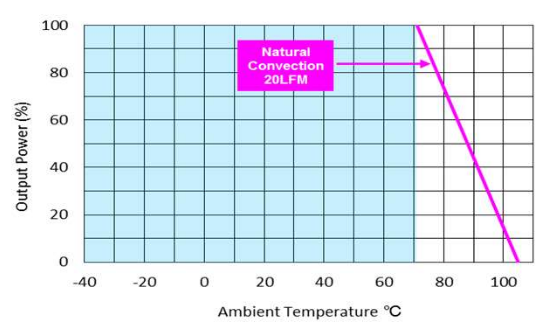


Figure 36: ATA03BB18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = ± 0.416A

ATA03CC18-L Performance Curves

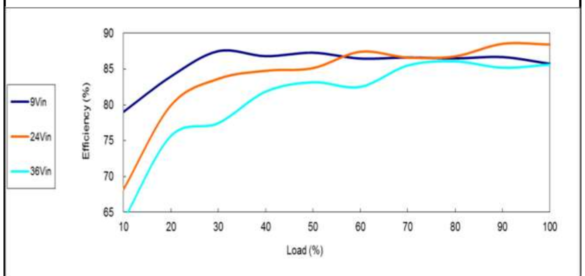


Figure 37: ATA03CC18-L Efficiency Versus Output Current Curve
Vin = 9 to 36Vdc Load: Io = 0 to ±0.333A

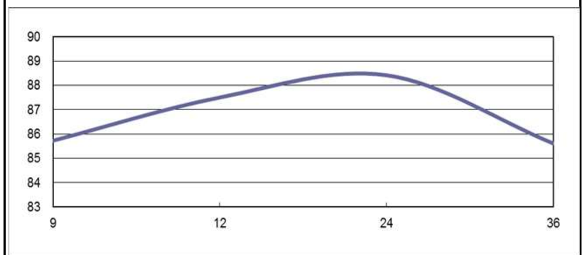


Figure 38: ATA03CC18-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = ±0.333A

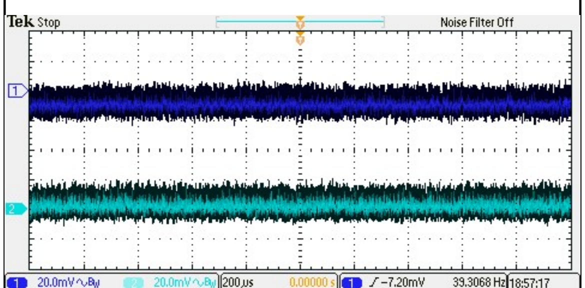


Figure 39: ATA03CC18-L Ripple and Noise Measurement
Vin = 24Vdc Load: Io = ±0.333A
Ch 1: Vo1 Ch 2: Vo2

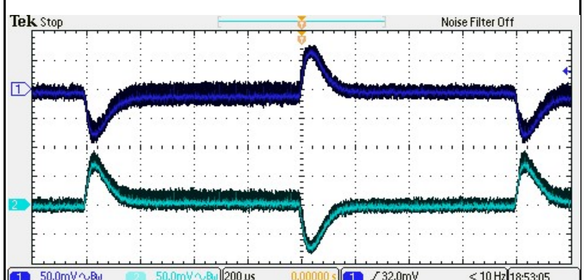


Figure 40: ATA03CC18-L Transient Response
Vin = 24Vdc Load: Io = 100% to 75% load change
Ch 1: Vo1 Ch 2: Vo2

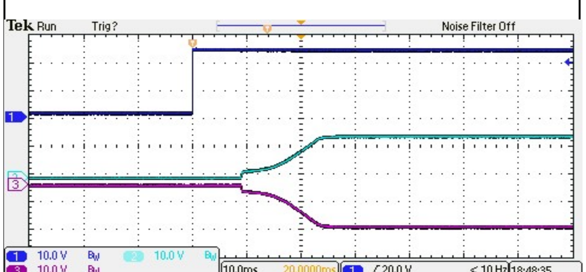


Figure 41: ATA03CC18-L Output Voltage Startup Characteristic by Vin
Vin = 24Vdc Load: Io = ±0.333A
Ch1: Vo1 Ch2:Vo2 Ch3: Vin

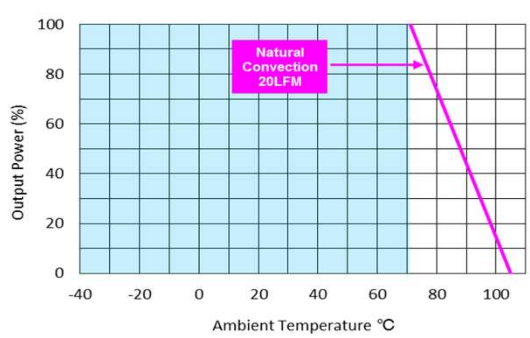


Figure 42: ATA03CC18-L Derating Output Current vs Ambient Temperature
Vin = 24Vdc Load: Io = ± 0.333A

