

### Alpha 400W Converter Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Case Height	mm		63	63.5	No modules, includes RFI etc. Standard airflow = Air inlet at fan
Case Width	mm		126.5	127	
Case Length	mm		279	279.5	
Weight	Kg		1.20		
Cooling			60mm fan		
Operating Frequency					
- Boost Converter	KHz	98	100	102	
- Forward Converter	KHz	196	200	204	
MTBF	fpmh		6.83 11.4		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
<b>Input</b>					
AC input voltage	V	90		255	
Input frequency	Hz	47		63	
Power factor				0.99	Load dependent, min at 230V i/p, max at 110V i/p
Earth leakage	m A			1.1 0.5 0.24 0.11 0.05	Standard filter ML filter LL filter RL filter TL filter
Inrush current	A		20	50	Input voltage dependent, (max at 255V i/p)
Minimum operating voltage	V			85	
Start up voltage	V			85	
<b>Output</b>					
Power output	W			400 300	Standard airflow (max 80 Ampere turns) Reverse airflow (max 60 Ampere turns)
Efficiency, 400W output					
110V	%	68	72		Line and configuration dependent
230V	%	70	75		Line and configuration dependent
Hold up, 400W output	m S	15			or better, load and configuration dependent
Start up time	m S		500	1000	
<b>Protection</b>					
Thermal trip	deg C	90		110	Sensing forward converter only
Forward converter I/limit	A/T	80			
<b>Environmental</b>					
Operating temperature	deg C	0		50	
- with derating	deg C	50		70	Derate 2.5%/C above 50C
Operating humidity	%	5		90	Non- condensing
Operating Altitude	Meter			3300	
Storage temperature	deg C	-40		85	
Storage humidity	%	5		95	Non- condensing
Storage pressure	mbar	680		1030	
Vibration performance					10-200 Hz @ 1.5G
Shock performance					3000 bumps, 10G (16mSec) half-sine
<b>Emission &amp; Immunity</b>					
Conducted Emission (230VAC)		EN55022 Curve B EN55022 Curve A			Standard filter ML & LL filters (RL & TL filters do not meet curve A) Meets case A
Immunity		EN61000-4-2,3,4,5,6 level 3			
<b>Isolation Voltages</b>					
Output to output	VDC		500		
Input to output	KVrms		3		
Input to ground	KVrms		1.5		

### Alpha 600W Converter Specification

	Units	Minimum	Nominal	Maximum	Notes	
<b>General</b>						
Case Height	mm		63	63.5	No modules, includes RFI etc. Standard airflow = Air inlet at fan	
Case Width	mm		126.5	127		
Case Length	mm		323	323.5		
Weight	Kg		1.56			
Cooling			60mm fan			
Operating Frequency					Forward Converter & Boost Converter Synchronised	
- Boost Converter	KHz	192	197	202		
- Forward Converter	KHz	192	197	202		
MTBF	fpmh		9.83 13.85			
					Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F	
<b>Input</b>						
AC input voltage	V	90		255	Load dependent, min at 230V i/p, max at 110V i/p 1.1 Standard filter 0.24 LL filter 0.11 RL filter 0.05 TL filter	
Input frequency	Hz	47		63		
Power factor		0.9		0.99		
Earth leakage	m A					
Inrush current	A		20	50		Input voltage dependent, (253V i/p)
Minimum operating voltage	V			85		
Start up voltage	V			85		
<b>Output</b>						
Power output	W			600 475	Standard airflow (max 120 Ampere turns) Reverse airflow (max 100 Ampere turns)	
Efficiency, 600W output					Configuration dependent	
90V	%	68	70			
230V	%	70	75		Configuration dependent	
Hold up, 600W output	m S	15			or better, load and configuration dependent	
Start up time	m S		300	500		
<b>Protection</b>						
Thermal trip	deg C	90		110	Sensing forward converter and/or PFC converter	
Forward converter I/limit	A/T	120				
<b>Environmental</b>						
Operating temperature	deg C	0		50	Derate 2.5%/C	
- with derating	deg C	50		70		
Operating humidity	%	5		90	Non- condensing	
Operating Altitude	Meter			3300		
Storage temperature	deg C	-40		85	Non- condensing	
Storage humidity	%	5		95		
Storage pressure	mbar	680		1030		
Vibration performance	10-200 Hz @ 1.5G					
Shock performance	3000 bumps, 10G (16mSec) half-sine					
<b>Emission &amp; Immunity</b>						
Conducted Emission (230VAC)	EN55022 Curve B EN55022 Curve A				Standard filter LL & RL filters (TL filters do not meet curve A)	
Immunity	EN61000-4-2,3,4,5,6 level 3				Meets case A	
<b>Isolation Voltages</b>						
Output to output	VDC			500		
Input to output	KVrms			3.0		
Input to ground	KVrms			1.5		

