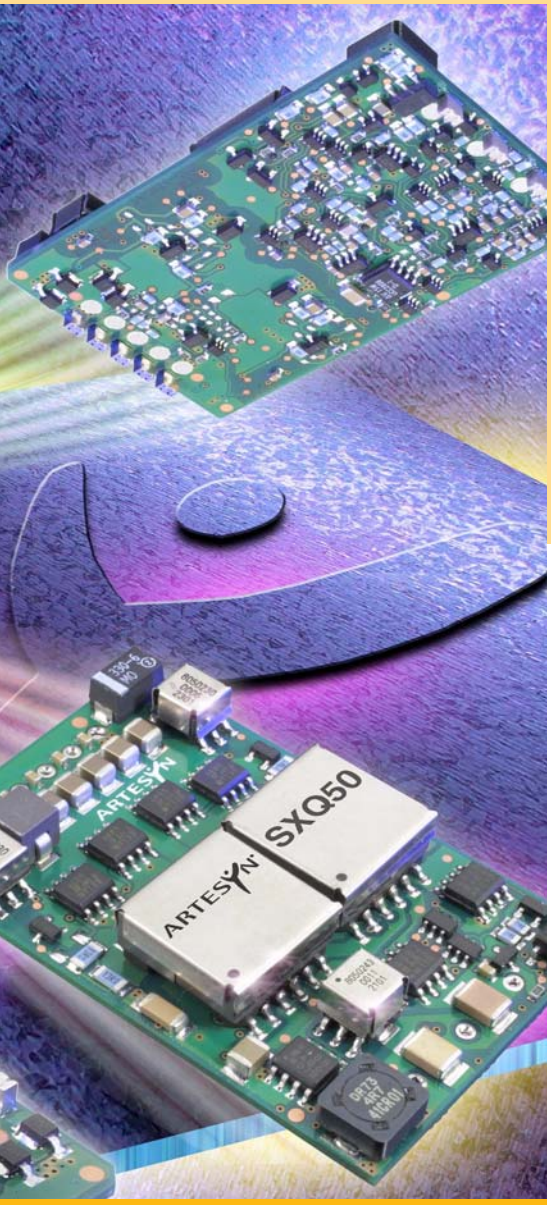
SXQ50 48V SERIES

Single output

NOTICE SOME MODELS LISTED IN THIS DOCUMENT HAVE BEEN DISCONTINUED

Please contact your local Artesyn representative or use the on line model number search tool at http://www.artesyn.com/powergroup/products.htm to find a suitable alternative.



- Surface mount quarter-brick format
- High efficiency topology, typically 90% at 5V, 86.5% at 1.8V
- Low profile, open-frame package
- Wide ambient temperature range, -40°C to +90°C
- 90% to 110% output trim
- No minimum load
- Overvoltage protection
- Remote ON/OFF

The SXQ50 series are surface mount high-efficiency, isolated DC/DC converters in a standard quarter-brick format and a height of just 0.4 inches. The converters provide up to 50 Watts of output power and are capable of delivering very high current at low voltages. Patent pending technology ensures unprecedented levels of performance from a 50W surface-mount DC/DC converter. The first four models in the series feature an input voltage range of 33 to 75VDC and are available with output voltages of 5.0V, 3.3V, 2.5V or 1.8V. The output voltage of each model is adjustable from 90% to 110% of its nominal value. Typical efficiencies are 90% for the 5V model, 89% for the 3.3V, 88% for the 2.5V and 86.5% for the 1.8V. All SXQ50 series converters have a remote on/off capability, and are fully protected against over-voltage, over-temperature and short-circuit conditions. Featuring full international safety approval, including EN60950 (TÜV Product Service) and UL/cUL 60950, SXQ50 series converters reduce compliance costs and time to market.

[2 YEAR WARRANTY]

c US TÜV

ARTESYN® TECHNOLOGIES

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Stresses in excess of the maximum ratings can cause permanent damage to the device. Operation of the device is not implied at these or any other conditions in excess of those given in the specification. Exposure to absolute maximum ratings can adversely affect device reliability.

Absolute Maximum Ratings

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input voltage - continuous	$V_{in\ (cont)}$	-0.3		75	V DC	$V_{in(+)} - V_{in(-)}$
Input voltage - peak/surge	$V_{in\ (peak)}$	-0.3		80	V DC	2s max, non-repetitive
Input voltage - remote pin	$V_{rem\ (peak)}$	-0.3		75	V DC	Peaks of any duration
Operating temperature	T_{op}	-40		90	˚C	Ambient temperature
Storage temperature	$T_{storage}$	-40		125	˚C	
Output power (5V)	Pout (max)			50	W	
Output power (3.3V)	Pout (max)			50	W	
Output power (2.5V)	$P_{out\ (max)}$			50	W	
Output power (1.8V)	Pout (max)			36	W	

All specifications are typical at nominal input Vin = 48V, full load under any resistive load combination at 25˚C unless otherwise specified.

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input voltage - operating	$V_{in\ (oper)}$	33	48	75	V DC	
Input current - no load	I_{in}		50	60	mADC	$V_{in\ (min)}$, enabled
Input current - Quiescent	$I_{in\ (off)}$		20	25	mADC	Converter disabled
Input voltage variation	dv/dt			5	V/ms	Complies with ETS300 132 Part 4.4
Inrush current (i^2t)	I_{inrush}		0.02		A^2s	Complies with ETS300 132 Part 4.7, with recommended LISN and recommended external bypass capacitor
Inrush current ratio	I_t/I_m		12			Complies with ETS300 132 Part 4.7, with recommended LISN and recommended external bypass capacitor
Input ripple rejection			50		dB	Frequency <1 kHz
Input fuse				3.15	A	Slow Blow/Antisurge HRC recommended 200V Rating

Turn On/Off

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input voltage - turn on	$V_{in\ (on)}$		32.5	34	V DC	
Input voltage - turn off	$V_{in\ (off)}$	29.0	30.5		V DC	
Hysteresis			2.0		V DC	
Turn on delay - enabled, then power applied	T_{delay} (power)		10	12	msec	With the Remote ON/OFF signal asserted, time from when V_{in} > V_{in} (oper) until Vout is within total regulation band
Turn on delay - power applied, then enabled	T_{delay} (enable)		3	6	msec	With $V_{in} = V_{in\ (nom)}$, then Remote ON/OFF asserted, time until Vo is within total error band
Rise time	T_{rise}		2	4	msec	From 10% to 90%, full resistive load, no external capacitance

Signal Electrical Interface

Characteristic - Signal Name	Symbol	Min	Typ	Max	Units	Notes and Conditions
At Remote ON/OFF pin Open collector or equivalent compatible						**See Notes 1 and 2**
Control pin open circuit voltage	V_{ih}		4.5	5	V	I_{ih} = 0µA; open circuit voltage
High level input voltage	V_{ih}	4		75	V	Converter guaranteed ON when control pin is greater than V_{ih} (min)
High level input current	I_{ih}			10	µA	Current flowing into control pin when pin is pulled high (max. at V_{ih} = 75V)
Acceptable high level leakage current	I_{ih} (leakage)			-10	µA	Acceptable leakage current from signal pin into the open collector driver (neg = from converter)
Low level input voltage	V_{il}	-0.3		1.2	V	Converter guaranteed off when control pin is less than V_{il} (max)
Low level input current	I_{il}		-0.2	-0.4	mA	V_{il} = 0.4 V
Low level input current	I_{il} (max)		-0.2	-0.4	mA	V_{il} = 0.0 V

Common Protection/Control

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overtemperature shutdown threshold	Tots	118	123	128	°C	non-latching shutdown protection
Overtemperature shutdown - restart hysteresis			5		°C	

Reliability and Service Life

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Mean time between failure	MTBF	380,000			Hours	MIL-HDBK-217F Parts Count V_{in} = $V_{in\ (nom)}$; I_{out} = $I_{out\ (max)}$; ambient 40°C; ground benign environment
Mean time between failure	MTBF	1,970,000			Hours	Demonstrated
HALT testing						Completed

Isolation

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input to output test voltage				1500	V DC	Test duration 1s
Input to output capacitance			2000		pF	
Input to output resistance		100			MΩ	Measured with 500 V DC
Input to output insulation system			Operational			

Other Specifications

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Switching frequency	f_{sw}		350		kHz	Fixed frequency (all models)
Weight			25		g	Statistical weight data available

Environmental Requirements

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Thermal performance		-40		90	˚C	Ambient temperature
Altitude				3000	m	Derate total max. output current by 20%
				9864	ft	Derate total max. output current by 20%
				10,000	m	Derate total max. output current by 50%
				32821	ft	Derate total max. output current by 50%

