Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

PXF40-xxDxx Dual Output DC/DC Converter

9 to 18 Vdc and 18 to 36 Vdc and 36 to 75 Vdc input, 3.3 to 15 Vdc Dual Output, 40W

Features

- Dual output current up to 8A
- 40 watts maximum output power
- 2:1 wide input voltage range
- Six-sided continuous shield
- High efficiency up to 89%
- Low profile: 2.00 x 2.00 x 0.40 inch (50.8 x 50.8 x 10.2 mm)
- Fixed switching frequency
- RoHS directive compliant
- Input to output isolation: 1600Vdc,min
- Over-temperature protection
- Input under-voltage protection
- Output over-voltage protection
- Over-current protection, auto-recovery
- Output short circuit protection, auto-recovery
- Remote ON/OFF

Options

- Heat sinks available for extended operation

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement
Semiconductor Equipment

General Description

The PXF40-xxDxx series offers 40 watts of output power from a 2 x 2 x 0.4 inch package. This series has a 2:1 wide input voltage of 9-18VDC,18-36VDC or 36-75VDC and features 1600VDC of isolation, short-circuit and over-voltage protection.

Table of Contents

Absolute Maximum Rating

Parameter	Model	Min	Max	Unit
Input Voltage				
Continuous	12Dxx		18	
	24Dxx		36	
	48Dxx		75	Vdc
Transient (100ms)	12Dxx		36	
	24Dxx		50	
	48Dxx		100	
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	xxD12	11.88	12	12.12	
(Vin = Vin(nom) ; Full Load ; TA=25°C)	xxD15	14.85	15	15.15	Vdc
	xxD3305	3.267/4.95	3.3/5	3.333/5.05	
Voltage Adjustability	All	-10		+10	%
Output Regulation					
Line (Vin(min) to Vin(max) at Full Load)	All	-0.5		+0.5	%
Load (Min. to 100% of Full Load)		-1.0		+1.0	
Output Ripple & Noise					
Peak-to-Peak (20MHz bandwidth)					
(Measured with a 0.1µF/50V MLCC)	xxD12		120		mVp-p
	xxD15		150		
(Measured with a 1µF/50V MLCC)	xxD3305		100		
Temperature Coefficient	All	-0.02		+0.02	%/°C
Output Voltage Overshoot	All		0	3	% Vo
(Vin(min) to Vin(max) ; Full Load ; T_A=25°C)					
Dynamic Load Response					
(Vin = Vin(nom) ; T_A=25°C)					
Load step change from					
75% to 100% or 100 to 75% of Full Load	All		250		mV
Peak Deviation					
Setting Time (V_{OUT} < 10% peak deviation)	All		250		µS
Output Current	xxD12	±144		±1800	
(Any condition of dual output (3.3V/5V) rated Iout current, not	xxD15	±112		±1400	mA
to exceed 8A of total output currents. The product safety	xxD3305	0		4/4	A
approval pending)					
Output Over Voltage Protection	xxD12		15		
(Zener diode clamp)	xxD15		18		Vdc
	xxD3305		3.9/6.2		
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	12Dxx	9	12	18	
	24Dxx	18	24	36	Vdc
	48Dxx	36	48	75	
Input Current	12D12			4444	
(Maximum value at Vin = Vin(nom); Full Load)	12D15			4321	
	12D3305			3416	
	24D12			2169	
	24D15			2108	mA
	24D3305			1689	
	48D12			1084	
	48D15			1054	
	48D3305			823	
Input Standby Current	12D12		30		
(Typical value at Vin = Vin(nom); No Load)	12D15		35		
	12D3305		325		
	24D12		20		
	24D15		20		mA
	24D3305		80		
	48D12		15		
	48D15		15		
	48D3305		45		
Under Voltage Lockout Turn-on Threshold	12Dxx			9	
	24Dxx			17.8	Vdc
	48Dxx			36	
Under Voltage Lockout Turn-off Threshold	12Dxx		8		
	24Dxx		16		Vdc
	48Dxx		34		
Input Reflected Ripple Current	All		40		mAp-p
(5 to 20MHz, 12µH Source Impedance)					
Start Up Time					
(Vin = Vin(nom) and Constant Resistive Load)					mS
Power Up	All			25	
Remote ON/OFF				25	
Remote ON/OFF Control					Vdc
(The ON/OFF pin voltage is referenced to -V_{IN})					
Positive Logic DC-DC ON	All	3.5		12	
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 (Vin = Vin(nom) ; Full Load ; TA=25°C)	12D12		85		
	12D15		85		
	12D3305		85		
	24D12		87		
	24D15		87		%
	24D3305		86		
	48D12		87		
	48D15		87		
	48D3305		88		
Isolation Voltage 　Input to Output 　Input to Case, Output to Case	All	1600 1600			Vdc
Isolation Resistance	All	1			GΩ
Isolation Capacitance	All			1000	pF
Switching Frequency master (5Vo) 300kHz　slave (3.3Vo) 500kHz	xxD12 xxD15 xxD3305		300		kHz
Weight	All		60		g
MTBF 　Bellcore TR-NWT-000332, TC=40°C 　MIL-HDBK-217F	All		1.398×10^6 3.585×10^5		hours
Over Temperature Protection	All		115		°C

Characteristic Curves

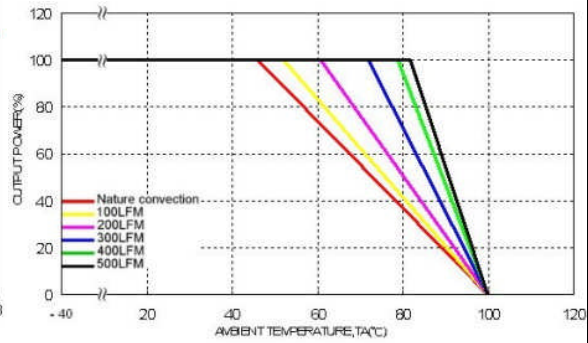All test conditions are at 25°C.The figures are for PXF40-12D12
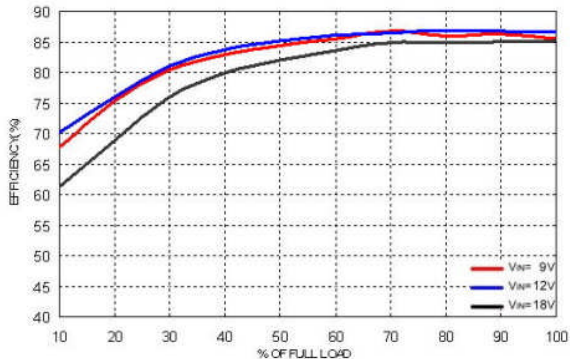

Efficiency Versus Output Current
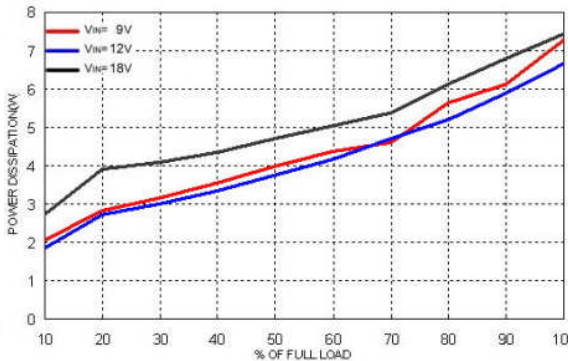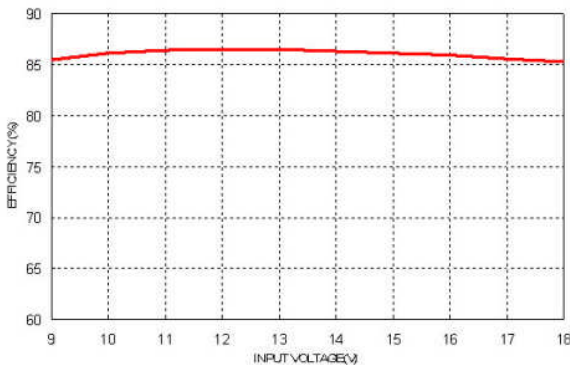
Power Dissipation Versus Output Current