### Alpha 1000W Converter Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Case Height	mm		63	63.5	No modules, includes RFI etc. Standard Airflow = Air inlet at fan
Case Width	mm		175.5	176	
Case Length	mm		279	279.5	
Weight	Kg		1.9		
Cooling			60mm fan(s)		
Operating Frequency					
- Boost Converter	KHz	98	100	102	Forward Converter & Boost Converter Synchronised
- Forward Converter	KHz	196	200	204	
MTBF	fpmh		14.01 23.15		
<b>Input</b>					
AC input voltage	V	85		264	Load dependent, min at 230V i/p, max at 110V i/p Standard filter 0.2µF LL filter 0.1µF RL filter 0.05µF TL filter
Input frequency	Hz	47		63	
Power factor				0.99	
Earth leakage	m A			1.0	
Inrush current	A		20	50	
Minimum operating voltage	V			85	
Start up voltage	V			85	
<b>Output</b>					
Power output	W			1000	Continuous Vin >=90V a/c, max ambient = 45C Continuous Vin >=100V a/c. Max 30 seconds for 85<=Vin <150V a/c, duty <=0.25 Continuous Vin >=85V a/c Configuration dependent Configuration dependent
Efficiency				1000	
1000W, 150V a/c	%	70	72		
800W, 85V a/c	%	65	68		
Hold up, 1000W output	mS	13			
800W output		16			
Start up time	mS		500	1000	
<b>Protection</b>					
Thermal trip	deg C	90		110	Sensing forward converter and PFC converter Max 200AT total
Forward converter I/limit	A/T	2x120			
<b>Environmental</b>					
Operating temperature	deg C	0		50	Derate 3.3%/C Non- condensing
- with derating	deg C	50		65	
Start-up temperature	deg C	-35		+65	
Operating humidity	%	5		90	
Operating Altitude	Meter			3300	
Storage temperature	deg C	-40		85	
Storage humidity	%	5		95	
Storage pressure	mbar	680		1030	
Vibration performance	10-200 Hz @ 1.5G				
Shock performance	3000 bumps, 10G (16mSec) half-sine				
<b>Emission &amp; Immunity</b>					
Conducted Emission (230VAC)	EN55022 Curve A				Standard & LL filters (RL & TL filters do not meet curve A)
Immunity	EN61000-4-2,3,4,5,6 level 4				Meets case A
<b>Isolation Voltages</b>					
Output to output	V DC			500	
Input to output	KV r m S			3	
Input to ground	KV r m S			1.5	

### Alpha 1500W Converter Specification

	Units	Minimum	Nominal	Maximum	Notes	
<b>General</b>						
Case Height	mm		63	63.5	No modules, includes RFI etc. Standard Airflow = Air inlet at fan	
Case Width	mm		199.75	200.25		
Case Length	mm		279	279.5		
Weight	Kg		2.04			
Cooling			60mm fan(s)			
Operating Frequency					Forward Converter & Boost Converter Synchronised	
- Boost Converter	KHz	98	100	102		
- Forward Converter	KHz	196	200	204		
MTBF	fpmh		14.27 23.66			
					Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F	
<b>Input</b>						
AC input voltage	V	85		264	Input voltage dependent, results are for 253V i/p	
Input frequency	Hz	47		63		
Power factor				0.99		Load dependent, min at 230V i/p, max at 110V i/p
Earth leakage	m A			1.0 0.21 0.1 0.05		Standard filter LL filter RL filter TL filter
Inrush current	A		20	50		
Minimum operating voltage	V			85		
Start up voltage	V			85		
<b>Output</b>						
Power output	W			1690 1500 1000 800	Continuous Vin >=180V a/c Continuous Vin >=150V a/c. Continuous Vin >=90V a/c (max ambient = 45C) Continuous Vin >=85V a/c	
Efficiency 1690W, 180V					Configuration dependent	
1500W, 150V a/c	%		68			
800W, 85V a/c	%	65				
Hold up, 1500W output	m S	8				
800W output		16			Configuration dependent	
Start up time	m S		500	1000		
<b>Protection</b>						
Thermal trip	deg C	90		110	Sensing forward converter and PFC converter	
Forward converter I/limit	A/T	2x138			Max 260AT total	
<b>Environmental</b>						
Operating temperature	deg C	0		50	Derate 3.3%/C	
- with derating	deg C	50		65		
Start-up temperature	deg C	-35		+65	Non- condensing	
Operating humidity	%	5		90		
Operating Altitude	Meter			3300		
Storage temperature	deg C	-40		85	Non- condensing	
Storage humidity	%	5		95		
Storage pressure	mbar	680		1030		
Vibration performance	10-200 Hz @ 1.5G					
Shock performance	3000 bumps, 10G (16mSec) half-sine					
<b>Emission &amp; Immunity</b>						
Conducted Emission (230VAC)	EN55022 Curve A				Standard & LL filters (RL & TL filters do not meet curve A)	
Immunity	EN61000-4-2,3,4,5,6 level 4				Meets case A	
<b>Isolation Voltages</b>						
Output to output	V DC			500		
Input to output	KV r m S			3		
Input to ground	KV r m S			1.5		