Type	Parameter	Reference	Test Level	Notes and Conditions
Air temperature	Low	IEC 68-2-1	-40˚C	All characteristics and parameters
	High	IEC 68-2-2	+70˚C	extracted from ETS 300 019
	Change	IEC 68-2-14	-40˚C to +70˚C	classes 3.1, 3.2, 3.3, 3.4 and 3.5
				$T_{max.}$ = +70˚C for T3.4
Relative humidity	Low		10%	
	High	IEC 68-2-56	100%	
	Condensation	IEC 68-2-30	90 to 100%	
Vibration IEC class 3M5	Freq. velocity	IEC 68-2-6	5-9Hz 5mm/s	
	Freq. acceleration	IEC 68-2-6	9-200Hz 1g	
Shocks IEC class 3M5	Acceleration	IEC 68-2-29	10g	

Referenced ETSI standards:

ETS 300 019: Environmental conditions and environmental tests for telecommunications equipment
ETS 300 019: Part 1-3 (1997) Classification of environmental conditions stationary use at weather protected locations
ETS 300 019: Part 2-3 (1997) Specification of environmental tests stationary use at weather protected locations

EMC
Electromagnetic Compatibility

Phenomenon	Port	Standard	Test level	Criteria	Notes and conditions
Immunity:					
ESD	Enclosure	EN61000-4-2	6kV contact 8kV air		As per ETS 300 386-1 Table 5
EFT	DC power	EN61000-4-4	2kV 4kV		As per ETS 300 386-1 Table 5
	Signal	EN61000-4-4	1kV 2kV		As per ETS 300 386-1 Table 5 As per ETS 300 386-1 Table 5
Radiated field	Enclosure	EN61000-4-3	10V/m		As per ETS 300 386-1 Table 5
Conducted	DC power	EN61000-4-6	10V		As per ETS 300 386-1 Table 5
	Signal	EN61000-4-6	10V		Signal Line assumed <3m long
Input transients	DC power	ETS 300 132 ETR 283			

EMC
Electromagnetic Compatibility

Phenomenon	Port	Standard	Test level	Criteria	Notes and conditions
Emission:					
Conducted	DC power	EN55022	Level A		With recommended external filter for compliance bandwidth 20 kHz to 30 MHz, as per ETS 300 386-1. See Application Note 120
		EN55022	Level B		With recommended external filter for compliance bandwidth 20 kHz to 30 MHz, as per ETS 300 386-1. See Application Note 120
	Signal	EN55022			Bandwidth 150kHz to 30MHz, as per ETS 300 386-1
Radiated		EN55022	Level B		Bandwidth 30 MHz to 1 GHz, as per ETS 300 386-1

Performance criteria:

NP: Normal Performance: EUT shall withstand applied test and operate within relevant limits as specified without damage
RP: Reduced Performance: EUT shall withstand applied test. Reduced performance is permitted within specified limits, resumption to normal performance shall occur at the cessation of the test
LFS: Loss of Function (self recovery): EUT shall withstand applied test without damage, temporary loss of function permitted during test. Unit will self recover to normal performance after test

Referenced ETSI standards:

ETS 300 386-1 table 5 (1997): Public telecommunication network equipment, EMC requirements
ETS 300 132-2 (1996): Power supply interface at the input to telecommunication equipment: Part 2 operated by direct current (DC)
ETR 283 (1997): Transient voltages at interface A on telecommunication direct current (DC) power distributions

Standards Compliance List

Characteristic	
IEC60950 UL/cUL 60950 TÜV Product Service	3rd edition

Safety Agency Approvals

Standard	Category
IEC60950	EN60950
UL/cUL CAN/CSA 22.2 No. 60950-00 : UL60950	File No. E174104
TÜV Product Service	Certificate No. B 01 11 38572 029

Material Ratings

Characteristic - Signal Name	Notes and Conditions
Flammability rating	UL94V-0
Material type	FR4 PCB

Model Numbers

Model Number	Input Voltage	Output Voltage	Overvoltage Protection	Output Current (Max.)	Typical Efficiency
SXQ50-48S1V8	33-75 VDC	1.8V	2.3V	20A	86.5%
SXQ50-48S2V5	33-75 VDC	2.5V	3.0V	20A	88.0%
SXQ50-48S3V3	33-75 VDC	3.3V	3.9V	15A	89.0%
SXQ50-48S05	33-75 VDC	5V	6.0V	10A	90.0%

SXQ50-48S1V8 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	I_{in}		0.867	0.877	A DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$
Input current - maximum	$I_{in\ (max)}$		1.28	1.3	A DC	$V_{in} = V_{in\ (min)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$,
Reflected ripple current	$I_{in\ (refl)}$		35 110		mA RMS mA pk-pk	$I_{out} = I_{out\ (max)}$, measured with external filter. See Application Note 120
Input capacitance - Internal filter	C_{input}		3.0		µF	Internal to converter
Input capacitance - External bypass	C_{bypass}		0		µF	No external bypass capacitor required for operation

SXQ50-48S1V8 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vo (nom)	1.764	1.80	1.836	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$
Total error band on V_{out}		1.728		1.872	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$ Worst case condition over line, load, temperature and life
Line regulation				0.3	%	$I_{out} = I_{out\ (nom)}$, $V_{in\ (min)}$ to $V_{in\ (max)}$
Load regulation				0.3	%	$V_{in} = V_{in\ (nom)}$, $I_{out\ (min)}$ to $I_{out\ (max)}$
Temperature regulation			0.002	0.02	±%/°C	$V_{in} = V_{in\ (nom)}$, $I_{out} = I_{out\ (max)}$
Output current continuous	I_{out}	0		20	A DC	
Output current - short circuit	I_{sc}		24		A rms	I_o with 20mΩ short
Output voltage - noise	V_{p-p} V_{rms}			120 30	mV pk-pk mV rms	Measurement bandwidth 20 MHz See Application Note 120 for test set-up

SXQ50-48S1V8 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	$V_{dynamic/Vo\ (nom)}$		5		%	Peak deviation for 50% to 75% step load, di/dt = 100mA/µsec
Load transient response - recovery	$T_{recovery}$		200		µsec	Settling time to within 1% of output set point voltage for 50% to 75% load step
External load capacitance	C_{ext}	0		5,000	µF	Higher load capacitance values may be possible. Contact Artesyn Technologies for details

SXQ50-48S1V8 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	V_{ov}	2.07	2.16	2.34	V DC	Non-latching. Refer to Application Note 120 for details
Overcurrent limit inception	I_{oc}		24		A DC	V_o = 90% of V_o (nom)
Output voltage trim range				110	%	Trim up (% of $V_{o\ nom}$)
		90			%	Trim down (% of $V_{o\ nom}$) See Application Note 120 for details of trim equations and trim curves
Output Remote Sense Range				10	%	This is inclusive of the output trim range. If 6% trim-up is used, for example, then only 4% output sense is available
Open sense voltage		2.07	2.16	2.34	V DC	

SXQ50-48S1V8 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	85.5	86.5		%	I_{out} = 100% $I_{out\ (max)}$, $V_{in} = V_{in\ (nom)}$
Efficiency	η	84.5	85.5		%	I_{out} = 50% $I_{out\ (max)}$, $V_{in} = V_{in\ (nom)}$

SXQ50-48S2V5 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	I_{in}		1.18	1.2	A DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$
Input current - maximum	$I_{in\ (max.)}$		1.72	1.73	A DC	$V_{in} = V_{in\ (min)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$,
Reflected ripple current	$I_{in\ (refl)}$		37 120		mA RMS mA pk-pk	$I_{out} = I_{out\ (max)}$, measured with external filter. See Application Note 120
Input capacitance - Internal filter	C_{input}		3.0		µF	Internal to converter
Input capacitance - External bypass	C_{bypass}		0		µF	No external bypass capacitor required for operation

SXQ50-48S2V5 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vo (nom)	2.45	2.50	2.55	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$
Total error band on V_{out}		2.4		2.6	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$ Worst case condition over line, load, temperature and life
Line regulation				0.3	%	$I_{out} = I_{out\ (nom)}$, $V_{in\ (min)}$ to $V_{in\ (max)}$
Load regulation				0.3	%	$V_{in} = V_{in\ (nom)}$, $I_{out\ (min)}$ to $I_{out\ (max)}$
Temperature regulation			0.002	0.02	±%/°C	$V_{in} = V_{in\ (nom)}$, $I_{out} = I_{out\ (max)}$
Output current continuous	I_{out}	0		20	A DC	
Output current - short circuit	I_{sc}		24		A rms	I_o with 20mΩ short
Output voltage - noise	V_{p-p} V_{rms}			120 30	mV pk-pk mV rms	Measurement bandwidth 20 MHz See Application Note 120 for test set-up

