Alpha 400W Converter Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
Case Height	mm		63	63.5	
Case Width	mm		126.5	127	
Case Length	mm		279	279.5	
Weight	Kg		1.20		No modules, includes RFI etc.
Cooling			60mm fan		Standard airflow = Air inlet at 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
Input					
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	mA			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	
Output					
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	mS	15			or better, load and configuration dependent
Start up time	mS		500	1000	
Protection					
Thermal trip	deg C	90		110	Sensing forward converter only
Forward converter I/limit	A/T	80			
Environmental					
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				
Emission & Immunity					
Conducted Emission (230VAC)	EN55022 Curve B EN55022 Curve A				Standard filter ML & LL filters (RL & TL filters do not meet curve A)
Immunity	EN61000-4-2,3,4,5,6 level 3				Meets case A
Isolation Voltages					
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
General					
Case Height	mm		63	63.5	
Case Width	mm		126.5	127	
Case Length	mm		323	323.5	
Weight	Kg		1.56		No modules, includes RFI etc.
Cooling			60mm fan		Standard airflow = Air inlet at fan
Operating Frequency					
- Boost Converter	KHz	192	197	202	
- Forward Converter	KHz	192	197	202	Forward Converter & Boost Converter Synchronised
MTBF	fpmh		9.83 13.85		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Input					
AC input voltage	V	90		255	
Input frequency	Hz	47		63	
Power factor		0.9		0.99	Load dependent, min at 230V i/p, max at 110V i/p
Earth leakage	mA			1.1 0.24 0.11 0.05	Standard filter LL filter RL filter TL filter
Inrush current	A		20	50	Input voltage dependent, (253V i/p)
Minimum operating voltage	V			85	
Start up voltage	V			85	
Output					
Power output	W			600 475	Standard airflow (max 120 Ampere turns) Reverse airflow (max 100 Ampere turns)
Efficiency, 600W output					
90V	%	68	70		Configuration dependent
230V	%	70	75		Configuration dependent
Hold up, 600W output	mS	15			or better, load and configuration dependent
Start up time	mS		300	500	
Protection					
Thermal trip	deg C	90		110	Sensing forward converter and/or PFC converter
Forward converter I/limit	A/T	120			
Environmental					
Operating temperature	deg C	0		50	
- with derating	deg C	50		70	Derate 2.5%/C
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				
Emission & Immunity					
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
Isolation Voltages					
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
General					
Case Height	mm		63	63.5	
Case WidthC	mm		175.5	176	
ase Length	mm		279	279.5	
Weight	Kg		1.9		No modules, includes RFI etc.
Cooling			60mm fan(s)		Standard Airflow = Air inlet at fan
Operating Frequency					
- Boost Converter	KHz	98	100	102	
- Forward Converter	KHz	196	200	204	Forward Converter & Boost Converter Synchronised
MTBF	fpmh		14.01 23.15		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Input					
AC input voltage	V	85		264	
Input frequency	Hz	47		63	
Power factor				0.99	Load dependent, min at 230V i/p, max at 110V i/p
Earth leakage	mA			1.0 0.21 0.1 0.05	Standard filter LL filter RL filter TL filter
Inrush current	A		20	50	Input voltage dependent, results are for 253V i/p
Minimum operating voltage	V			85	
Start up voltage	V			85	
Output					
Power output	W			1000	Continuous Vin >=90V a/c, max ambient = 45C
				1000	Continuous Vin >=100V a/c. Max 30 seconds for 85<=Vin <150V a/c, duty <=0.25
				800	Continuous Vin >=85V a/c
Efficiency					
1000W, 150V a/c	%	70	72		Configuration dependent
800W, 85V a/c	%	65	68		Configuration dependent
Hold up, 1000W output	mS	13			
800W output		16			
Start up time	mS		500	1000	
Protection					
Thermal trip	deg C	90		110	Sensing forward converter and PFC converter
Forward converter I/limit	A/T	2x120			Max 200AT total
Environmental					
Operating temperature	deg C	0		50	
- with derating	deg C	50		65	Derate 3.3%/C
Start-up temperature	deg C	-35		+65	
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				
Emission & Immunity					
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
Isolation Voltages					
Output to output	VDC			500	
Input to output	KVrmS			3	
Input to ground	KVrmS			1.5	