ATA03F36-L Performance Curves

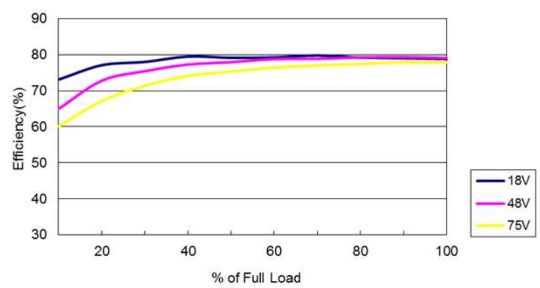


Figure 43: ATA03F36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to 2.7A

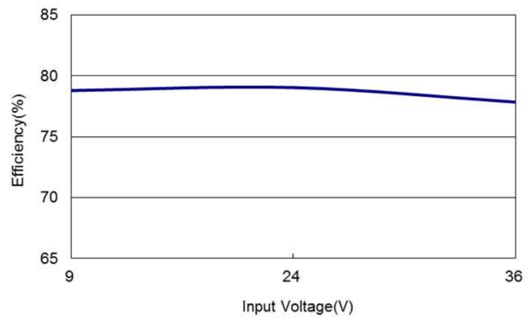


Figure 44: ATA03F36-L Efficiency Versus Input Voltage Curve
Vin = 18 to 75Vdc Load: Io = 2.7A

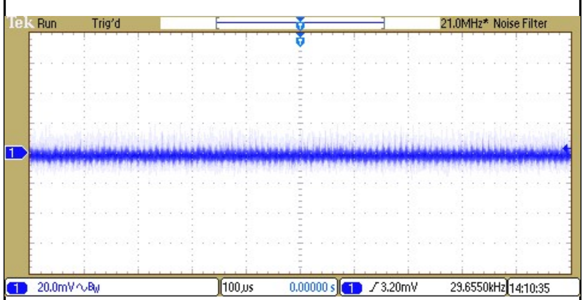


Figure 45: ATA03F36-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = 2.7A
Ch 1: Vo

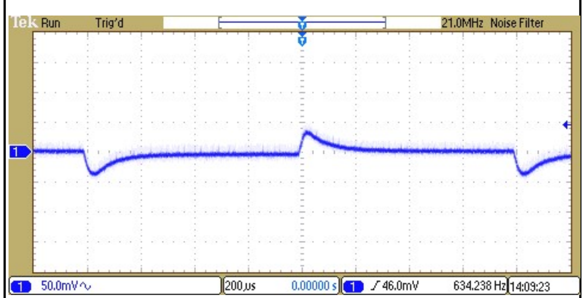


Figure 46: ATA03F36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

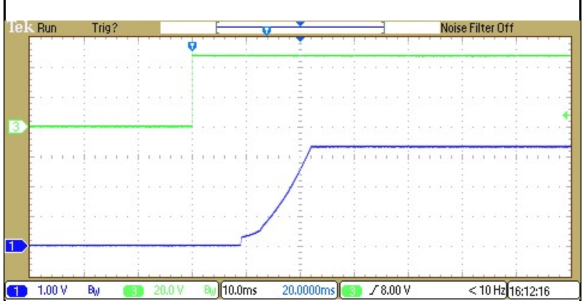


Figure 47: ATA03F36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = 2.7A
Ch1: Vo Ch3: Vin

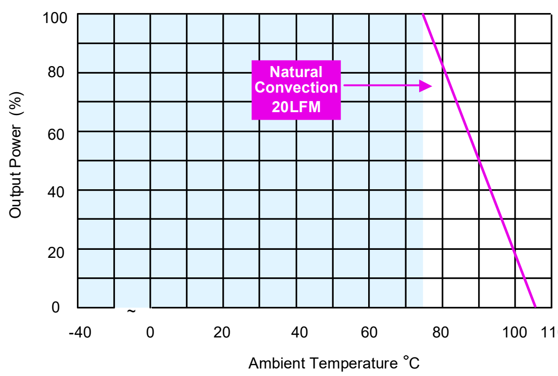


Figure 48: ATA03F36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = 2.7A

ATA03A36-L Performance Curves

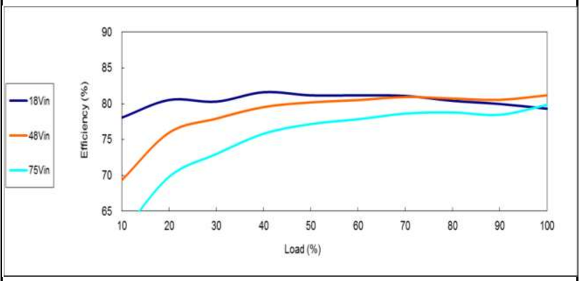


Figure 49: ATA03A36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to 2.0A

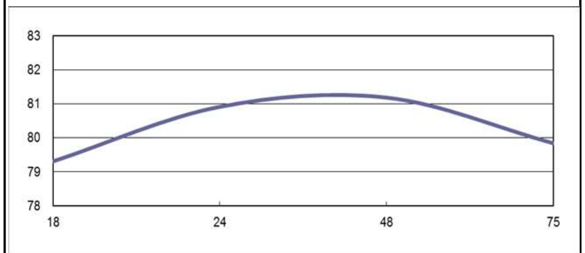


Figure 50: ATA03A36-L Efficiency Versus Input Voltage Curve
Vin = 18 to 75Vdc Load: Io = 2.0A

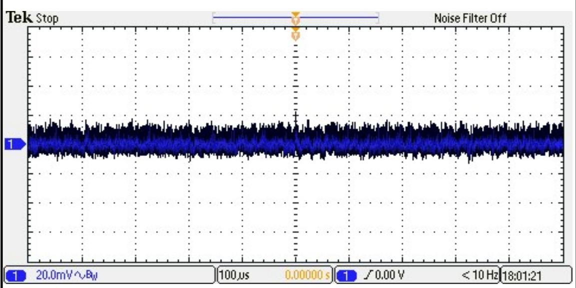


Figure 51: ATA03A36-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = 2.0A
Ch 1: Vo

