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# PXE30xxSxx Single Output DC/DC Converters

9 to 18 Vdc, 18 to 36 Vdc, or 36 to 75 Vdc input, 1.5 to 15 Vdc Single Output, 30W



## APPLICATIONS

Wireless Network  
Telecom/Datacom  
Industry Control System  
Measurement Equipment  
Semiconductor Equipment

## Features

- 30 watts maximum output power
- Output current up to 6A
- Standard 2" x 1.6" x 0.4" package
- High efficiency up to 90%
- 2:1 wide input voltage range
- Six-sided continuous shield
- Fixed switching frequency
- Offer single output
- CE MARK meets 2006/95/EC, 93/68/EEC and 2004/108/EC
- UL60950-1, EN60950-1 and IEC60950-1 licensed
- Iso9001 certified manufacturing facilities
- Compliant to ROHS EU directive 2002/95/EC

## Options

- Heat sinks available for extended operation

## General Description

The PXE30xxSxx series offers 30 watts of output power from a 2 x 1.6 x 0.4 inch package. It has a 2:1 wide input voltage range of 9-18VDC, 18-36VDC and 36-75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection.

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Absolute Maximum Rating					
Parameter	Model	Min	Max	Unit	
Input Voltage Continuous	12Sxx		18	V <sub>DC</sub>	
	24Sxx		36		
	48Sxx		75		
	Transient (100mS)	12Sxx			36
		24Sxx			50
		48Sxx			100
Input Voltage Variation (complies with EST300 132 part 4.4)	All		5	V/mS	
Operating Ambient Temperature (with derating)	All	-40	85	°C	
Operating Case Temperature	All		100	°C	
Storage Temperature	All	-55	105	°C	

Output Specification					
Parameter	Model	Min	Typ	Max	Unit
Output Voltage (V <sub>in</sub> = V <sub>in</sub> (nom) ; Full Load ; T <sub>A</sub> =25°C)	xxS1P5	1.485	1.5	1.515	V <sub>DC</sub>
	xxS1P8	1.782	1.8	1.818	
	xxS2P5	2.475	2.5	2.525	
	xxS3P3	3.267	3.3	3.333	
	xxS05	4.95	5	5.05	
	xxS12	11.88	12	12.12	
	xxS15	14.85	15	15.15	
Voltage Adjustability	All	-10		+10	%
Output Regulation	All	Line (V <sub>in</sub> (min) to V <sub>in</sub> (max) at Full Load)		+0.2	%
		Load (Min. to 100% of Full Load)	-0.5	+0.5	
Output Ripple & Noise Peak-to-Peak (20MHz bandwidth) (Measured with a 0.1µF/50V MLCC)	xxS1P5		50		mVp-p
	xxS1P8		50		
	xxS2P5		50		
	xxS3P3		50		
	xxS05		50		
	xxS12		75		
xxS15		75			
Temperature Coefficient	All	-0.02		+0.02	%/°C
Output Voltage Overshoot (V <sub>in</sub> (min) to V <sub>in</sub> (max) ; Full Load ; T <sub>A</sub> =25°C)	All		0	5	% V <sub>OUT</sub>
Dynamic Load Response (V <sub>in</sub> = V <sub>in</sub> (nom) ; T <sub>A</sub> =25°C) Load step change from 75% to 100% or 100 to 75% of Full Load Peak Deviation	All		250		mV
	All		300		µS
Output Current	xxS1P5	0		6000	mA
	xxS1P8	0		6000	
	xxS2P5	0		6000	
	xxS3P3	0		6000	
	xxS05	0		6000	
	xxS12	0		2500	
	xxS15	0		2000	

Output Specification(Continued)					
Parameter	Model	Min	Typ	Max	Unit
Output Over Voltage Protection (Zener diode clamp)	xxS1P5		3.9		V <sub>DC</sub>
	xxS1P8		3.9		
	xxS2P5		3.9		
	xxS3P3		3.9		
	xxS05		6.2		
	xxS12		15		
	xxS15		18		
Output Over Current Protection	All			150	% FL.
Output Short Circuit Protection	All	Hiccup, automatic recovery			

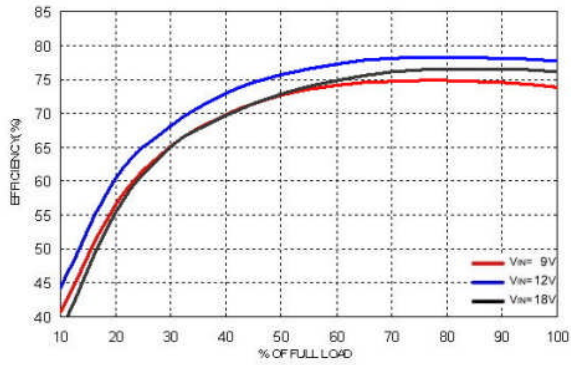
Input Specification					
Parameter	Model	Min	Typ	Max	Unit
Operating Input Voltage	12Sxx	9	12	18	V <sub>DC</sub>
	24Sxx	18	24	36	
	48Sxx	36	48	75	
Input Current (Maximum value at V <sub>in</sub> = V <sub>in</sub> (nom); Full Load)	12S1P5			1014	mA
	12S1P8			1169	
	12S2P5			1582	
	12S3P3			2037	
	12S05			3012	
	12S12			2976	
	12S15			2976	
	24S1P5			439	
	24S1P8			580	
	24S2P5			780	
	24S3P3			1010	
	24S05			1490	
	24S12			1470	
	24S15			1470	
	48S1P5			244	
	48S1P8			290	
	48S2P5			390	
	48S3P3			500	
48S05			740		
48S12			730		
48S15			730		

Input Specification (Continued)					
Parameter	Model	Min	Typ	Max	Unit
Input Standby Current (Typical value at $V_{in} = V_{in(nom)}$ ; No Load)	12S1P5		100		mA
	12S1P8		100		
	12S2P5		110		
	12S3P3		115		
	12S05		95		
	12S12		170		
	12S15		210		
	24S1P5		50		
	24S1P8		35		
	24S2P5		45		
	24S3P3		50		
	24S05		50		
	24S12		80		
	24S15		90		
	48S1P5		20		
	48S1P8		20		
	48S2P5		25		
	48S3P3		30		
	48S05		35		
48S12		35			
48S15		55			
Under Voltage Lockout Turn-on Threshold	12Sxx			9	$V_{DC}$
	24Sxx			17.8	
	48Sxx			36	
Under Voltage Lockout Turn-off Threshold	12Sxx		8		$V_{DC}$
	24Sxx		16		
	48Sxx		33		
Input Reflected Ripple Current (5 to 20MHz, 12 $\mu$ H Source Impedance)	All		30		mAp-p
Start Up Time ( $V_{in} = V_{in(nom)}$ and Constant Resistive Load)	All			25	mS
Remote ON/OFF Control (The ON/OFF pin voltage is referenced to $-V_{IN}$ )	All	3.0		12	VDC
Positive Logic DC-DC ON					
DC-DC OFF		0		1.2	
Remote Off Input Current	All		2.5		mA
Input Current of Remote Control Pin	All	-0.5		0.5	mA

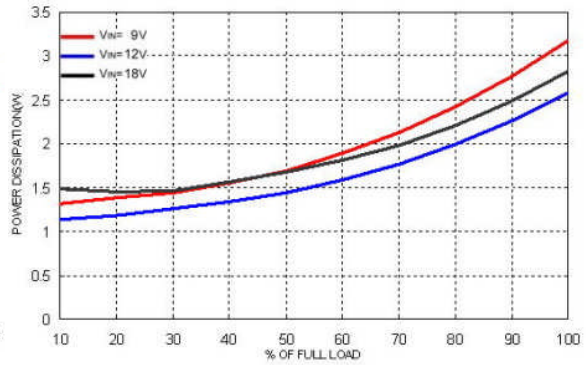
General Specification					
Parameter	Model	Min	Typ	Max	Unit
Efficiency ( $V_{in} = V_{in(nom)}$ ; Full Load ; $T_A=25^{\circ}C$ )	12S1P5		78		%
	12S1P8		81		
	12S2P5		83		
	12S3P3		85		
	12S05		87		
	12S12		88		
	12S15		88		
	24S1P5		80		
	24S1P8		82		
	24S2P5		84		
	24S3P3		86		
	24S05		88		
	24S12		89		
	24S15		89		
	48S1P5		81		
	48S1P8		83		
	48S2P5		85		
	48S3P3		87		
	48S05		89		
48S12		90			
48S15		90			
Isolation Voltage Input to Output Input to Case, Output to Case	All	1600 1600			$V_{DC}$
Isolation Resistance	All	1			$G\Omega$
Isolation Capacitance	All			1000	pF
Switching Frequency	All		300		KHz
Weight	All		48		g
MTBF Bellcore TR-NWT-000332, $T_C=40^{\circ}C$ MIL-HDBK-217F	All		$1.316 \times 10^6$ $3.465 \times 10^5$		Hours
Over Temperature Protection	All		115		$^{\circ}C$

Characteristic Curves

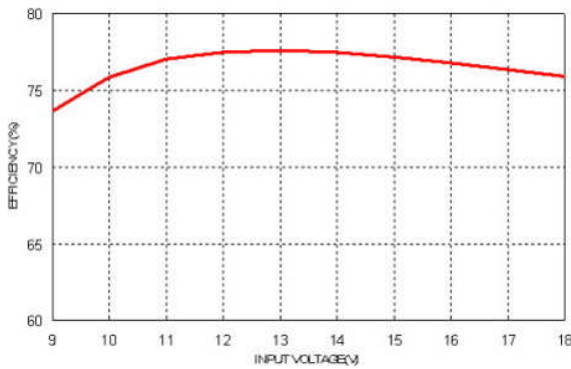
All test conditions are at 25°C. The figures are for PXE30-12S1P5



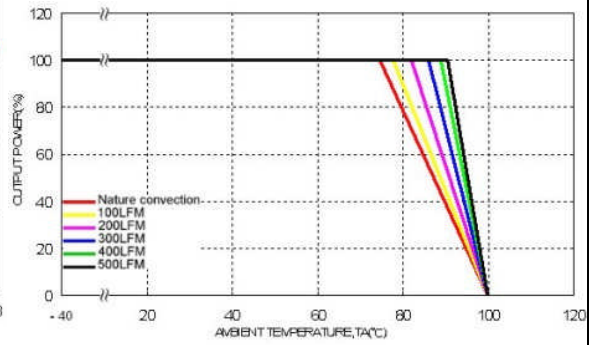
Efficiency Versus Output Current



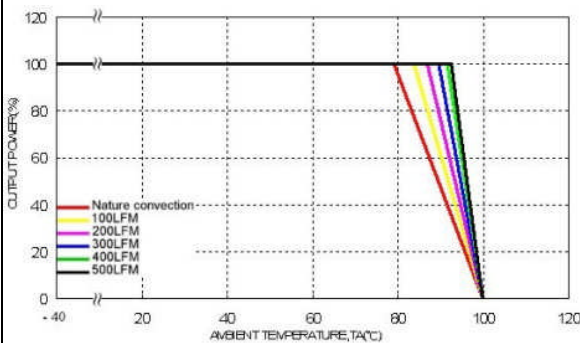
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