### Alpha A Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		239		
Transformer Turns			1		
Power Output	W		300		
MTBF	fpmh		0.8 1.17		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V V	4.5	5	5.5	at sense terminals
Output Adjustment	V/Turn	4.2		6.39	
Resolution	%	0.139		0.167	
Initial setting accuracy	V	-1		1	
Remote sense	% lout			0.5	Total Volt drop
Minimum load	%/deg C	None			
Temperature coefficient	%		0.02	0.03	
Line regulation	%			0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	sense not connected
Ripple	%		0.5	1	Switching ripple at 200KHz
PARD	%		1.5	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	S		2	4	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	%		100	500	Recovery to within 1%, 50% load change in the region 25% to 100% lout.
Transient response overshoot	V		5	10	
Over voltage protection	Amps	6.26		7	
Output current	% lout			60	
Current limit		105		130	
Short circuit current		85		150	
Output rise		Monotonic			
Output rise time	mS			50	Into non-capacitive load
Turn on overshoot	%		2	10	Into capacitive load
Overshoot recovery from I/limit	mS		2	10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha AA Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		239		
Transformer Turns			1		
Power Output	W		360		
MTBF	fpmh		1.12 1.91		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	4.5	5.5	6.0	at sense terminals
Resolution	V/Turn		0.15		
Initial setting accuracy	%	-1		1	
Remote sense	V			0.5	
Minimum load	% Iout	None			Total Volt drop
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%			0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	sense not connected
Ripple	%		0.5	1	Switching ripple at 200KHz
PARD	%		1.5	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%		2	4	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S		100	500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	% V		5	10	
Over voltage protection	Amps	7.61		8.46	
Output current	% Iout			60	
Current limit		104		132	
Short circuit current		85		160	
Output rise		Monotonic			
Output rise time	mS			50	Into non-capacitive load
Turn on overshoot	%		2	10	Into capacitive load
Overshoot recovery from I/limit	mS		2	10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

## Alpha B Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		145		
Transformer Turns			1		
Power Output	W		125		
MTBF	fpmh		0.90 1.31		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V V	4.5	5	5.5	at sense terminals
Output Adjustment	V/Turn	4.35		6.84	
Resolution	%	0.15		1.85	
Initial setting accuracy	V	-1		1	
Remote sense	% lout			0.5	Total Volt drop
Minimum load	%/deg C	None			
Temperature coefficient	%		0.02	0.03	
Line regulation	%		0.05	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	sense not connected
Ripple	%		0.5	1	Switching ripple at 200KHz
PARD			1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	S			4	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	%		300	500	Recovery to within 1%, 50% load change in the region 25% to 100% lout.
Transient response overshoot	V		5	10	
Over voltage protection	Amps	6		7	
Output current	% lout			25	
Current limit	% lout	104		132	
Short circuit current		85		140	Not protected against continuous (greater than 2 mins) short circuit above 50C 100% = 16A
Output rise		Monotonic			
Output rise time	mS			50	Into non-capacitive load
Output rise time	mS		$(C \times V_{out}) / (I_{lim} - I_{out})$		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%		5	10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha BB Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		145		
Transformer Turns			1		
Power Output	W		150		
MTBF	fpmh		0.97 1.51		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	4.5	6	6.5	at sense terminals
Resolution	V/Turn	0.15	0.17	1.85	
Initial setting accuracy	%	-1		1	
Remote sense	V			0.5	
Minimum load	% Iout	None			Total Volt drop
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.05	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	sense not connected
Ripple	%		0.5	1	Switching ripple at 200KHz
PARD	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise				4	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S		300	500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%		5	10	
Over voltage protection	V	8.15		9.0	
Output current	Amps			25	
Current limit	% Iout	104		132	
Short circuit current	% Iout	85		160	
Output rise		Monotonic			Not protected against continuous (greater than 2 mins) short circuit above 50C 100% = 16A
Output rise time	mS			50	Into non-capacitive load
Output rise time	mS		$(C \times V_{out}) / (I_{lim} - I_{out})$		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%		5	10	Into capacitive load
Isolation o/p to gnd	Vdc			500	



### Alpha C Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		130		
Transformer Turns			2		
Power Output	W		192		
MTBF	fpmh		0.84 1.20		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	5	12	15	at sense terminals
Resolution	V/Turn		1.2		
Initial setting accuracy	mV	-120		+120	
Remote sense	V			1	
Minimum load	% Iout	None			Total Volt drop
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	sense not connected
Ripple 10V-15V output	%		0.5	1	Switching ripple at 200KHz
PARD 10V-15V output	%		1.5	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Ripple 5V-9.9V output	%		1	2	Switching ripple at 200KHz
PARD 5V-9.9V output	%			3	20 MHz bandwidth, differential mode, modules isolated or non-isolated.
Common mode noise	%			3	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S	200		500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	16.8		18.1	
Output current	Amps	12		16 12	
Current limit	% Iout	104		132	Vout < -12V Vout > -12V
Short circuit current	% Iout	85		150	100% = 16A
Output rise			Monotonic		Not protected against continuous (greater than 2 mins) short circuit above 50C 100% = 16A
Output rise time	mS		10	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-Iout)		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