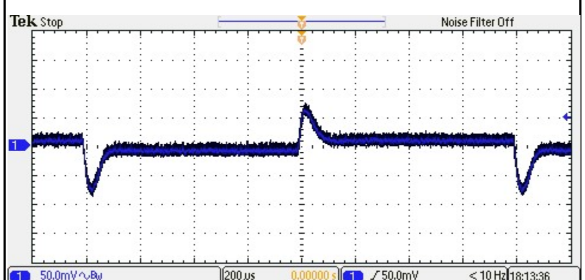


Figure 52: ATA03A36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

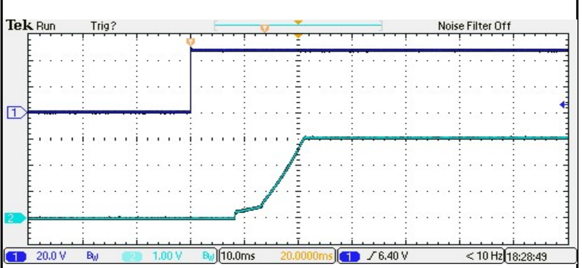


Figure 53: ATA03A36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = 2.0A
Ch1: Vo Ch3: Vin

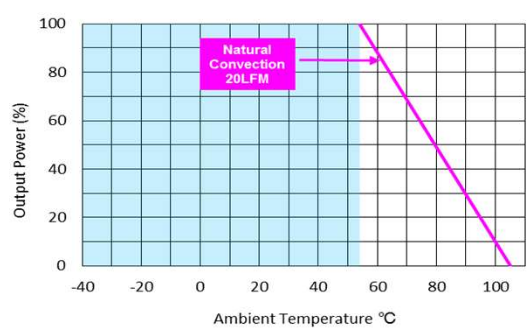


Figure 54: ATA03A36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = 2.0A

ATA03B36-L Performance Curves

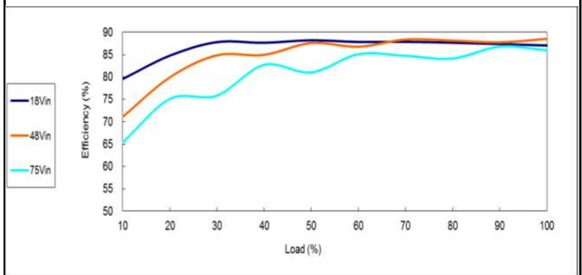


Figure 55: ATA03B36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to 0.833A

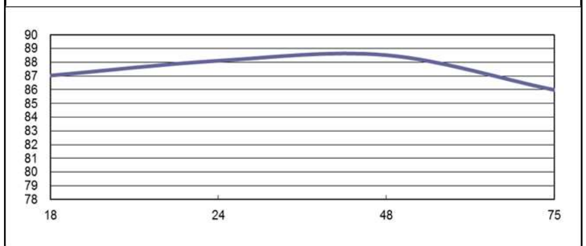


Figure 56: ATA03B36-L Efficiency Versus Input Voltage Curve
Vin = 18 to 75Vdc Load: Io = 0.833A

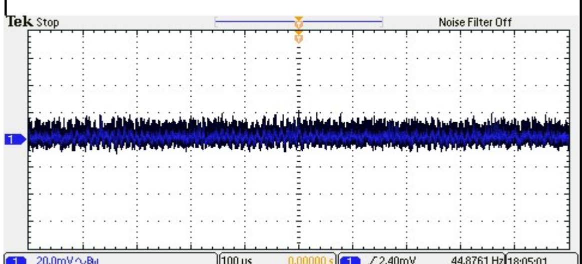


Figure 57: ATA03B36-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = 0.833A
Ch 1: Vo

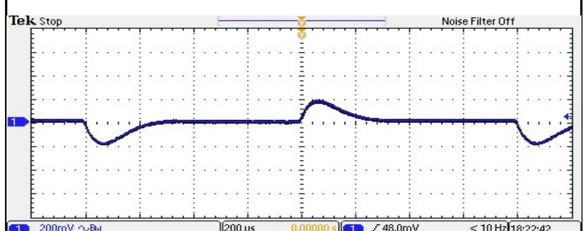


Figure 58: ATA03B36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

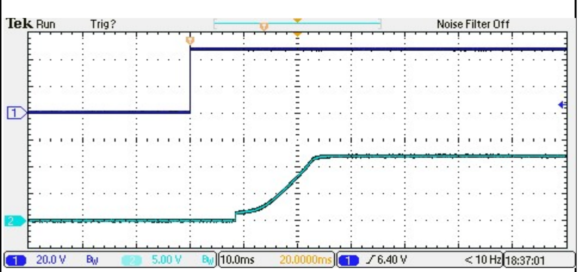


Figure 59: ATA03B36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = 0.833A
Ch1: Vo Ch3: Vin

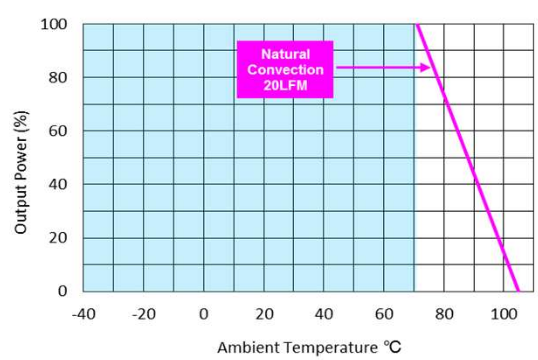


Figure 60: ATA03B36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = 0.833A

ATA03C36-L Performance Curves

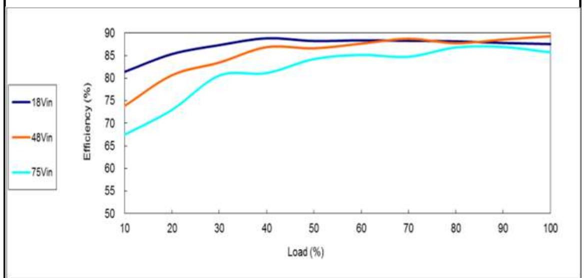


Figure 61: ATA03C36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to 0.666A