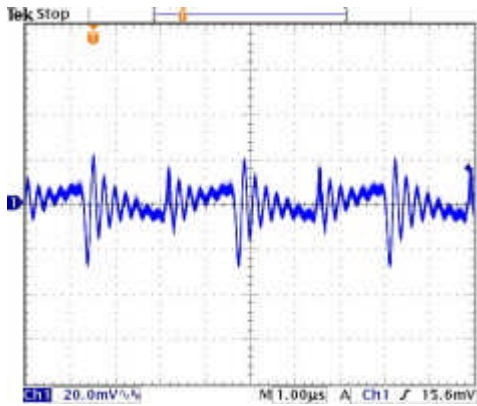
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



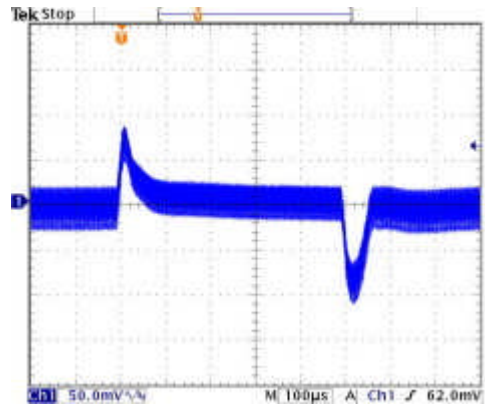
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

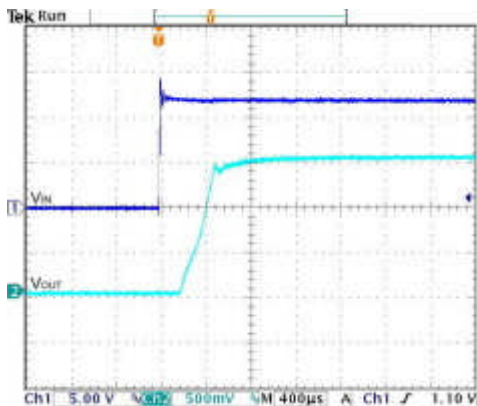
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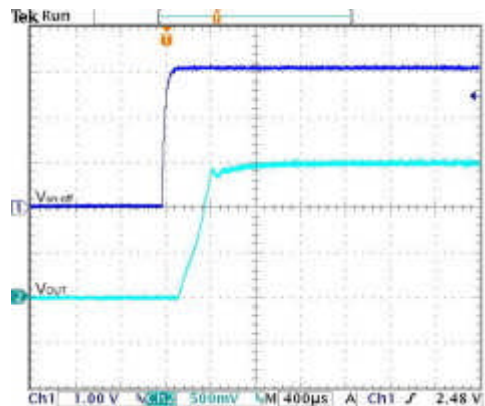
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



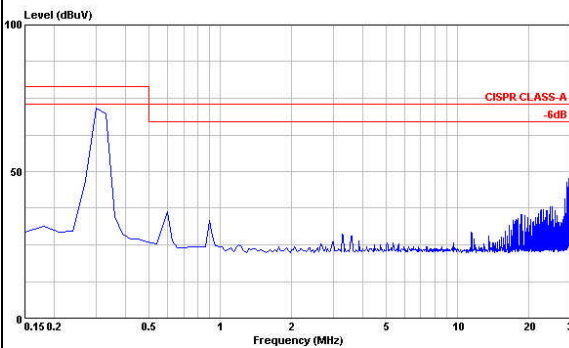
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



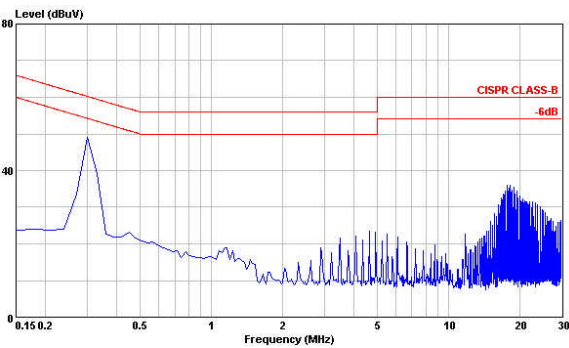
Typical Input Start-Up and Output Rise Characteristic  
Vin=Vin(nom), Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load

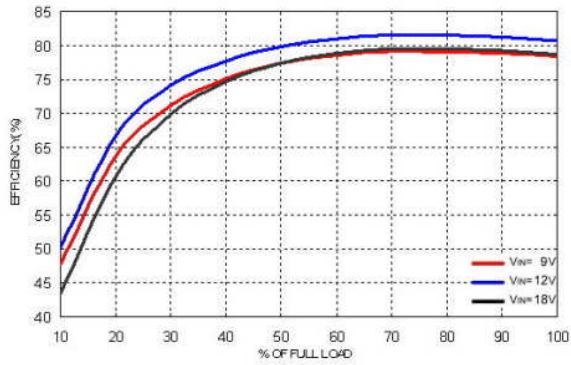


Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

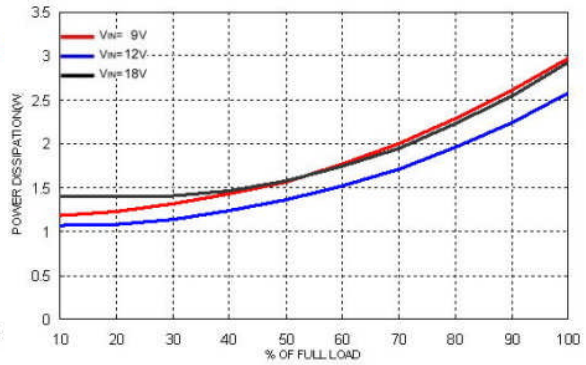


Characteristic Curves (Continued)

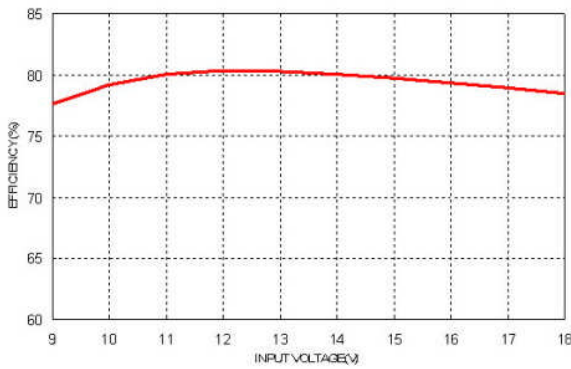
All test conditions are at 25°C. The figures are for PXE30-12S1P8



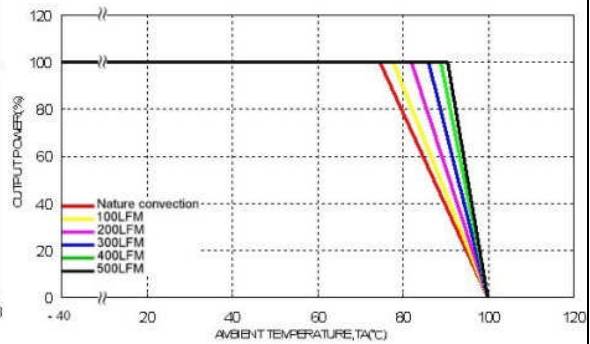
Efficiency Versus Output Current



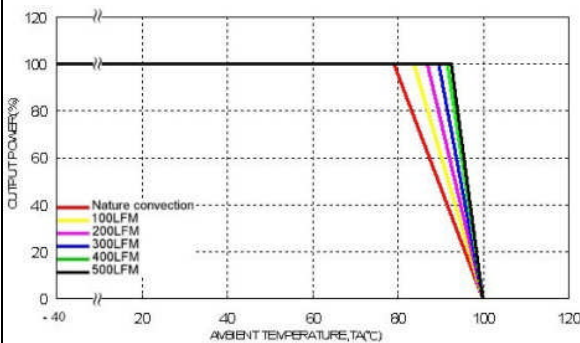
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



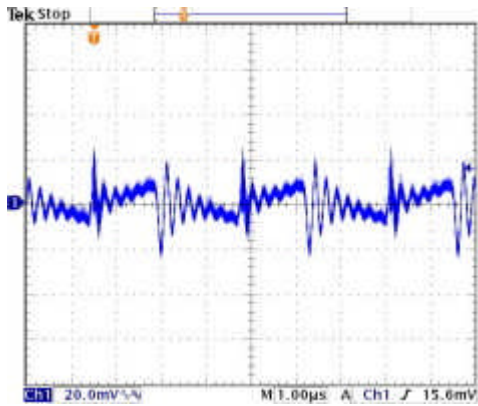
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



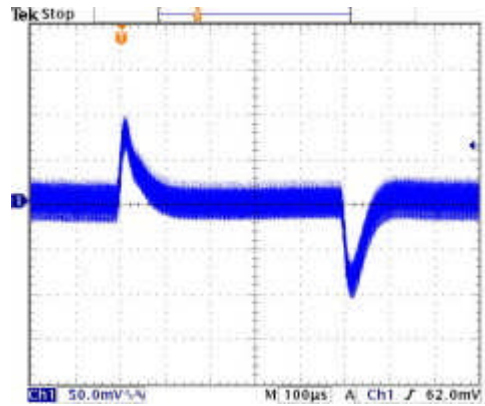
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

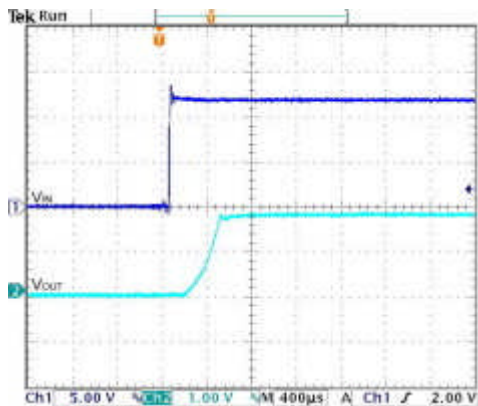
All test conditions are at 25°C. The figures are for PXE30-12S1P8



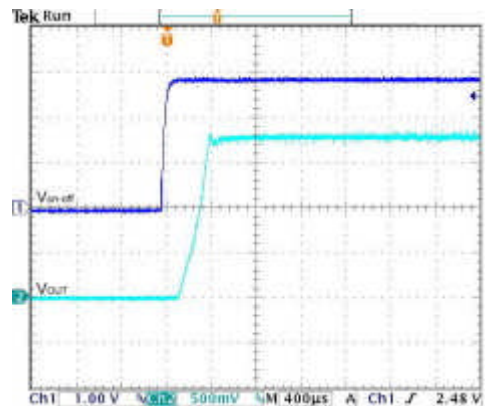
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