SXQ50-48S2V5 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	$V_{dynamic}$/ Vo (nom)		5		%	Peak deviation for 50% to 75% step load, di/dt = 100mA/µsec
Load transient response - recovery	$T_{recovery}$		200		µsec	Settling time to within 1% of output set point voltage for 50% to 75% load step
External load capacitance	C_{ext}	0		5,000	µF	Higher load capacitance values may be possible. Contact Artesyn Technologies for details

SXQ50-48S2V5 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	V_{ov}	2.875	3.0	3.25	V DC	Non-latching. See Application Note 120 for details
Overcurrent limit inception	I_{oc}		24		A DC	V_o = 90% of V_o (nom)
Output voltage trim range				110	%	Trim up (% of $V_{o\ nom}$) Note that the maximum output power is still 50W. Derate the maximum output current accordingly
		90			%	Trim down (% of $V_{o\ nom}$) See Application Note 120 for details of trim equations and trim curves.
Output remote sense range				10	%	This is inclusive of the output trim range. If 6% trim-up is used, for example, then only 4% output sense is available. The output current must also be derated to ensure that the maximum output power remains 50W
Open sense voltage		2.875	3.0	3.25	V DC	

SXQ50-48S2V5 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	87	88		%	I_{out} = 100% Iout (max), V_{in} = V_{in} (nom)
Efficiency	η	87	88		%	I_{out} = 50% I_{out} (max), V_{in} = V_{in} (nom)

SXQ50-48S3V3 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	I_{in}		1.16	1.17	A DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$
Input current - maximum	$I_{in\ (max.)}$		1.7	1.77	A DC	$V_{in} = V_{in\ (min)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$,
Reflected ripple current	$I_{in\ (refl)}$		37 120		mA RMS mA pk-pk	$I_{out} = I_{out\ (max)}$, measured with external filter. See Application Note 120
Input capacitance - Internal filter	C_{input}		3.0		µF	Internal to converter
Input capacitance - External bypass	C_{bypass}		0		µF	No external bypass capacitor required for operation

SXQ50-48S3V3 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vo (nom)	3.234	3.30	3.366	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$
Total error band on V_{out}		3.168		3.432	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$ Worst case condition over line, load, temperature and life
Line regulation				0.3	%	$I_{out} = I_{out\ (nom)}$, $V_{in\ (min)}$ to $V_{in\ (max)}$
Load regulation				0.3	%	$V_{in} = V_{in\ (nom)}$, $I_{out\ (min)}$ to $I_{out\ (max)}$
Temperature regulation			0.002	0.02	±%/°C	$V_{in} = V_{in\ (nom)}$, $I_{out} = I_{out\ (max)}$
Output current - continuous	I_{out}	0		15	A DC	
Output current - short circuit	I_{sc}		17.5		A rms	I_o with 20mΩ short
Output voltage - noise	V_{p-p} V_{rms}			120 30	mV pk-pk mV rms	Measurement bandwidth 20 MHz See Application Note 120 for test set-up

SXQ50-48S3V3 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	$V_{dynamic}$/ Vo (nom)		5		%	Peak deviation for 50% to 75% step load, di/dt = 100mA/µsec,
Load transient response - recovery	$T_{recovery}$		200		µsec	Settling time to within 1% of output set point voltage for 50% to 75% load step
External load capacitance	C_{ext}	0		5,000	µF	Higher load capacitance values may be possible. Contact Artesyn Technologies for details

SXQ50-48S3V3 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	V_{ov}	3.795	3.96	4.29	V DC	Non-latching. See Application Note 120 for details
Overcurrent limit inception	I_{oc}		18		A DC	V_o = 90% of V_o (nom)
Output voltage trim range				110	%	Trim up (% of $V_{o\ nom}$) Note that the maximum output power is still 50W. Derate the maximum output current accordingly
		90			%	Trim down (% of $V_{o\ nom}$) See Application Note 120 for details of trim equations and trim curves.
Output remote sense range				10	%	This is inclusive of the output trim range. If 6% trim-up is used, for example, then only 4% output sense is available. The output current must also be derated to ensure that the maximum output power remains 50W
Open sense voltage		3.795	3.46	4.29	V DC	

SXQ50-48S3V3 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	88	89.0		%	I_{out} = 100% Iout (max), V_{in} = V_{in} (nom)
Efficiency	η	88.5	89.5		%	I_{out} = 50% I_{out} (max), V_{in} = V_{in} (nom)

SXQ50-48S05 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	I_{in}		1.16	1.18	A DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$
Input current - maximum	$I_{in\ (max.)}$			1.73	A DC	$V_{in} = V_{in\ (min)}$; $I_{out} = I_{out\ (max)}$; $V_o = V_{o\ (nom)}$,
Reflected ripple current	$I_{in\ (refl)}$		37 120		mA RMS mA pk-pk	$I_{out} = I_{out\ (max)}$, measured with external filter. See Application Note 120
Input capacitance - Internal filter	C_{input}		3.0		µF	Internal to converter
Input capacitance - External bypass	C_{bypass}		0		µF	No external bypass capacitor required for operation

SXQ50-48S05 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vo (nom)	4.90	5.0	5.1	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$
Total error band on V_{out}		4.8		5.2	V DC	$V_{in} = V_{in\ (nom)}$; $I_{out} = I_{out\ (nom)}$ Worst case condition over line, load, temperature and life
Line regulation				0.3	%	$I_{out} = I_{out\ (nom)}$, $V_{in\ (min)}$ to $V_{in\ (max)}$
Load regulation				0.3	%	$V_{in} = V_{in\ (nom)}$, $I_{out\ (min)}$ to $I_{out\ (max)}$
Temperature regulation			0.002	0.02	±%/°C	$V_{in} = V_{in\ (nom)}$, $I_{out} = I_{out\ (max)}$
Output current - continuous	I_{out}	0		10	A DC	
Output current - short circuit	I_{sc}		13		A rms	I_o with 20mΩ short
Output voltage - noise	V_{p-p} V_{rms}			120 30	mV pk-pk mV rms	Measurement bandwidth 20 MHz See Application Note 120 for test set-up

SXQ50-48S05 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	$V_{dynamic}$/ Vo (nom)		5		%	Peak deviation for 50% to 75% step load, di/dt = 100mA/µsec
Load transient response - recovery	$T_{recovery}$		200		µsec	Settling time to within 1% of output set point voltage for 50% to 75% load step
External load capacitance	C_{ext}	0		5,000	µF	Higher load capacitance values may be possible. Contact Artesyn Technologies for details

SXQ50-48S05 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	V_{ov}	5.75	6.0	6.5	V DC	Non-latching. See Application Note 120 for details
Overcurrent limit inception	I_{oc}		12.5		A DC	V_o = 90% of $V_{o\ (nom)}$
Output voltage trim range				110	%	Trim up (% of $V_{o\ nom}$) Note that the maximum output power is still 50W. Derate the maximum output current accordingly
		90			%	Trim down (% of $V_{o\ nom}$) See Application Note 120 for details of trim equations and trim curves.
Output remote sense range				10	%	This is inclusive of the output trim range. If 6% trim-up is used, for example, then only 4% output sense is available. The output current must also be derated to ensure that the maximum output power remains 50W
Open sense voltage		5.75	6.0	6.5	V DC	

SXQ50-48S05 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	88.5	90.0		%	I_{out} = 100% Iout (max), V_{in} = $V_{in\ (nom)}$
Efficiency	η	87.5	88.5		%	I_{out} = 50% $I_{out\ (max)}$, V_{in} = $V_{in\ (nom)}$