Efficiency Versus Input Voltage. Full Load
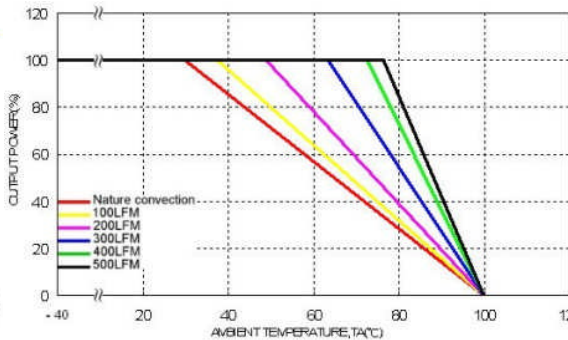
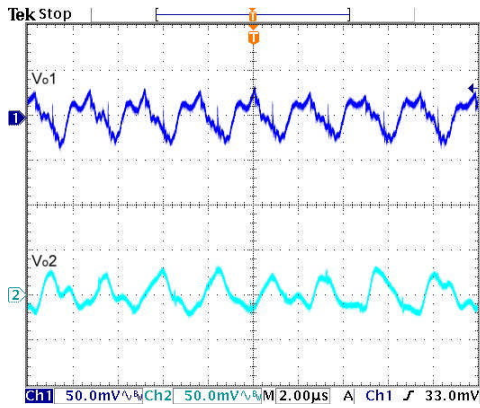**Derating Output Current Versus Ambient Temperature and Airflow Vin = Vin(nom)**
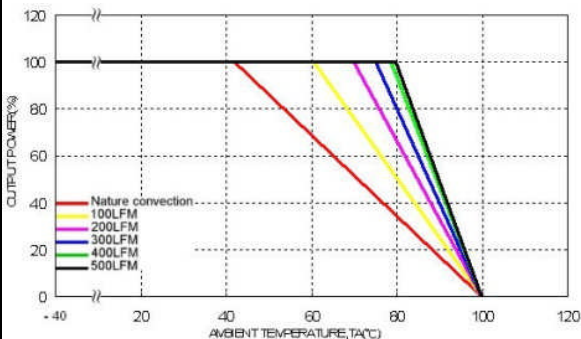
Derating Output Current Versus Ambient Temperature with Heat-Sink and Airflow ,Vin = Vin(nom)
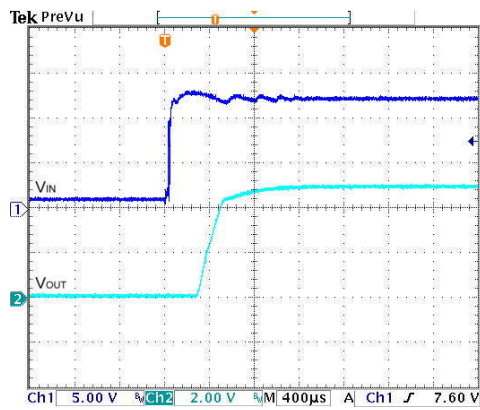
Characteristic Curves (Continued)

All test conditions are at 25°C.The figures are for PXF40-12D12

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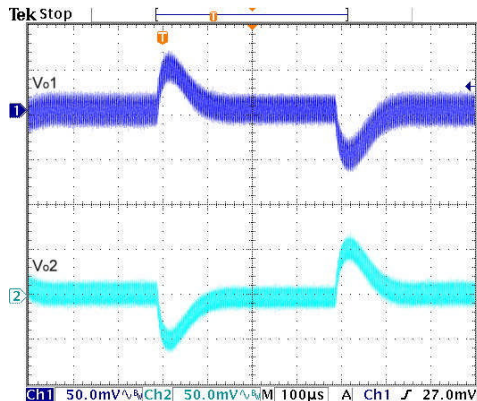
Vin = Vin(nom), Full Load

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
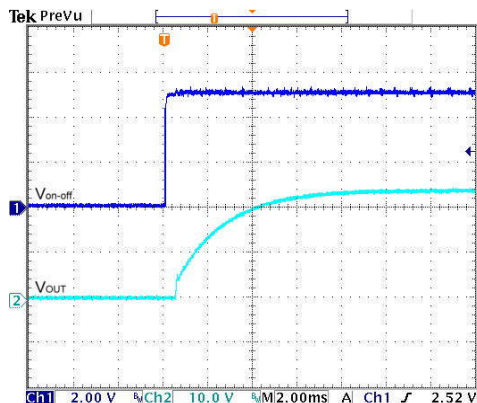
Using ON/OFF Voltage Start-Up and Vo Rise Characteristic

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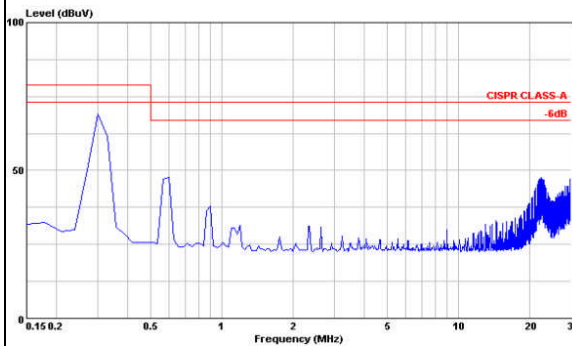
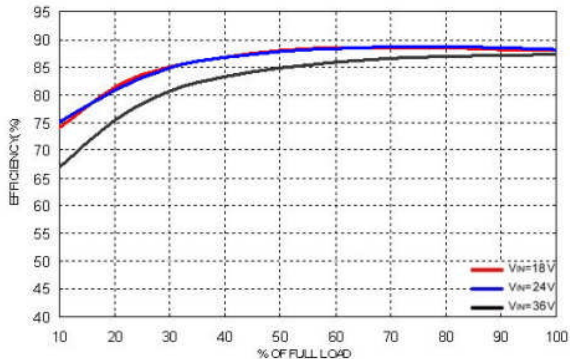
**Conduction Emission of EN55022 Class A**

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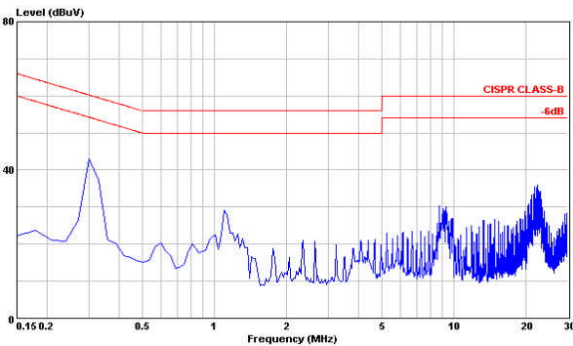
Conduction Emission of EN55022 Class B

Vin = Vin(nom), Full Load
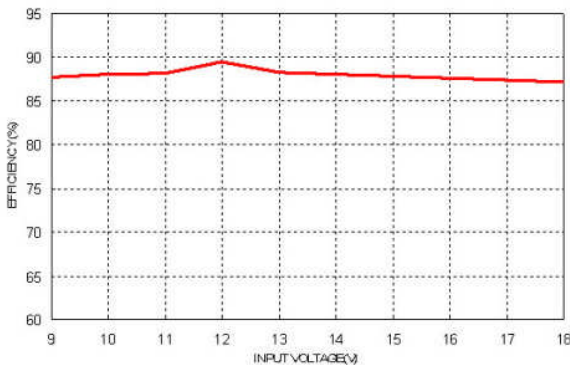
Characteristic Curves (Continued)

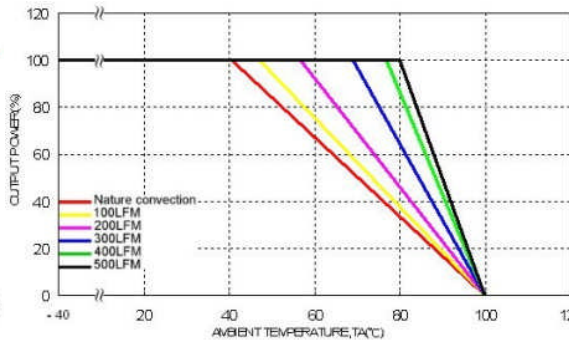All test conditions are at 25°C.The figures are for PXF40-12D15