## Alpha D Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		125		
Transformer Turns			4		
Power Output	W		192		
MTBF	fpmh		0.82 1.17		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	18	24	28	at sense terminals
Resolution	V/Turn		1.4		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	
Minimum load	% Iout	None			Total Volt drop
Temperature coefficient	%/deg C			0.03	
Line regulation	%		0.02	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		0.1	2	Sense not connected
Ripple	%		1	1	Switching Ripple at 200kHz
PARD	%		0.5	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%		1	2	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	33.4		36.2	
Output current	Amps			8	
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	85		160	
					Not protected against continuous (> 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		10	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-Iout)		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha E Module Specification

		Units	Minimum	Nominal	Maximum			Notes	
<b>General</b>									
Grade				2					
Case dimensions	mm			23					
Module weight	gms			150					
Transformer Turns				CH1 = 2 CH2 = 2					
Power Output	watts			CH1 = 96 CH2 = 96					
MTBF	fpmh			1.25 1.75				Ground benign, 25C, MIL217F Ground benign, 50C, MIL217F	
Operating temperature	deg C	0					+50		
- With derating	deg C	+50					+70	Derating 2.5%/C	
			<b>Channel 1</b>			<b>Channel 2</b>			
			<b>Min</b>	<b>Nom</b>	<b>Max</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>	
<b>Output</b>									
Output Voltage	Volts	5	12	16	5	12	16		
Resolution	V/Turn		1.2			1.2			
Initial setting accuracy	%	-1		+1	-1		+1		
Minimum load	% of Iout	None			None				
Temperature coefficient	%/deg C		0.02	0.03		0.02	0.03		
Line regulation	%		0.1	0.5		0.1	0.5		
Load regulation	%		1	2		1	2		
Ripple 10-15V output	%		0.5	1		0.5	1	Switching ripple at 200 KHz	
PARD 10V-15V output	%		1	2		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated	
Ripple 5V-9.9V output	%		1	2		1	2	Switching ripple at 200 KHz	
PARD 5V-9.9V output	%			3			3	20 MHz bandwidth, differential mode, modules isolated or non-isolated	
Common mode noise	%			2			2	20 MHz bandwidth, modules non-isolated and earthed	
Transient response time	S		300	500		300	500	50% load change in the region 25% to 100% Iout.	
Transient response overshoot	%		5	10		5	10		
Over voltage protection	Volts	16.8		18.1	16.8		18.1		
Output current	Amps			8			8		
Current limit	% of Iout	104		132	104		132		
Short circuit current	% of Iout	85		150	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C	
Output rise			Monotonic						
Output rise time	mS		15	50		15	50	Into non-capacitive load	
Output rise time	s		(CxVout) (lim-Io)			(CxVout) (lim-Io)		Into capacitive load	
Turn on overshoot	%			10			10	Into capacitive load	
Overshoot recovery from I/limit	%			10			10	Into capacitive load	
Isolation o/p to gnd	Vdc			500			500		

### Alpha EB Module Specification

		Units	Minimum	Nominal	Maximum			Notes	
<b>General</b>									
Grade				2					
Case dimensions	mm			23					
Module weight	gms			150					
Transformer Turns				CH1 = 1 CH2 = 1					
Power Output	watts			CH1 = 45 CH2 = 45					
MTBF	fpmh			1.34 2.10				Ground benign, 25C, MIL217F Ground benign, 50C, MIL217F	
Operating temperature	deg C	0					+50		
- With derating	deg C	+50					+70	Derating 2.5%/C	
			<b>Channel 1</b>			<b>Channel 2</b>			
			<b>Min</b>	<b>Nom</b>	<b>Max</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>	
<b>Output</b>									
Output Voltage	Volts	4.5	5.0	5.5	4.5	5.0	5.5		
Resolution	V/Tum		0.17			0.17			
Initial setting accuracy	%	-1		+1	-1		+1		
Minimum load	% of lout	None			None				
Temperature coefficient	%/deg C		0.02	0.03		0.02	0.03		
Line regulation	%		0.1	0.5		0.1	0.5		
Load regulation	%		1	2		1	2		
Ripple	%		0.5	1		0.5	1	Switching ripple at 200 KHz	
PARD	%		1	2		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated	
Common mode noise	%			2			2	20 MHz bandwidth, modules non-isolated and earthed	
Transient response time	S		300	500		300	500	50% load change in the region 25% to 100% lout.	
Transient response overshoot	%		5	10		5	10		
Over voltage protection	Volts	6.15		7.0	6.15		7.0		
Output current	Amps			9			9		
Current limit	% of lout	104		132	104		132		
Short circuit current	% of lout	85		150	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C	
Output rise			Monotonic						
Output rise time	mS		15	50		15	50	Into non-capacitive load	
Output rise time	s		(CxVout) (lim-lo)			(CxVout) (lim-lo)		Into capacitive load	
Turn on overshoot	%			10			10	Into capacitive load	
Overshoot recovery from I/limit	%			10			10	Into capacitive load	
Isolation o/p to gnd	Vdc			500			500		