SXQ50-48S1V8 Model

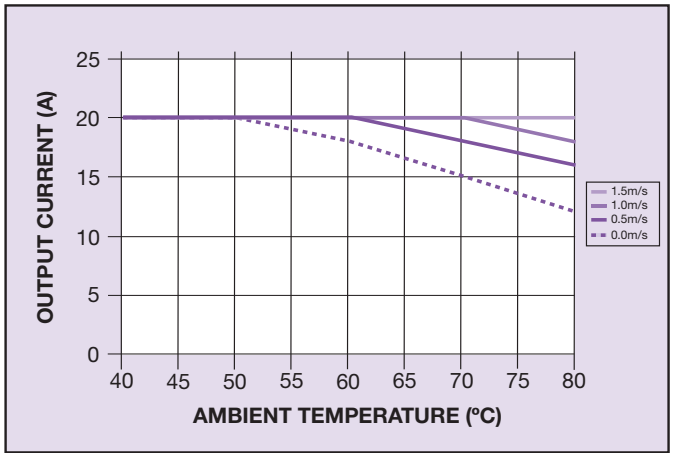


Figure 1: Derating Curve with Forced Air

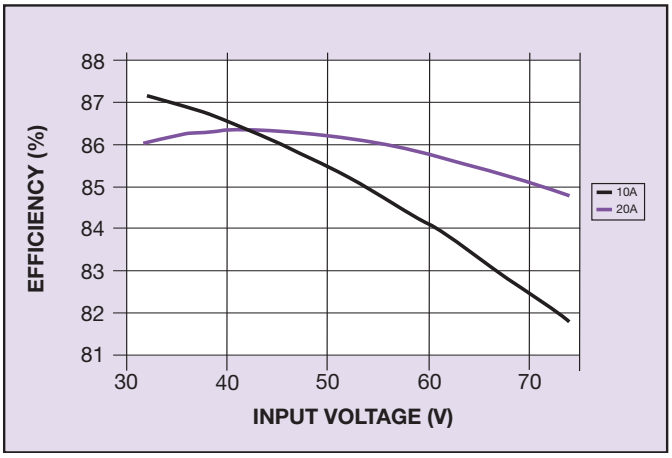


Figure 2: Efficiency vs. Line

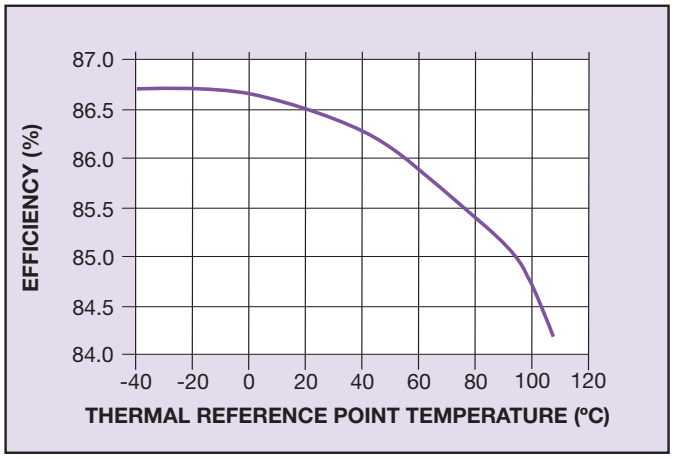


Figure 3: Typical Efficiency vs. Thermal Reference Point Temperature

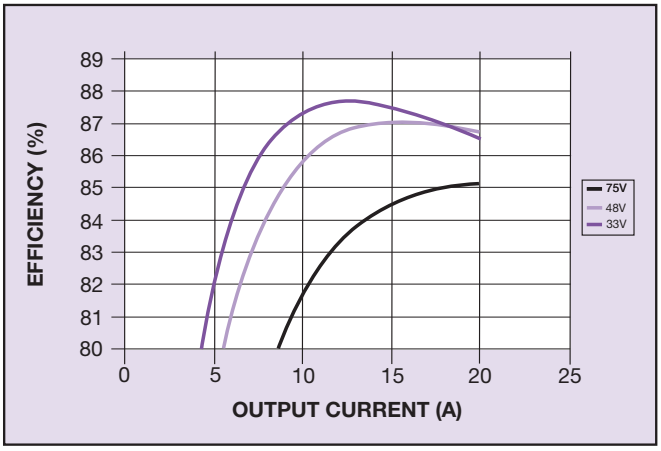


Figure 4: Efficiency vs. Load

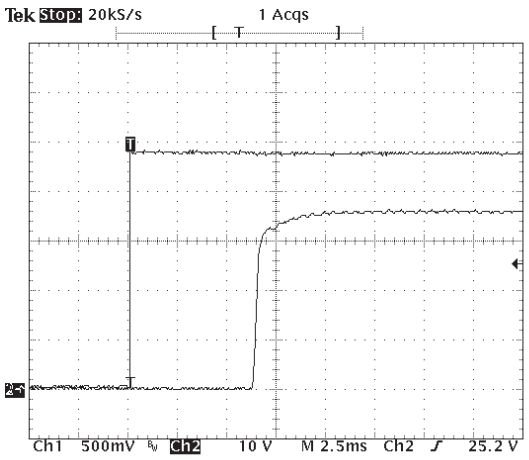


Figure 5: Turn-on Characteristic

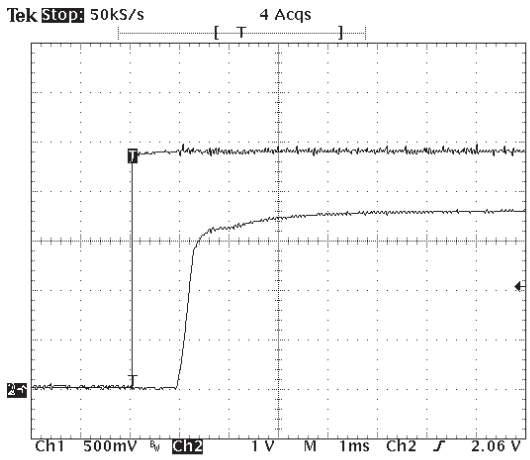


Figure 6: Control On/Off Characteristic (Turn-on)

SXQ50-48S1V8 Model

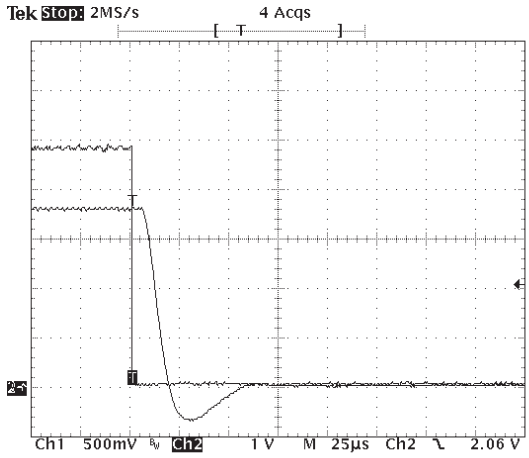


Figure 7: Control On/Off Characteristic (Turn-off)