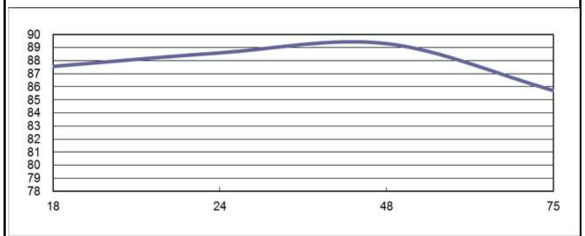


Figure 62: ATA03C36-L Efficiency Versus Input Voltage Curve
Vin = 9 to 36Vdc Load: Io = 0.666A

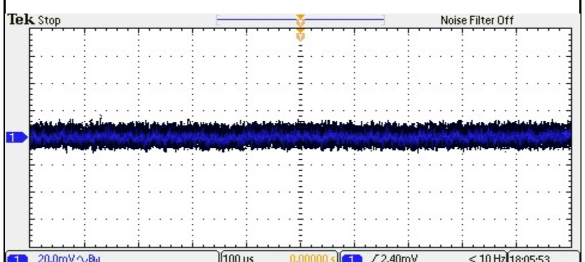


Figure 63: ATA03C36-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = 0.666A
Ch 1: Vo

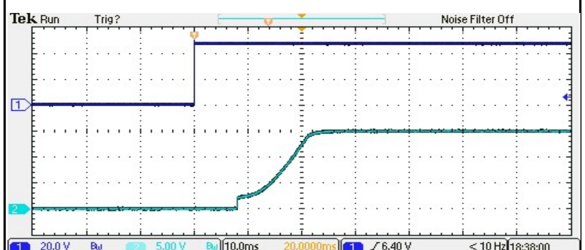


Figure 64: ATA03C36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

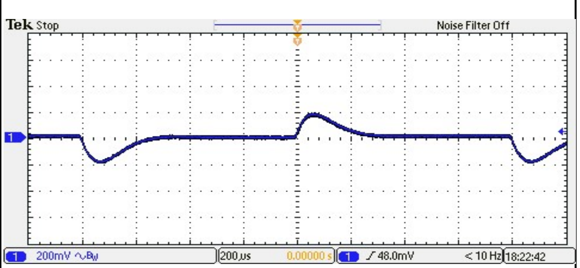


Figure 65: ATA03C36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = 0.666A
Ch1: Vo Ch3: Vin

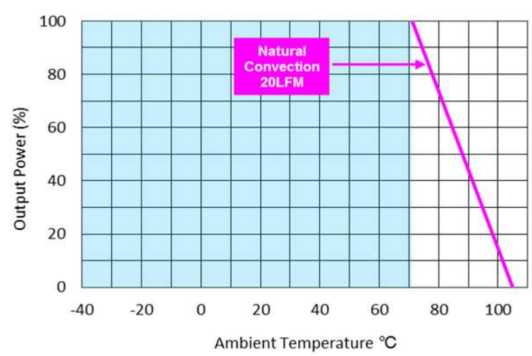


Figure 66: ATA03C36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = 0.666A

ATA03H36-L Performance Curves

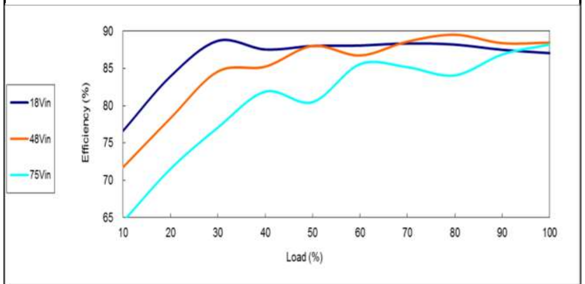


Figure 67: ATA03H36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to 0.416A

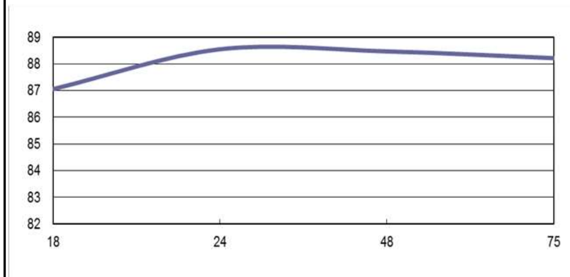


Figure 68: ATA03H36-L Efficiency Versus Input Voltage Curve
Vin = 18 to 75Vdc Load: Io = 0.416A

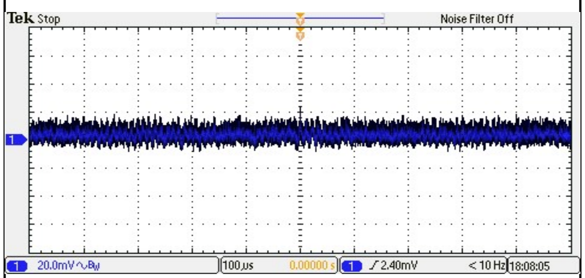


Figure 69: ATA03H36-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = 0.416A
Ch 1: Vo