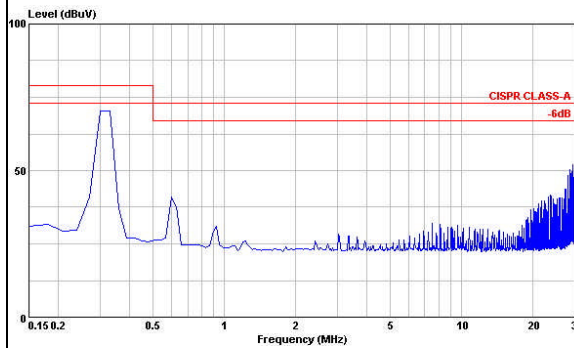
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



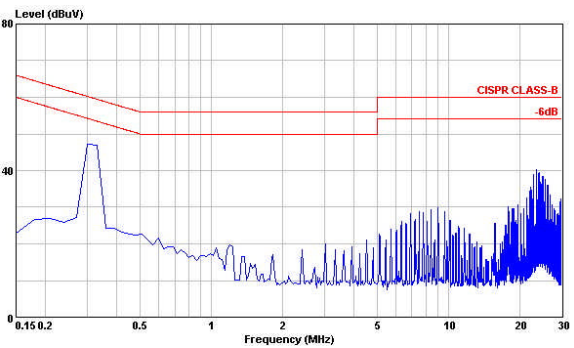
Typical Input Start-Up and Output Rise Characteristic  
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Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
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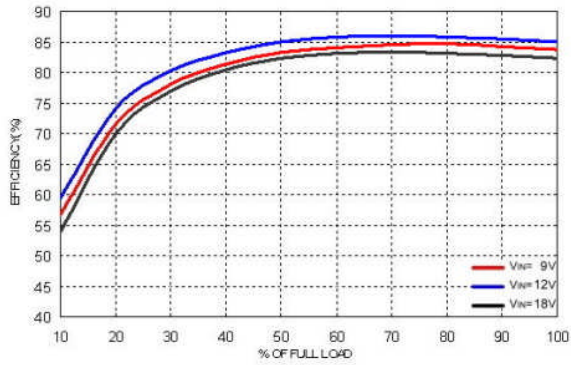
Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load



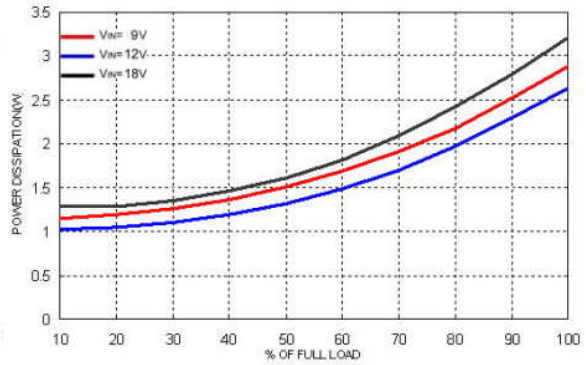
Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

Characteristic Curves (Continued)

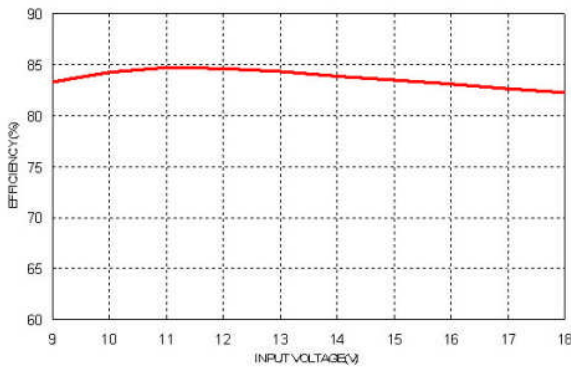
All test conditions are at 25°C. The figures are for PXE30-12S2P5



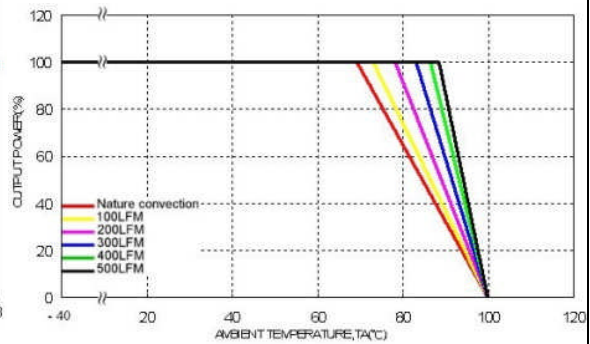
Efficiency Versus Output Current



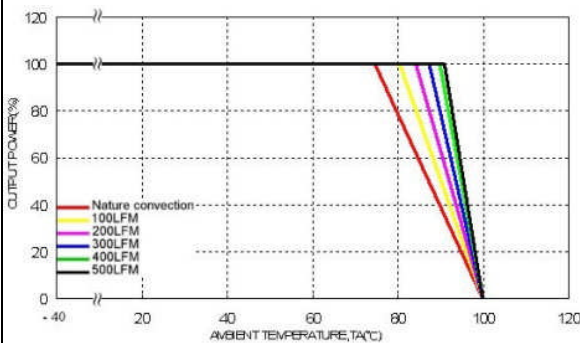
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



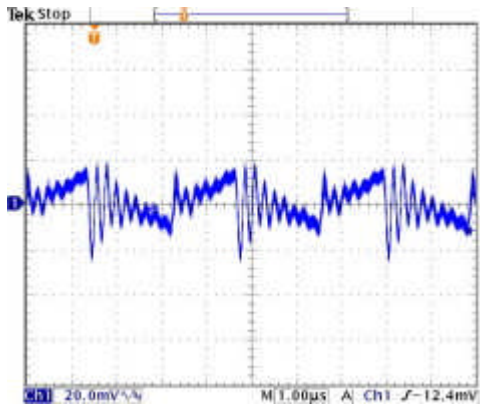
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



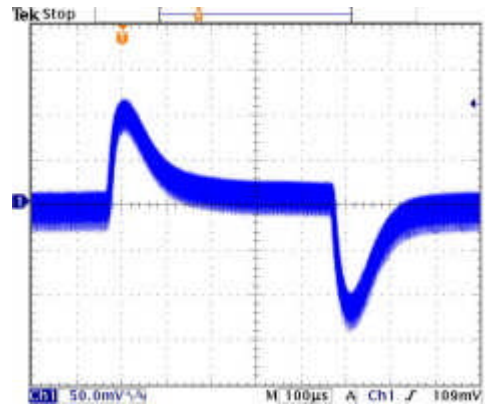
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

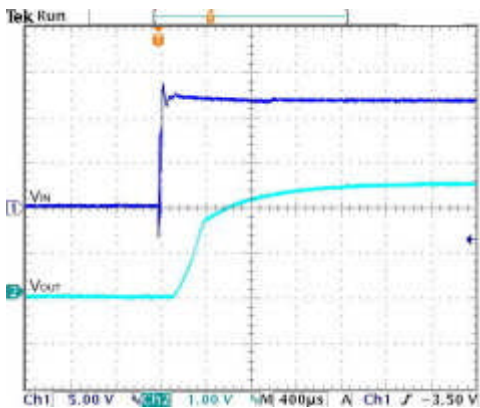
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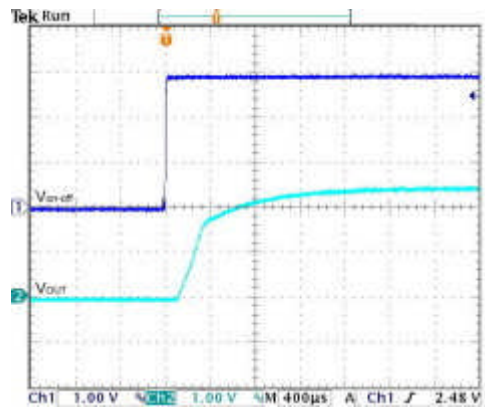
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



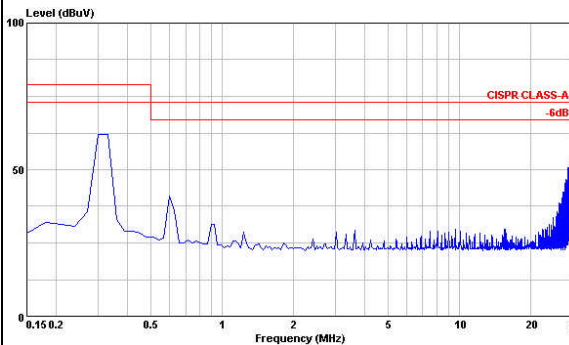
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



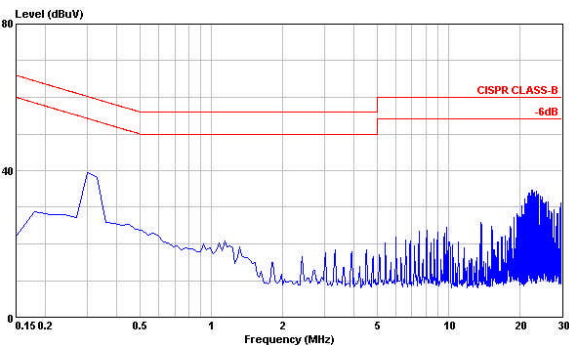
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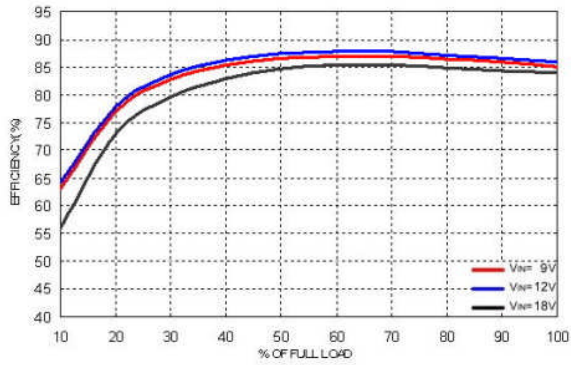
Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load



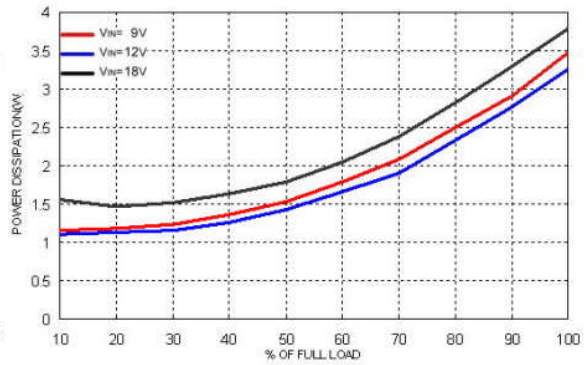
Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

Characteristic Curves (Continued)

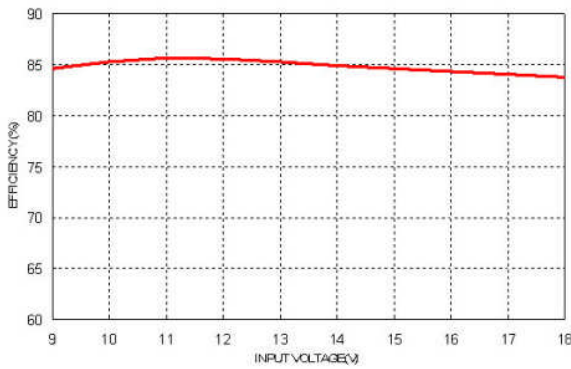
All test conditions are at 25°C. The figures are for PXE30-12S3P3