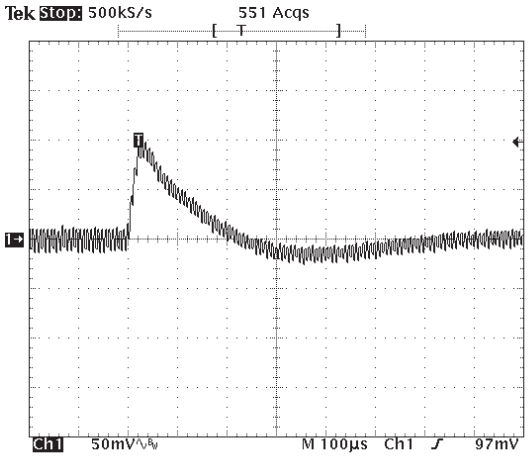


Figure 8: Typical Transient Response 75-50% Step Load Change

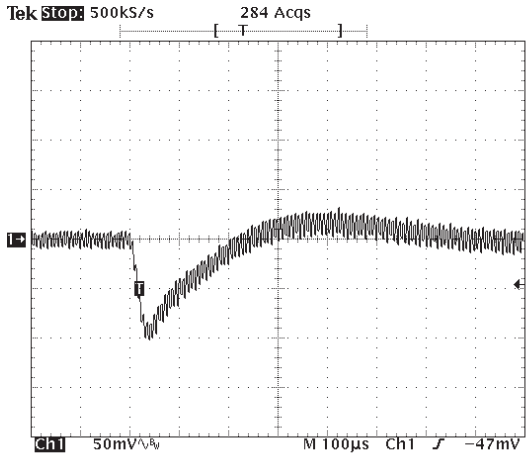


Figure 9: Typical Transient Response 50-75% Step Load Change

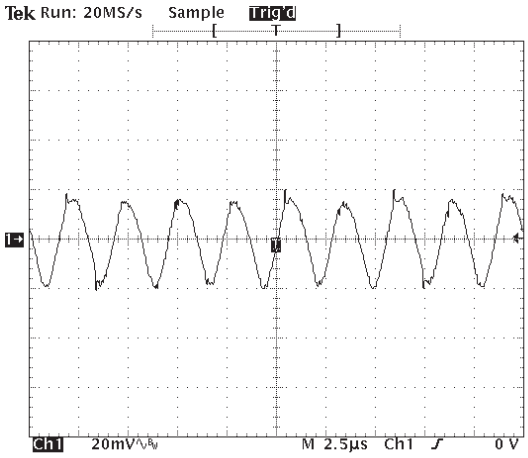


Figure10: Typical Output Ripple and Noise Measurement

SXQ50-48S2V5 Model

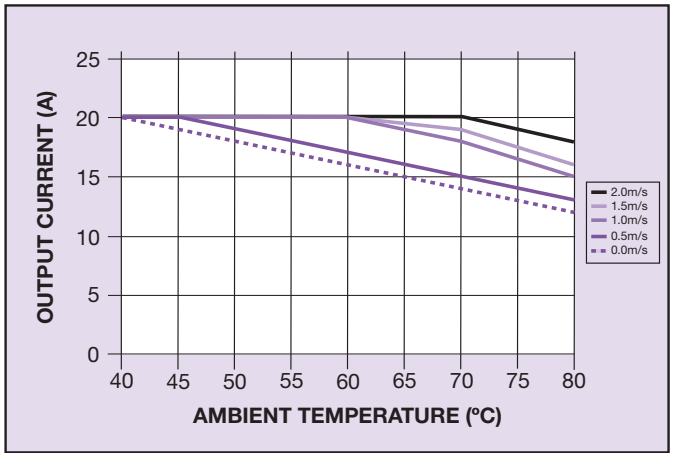


Figure 11: Derating Curve with Forced Air

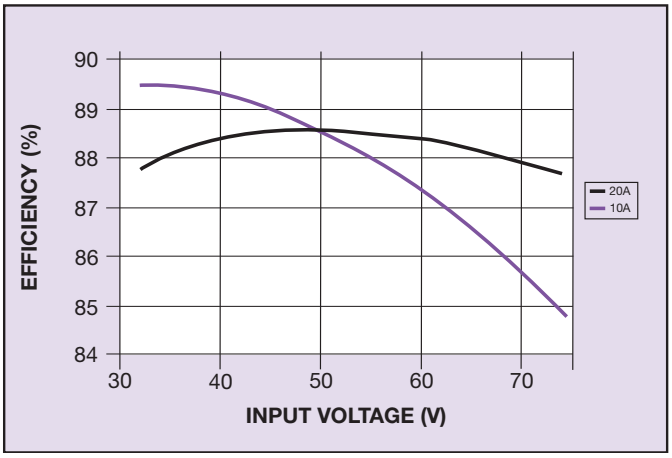


Figure 12: Efficiency vs. Line

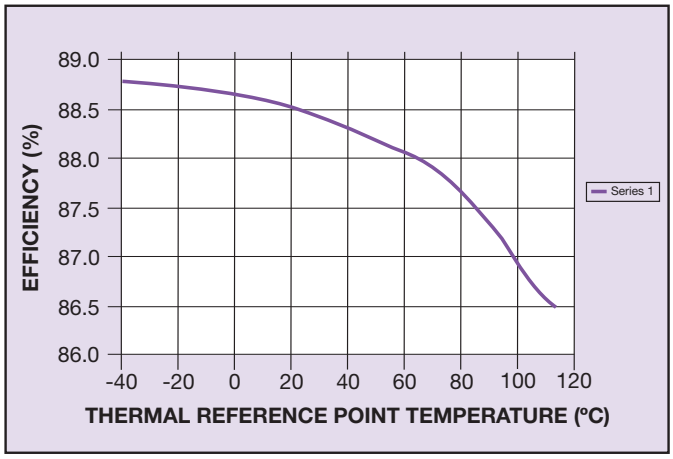


Figure 13: Typical Efficiency vs. Thermal Reference Point Temperature

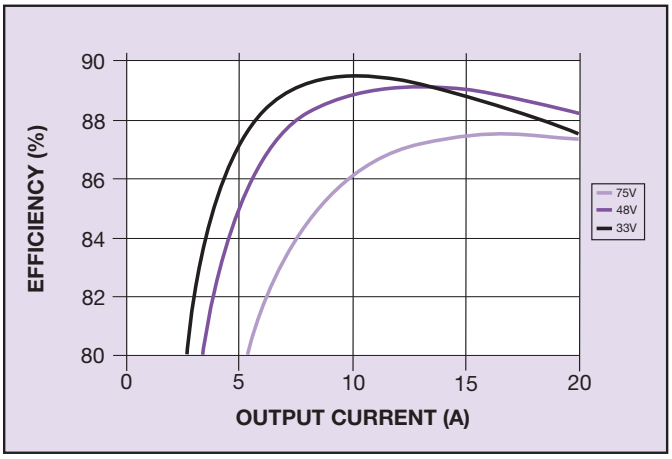


Figure 14: Efficiency vs Load

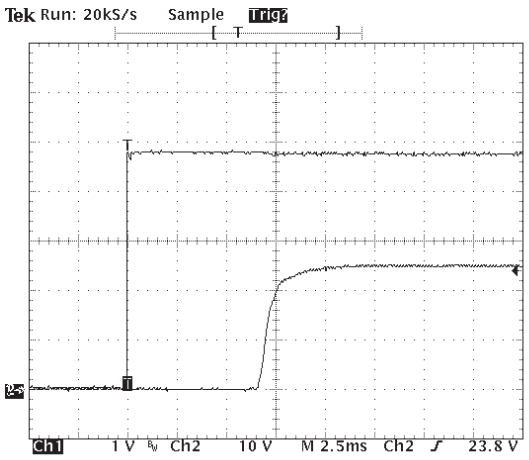


Figure 15: Turn-on Characteristic

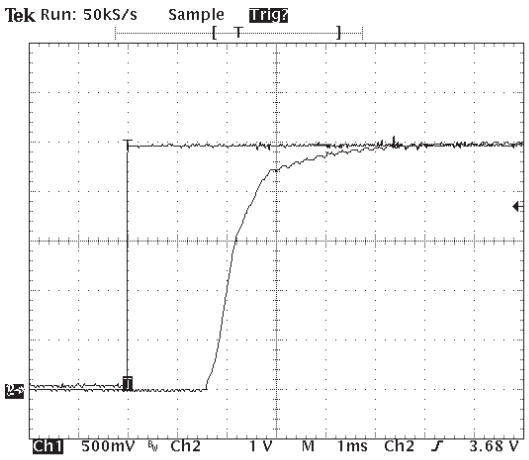


Figure 16: Control On/Off Characteristic (Turn-on)

SXQ50-48S2V5 Model

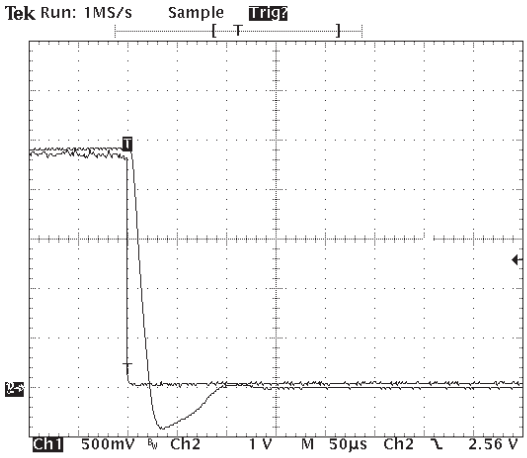


Figure 17: Control On/Off Characteristic (Turn-off)