### Alpha EQ Module Specification

		Units	Minimum	Nominal	Maximum			Notes	
<b>General</b>									
Grade				2					
Case dimensions	mm			23					
Module weight	gms			150					
Transformer Turns				CH1 = 1 CH2 = 1					
Power Output	watts			CH1 = 45 CH2 = 45					
MTBF	fpmh			1.25 1.75				Ground benign, 25C, MIL217F Ground benign, 50C, MIL217F	
Operating temperature	deg C	0					+50		
- With derating	deg C	+50					+70	Derating 2.5%/C	
			<b>Channel 1</b>			<b>Channel 2</b>			
			<b>Min</b>	<b>Nom</b>	<b>Max</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>	
<b>Output</b>									
Output Voltage	Volts	4.5	5.0	5.5	2.7	3.3	3.9		
Resolution	V/Tum		0.17			0.3			
Initial setting accuracy	%	-1		+1	-1		+1		
Minimum load	% of lout	None			None				
Temperature coefficient	%/deg C		0.02	0.03		0.02	0.03		
Line regulation	%		0.1	0.5		0.1	0.5		
Load regulation	%		1	2		1	2		
Ripple	%		0.5	1		0.5	1	Switching ripple at 200 KHz	
PARD	%		1	2		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated	
Common mode noise	%			2			2	20 MHz bandwidth, modules non-isolated and earthed	
Transient response time	S		300	500		300	500	50% load change in the region 25% to 100% lout.	
Transient response overshoot	%		5	10		5	10		
Over voltage protection	Volts	6.15		7.0	4.26		4.59		
Output current	Amps			9			9		
Current limit	% of lout	104		132	104		132		
Short circuit current	% of lout	85		150	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C	
Output rise			Monotonic						
Output rise time	mS		15	50		15	50	Into non-capacitive load	
Output rise time	s		(CxVout) (lim-lo)			(CxVout) (lim-lo)		Into capacitive load	
Turn on overshoot	%			10			10	Into capacitive load	
Overshoot recovery from I/limit	%			10			10	Into capacitive load	
Isolation o/p to gnd	Vdc			500			500		

### Alpha F Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		226		
Transformer Turns			2		
Power Output	W		396		
MTBF	fpmh		0.96 1.35		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	9	12	15	at sense terminals
Resolution	V/Turn		0.63		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C			0.03	
Line regulation	%		0	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	Sense not connected
Ripple	%			1	Switching ripple at 200 KHz
PARD	%			2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			4	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	16.8		18.1	
Output current	Amps			33	
Current limit	% of Iout	105		132	
Short circuit current	% of Iout	105		160	
Output rise		Monotonic			
Output rise time	mS		10	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-Iout)		Into capacitive load
Turn on overshoot	%		2	10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha FF Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		226		
Transformer Turns			2		
Power Output	W		396		
MTBF	fpmh		0.96 1.35		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	9	12	15	at sense terminals
Resolution	V/Turn		0.63		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C			0.03	
Line regulation	%		0	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	Sense not connected
Ripple	%			1	Switching ripple at 200 KHz
PARD	%			2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			4	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	16.8		18.1	
Output current	Amps	33.5		34.5	
Current limit	Amps	33.5		34.5	
Short circuit current	% of Iout	33.5		45	
Output rise		Monotonic			
Output rise time	mS		10	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-Iout)		Into capacitive load
Turn on overshoot	%		2	10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha G Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		222		
Transformer Turns			4		
Power Output	W		600		
MTBF	fpmh		0.83 1.12		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	17.5	24	28	at sense terminals
Resolution	V/Turn		1.39		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching ripple at 200 KHz
PARD	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%		1	2	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%		2	10	
Over voltage protection	V	33.46		40	
Output current	Amps			16.6	Vout between 18V and 24.5V, 400W converter
Output current	Amps			14	Vout between 24.5V and 28V, 400W converter
Output current	Amps			25	Vout between 18V and 24.5V, 600W converter
Output current	Amps			21	Vout between 24.5V and 28V, 600W converter
Current limit	Amps			32.5	For 400W converter
Short circuit current	% of Iout			100	For 400W converter
Current limit	% of Iout	105		130	For 600W & 800W converter
Short circuit current	% of Iout	85		150	For 600W & 800W converter
Output rise		Monotonic			
Output rise time	mS		5	50	Into non-capacitive load
Output rise time	mS	$(C \times V_{out}) / (I_{lim} - I_{out})$			Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%		2	10	Into capacitive load
Isolation o/p to gnd	Vdc			500	