**Efficiency Versus Output Current**
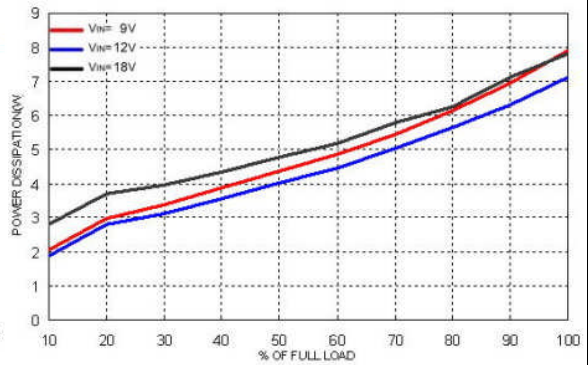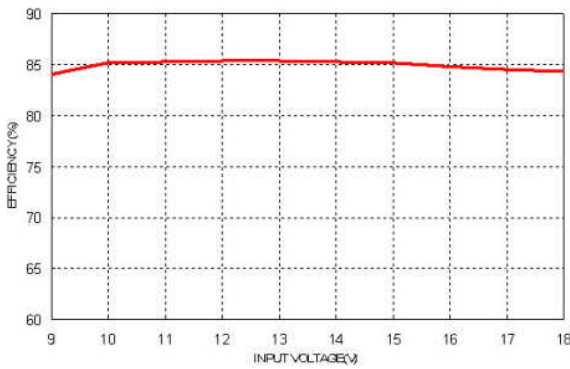
Power Dissipation Versus Output Current

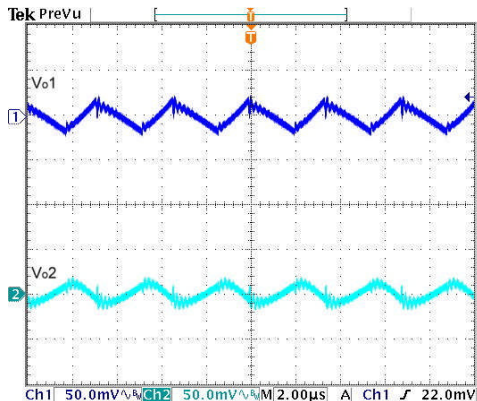**Efficiency Versus Input Voltage. Full Load**
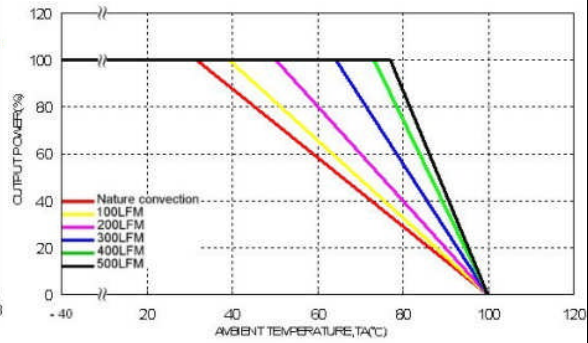
Derating Output Current Versus Ambient Temperature and Airflow Vin = Vin(nom)
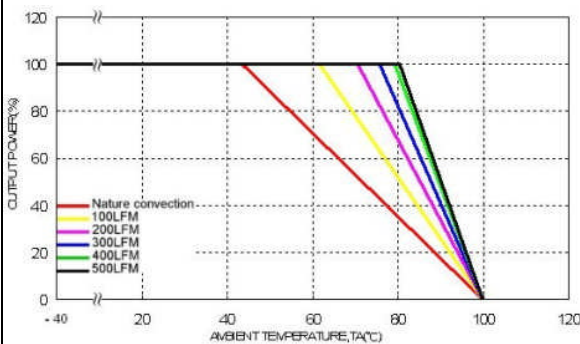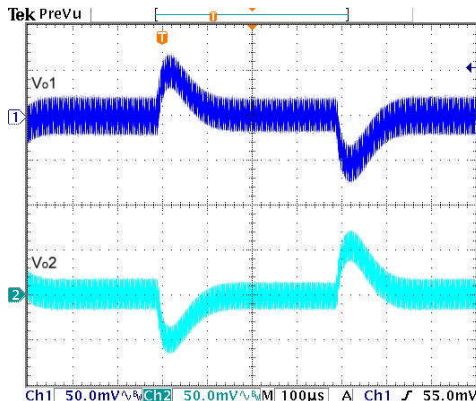

Derating Output Current Versus Ambient Temperature with Heat-Sink and Airflow ,Vin = Vin(nom)
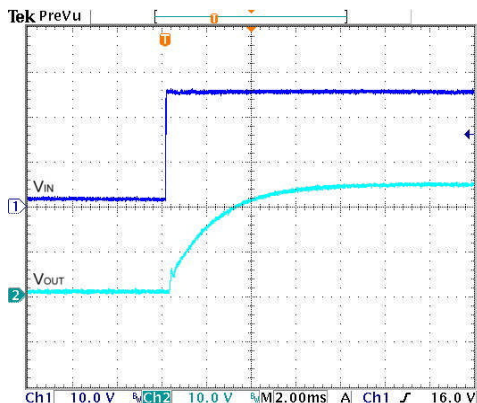
Characteristic Curves (Continued)

All test conditions are at 25°C.The figures are for PXF40-12D15

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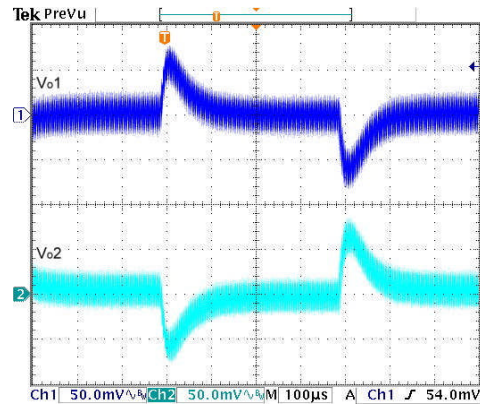
Vin = Vin(nom), Full Load

**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
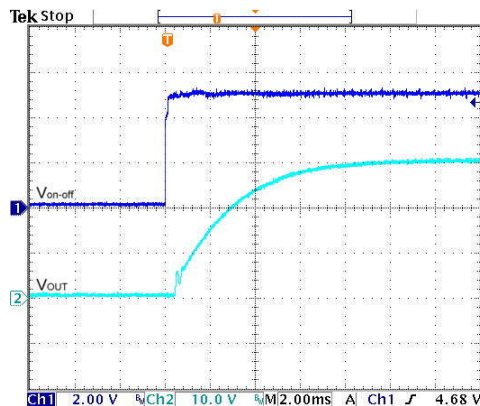
Using ON/OFF Voltage Start-Up and Vo Rise Characteristic

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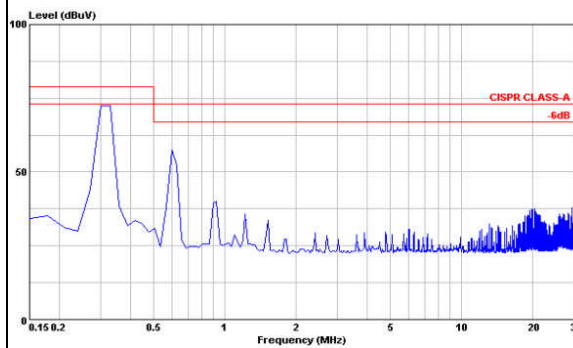
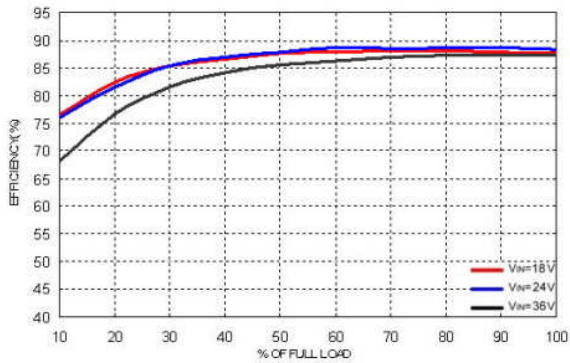**Conduction Emission of EN55022 Class A**

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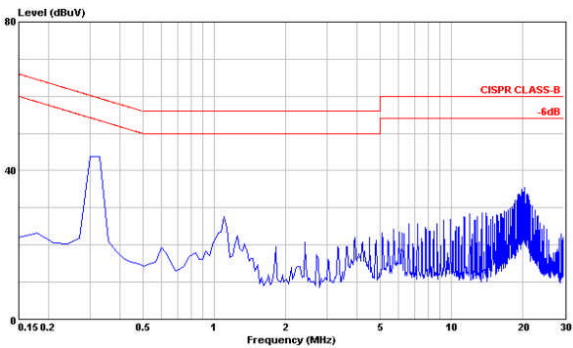
Conduction Emission of EN55022 Class B

Vin = Vin(nom), Full Load

Characteristic Curves (Continued)