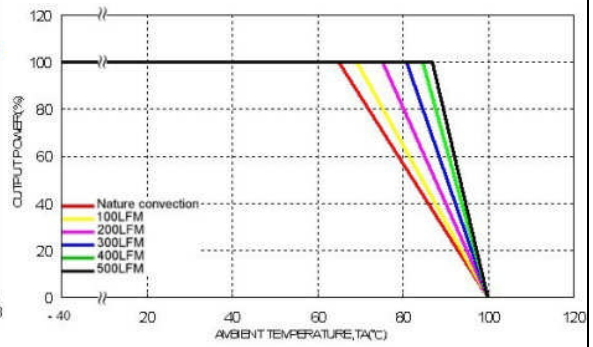
Efficiency Versus Output Current



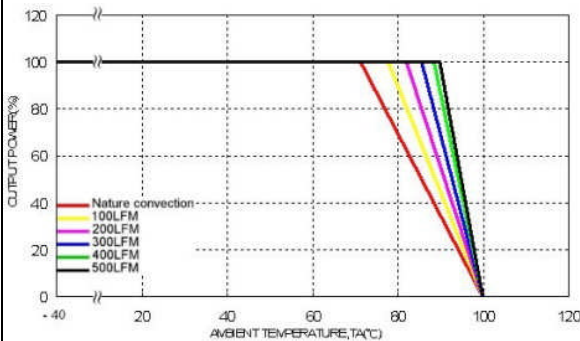
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



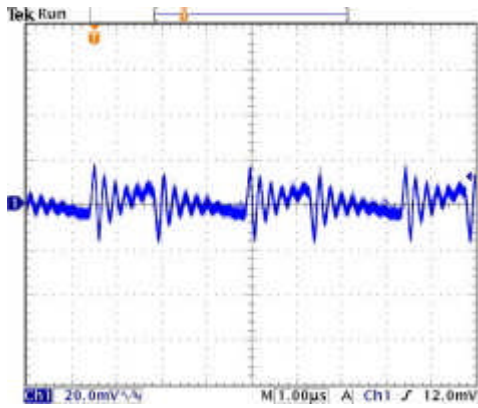
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



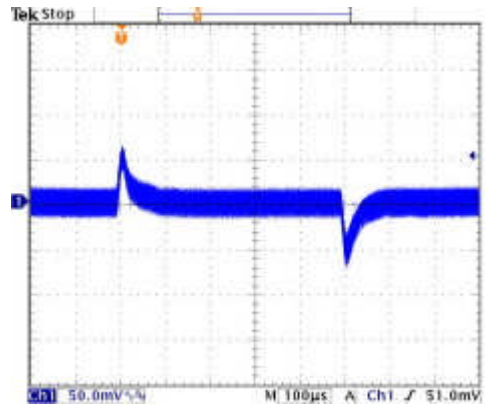
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

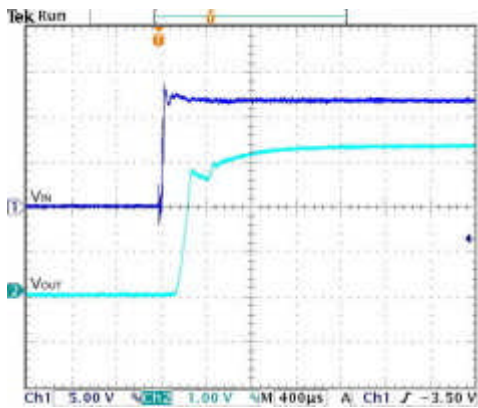
All test conditions are at 25°C. The figures are for PXE30-12S3P3



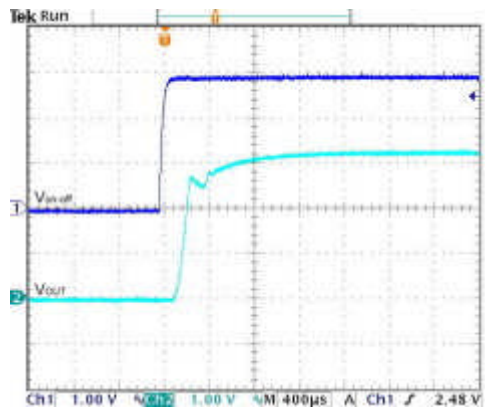
Typical Output Ripple and Noise.  
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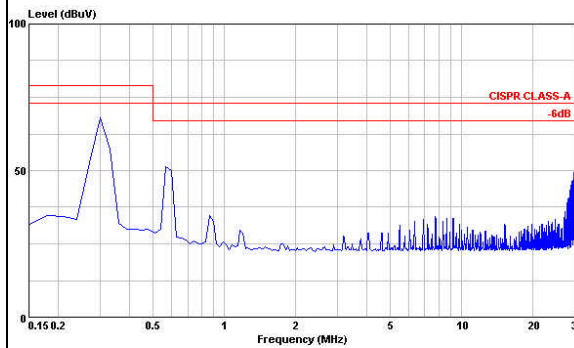
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



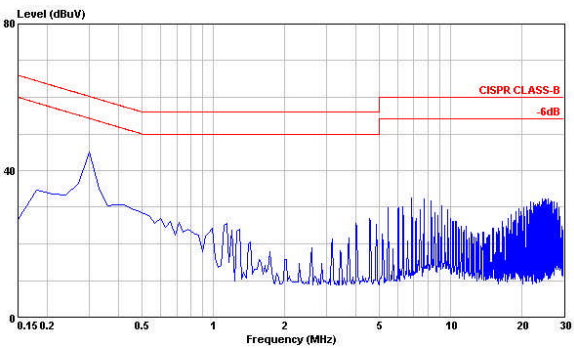
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Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



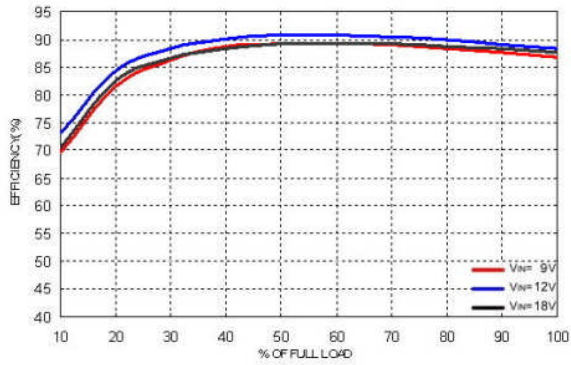
Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load



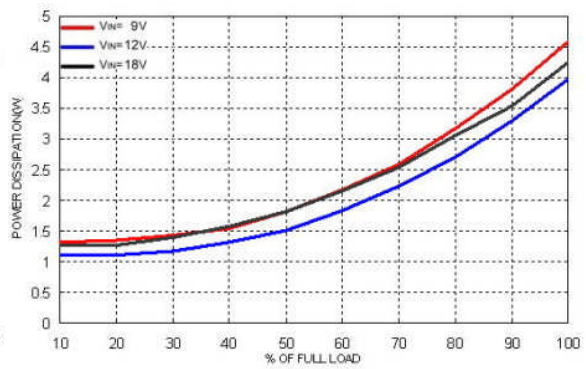
Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

Characteristic Curves (Continued)

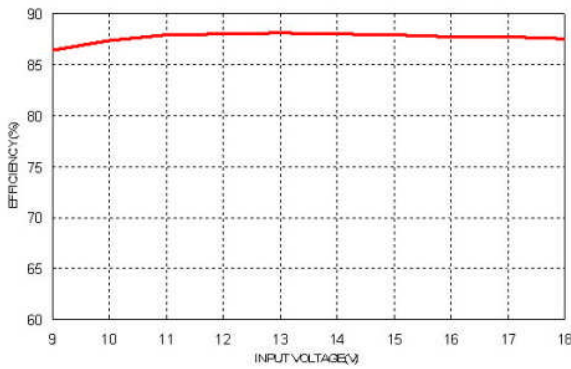
All test conditions are at 25°C. The figures are identical for PXE30-12S05



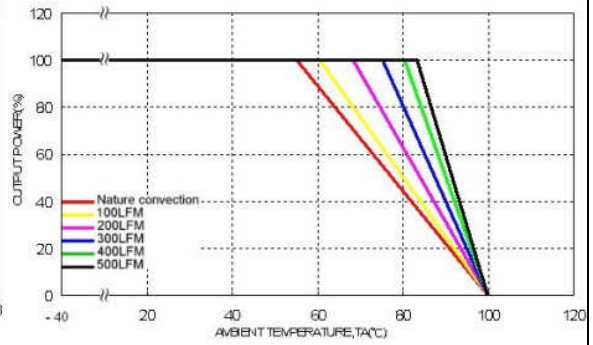
Efficiency Versus Output Current



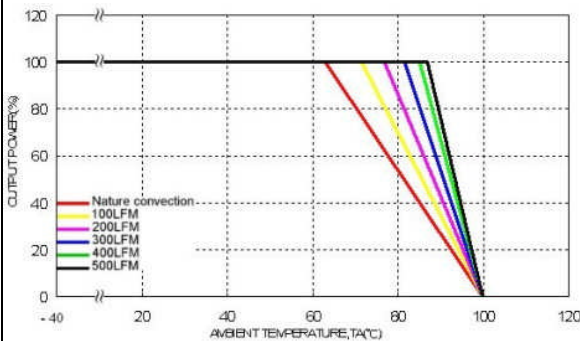
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



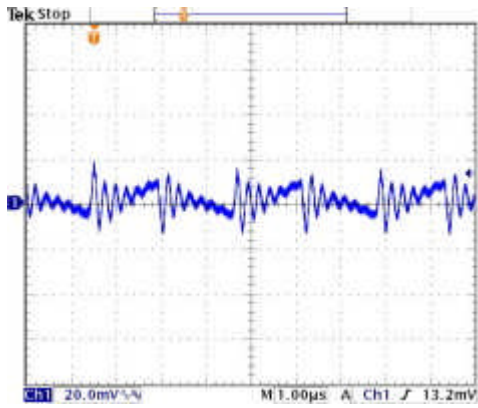
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



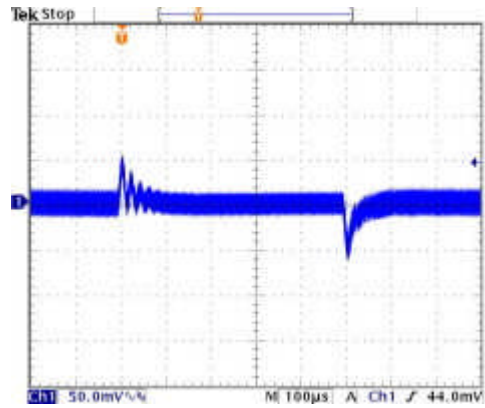
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