### Alpha H Module Specification

	Units	Minimum	Nominal	Maximum				Notes
<b>General</b>								
Grade			2					
Case dimensions	mm		23					
Module weight	gms		145					
Transformer Turns			CH1 = 4 CH2 = 4					
Power Output	watts		CH1 = 120 CH1 = 120					
MTBF	fpmh		1.62 2.30					Ground benign, 25C, MIL217F Ground benign, 50C, MIL217F
Operating temperature	deg C	0		+50				
- With derating	deg C	+50		+70				Derating 2.5%/C
		<b>Channel 1</b>			<b>Channel 2</b>			
		<b>Min</b>	<b>Nom</b>	<b>Max</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>	
<b>Output</b>								
Output Voltage	Volts	18	24	32	18	24	32	
Resolution	V/Tum		1.4			1.4		
Initial setting accuracy	%	-1		+1	-1		+1	
Minimum load	% of lout	None			None			
Temperature coefficient	%/deg C		0.02	0.03		0.02	0.03	
Line regulation	%		0.1	0.5		0.1	0.5	
Load regulation	%		1	2		1	2	
Ripple	%		0.5	1		0.5	1	Switching ripple at 200 KHz
PARD	%		1	2		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			2			2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Transient response time	S			500			500	50% load change in the region 25% to 100% lout.
Transient response overshoot	%		1	2		1	2	
Over voltage protection	Volts	33.4		36.2	33.4		36.2	
Output current	Amps			5 1			5 1	V out <- 29V V out > 29V
Current limit	% of lout	104		132	104 85		132	
Short circuit current	% of lout	85		165			165	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic						
Output rise time	mS			50			50	Into non-capacitive load, min at 5V
Output rise time	s		(CxVout) (lim-lo)			(CxVout) (lim-lo)		Into capacitive load
Turn on overshoot	%		5	10		5	10	Into capacitive load
Overshoot recovery from I/limit	%		5	10		5	10	Into capacitive load
Isolation o/p to gnd	Vdc			500			500	

### Alpha J Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		245		
Transformer Turns			4		Assume 8 turns for ampere turns calculation
Power Output	W		400		
MTBF	fpmh		1.07 1.62		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	36	40	48	at sense terminals
Resolution	V/Turn		1.39		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	Total Volt drop
Minimum load	% lout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%			0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching ripple at 200 KHz
PARD	%			2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			2	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% lout.
Transient response overshoot	%			10	
Over voltage protection	V	51		58	
Output current	Amps			10	derate 0.25A/V above 40V.
Current limit	% of lout	105		130	
Short circuit current	% of lout	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS				Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-lout)		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load (12,500mF)
Isolation o/p to gnd	Vdc			500	

### Alpha K Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		150		
Transformer Turns			4		
Power Output	W		360		
MTBF	fpmh		0.84 1.22		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	18	24	28	at sense terminals
Resolution	V/Turn		1.39		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	Total Volt drop
Minimum load	% lout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching Ripple at 200kHz
PARD	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			2	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% lout.
Transient response overshoot	%			10	
Over voltage protection	V	32.8		35	
Output current	Amps			15	
Current limit	% of lout	104		132	
Short circuit current	% of lout	85		160	Not protected against continuous (> 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		10	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-lout)		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

## Alpha L Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		150		
Transformer Turns			1		
Power Output	W		50		
MTBF	fpmh		1.12 1.63		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	1.8	2.0	3.2	at power terminal (includes remote sense)
Resolution	V/Turn		0.13		
Initial setting accuracy	%	-1		1	
Remote sense	V			0.5	Total Volt drop
Minimum load	% lout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	mV			25	
Load regulation	mV			25	Sense terminals connected
	mV			100	Sense not connected
Ripple	mV			50	Switching ripple at 200Khz
PARD	mV			100	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% lout
Transient response overshoot	%			10	
Over voltage protection	V	4.3		4.73	
Output current	Amps			25	
Current limit	% of lout	104		132	
Short circuit current	% of lout	85		160	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS			10	Into non-capacitive load
Output rise time	mS		$(C \times V_{out}) / (I_{lim} - I_{out})$		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			15	Into capacitive load (12,500uf)
Isolation o/p to and	Vdc			500	

### Alpha M Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		115		
Transformer Turns			2		
Power Output	W		96		
MTBF	fpmh		0.84 1.18		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	5	12	15	at sense terminals
Resolution	V/Turn		1.2		
Initial setting accuracy	mV	120		120	
Remote sense	V			1	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
	%		1	2	Sense not connected
Ripple 10V-15V output	%		0.5	1	Switching ripple at 200 KHz
PARD 10V-15V output	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Ripple 5V-9.9V output	%		1	2	Switching ripple at 200Khz
PARD 5V-9.9V output	%			3	20Mhz bandwidth, modules non-isolated and earthed.
Common mode noise	%			2	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S		350	500	50% load change in the region 25% to 100% Iout
Transient response overshoot	%		5	10	
Over voltage protection	V	16.8		18.1	
Output current	Amps			8	
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		15	50	Into non-capacitive load, min at 5V
Output rise time	mS	(CxVout)/(lim-Iout)			Into capacitive load
Turn on overshoot	%			10	Into capacitive load 12V output
Overshoot recovery from I/limit	%			10	Into capacitive load 12V output
Isolation o/p to gnd	Vdc			500	

### Alpha N Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		115		
Transformer Turns			4		
Power Output	W		120		
MTBF	fpmh		0.78 1.10		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	18	24	31	at sense terminals
Resolution	V/Turn		1.4		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching Ripple at 200kHz.
PARD	%		0.5	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			2	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	50% load change in the region 25% to 100% Iout
Transient response overshoot	%		1	2	
Over voltage protection	V	33.4		36.2	
Output current	Amps			5	Vout < 29V
				1	Vout > 29V
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	85		165	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		15	50	Into non-capacitive load, min at 5V
Output rise time	mS	(CxVout)/(Ilim-Iout)			
					Into capacitive load
Turn on overshoot	%		5	10	Into capacitive load
Overshoot recovery from I/limit	%		5	10	Into capacitive load 12V output
Isolation o/p to gnd	Vdc			500	