All test conditions are at 25°C.The figures are for PXF40-12D3305

Efficiency Versus Output Current
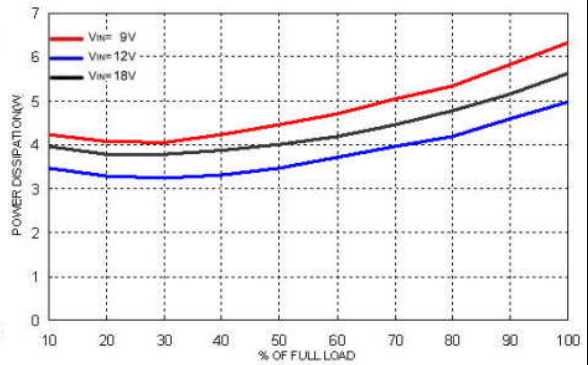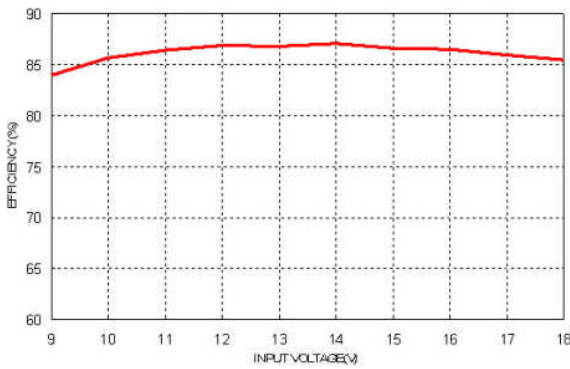
Power Dissipation Versus Output Current

Efficiency Versus Input Voltage. Full Load

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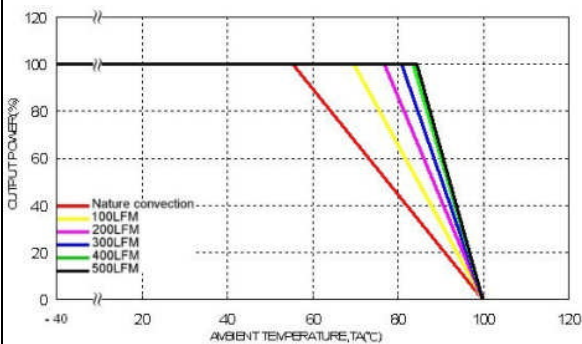
Vin = Vin(nom)

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 PXF40-12D3305

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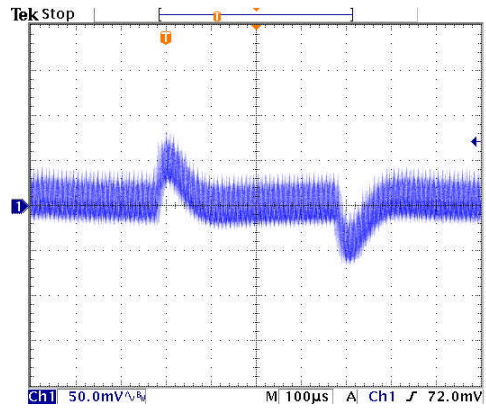
Vin = Vin(nom), Full Load

+5Vo:

Transient Response to Dynamic Load Change from

100% to 75% to 100% of Full Load ; Vin = Vin(nom)

+3.3Vo:Full load

Typical Input Start-Up and Output Rise Characteristic

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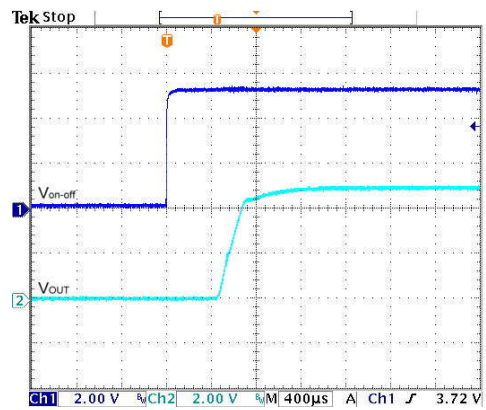
Using ON/OFF Voltage Start-Up and Vo Rise Characteristic

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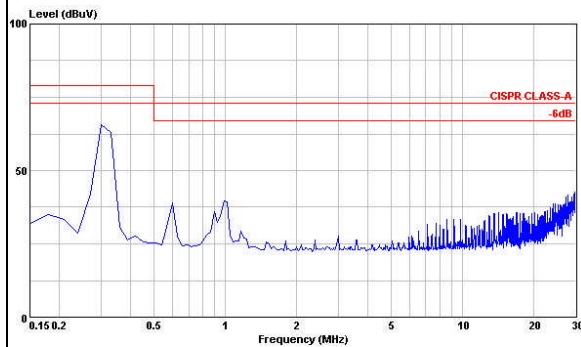
**Conduction Emission of EN55022 Class A**

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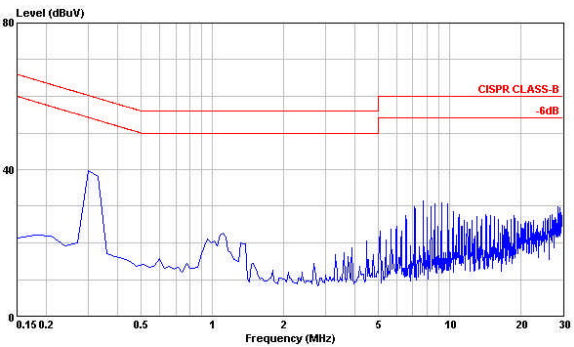
Conduction Emission of EN55022 Class B

Vin = Vin(nom), Full Load

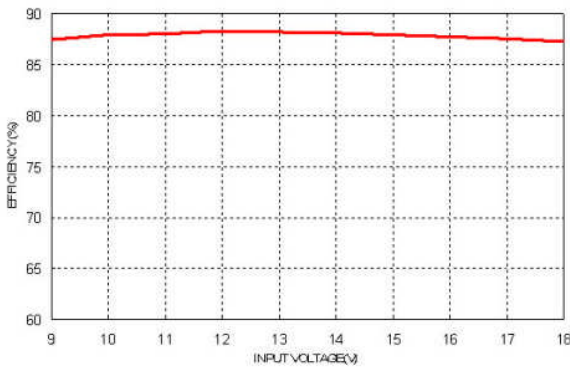## Characteristic Curves (Continued)

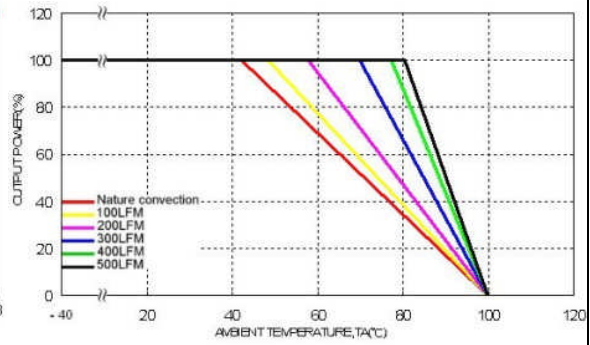All test conditions are at 25°C.The figures are for PXF40-24D12

Efficiency Versus Output Current
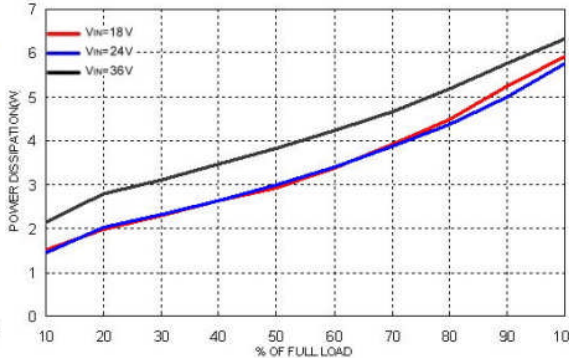
Power Dissipation Versus Output Current
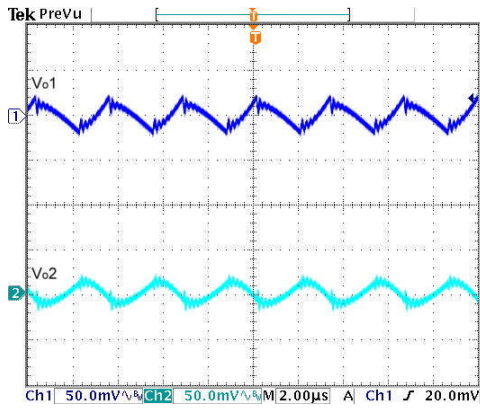
Efficiency Versus Input Voltage. Full Load