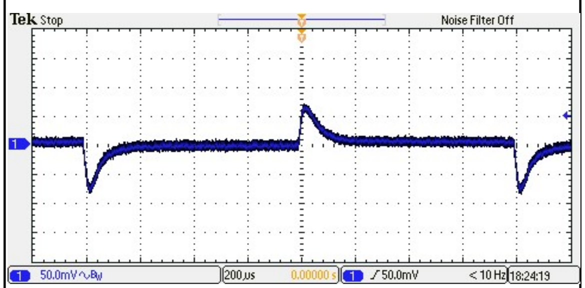


Figure 70: ATA03H36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo

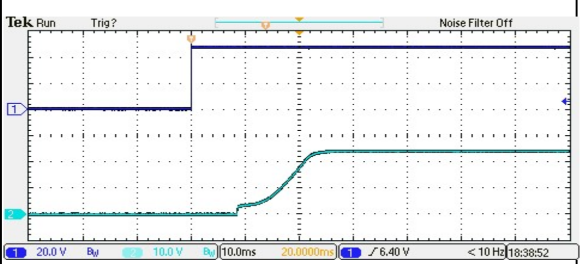


Figure 71: ATA03H36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = 0.416A
Ch1: Vo Ch3: Vin

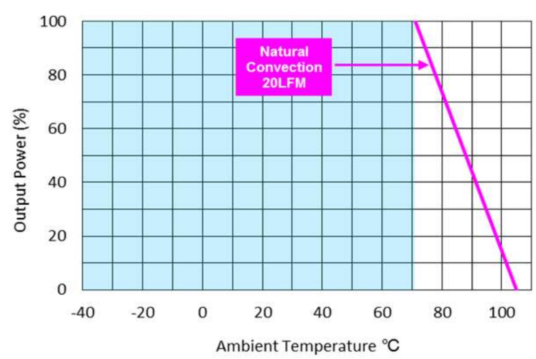


Figure 72: ATA03H36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = 0.416A

ATA03BB36-L Performance Curves

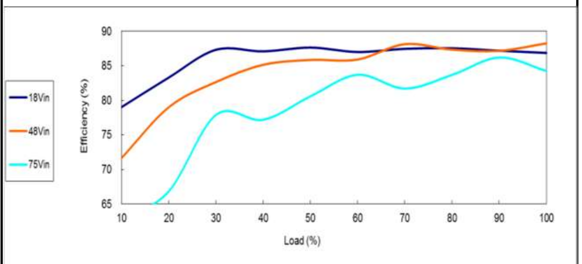


Figure 73: ATA03BB36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to ±0.416A

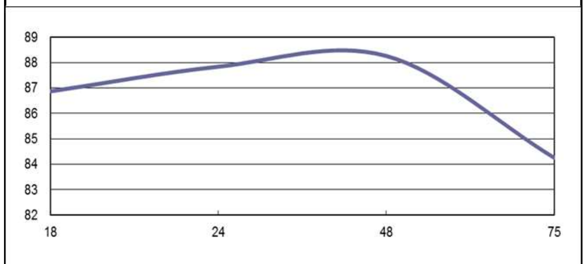


Figure 74: ATA03BB36-L Efficiency Versus Input Voltage Curve
Vin = 18 to 75Vdc Load: Io = ±0.416A

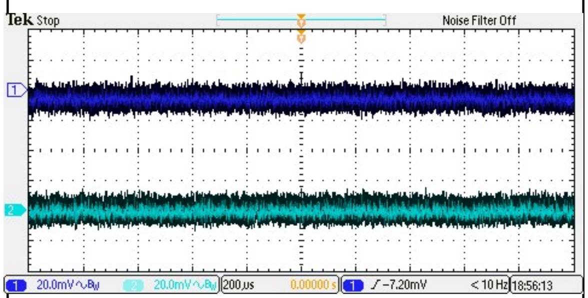


Figure 75: ATA03BB36-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = ±0.416A
Ch 1: Vo1 Ch 2: Vo2

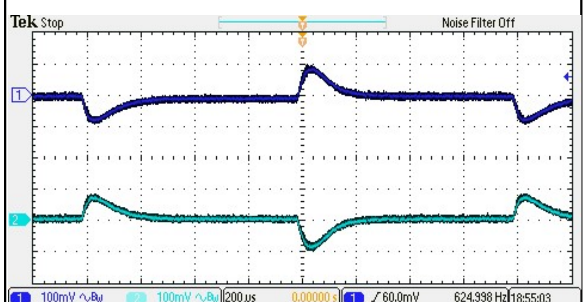


Figure 76: ATA03BB36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo1 Ch 2: Vo2

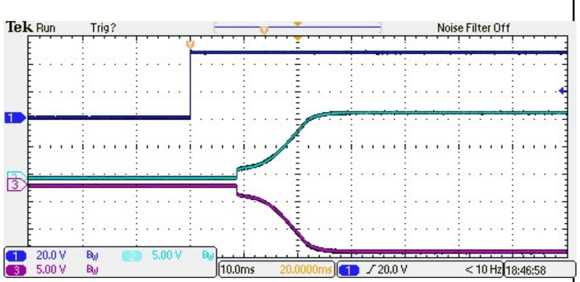


Figure 77: ATA03BB36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = ±0.416A
Ch1: Vo1 Ch2:Vo2 Ch3: Vin

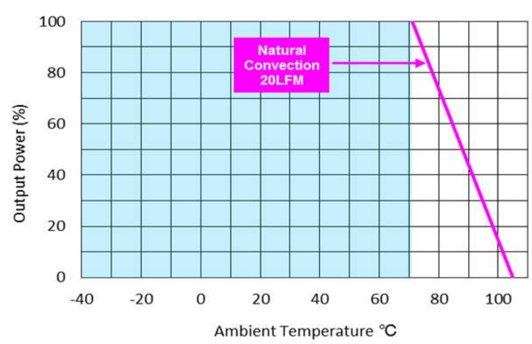


Figure 78: ATA03BB36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = ± 0.416A