### Alpha P Module Specification

	Units	Minimum	Nominal	Maximum				Notes	
<b>General</b>									
Grade			2						
Case dimensions	mm		23						
Module weight	gms		145						
Transformer Turns			CH1 = 2 CH2 = 4						
Power Output	watts		CH1 = 96 CH2 = 120						
MTBF	fpmh		1.64 2.33					Ground benign, 25C, MIL217F Ground benign, 50C, MIL217F	
Operating temperature	deg C	0						+50	
- With derating	deg C	+50						+70 Derating 2.5%/C	
		<b>Channel 1</b>			<b>Channel 2</b>				
		<b>Min</b>	<b>Nom</b>	<b>Max</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>		
<b>Output</b>									
Output Voltage	Volts	5	12	16	18	24	29		
Resolution	V/Turn		1.2			1.4			
Initial setting accuracy	%	-1		+1	-1		+1		
Minimum load	% of lout	None			None				
Temperature coefficient	%/deg C		0.02	0.03		0.02	0.03		
Line regulation	%		0.1	0.5		0.1	0.5		
Load regulation	%		1	2		1	2		
Ripple 10-15V output	%		0.5	1		N/A		Switching ripple at 200 KHz	
PARD 10V-15V output	%			2		N/A		20 MHz bandwidth, differential mode, modules isolated or non-isolated	
Ripple 5V-9.9V output	%		1	2		N/A		Switching ripple at 200 KHz	
PARD 5V-9.9V output	%			3		N/A		20 MHz bandwidth, differential mode, modules isolated or non-isolated	
Ripple 18V-29V output	%		N/A			0.5	1	Switching ripple at 200KHz	
PARD 18V-29V output	%		N/A			0.5	2	20MHz Bandwidth, differential mode, modules isolated or non-isolated	
Common mode noise	%			2			2	20MHz bandwidth, modules non-isolated and earthed.	
Transient response time	S			500			500	50% load change in the region 25% to 100% lout.	
Transient response overshoot	%		5	10		1	2		
Over voltage protection	Volts	16.8		18.1	33.4		36.2		
Output current	Amps			8			5		
Current limit	% of lout	104		132	104		132		
Short circuit current	% of lout	85		150	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50CC	
Output rise			Monotonic						
Output rise time	mS		15	50		15	50	Into non-capacitive load	
Output rise time	s		(CxVout) (lim-lo)			(CxVout) (lim-lo)		Into capacitive load	
Turn on overshoot	%			10			10	Into capacitive load	
Overshoot recovery from I/limit	%			10			10	Into capacitive load	
Isolation o/p to gnd	Vdc			500			500		

### Alpha Q Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		145		
Transformer Turns			1		
Power Output	W		82.5		
MTBF	fpmh		0.55 0.78		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	2.7	3.3	3.9	at power terminal (includes remote sense)
Resolution	V/Turn		0.3		
Initial setting accuracy	%	-1		1	
Remote sense	V			0.5	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching ripple at 200Khz
PARD	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			4	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S		150	500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout
Transient response overshoot	%			10	
Over voltage protection	V	4.26		4.59	
Output current	Amps			25	
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS			50	Into non-capacitive load
Output rise time	mS		$(C \times V_{out}) / (I_{lim} - I_{out})$		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load (12,500uf)
Isolation o/p to gnd	Vdc			500	



### Alpha R Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		239		
Transformer Turns			1		
Power Output	W		198		
MTBF	fpmh		0.82 1.27		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	2.7	3.3	3.9	at power terminals (includes remote sense)
Resolution	V/Turn		0.16		
Initial setting accuracy	mV	-1		1	
Remote sense	V			0.5	Total Volt drop
Minimum load	% lout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching ripple at 200Khz
PARD	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			4.0	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% lout
Transient response overshoot	%			10	
Over voltage protection	V	4.26		4.59	
Output current	Amps			60	
Current limit	% of lout	105		130	
Short circuit current	% of lout	85		150	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		5	50	Into non-capacitive load
Output rise time	mS	(CxVout)/(lim-lout)			Into capacitive load
Turn on overshoot	%			10	NB Sense must be connected to limit overshoot with purely resistive loads
Overshoot recovery from I/limit	%			10	Into capacitive load (12,500uf)
Isolation o/p to gnd	Vdc			500	

### Alpha S Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		283		
Transformer Turns			1		
Power Output	W		425		
MTBF	fpmh		1.42 2.32		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	2.5	5	5.2	at sense terminals
Initial setting accuracy	mV	-1		1	
Remote sense	V			0.5	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%			0.5	
Load regulation	mV			50	Sense terminals connected
Ripple	%			1	Switching ripple at 200Khz
PARD	%			2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			4.0	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S			1000	Recovery to within 1%, 50% load change in the region 25% to 100% Iout
Transient response overshoot	%			10	
Over voltage protection	V	6.26		7.0	
Output current	Amps			85	
Current limit	% of Iout	105		130	
Short circuit current	% of Iout	90		150	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS			50	
Output rise time	mS	$(C \times V_{out}) / (I_{lim} - I_{out})$			Into capacitive load
Turn on overshoot	%			10	NB Sense must be connected to limit overshoot with purely resistive loads
Overshoot recovery from I/limit	%			10	Into capacitive load (12,500uf)
Isolation o/p to gnd	Vdc			500	