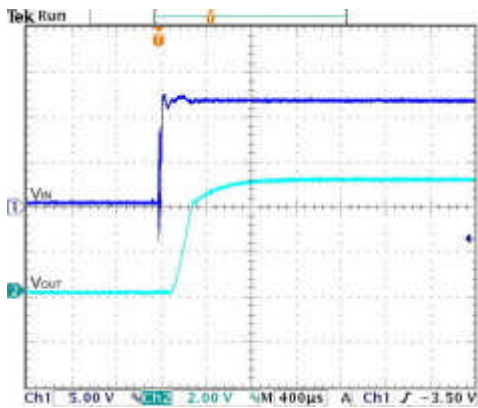
All test conditions are at 25°C. The figures are for PXE30-12S05



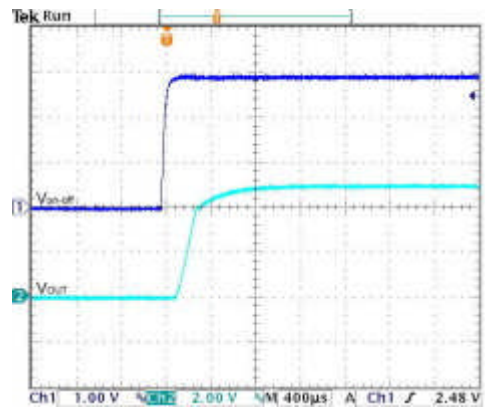
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



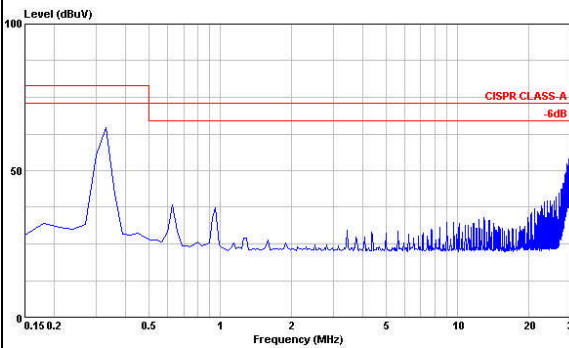
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



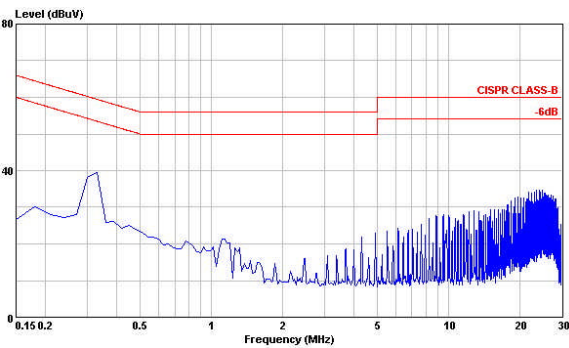
Typical Input Start-Up and Output Rise Characteristic  
Vin=Vin(nom), Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load

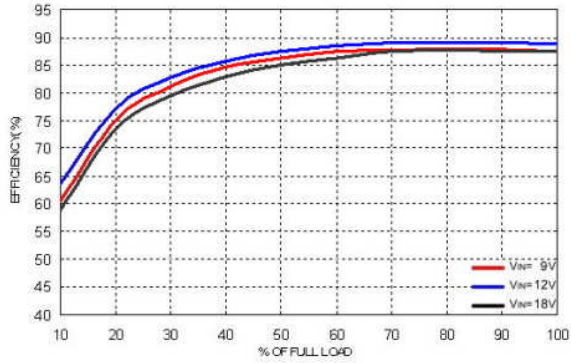


Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

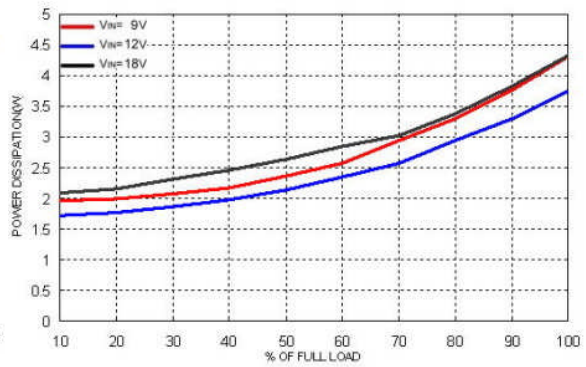


Characteristic Curves (Continued)

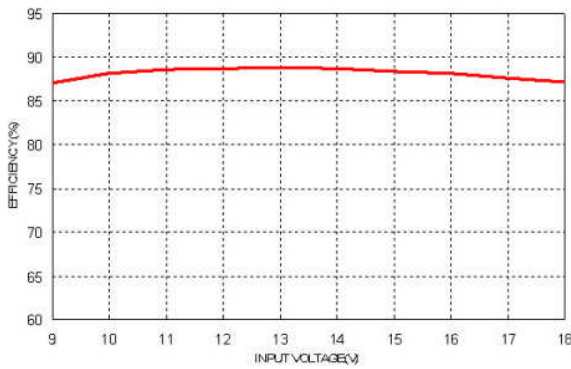
All test conditions are at 25°C. The figures are for PXE30-12S12



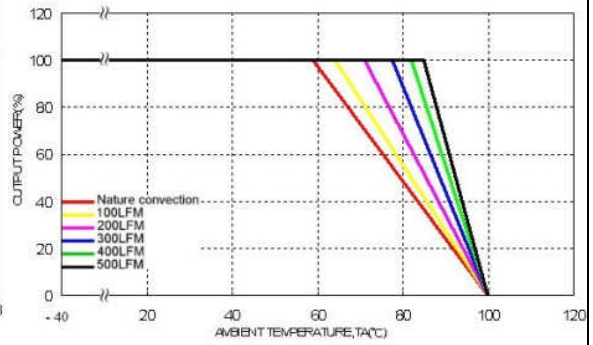
Efficiency Versus Output Current



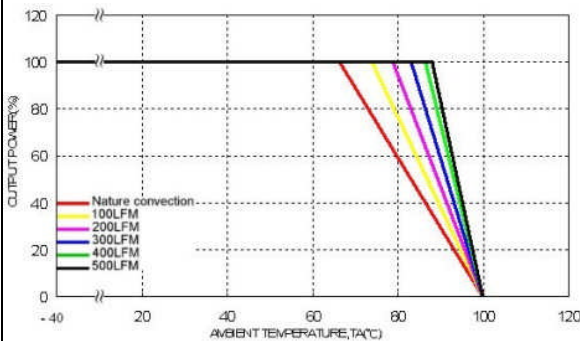
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



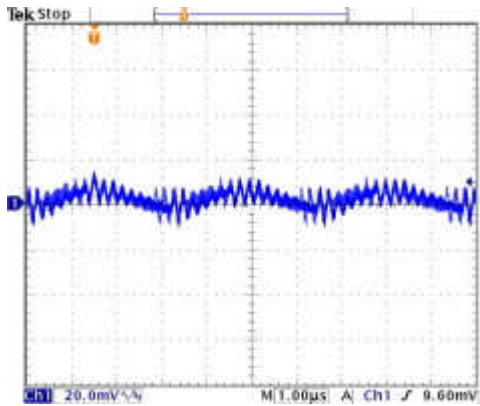
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



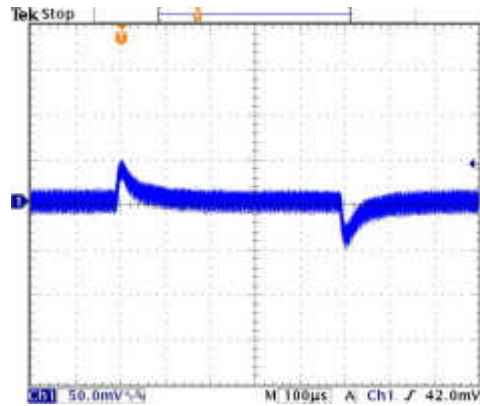
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

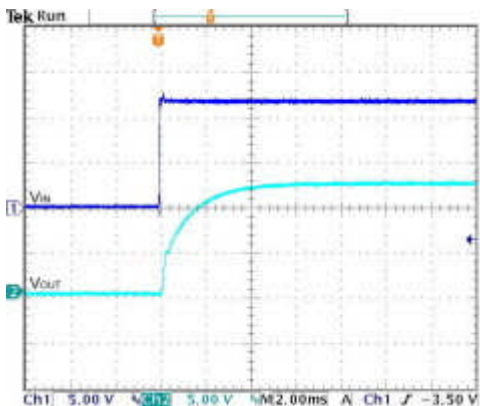
All test conditions are at 25°C. The figures are for PXE30-12S12



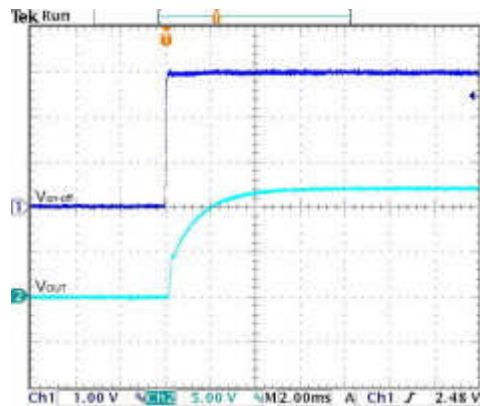
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



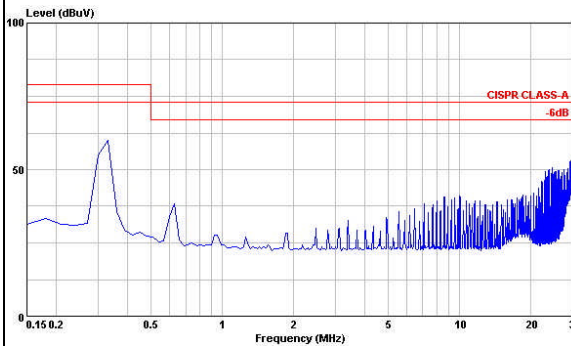
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



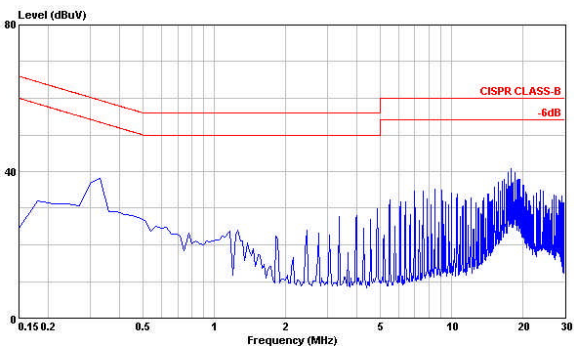
Typical Input Start-Up and Output Rise Characteristic  
Vin=Vin(nom), Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



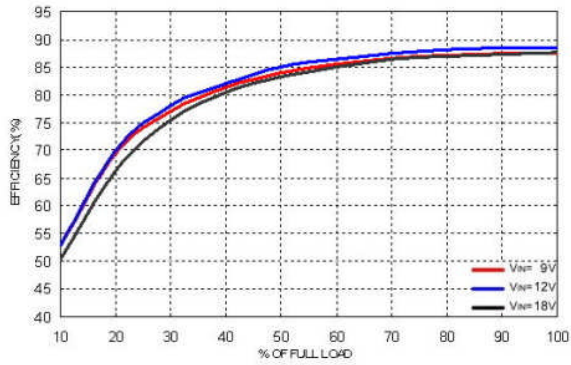
Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load