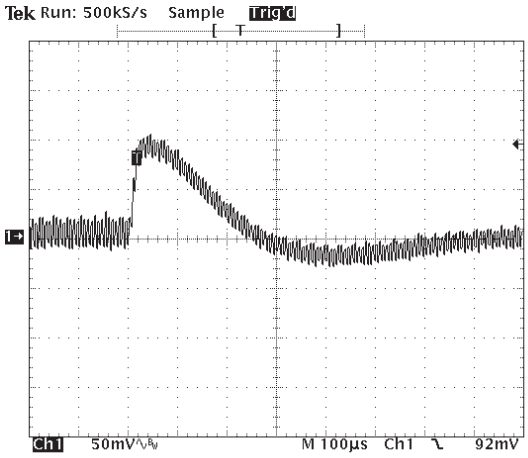


Figure 18: Typical Transient Response 75-50% Step Load Change

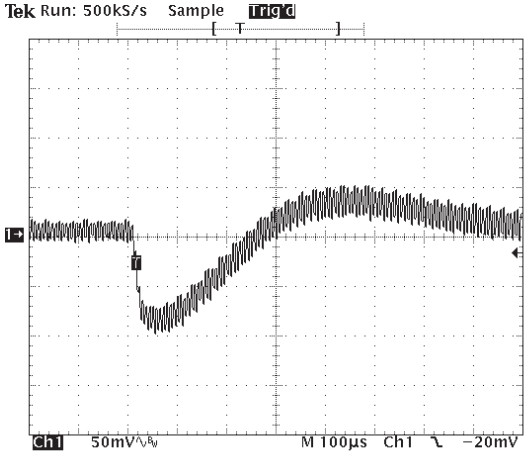


Figure 19: Typical Transient Response 50-75% Step Load Change

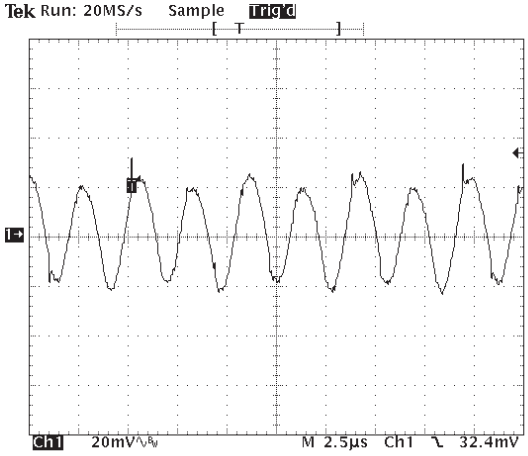


Figure 20: Typical Output Ripple and Noise Measurement

SXQ50-48S3V3 Model

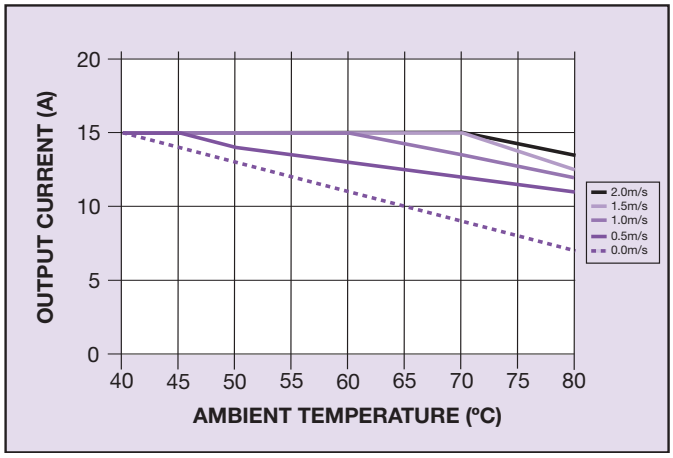


Figure 21: Derating Curve with Forced Air

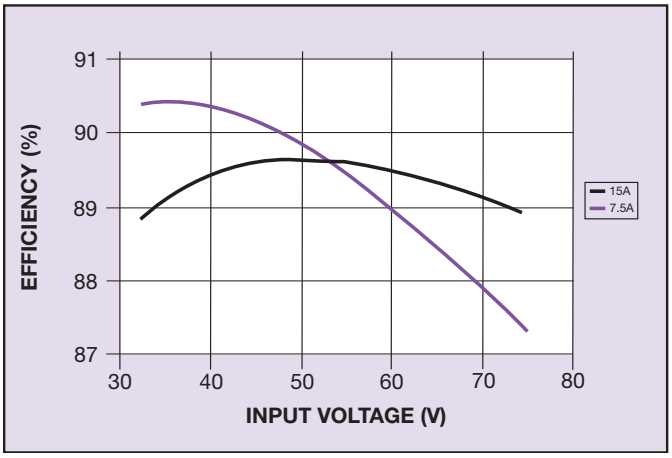


Figure 22: Efficiency vs. Line

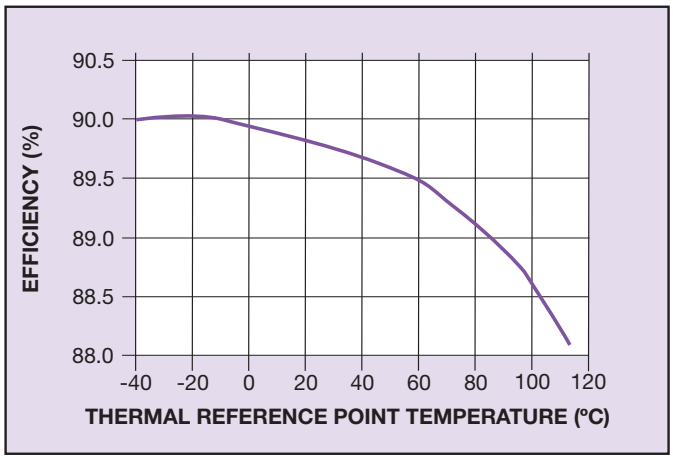


Figure 23: VTypical Efficiency vs. Thermal Reference Point Temperature

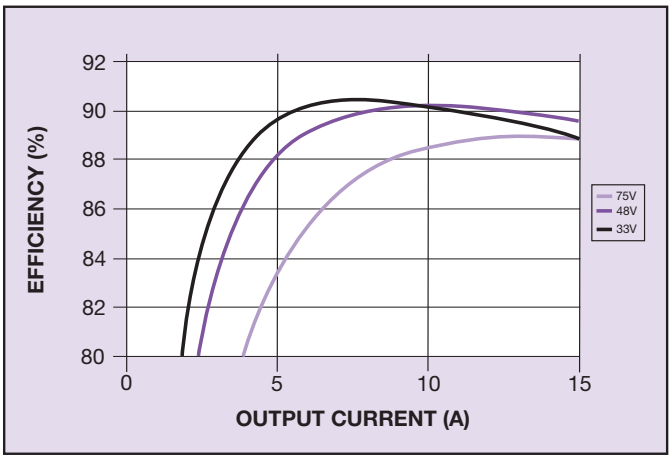


Figure 24: Efficiency vs Load

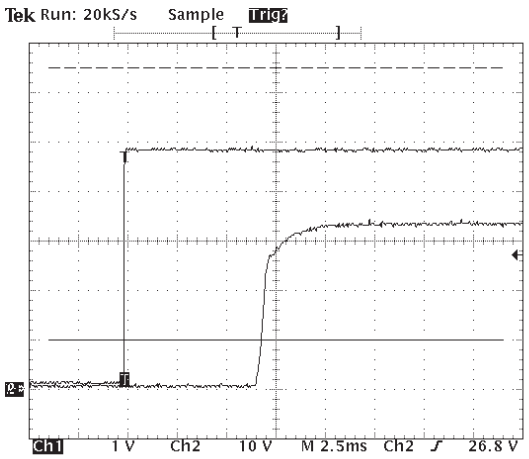


Figure 25: Turn-on Characteristic

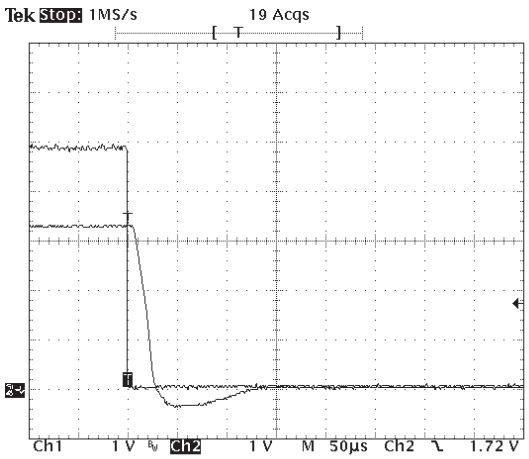


Figure 26: Control On/Off Characteristic (Turn-on)

SXQ50-48S3V3 Model

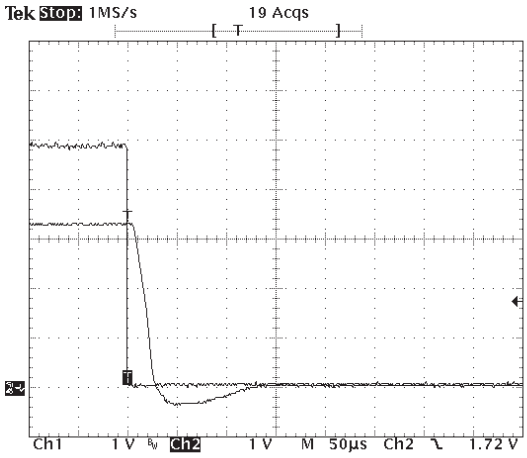


Figure 27: Control On/Off Characteristic (Turn-off)