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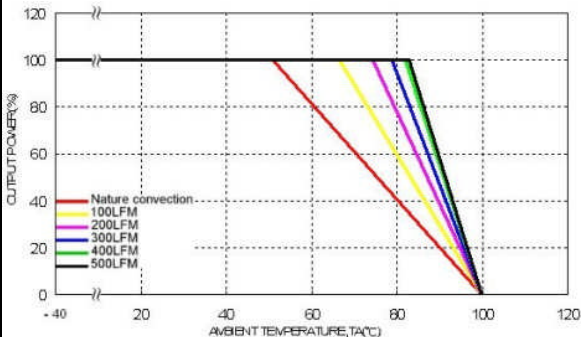
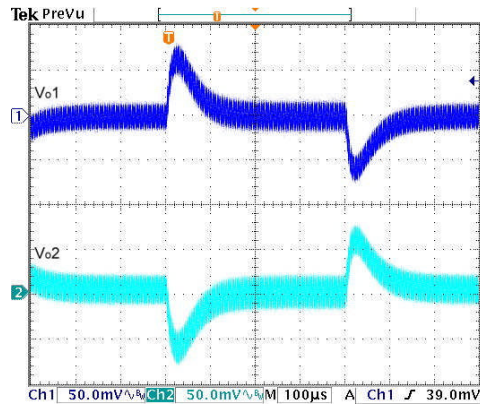**Derating Output Current Versus Ambient Temperature with Heat-Sink and Airflow ,Vin = Vin(nom)**
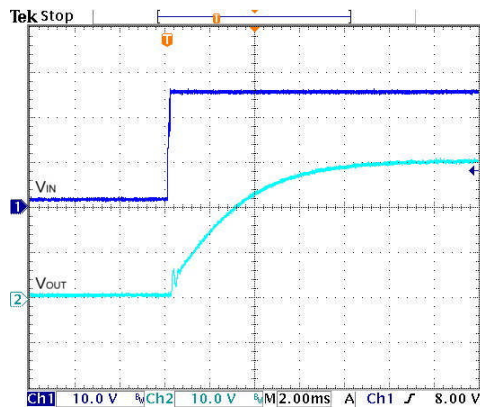
Characteristic Curves (Continued)

All test conditions are at 25°C.The figures are for PXF40-24D12

**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
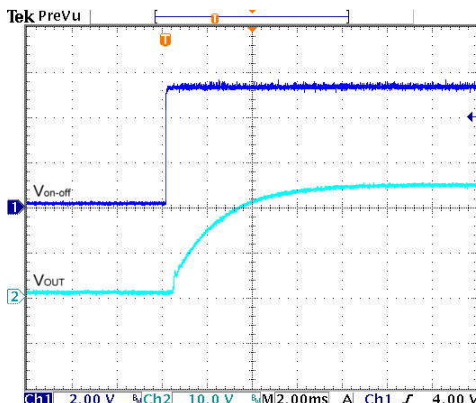
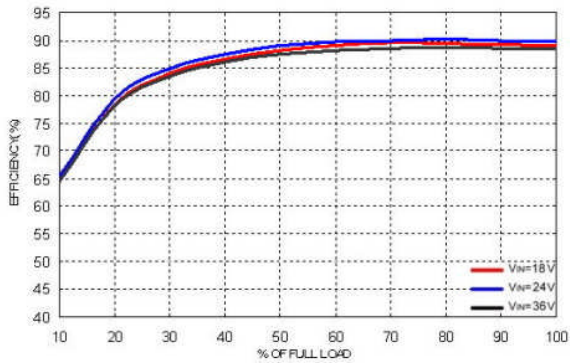**Using ON/OFF Voltage Start-Up and Vo Rise Characteristic**

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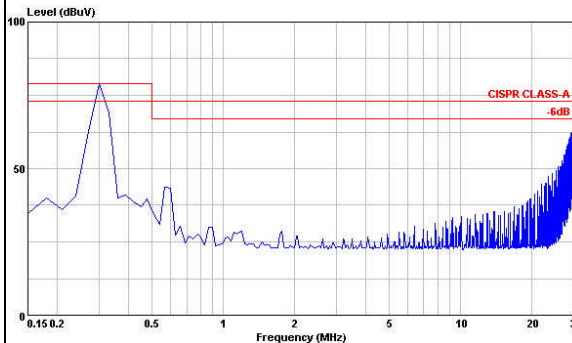
Conduction Emission of EN55022 Class A
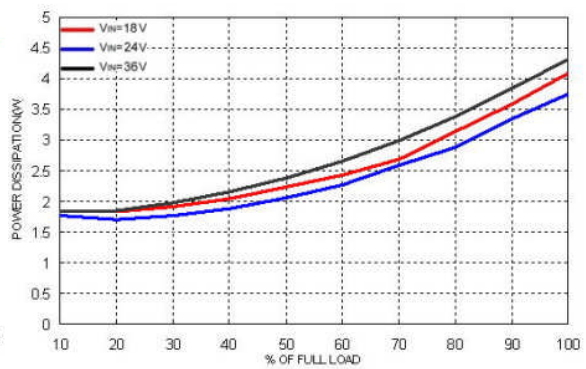
Vin = Vin(nom), Full Load
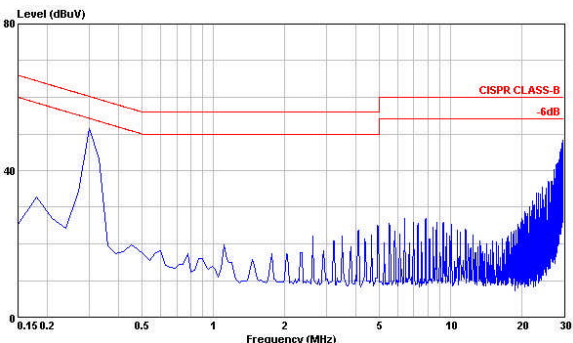
Conduction Emission of EN55022 Class B

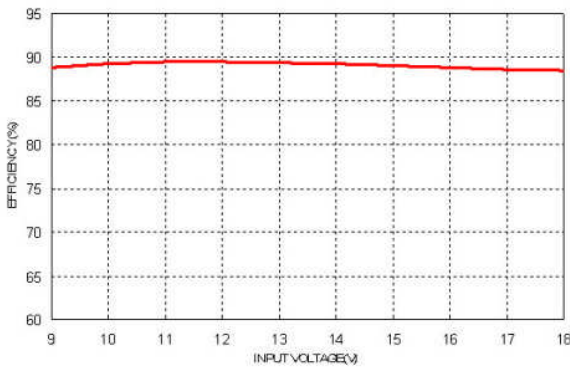Vin = Vin(nom), Full Load

Characteristic Curves (Continued)

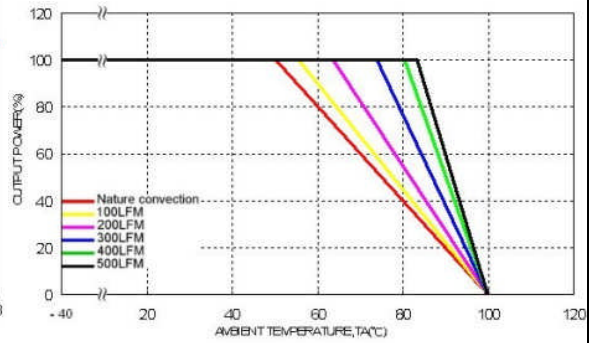All test conditions are at 25°C.The figures are for PXF40-24D15

Efficiency Versus Output Current
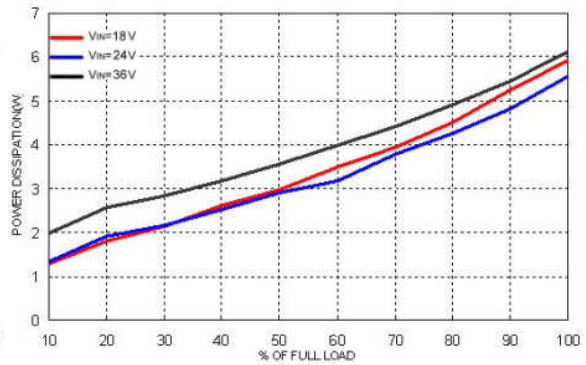
Power Dissipation Versus Output Current