ATA03CC36-L Performance Curves

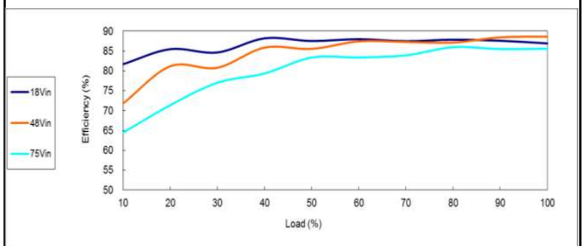


Figure 79: ATA03CC36-L Efficiency Versus Output Current Curve
Vin = 18 to 75Vdc Load: Io = 0 to ±0.333A

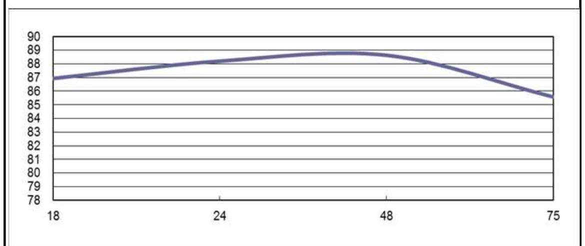


Figure 80: ATA03CC36-L Efficiency Versus Input Voltage Curve
Vin = 18 to 75Vdc Load: Io = ±0.333A

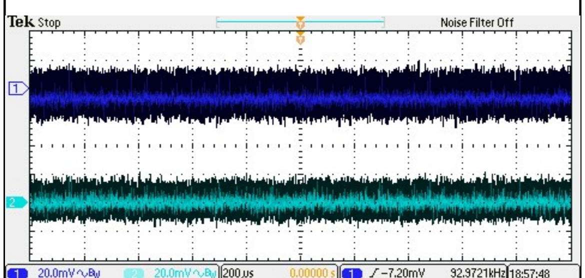


Figure 81: ATA03CC18-L Ripple and Noise Measurement
Vin = 48Vdc Load: Io = ±0.333A
Ch 1: Vo1 Ch 2: Vo2

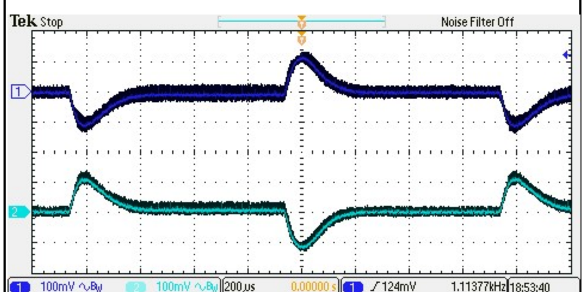


Figure 82: ATA03CC36-L Transient Response
Vin = 48Vdc Load: Io = 100% to 75% load change
Ch 1: Vo1 Ch 2: Vo2

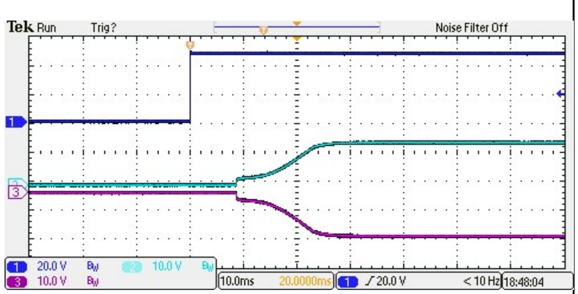


Figure 83: ATA03CC36-L Output Voltage Startup Characteristic by Vin
Vin = 48Vdc Load: Io = ±0.333A
Ch1: Vo1 Ch2:Vo2 Ch3: Vin

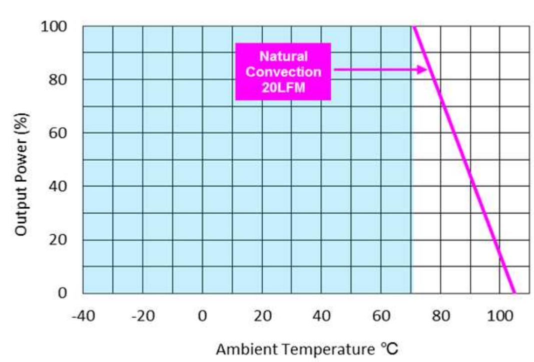
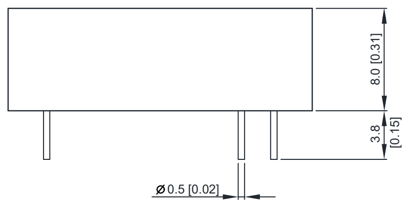
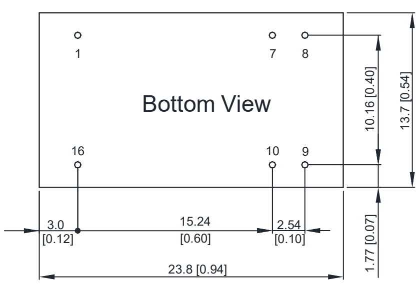


Figure 84: ATA03CC36-L Derating Output Current vs Ambient Temperature
Vin = 48Vdc Load: Io = ± 0.333A

Mechanical Specifications

Mechanical Outlines





Note:
1.All dimensions in mm (inches)
2.Tolerance: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
3.Pin diameter 0.5 ±0.05 (0.02±0.002)