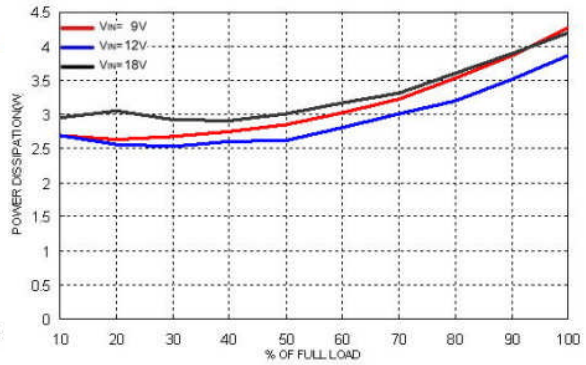
Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

Characteristic Curves (Continued)

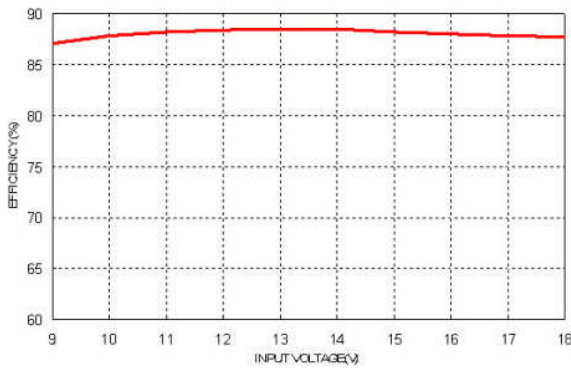
All test conditions are at 25°C. The figures are for PXE30-12S15



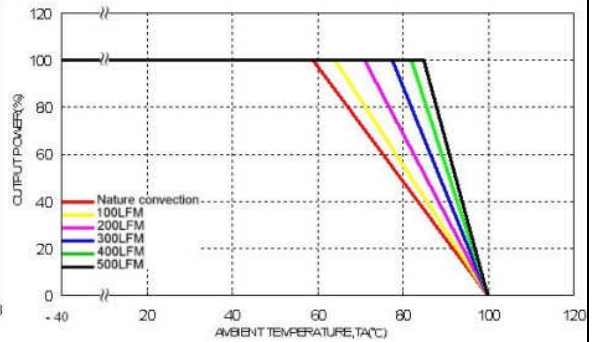
Efficiency Versus Output Current



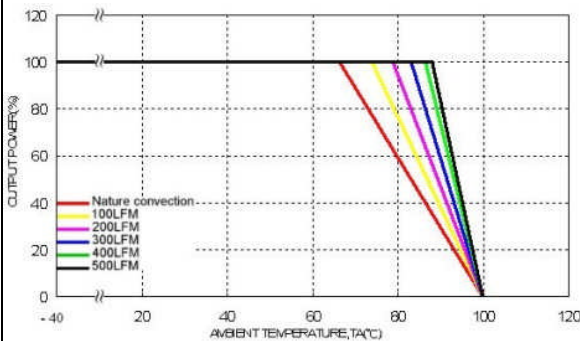
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



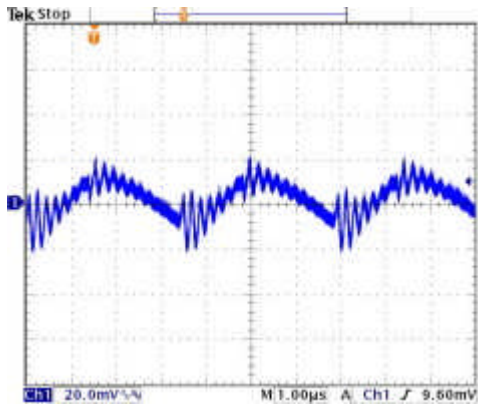
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



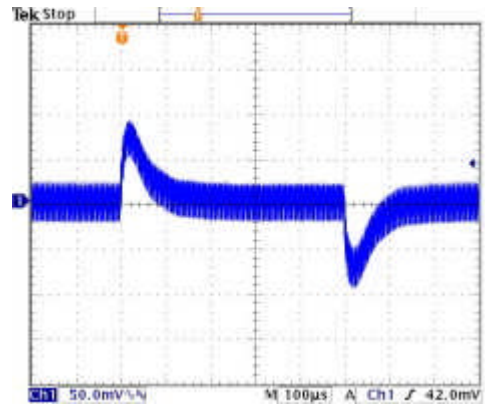
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

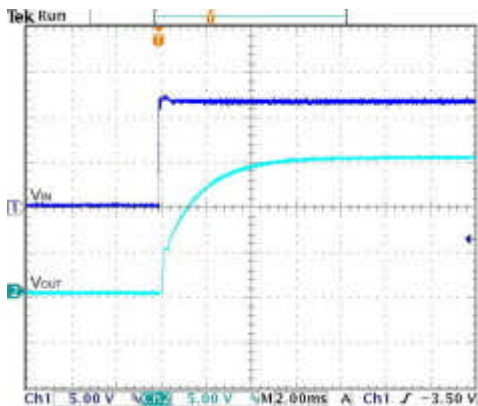
All test conditions are at 25°C. The figures are for PXE30-12S15



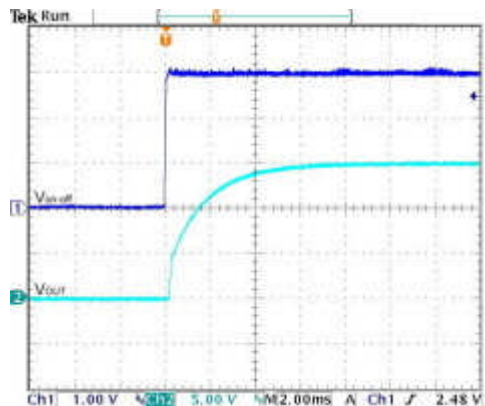
Typical Output Ripple and Noise.  
 $V_{in}=V_{in}(nom)$ , Full Load



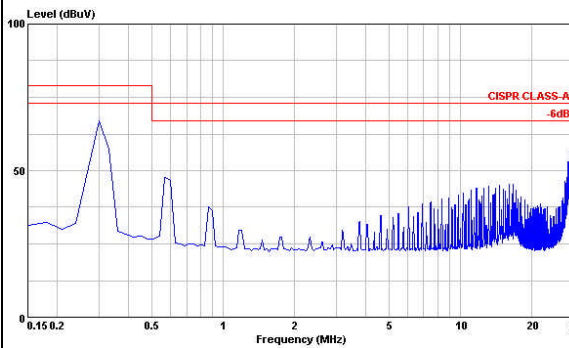
Transient Response to Dynamic Load Change from  
 100% to 75% to 100% of Full Load ;  $V_{in}=V_{in}(nom)$



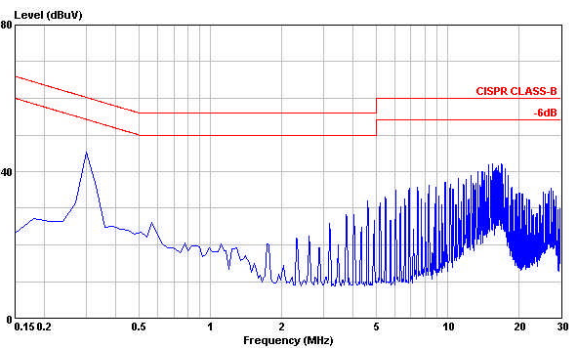
Typical Input Start-Up and Output Rise Characteristic  
 $V_{in}=V_{in}(nom)$ , Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
 $V_{in}=V_{in}(nom)$ , Full Load



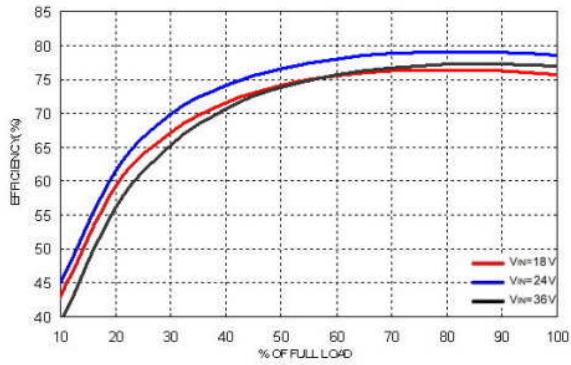
Conduction Emission of EN55022 Class A  
 $V_{in}=V_{in}(nom)$ , Full Load



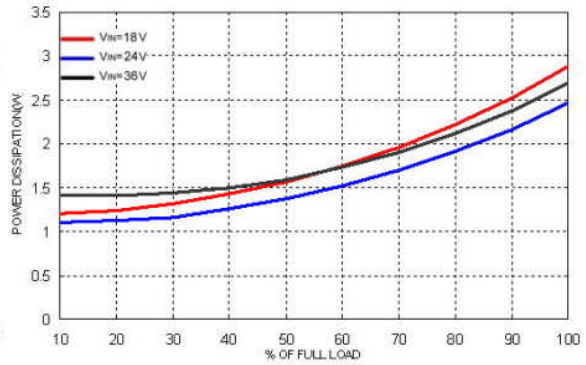
Conduction Emission of EN55022 Class B  
 $V_{in}=V_{in}(nom)$ , Full Load

Characteristic Curves (Continued)

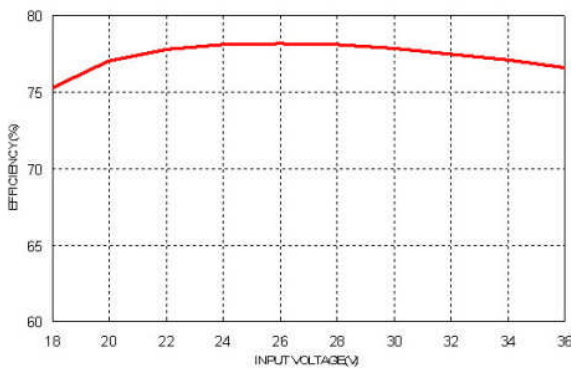
All test conditions are at 25°C. The figures are for PXE30-24S1P5