Efficiency Versus Input Voltage. Full Load

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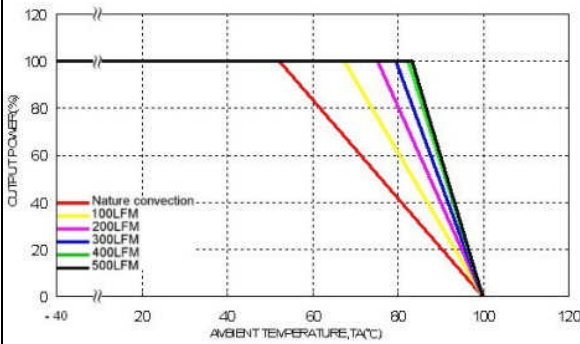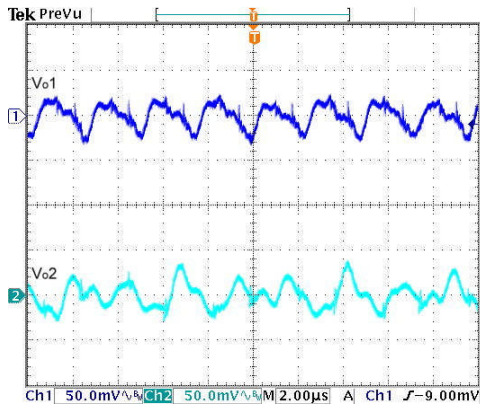
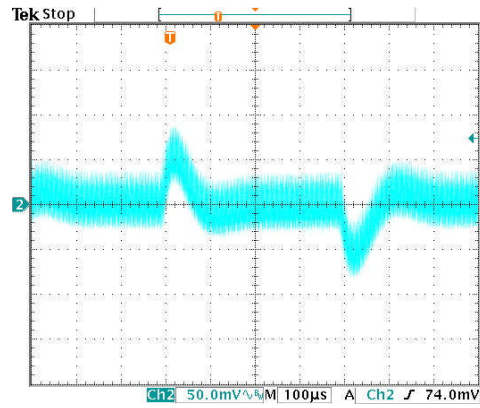**Derating Output Current Versus Ambient Temperature with Heat-Sink and Airflow ,Vin = Vin(nom)**
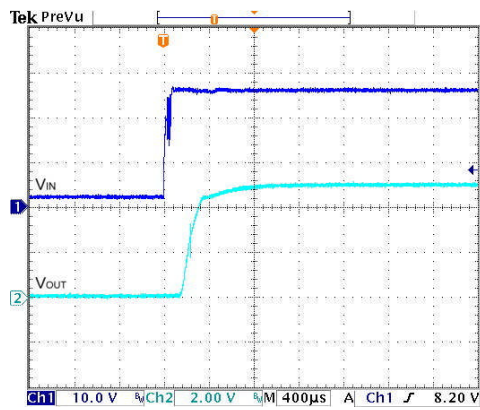
Characteristic Curves (Continued)

All test conditions are at 25°C. The figures are for PXF40-24D15

**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
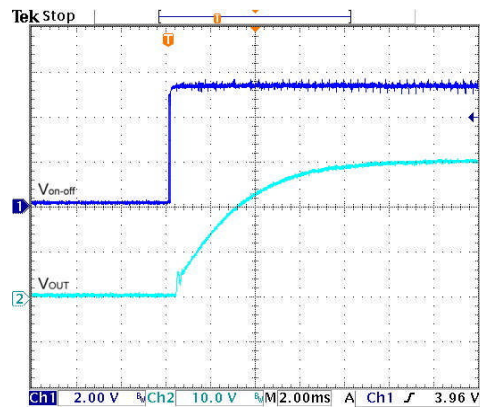
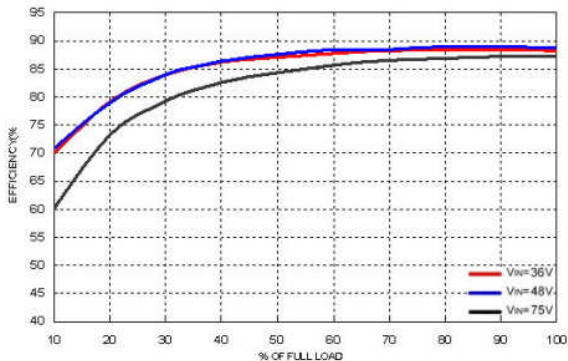**Using ON/OFF Voltage Start-Up and Vo Rise Characteristic**

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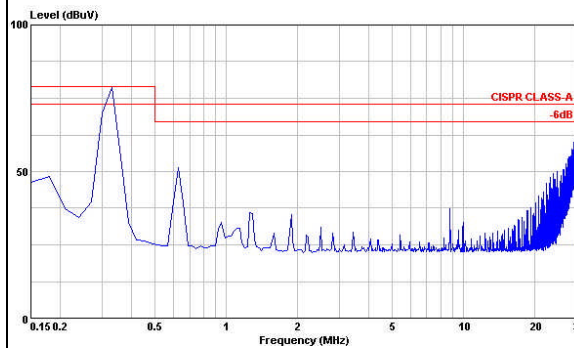
**Conduction Emission of EN55022 Class A**

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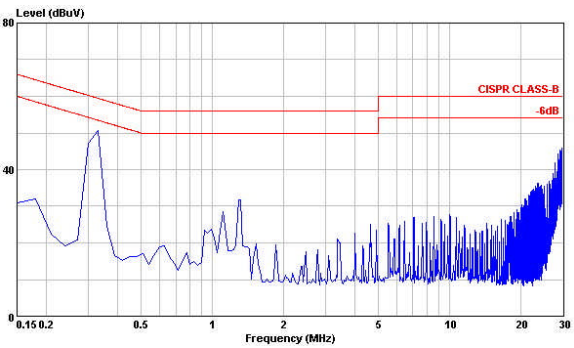
Conduction Emission of EN55022 Class B

Vin = Vin(nom), Full Load

Characteristic Curves (Continued)

All test conditions are at 25°C.The figures are for PXF40-24D3305

Efficiency Versus Output Current

Power Dissipation Versus Output Current

Efficiency Versus Input Voltage. Full Load

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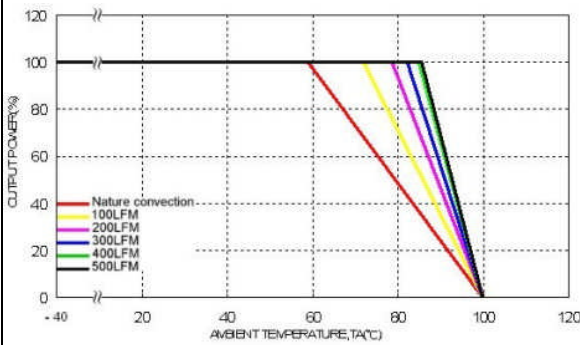
Vin = Vin(nom)

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 PXF40-24D3305

Typical Output Ripple and Noise.

Vin = Vin(nom), Full Load

+5Vo:

Transient Response to Dynamic Load Change from

100% to 75% to 100% of Full Load ; Vin = Vin(nom)

+3.3Vo:Full load

Typical Input Start-Up and Output Rise Characteristic

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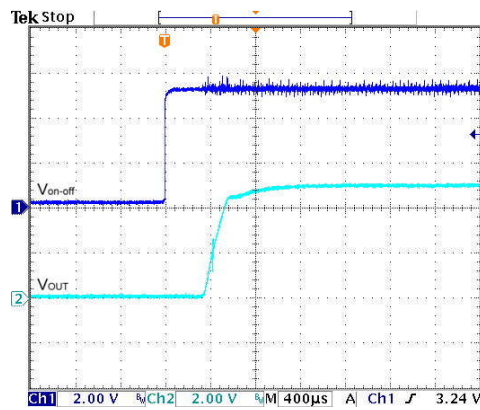
Using ON/OFF Voltage Start-Up and Vo Rise Characteristic

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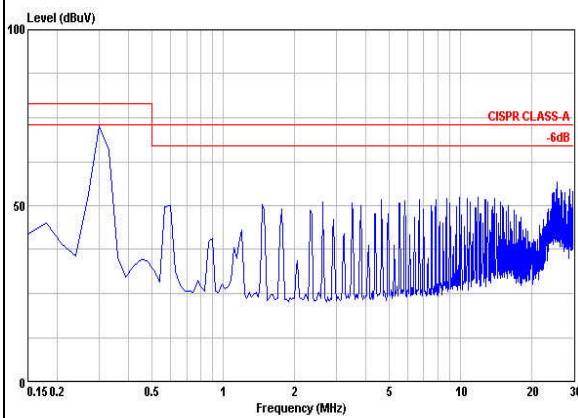
Conduction Emission of EN55022 Class A