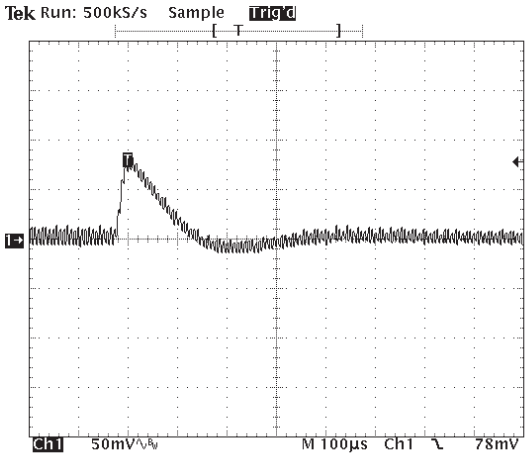


Figure 28: Typical Transient Response 75-50% Step Load Change

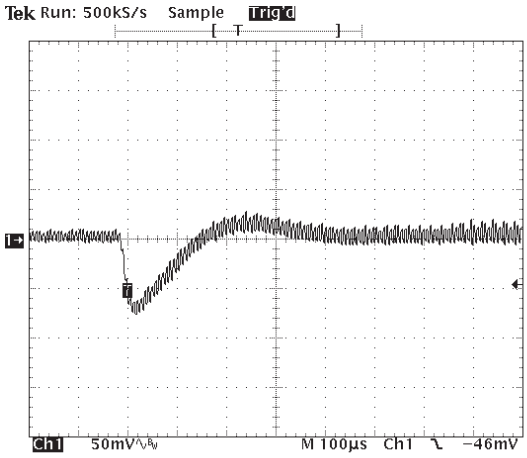


Figure 29: Typical Transient Response 50% - 75% Step Load Change

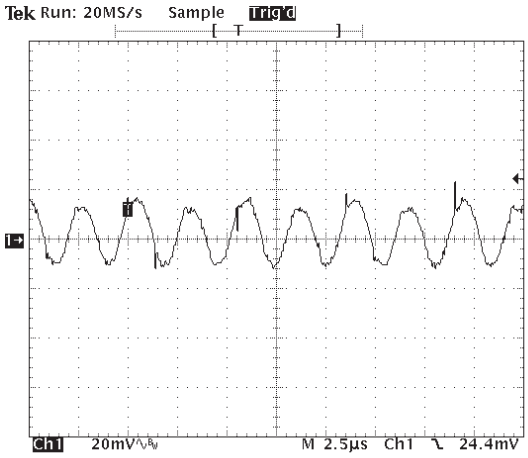


Figure 30: Typical Output Ripple and Noise Measurement

SXQ50-48S05 Model

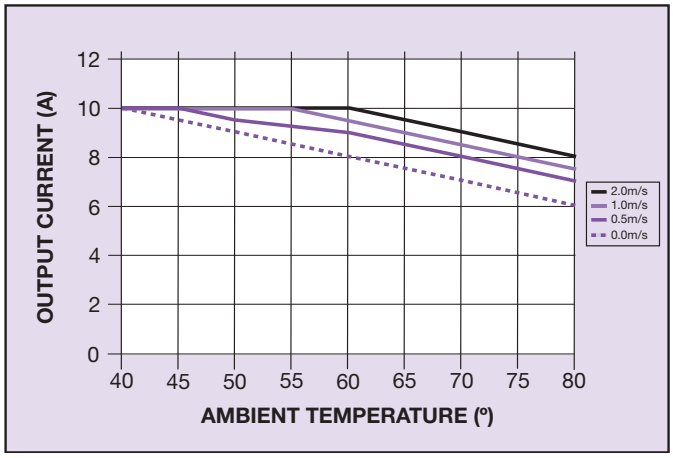


Figure 31: Derating Curve with Forced Air

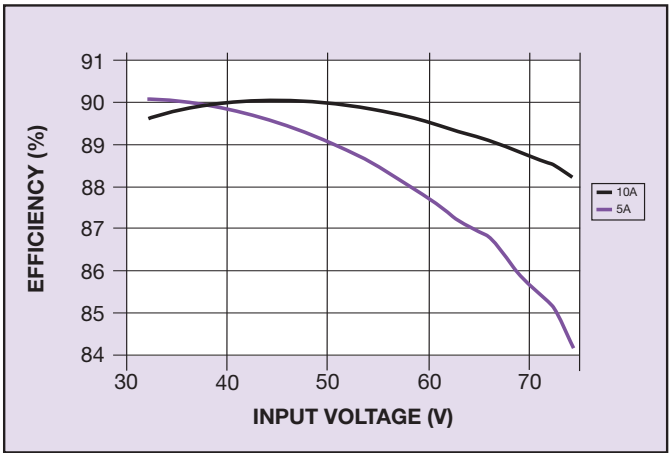


Figure 32: Efficiency vs. Line

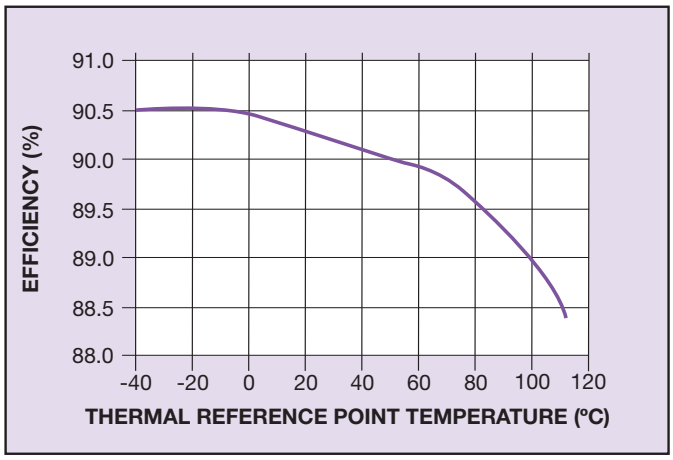


Figure 33: Typical Efficiency vs. Thermal Reference Point Temperature

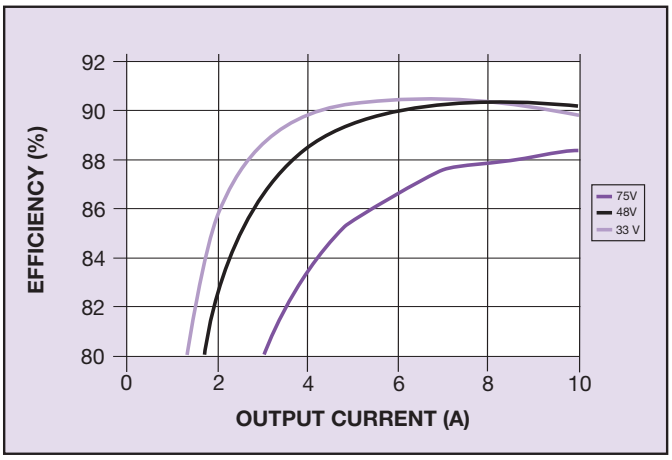


Figure 34: Efficiency vs Load

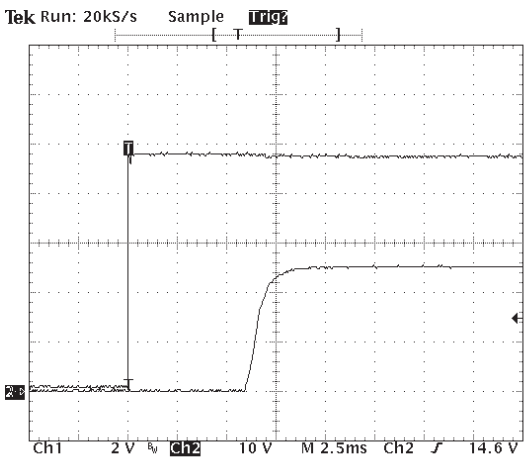


Figure 35: Turn-on Characteristic

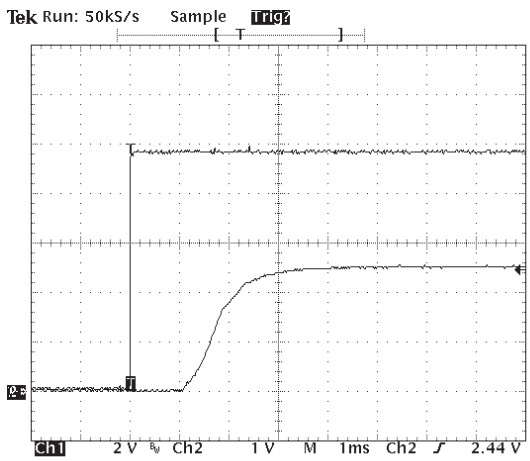


Figure 36: Control On/Off Characteristic (Turn-on)