Pin Connections

Single output

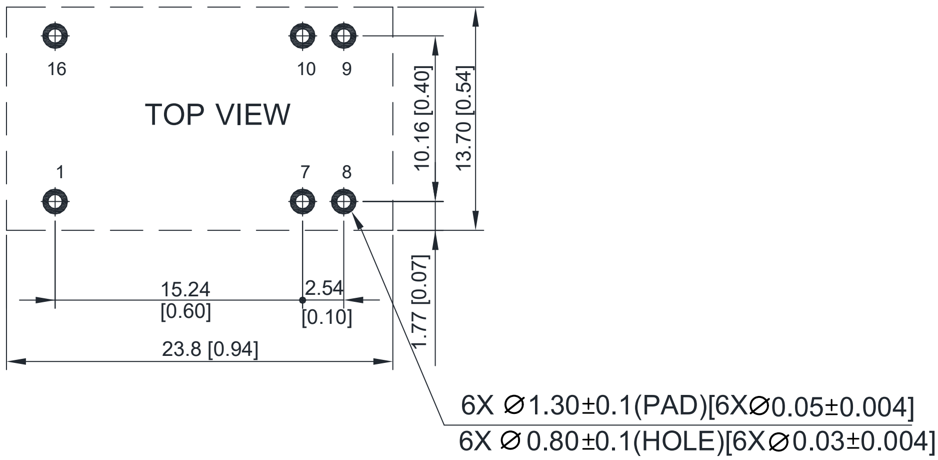
Pin 1 – -Vin
Pin 7 – NC
Pin 8 – NC
Pin 9 – +Vout
Pin 10 – -Vout
Pin 16 – +Vin

Dual Output

Pin 1 – -Vin
Pin 7 – NC
Pin 8 – Common
Pin 9 – +Vout
Pin 10 – -Vout
Pin 16 – +Vin

Physical Characteristics	
Case Size	23.8x13.7x8.0mm (0.94x0.54x0.31 inches)
Case Material	Aluminium Alloy, Black Anodized Coating
Pin Material	Tinned Copper
Weight	6.5g

Recommended Pad Layout for Single & Dual Output Converter



Environmental Specifications

EMC Immunity

ATA 10W series power supply is designed to meet the following EMC immunity specifications.

Table 4. EMC Specifications:

Parameter	Standards & Level		Performance
EMI	Conduction	EN55032, FCC part15	Class A
EMS	EN55024		
	ESD	EN61000-4-2 Air ±8kV, Contact ±6kV	Perf. Criteria A
	Radiated immunity	EN61000-4-3 20V/m	
	Fast transient[1]	EN61000-4-4 ±2KV	Perf. Criteria A
	Surge[1]	EN61000-4-5 ±2KV	Perf. Criteria A
	Conducted immunity	EN61000-4-6 10Vrms	Perf. Criteria A
	PFMF	EN61000-4-8 100A/M	Perf. Criteria A

Note 1 - To meet EN61000-4-4 & EN61000-4-5 an external filter requested, please contact Artesyn

Safety Certifications

The ATA 10W series power supply is intended for inclusion in other equipment and the installer must ensure that it is in compliance with all the requirements of the end application. This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.

Table 5. Safety Certifications for ATA 10W series power supply system

Document	Description
cUL/UL 60950-1(UL certificate)	US and Canada Requirements
IEC/EN 60950-1(CB-scheme)	European Requirements(All CENELEC Countries)
cUL/UL 62368-1(UL certificate)	US Requirements
IEC/EN 62368-1(CB-scheme)	European Requirements(All CENELEC Countries)
CE Mark	

MTBF and Reliability

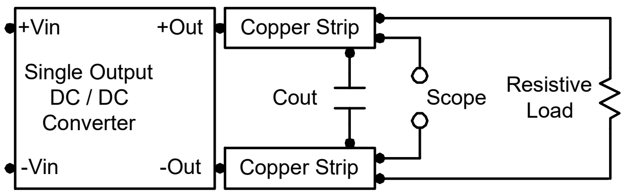
The MTBF of ATA 10W series of DC/DC converters has been calculated using MIL-HDBK 217F NOTICE2, Operating Temperature 25 ^{O}C, Ground Benign.

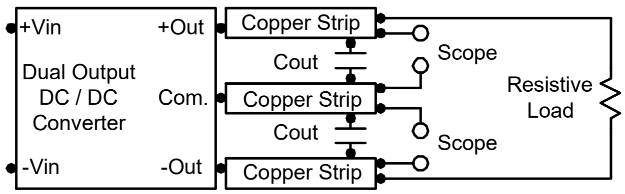
Model	MTBF	Unit
ATA03F18-L	2562483	Hours
ATA03A18-L	2555111	
ATA03B18-L	3534977	
ATA03C18-L	3704681	
ATA03H18-L	3776036	
ATA03BB18-L	3526032	
ATA03CC18-L	3499799	
ATA03F36-L	2606925	
ATA03A36-L	2587419	
ATA03B36-L	3604906	
ATA03C36-L	3735662	
ATA03H36-L	3792554	
ATA03BB36-L	3533217	
ATA03CC36-L	3519995	

Application Notes

Peak-to-Peak Output Noise Measurement Test

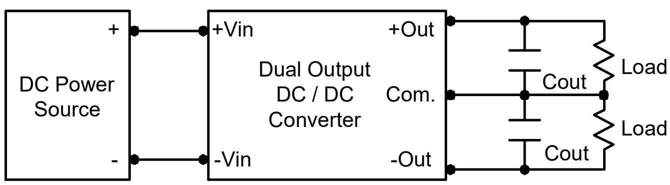
Refer to the output specifications or add 4.7μF capacitor if the output specifications undefine Cout. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20 MHz. Position the load between 50 mm and 75 mm from the DC-DC Converter.