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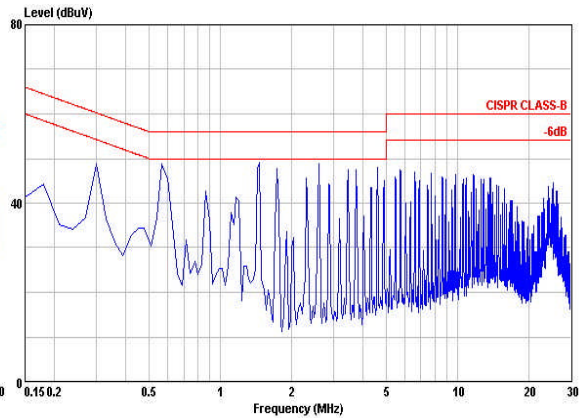
Conduction Emission of EN55022 Class B

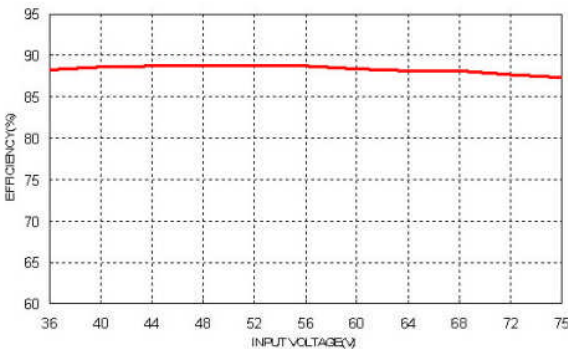Vin = Vin(nom), Full Load

Characteristic Curves (Continued)

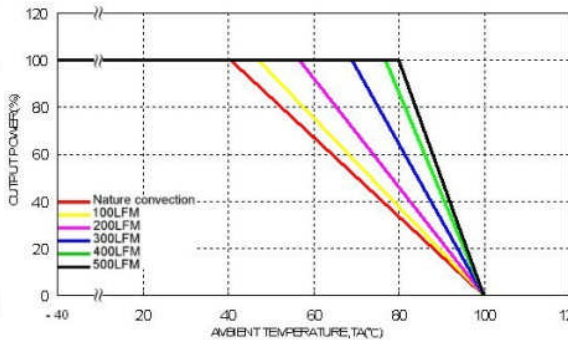All test conditions are at 25°C.The figures are for PXF40-48D12
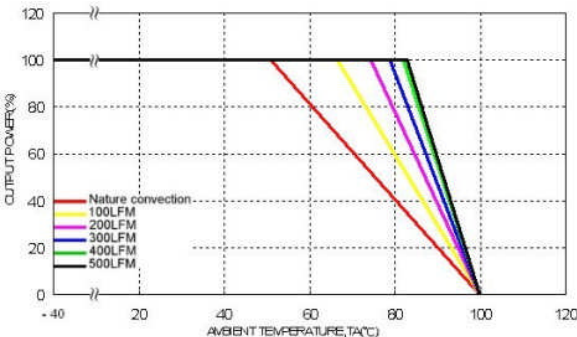

Efficiency Versus Output Current
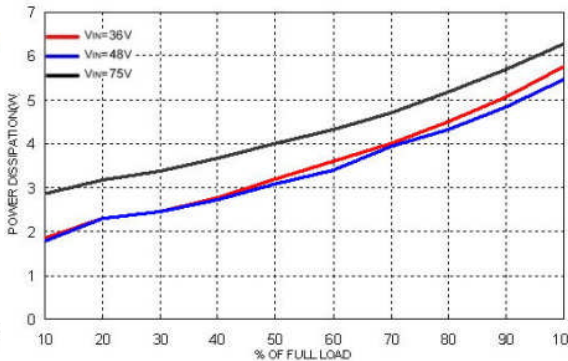
Power Dissipation Versus Output Current

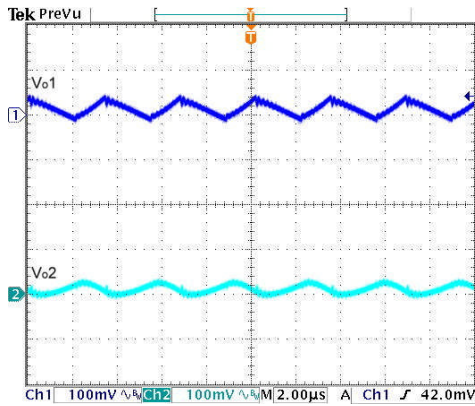**Efficiency Versus Input Voltage. Full Load**

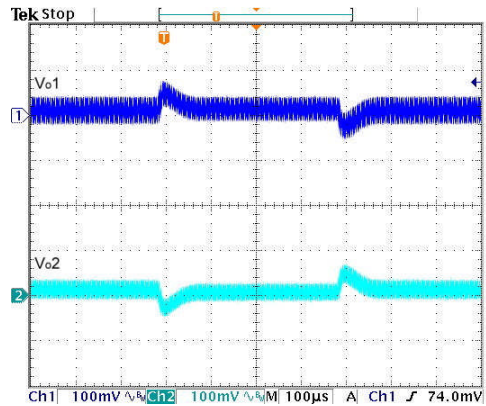**Derating Output Current Versus Ambient Temperature and Airflow Vin = Vin(nom)**

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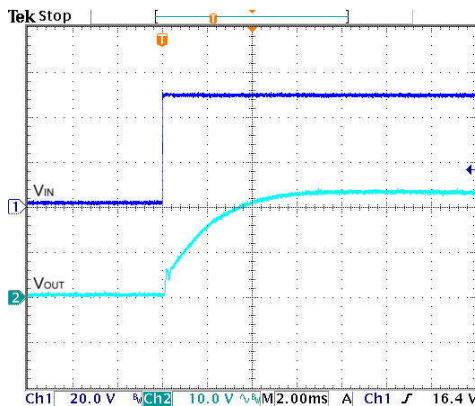
Characteristic Curves (Continued)

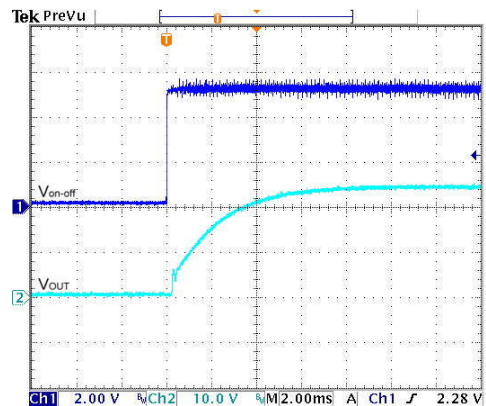All test conditions are at 25°C.The figures are for PXF40-48D12

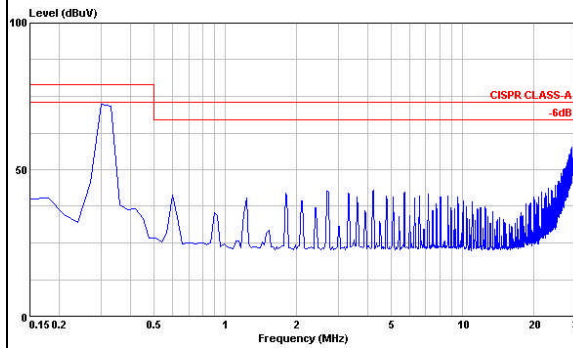**Typical Output Ripple and Noise.**

Vin = Vin(nom), Full Load

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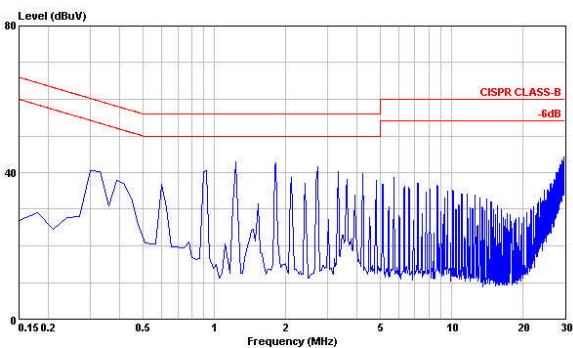
100% to 75% to 100% of Full Load ; Vin = Vin(nom)