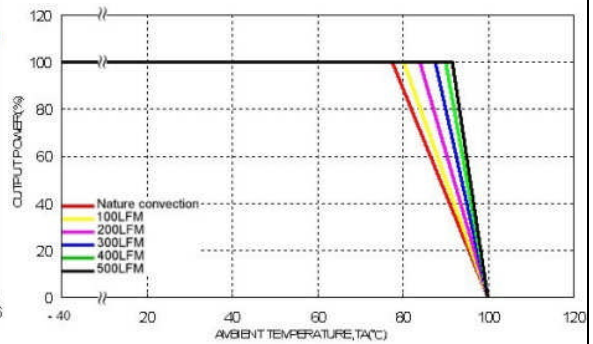
Efficiency Versus Output Current



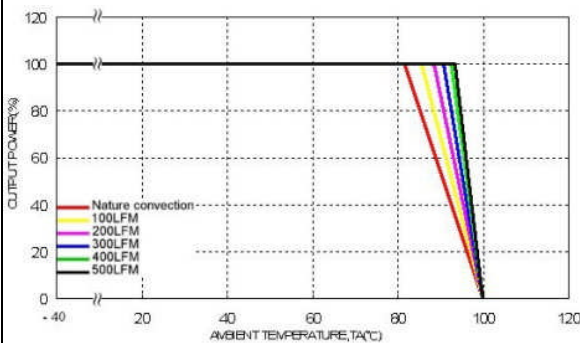
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



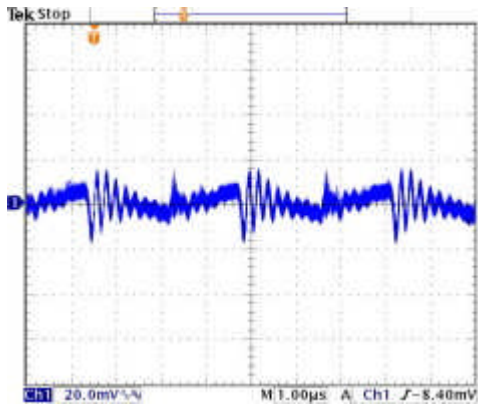
Derating Output Current Versus Ambient Temperature and Airflow  
Vin=Vin(nom)



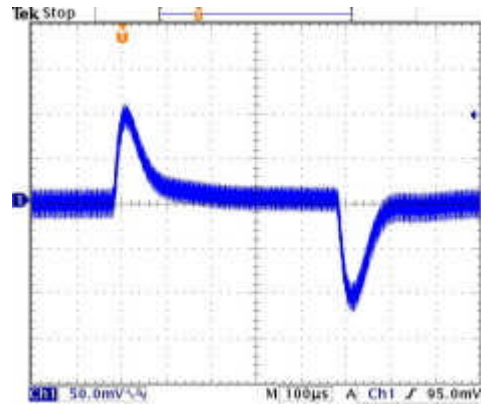
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, Vin = Vin(nom)

Characteristic Curves (Continued)

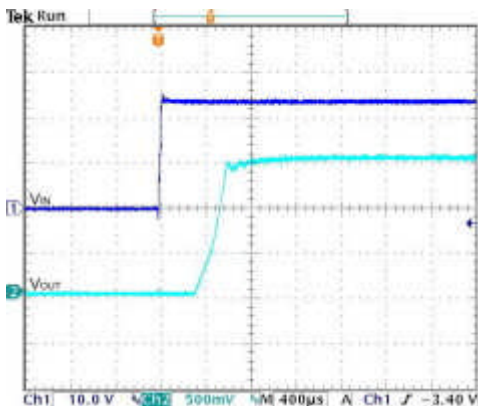
All test conditions are at 25°C. The figures are for PXE30-24S1P5



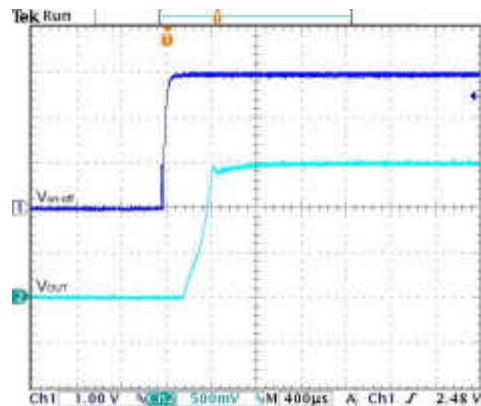
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



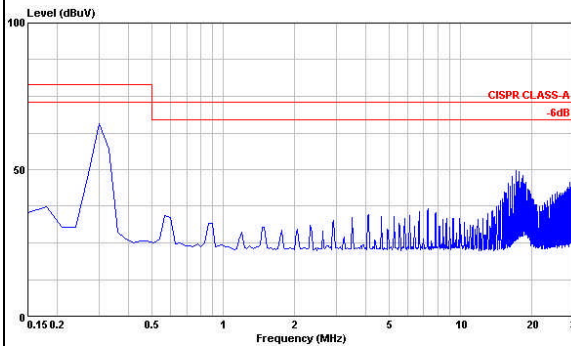
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



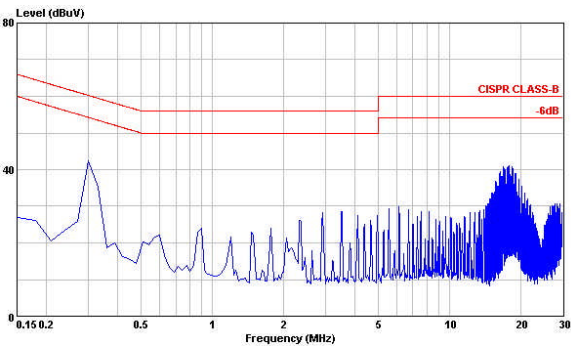
Typical Input Start-Up and Output Rise Characteristic  
Vin=Vin(nom), Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



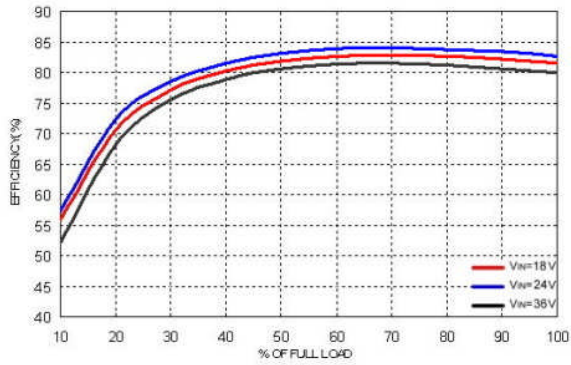
Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load



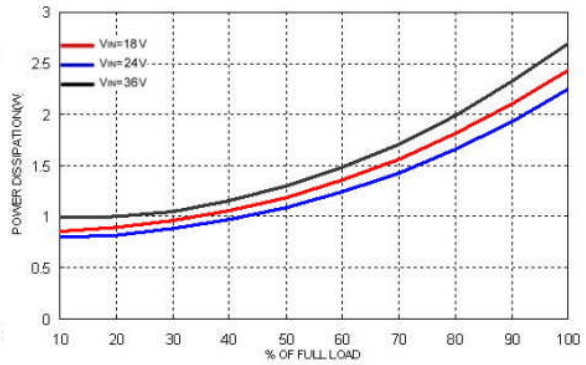
Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

Characteristic Curves (Continued)

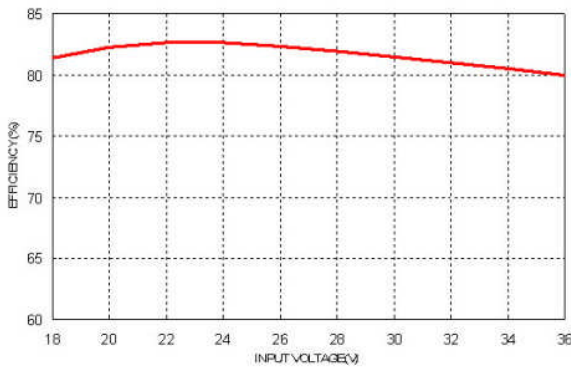
All test conditions are at 25°C. The figures are for PXE30-24S1P8



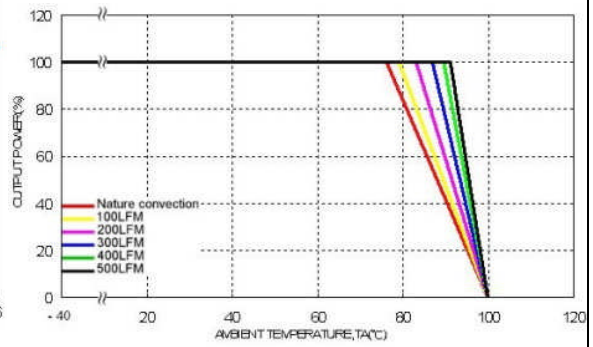
Efficiency Versus Output Current



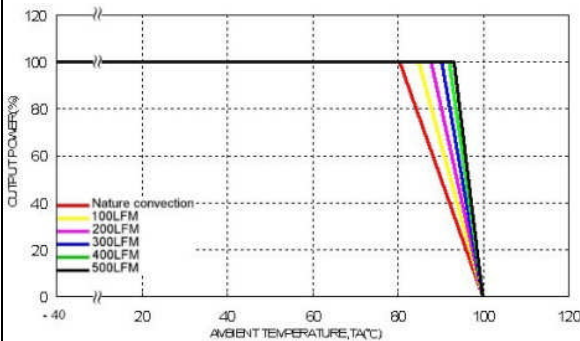
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



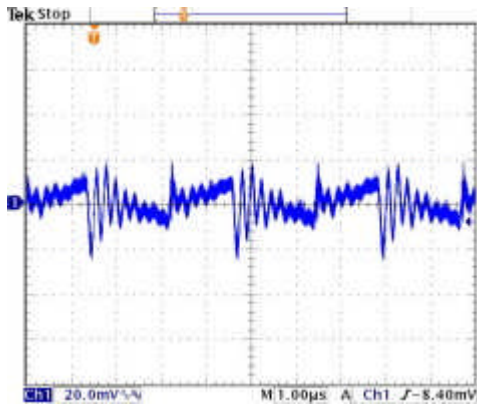
Derating Output Current Versus Ambient Temperature and Airflow  
V<sub>in</sub>=V<sub>in</sub>(nom)



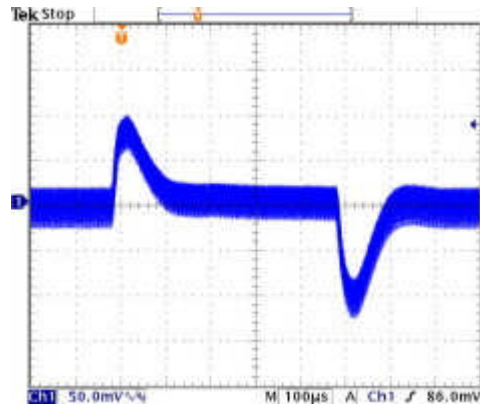
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, V<sub>in</sub> = V<sub>in</sub>(nom)

Characteristic Curves (Continued)

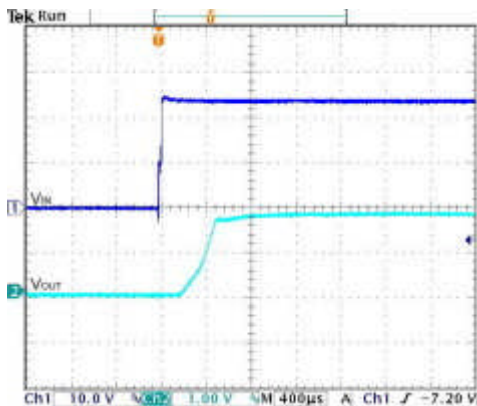
All test conditions are at 25°C. The figures are for PXE30-24S1P8