### Alpha T Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		46		
Module weight	g		239		
Transformer Turns			1		
Power Output	W				
MTBF	fpmh		1.36 1.85		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	1.8	2.0	3.2	at power terminals (includes remote sense)
Resolution	V/Turn		0.13		
Initial setting accuracy	mV	-1		1	
Remote sense	V			0.5	Total Volt drop
Minimum load	% lout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	mV			25	
Load regulation	%		1	25	Sense terminals not connected
Ripple	mV			50	Switching ripple at 200Khz
PARD	mV			100	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			2.0	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% lout
Transient response overshoot	%			10	
Over voltage protection	V	4.3		4.8	
Output current	Amps			60	
Current limit	% of lout	104		132	
Short circuit current	% of lout	85		160	Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		5	10	Into non-capacitive load
Output rise time	mS	(CxVout)/(lim-lout)			Into capacitive load
Turn on overshoot	%			10	NB Sense must be connected to limit overshoot with purely resistive loads
Overshoot recovery from I/limit	V			0.8	Into capacitive load (12,500uf)
Isolation o/p to gnd	Vdc			500	

## Alpha U Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		133		
Transformer Turns			3		
Power Output	W		256		
MTBF	fpmh		1.06 1.61		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	10	16	20	at sense terminals
Resolution	V/Turn		1.0		
Initial setting accuracy	%	-1		1	
Remote sense	V			1	
Minimum load	% lout	None			Total Volt drop
Temperature coefficient	%/deg C			0.03	
Line regulation	%		0.02	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		0.1	2	Sense not connected
Ripple	%		1	1	Switching Ripple at 200kHz
PARD	%		0.5	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%		1	2	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S			500	Recovery to within 1%, 50% load change in the region 25% to 100% lout.
Transient response overshoot	%			10	
Over voltage protection	V	21.9		24.3	
Output current	Amps			16	
Current limit	% of lout	104		132	
Short circuit current	% of lout	85		160	
					Not protected against continuous (> 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		10	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-lout)		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha W Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		130		
Transformer Turns			1		
Power Output	W		75		
MTBF	fpmh		1.09 1.52		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	4.5	5.0	5.5	at sense terminals
Resolution	V/Turn		0.15		
Initial setting accuracy	%	-1		+1	
Remote sense	V			0.5	Total Volt drop
Minimum load	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
Load regulation	%		1	2	sense not connected
Ripple	%			2	Switching ripple at 200KHz
PARD	%			3	20 MHz bandwidth, differential mode, modules isolated or non-isolated.
Common mode noise	%			3	20 MHz bandwidth, modules non-isolated and earthed.
Transient response time	S	200		500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	6.16		6.76	
Output current	Amps			15	Vout <-12V
Current limit	% Iout	104		132	
Short circuit current	% Iout	85		160	Not protected against continuous (greater than 2 mins) short circuit above 50C 100% = 16A
Output rise		Monotonic			
Output rise time	mS		5	10	Into non-capacitive load
Output rise time	mS		$(C \times V_{out}) / (I_{lim} - I_{out})$		Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%			10	Into capacitive load
Isolation o/p to gnd	Vdc			500	

### Alpha Z Module Specification

	Units	Minimum	Nominal	Maximum	Notes
<b>General</b>					
Grade			2		
Case dimensions	mm		23		
Module weight	g		145		
Transformer Turns			1		
Power Output	W		125		
MTBF	fpmh		0.90 1.31		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Operating Temperature	deg C	0		50	
- With derating	deg C	50		70	Derating 2.5%/C
<b>Output</b>					
Output voltage	V	4.5		5.5	at sense terminals
Resolution	V/Turn		0.17		
Initial setting accuracy	mV	-1		1	
Remote sense	V			0.5	
Minimum load	% Iout	None			Total Volt drop
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	%		0.1	0.5	Sense terminals connected
	%		1	2	Sense not connected
Ripple	%		0.5	1	Switching ripple at 200Khz
PARD	%		1	2	20 MHz bandwidth, differential mode, modules isolated or non-isolated
Common mode noise	%			4	20Mhz bandwidth, modules non-isolated and earthed.
Transient response time	S		300	500	Recovery to within 1%, 50% load change in the region 25% to 100% Iout
Transient response overshoot	%		5	10	
Over voltage protection	V	5.73		5.48	
Output current	Amps			25	
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	85		140	
					Not protected against continuous (greater than 2 mins) short circuit above 50C
Output rise		Monotonic			
Output rise time	mS		5	50	
Output rise time	mS	(CxVout)/(lim-Iout)			Into capacitive load
Turn on overshoot	%			10	Into capacitive load
Overshoot recovery from I/limit	%		5	10	Into capacitive load (12,500uf)
Isolation o/p to gnd	Vdc			500	