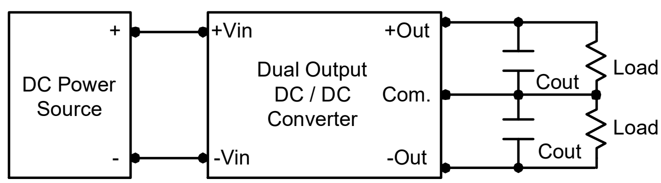




Output Ripple Reduction

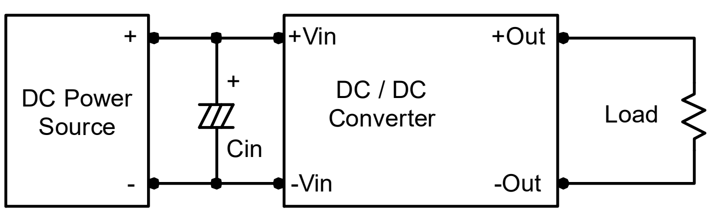
A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 3.3μF capacitors at the output.





Input Source Impedance

The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup. Capacitor mounted close to the power module helps ensure stability of the unit, it is recommended to use a good quality low Equivalent Series Resistance (ESR < 1.0Ω at 100KHz) capacitor of a 2.2μF for the 24V and 48V devices.

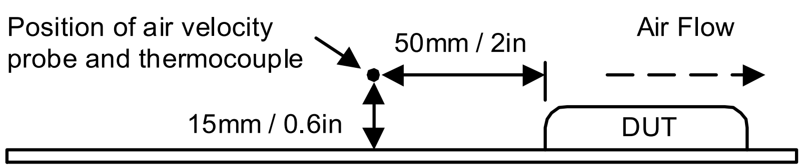


Output Over Current Protection

To provide hiccup mode protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure overload for an unlimited duration.

Thermal Considerations

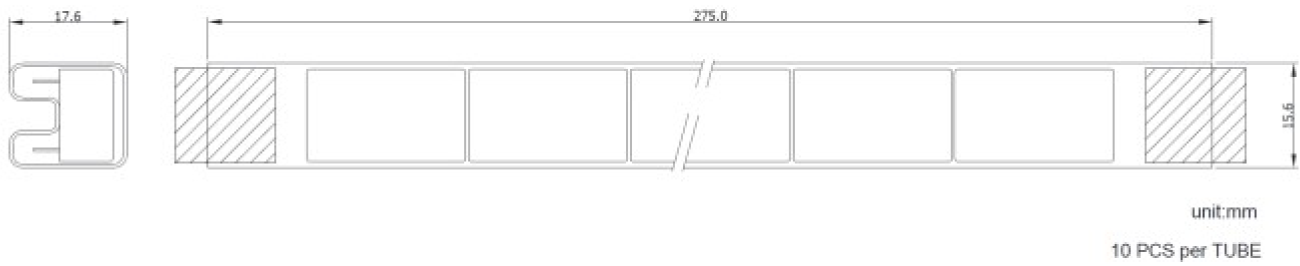
Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 105 ^{O}C. The derating curves are determined from measurements obtained in a test setup.



Maximum Capacitive Load

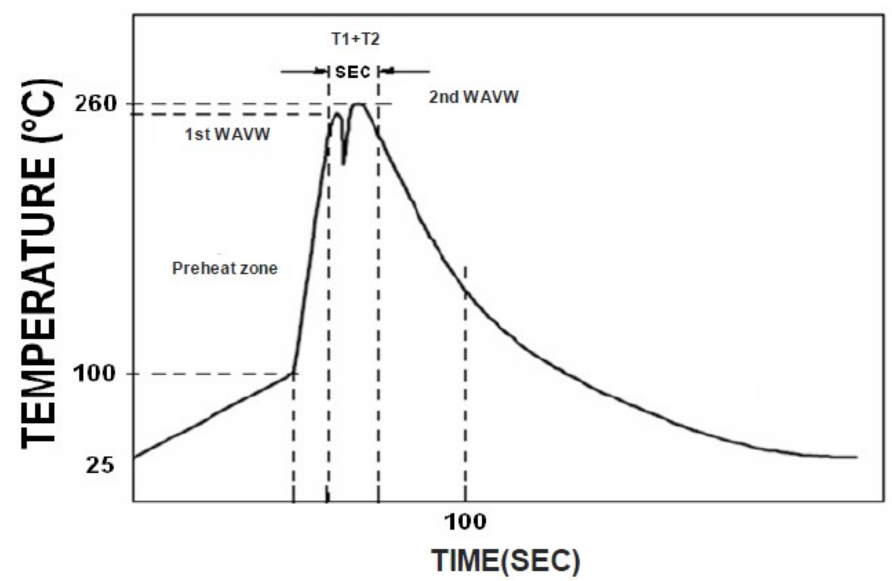
The ATA 10W series has limitation of maximum connected capacitance at the output. The power module may operate in current limiting mode during start-up, affecting the ramp-up and the startup time. The maximum capacitance can be found in the datasheet.

Packaging Information



Soldering and Reflow Considerations

Lead free wave solder profile for ATA 10W Series



Zone	Reference Parameter
Preheat zone	Rise temp speed：3^{O}C/sec max.
	Preheat temp : 100~130^{O}C
Actual heating	Peak temp: 250~260^{O}C Peak Time
	Peak time(T1+T2)：4~6 sec

Reference Solder: Sn-Ag-Cu：Sn-Cu：Sn-Ag
Hand Welding: Soldering iron：Power 60W
Welding Time: 2~4 sec
Temp.: 380~400 ^{O}C

Record of Revision and Changes

Issue	Date	Description	Originators
1.0	09.25.2018	First Issue	K. Wang