SXQ50-48S05 Model

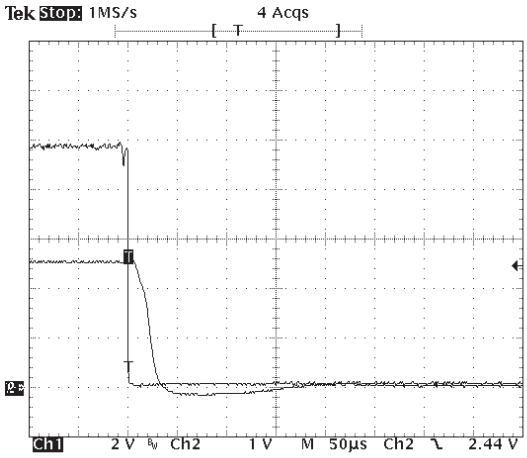


Figure 37: Control On/Off Characteristic (Turn-off)

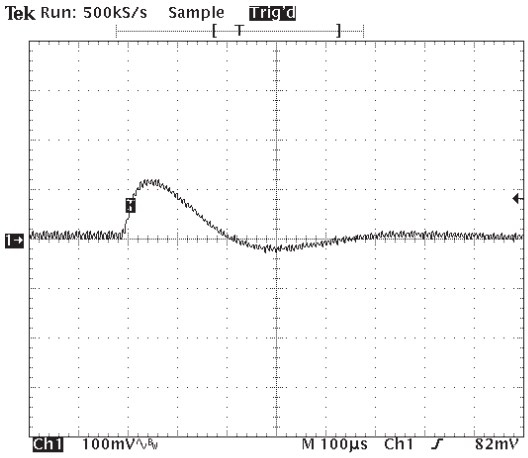


Figure 38: Typical Transient Response 75-50% Step Load Change

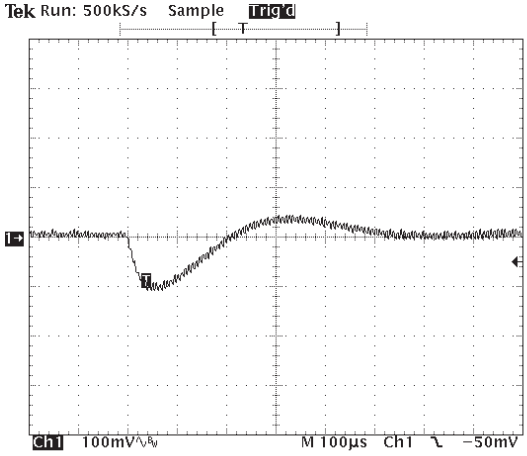


Figure 39: Typical Transient Response 50% - 75% Step Load Change

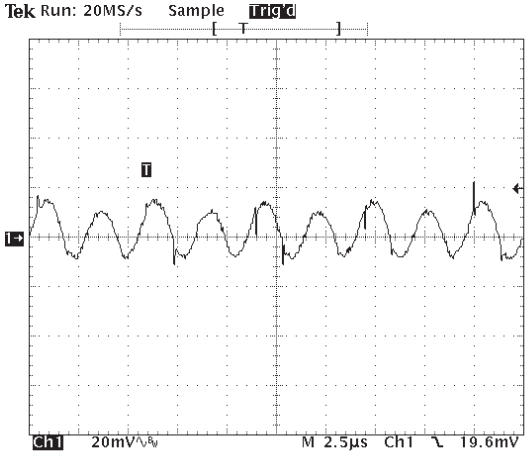
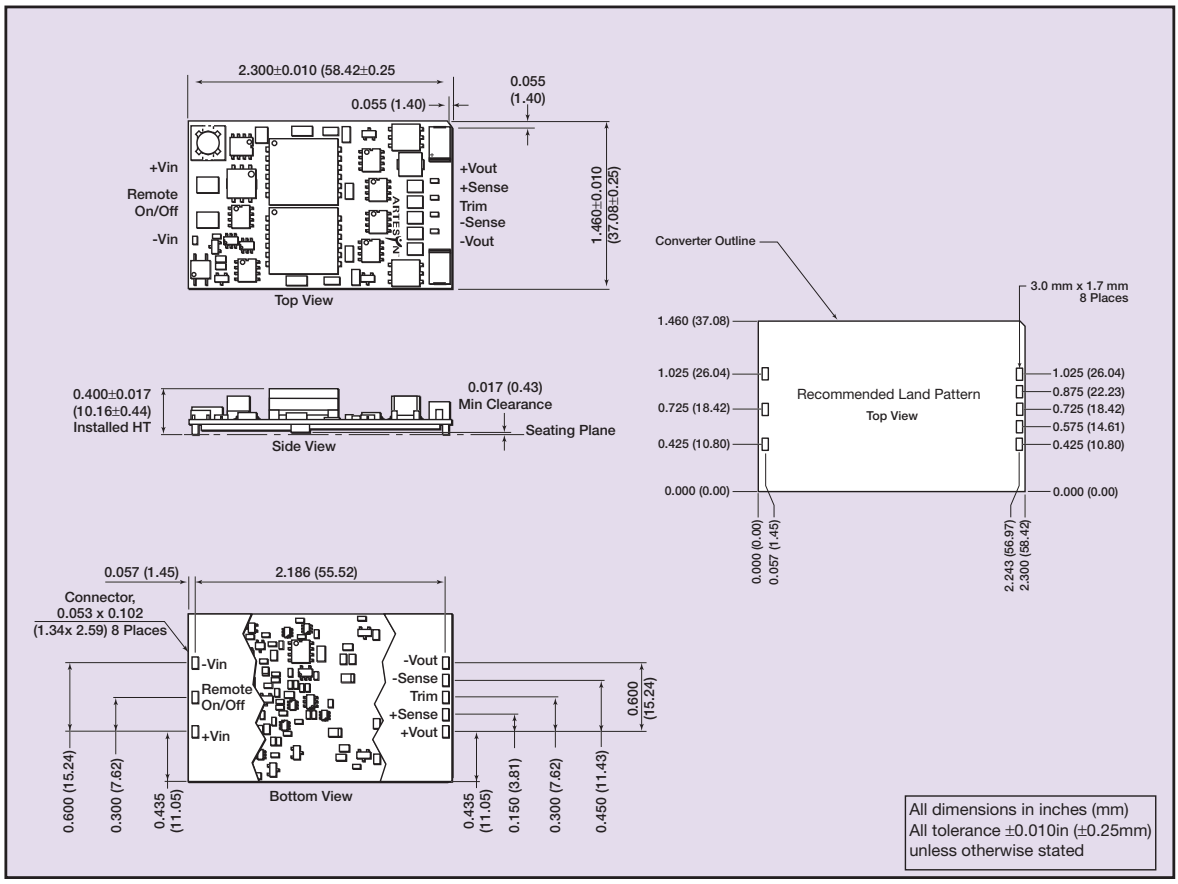


Figure 40: Typical Output Ripple and Noise Measurement



Pin Connections

Pin No.	*Function*
1	+Vin
2	ON/OFF
3	-Vin
4	-Vout
5	-Sense
6	Trim
7	+Sense
8	+Vout

Figure 41: Dimensions and Pinout

Note 1

The control pin is referenced to Vin-.

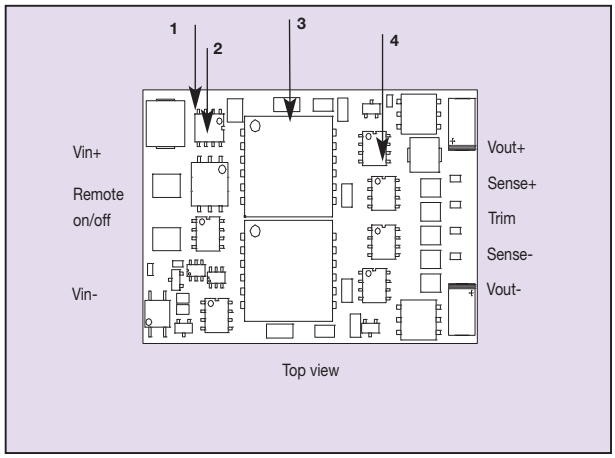
Note 2

Active low Remote ON/OFF is available. Standard product is active high. When ordering active low parts, designate with the Suffix '-R' e.g.SXQ50-48S3V3-R. See Application Note 120 for detailed information regarding ON/OFF control implementation.

Note 3

These products are susceptible to handling damage, and if not being placed by pick and place equipment must be handled by board edge only.

CAUTION: Hazardous internal voltages and high temperatures. Ensure that unit is accessible only to trained personnel. The user must provide the recommended fusing in order to comply with safety approvals.



Thermal Reference Number	Device/Location
1	Top Side Fiducial
2	SOIC8 Case
3	Transformer Core
4	SOIC8 Case

Figure 42: Thermal Reference Points

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