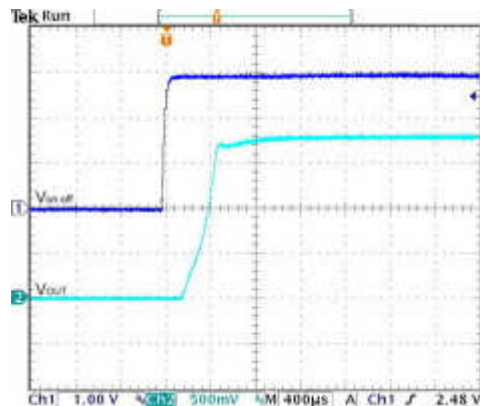
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



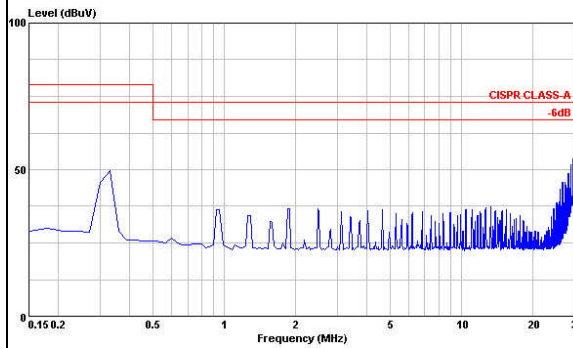
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



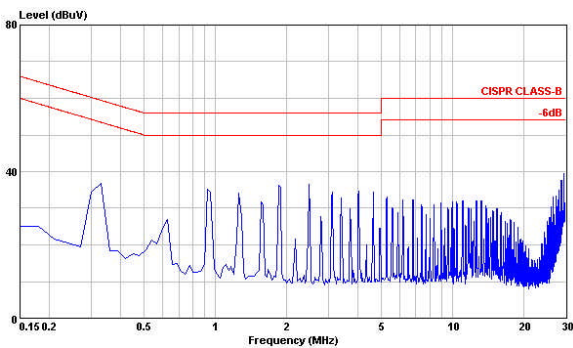
Typical Input Start-Up and Output Rise Characteristic  
Vin=Vin(nom), Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load

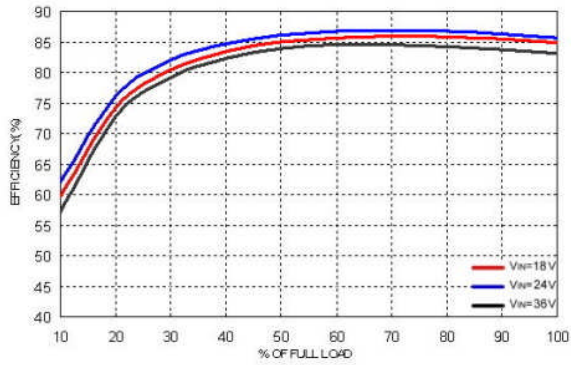


Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load

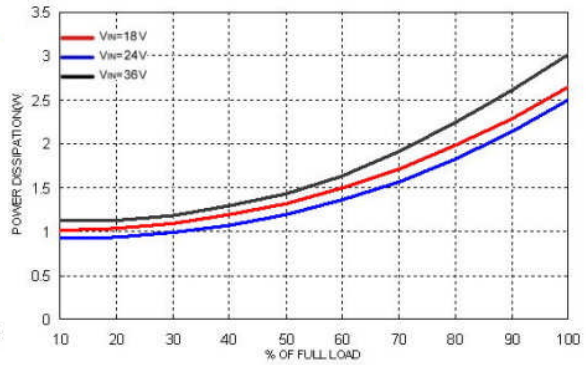


Characteristic Curves (Continued)

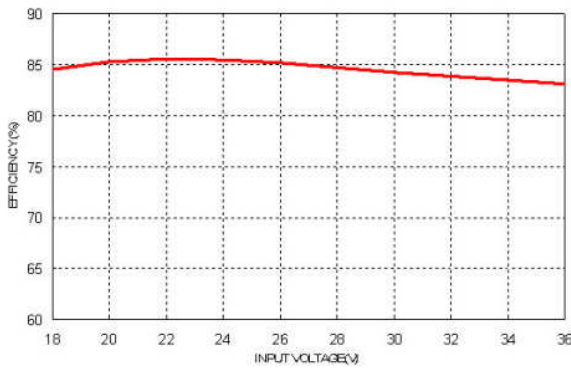
All test conditions are at 25°C. The figures are for PXE30-24S2P5



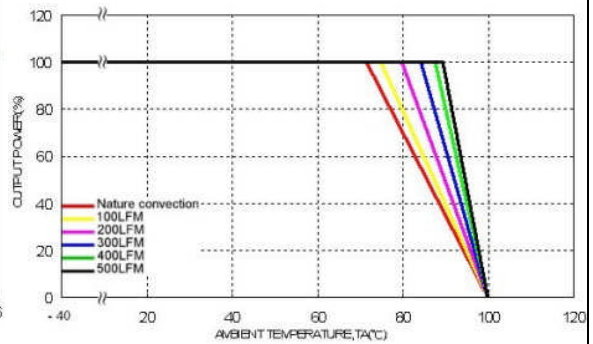
Efficiency Versus Output Current



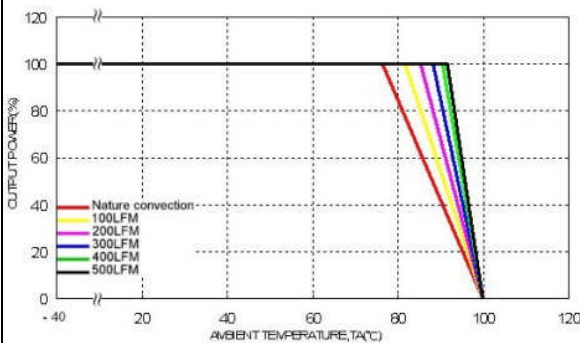
Power Dissipation Versus Output Current



Efficiency Versus Input Voltage. Full Load



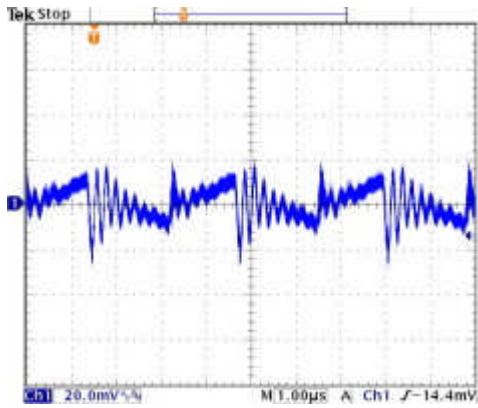
Derating Output Current Versus Ambient Temperature and Airflow  
V<sub>in</sub>=V<sub>in</sub>(nom)



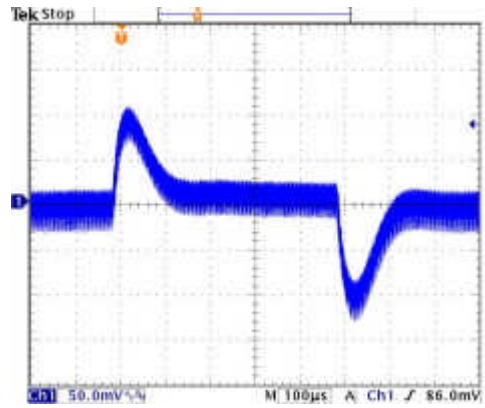
Derating Output Current Versus Ambient Temperature with Heat-Sink  
and Airflow, V<sub>in</sub> = V<sub>in</sub>(nom)

Characteristic Curves (Continued)

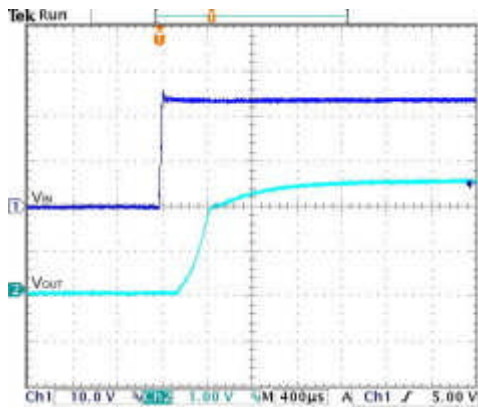
All test conditions are at 25°C. The figures are for PXE30-24S2P5



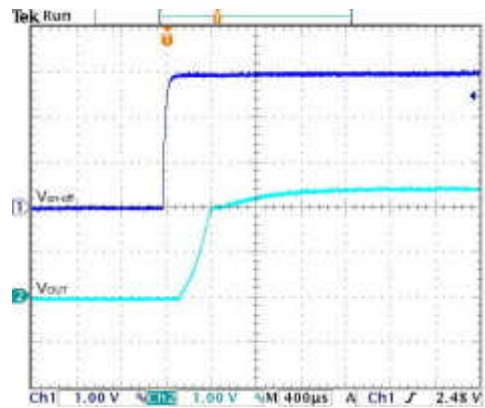
Typical Output Ripple and Noise.  
Vin=Vin(nom), Full Load



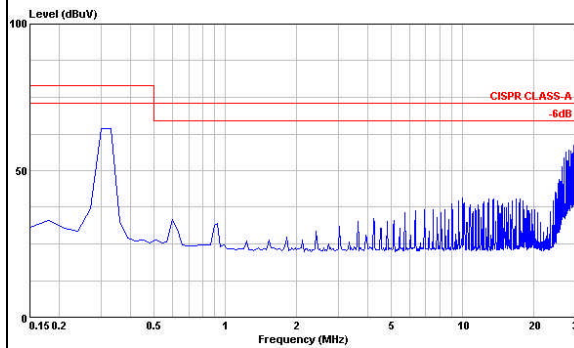
Transient Response to Dynamic Load Change from 100% to 75% to 100% of Full Load ; Vin=Vin(nom)



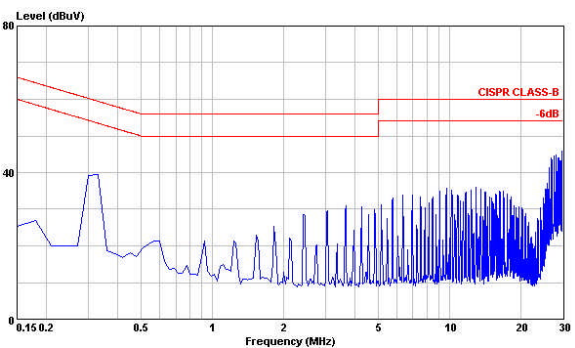
Typical Input Start-Up and Output Rise Characteristic  
Vin=Vin(nom), Full Load



Using ON/OFF Voltage Start-Up and Vo Rise Characteristic  
Vin=Vin(nom), Full Load



Conduction Emission of EN55022 Class A  
Vin=Vin(nom), Full Load



Conduction Emission of EN55022 Class B  
Vin=Vin(nom), Full Load