Alpha 1500W Converter Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
Case Height	mm		63	63.5	
Case WidthC	mm		199.75	200.25	
ase Length	mm		279	279.5	
Weight	Kg		2.04		No modules, includes RFI etc.
Cooling			60mm fan(s)		Standard Airflow = Air inlet at fan
Operating Frequency					
- Boost Converter	KHz	98	100	102	
- Forward Converter	KHz	196	200	204	Forward Converter & Boost Converter Synchronised
MTBF	fpmh		14.27 23.66		Ground benign 25°C, MIL217F Ground benign 50°C, MIL217F
Input					
AC input voltage	V	85		264	
Input frequency	Hz	47		63	
Power factor				0.99	Load dependent, min at 230V i/p, max at 110V i/p
Earth leakage	mA			1.0 0.21 0.1 0.05	Standard filter LL filter RL filter TL filter
Inrush current	A		20	50	Input voltage dependent, results are for 253V i/p
Minimum operating voltage	V			85	
Start up voltage	V			85	
Output					
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					
1500W, 150V a/c	%				Configuration dependent
800W, 85V a/c	%	65	68		Configuration dependent
Hold up, 1500W output	mS	8			
800W output		16			
Start up time	mS		500	1000	
Protection					
Thermal trip	deg C	90		110	Sensing forward converter and PFC converter
Forward converter I/limit	A/T	2x138			Max 260AT total
Environmental					
Operating temperature	deg C	0		50	
- with derating	deg C	50		65	Derate 3.3%/C
Start-up temperature	deg C	-35		+65	
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				
Emission & Immunity					
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
Isolation Voltages					
Output to output	VDC			500	
Input to output	KVrmS			3	
Input to ground	KVrmS			1.5	

Alpha A Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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	% Iout			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% Iout.
Transient response overshoot	V		5	10	
Over voltage protection	Amps	6.26		7	
Output current	% Iout			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
General					
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
Output					
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
General					
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
Output					
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	% Iout			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% Iout.
Transient response overshoot	V		5	10	
Over voltage protection	Amps	6		7	
Output current	% Iout			25	
Current limit	% Iout	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		(CxVout)/(lim-Iout)		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
General					
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
Output					
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	
					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		(CxVout)/(lim-Iout)		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
General					
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
Output					
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
					Not protected against continuous (greater than 2 mins) short circuit above 50C 100% = 16A
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 D Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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
General					
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

		Channel 1			Channel 2			
		Min	Nom	Max	Min	Nom	Max	
Output								
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-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 EB Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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

		Channel 1			Channel 2			
		Min	Nom	Max	Min	Nom	Max	
Output								
Output Voltage	Volts	4.5	5.0	5.5	4.5	5.0	5.5	
Resolution	V/Turn		0.17			0.17		
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	%		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% Iout.
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 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-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
General					
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

		Channel 1			Channel 2			
		Min	**Nom**	**Max**	**Min**	**Nom**	**Max**	
Output								
Output Voltage	Volts	4.5	5.0	5.5	2.7	3.3	3.9	
Resolution	V/Turn		0.17			0.3		
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	%		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% Iout.
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 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 F Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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
General					
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
Output					
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
General					
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
Output					
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		(CxVout)/(lim-Iout)		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
General					
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

		Channel 1			Channel 2			
		Min	Nom	Max	Min	Nom	Max	
Output								
Output Voltage	Volts	18	24	32	18	24	32	
Resolution	V/Turn		1.4			1.4		
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	%		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% Iout.
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 Iout	104		132	104		132	
Short circuit current	% of Iout	85		165	85		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
General					
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
Output					
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	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%			0.5	
Load regulation	% %		0.1 1	0.5 2	Sense terminals connected 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% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	51		58	
Output current	Amps			10	derate 0.25A/V above 40V.
Current limit	% of Iout	105		130	
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				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 (12,500mF)
Isolation o/p to gnd	Vdc			500	

Alpha K Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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	% 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 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% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	32.8		35	
Output current	Amps			15	
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 L Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	mV			25	
Load regulation	mV mV			25 100	Sense terminals connected 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% Iout
Transient response overshoot	%			10	
Over voltage protection	V	4.3		4.73	
Output current	Amps			25	
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	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		(CxVout)/(lim-Iout)		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 gnd	Vdc			500	

Alpha M Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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 1	0.5 2	Sense terminals connected 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
General					
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
Output					
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 1	0.5 2	Sense terminals connected 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 1	Vout <- 29V 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)/(lim-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
General					
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

		Channel 1			Channel 2			
		Min	Nom	Max	Min	Nom	Max	
Output								
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 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		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% Iout.
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 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 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
General					
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
Output					
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 1	0.5 2	Sense terminals connected 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		(CxVout)/(lim-Iout)		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
General					
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
Output					
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	% Iout	None			
Temperature coefficient	%/deg C		0.02	0.03	
Line regulation	%		0.1	0.5	
Load regulation	% %		0.1 1	0.5 2	Sense terminals connected 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% Iout
Transient response overshoot	%			10	
Over voltage protection	V	4.26		4.59	
Output current	Amps			60	
Current limit	% of Iout	105		130	
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		5	50	Into non-capacitive load
Output rise time	mS		(CxVout)/(lim-Iout)		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
General					
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
Output					
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		(CxVout)/(lim-Iout)		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
General					
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
Output					
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	% Iout	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% Iout
Transient response overshoot	%			10	
Over voltage protection	V	4.3		4.8	
Output current	Amps			60	
Current limit	% of Iout	104		132	
Short circuit current	% of Iout	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-Iout)		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
General					
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
Output					
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	% 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 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% Iout.
Transient response overshoot	%			10	
Over voltage protection	V	21.9		24.3	
Output current	Amps			16	
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 W Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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		(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 Z Module Specification

	Units	Minimum	Nominal	Maximum	Notes
General					
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
Output					
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 1	0.5 2	Sense terminals connected 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	