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

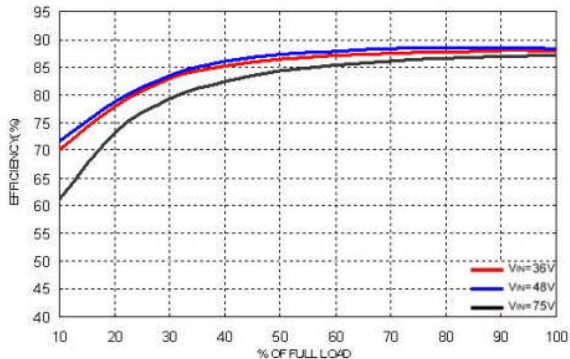
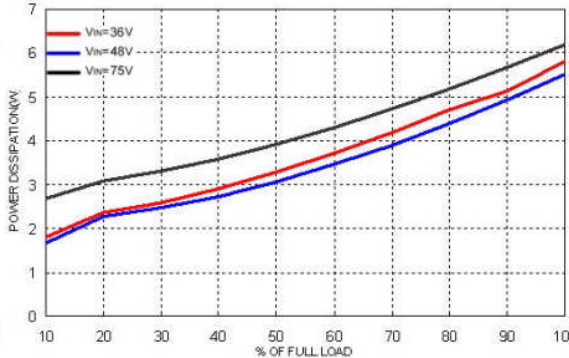**Conduction Emission of EN55022 Class A**

Vin = Vin(nom), Full Load

Conduction Emission of EN55022 Class B

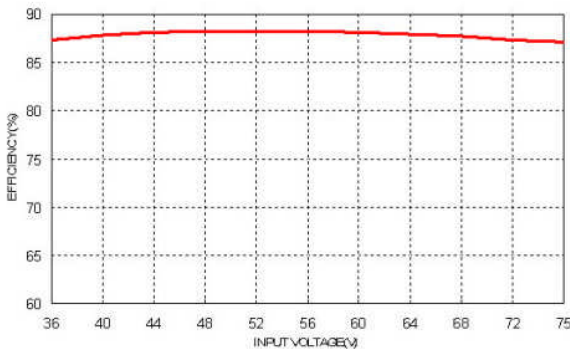**Vin = Vin(nom), Full Load**

Characteristic Curves (Continued)

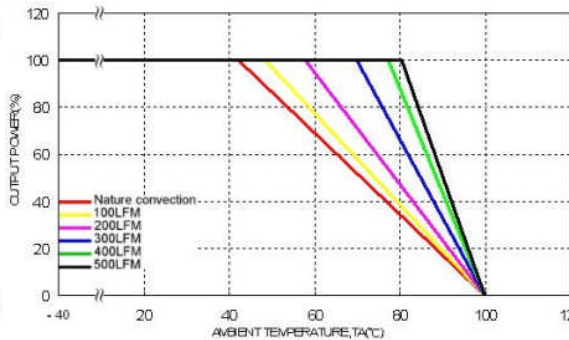All test conditions are at 25°C. The figures are for PXF40-48D15
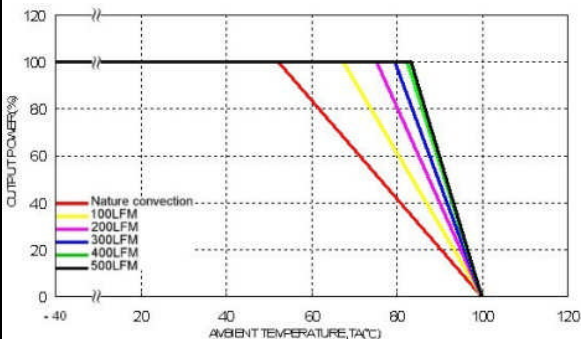

Efficiency Versus Output Current

Power Dissipation Versus Output Current

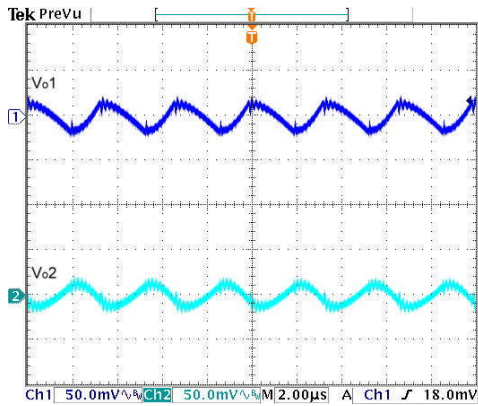**Efficiency Versus Input Voltage. Full Load**

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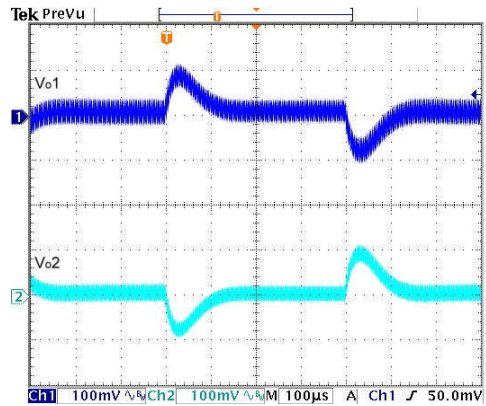

Derating Output Current Versus Ambient Temperature with Heat-Sink and Airflow ,Vin = Vin(nom)
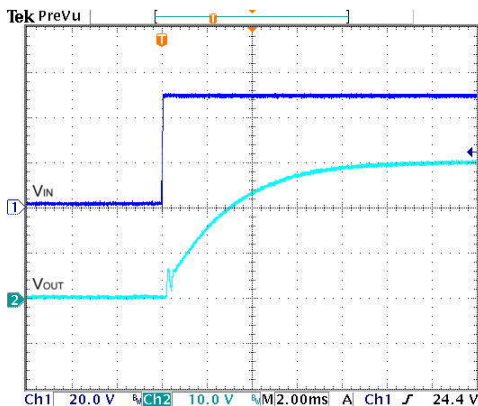
Characteristic Curves (Continued)

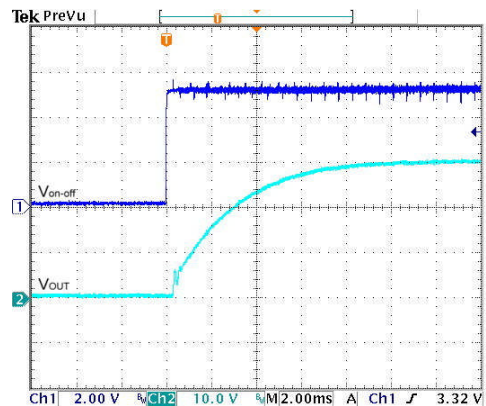All test conditions are at 25°C. The figures are for PXF40-48D15

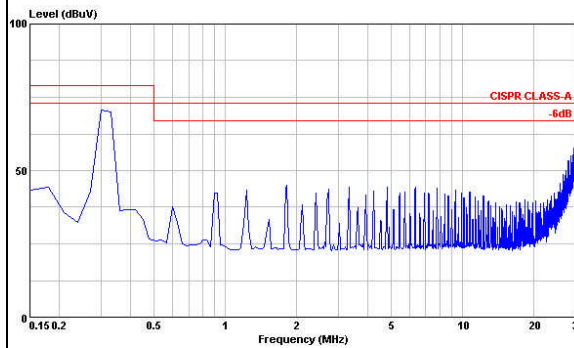**Typical Output Ripple and Noise.**

Vin = Vin(nom), Full Load

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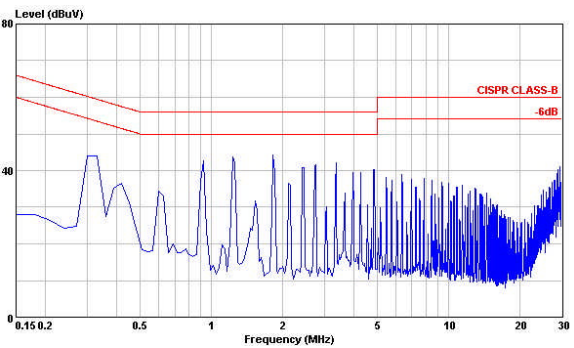
100% to 75% to 100% of Full Load ; Vin = Vin(nom)

Typical Input Start-Up and Output Rise Characteristic

Vin = Vin(nom), Full Load

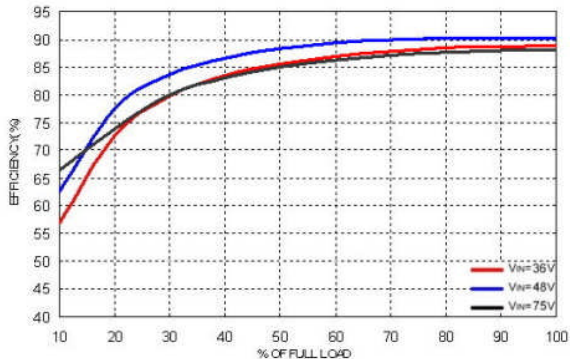**Using ON/OFF Voltage Start-Up and Vo Rise Characteristic**

Vin = Vin(nom), Full Load

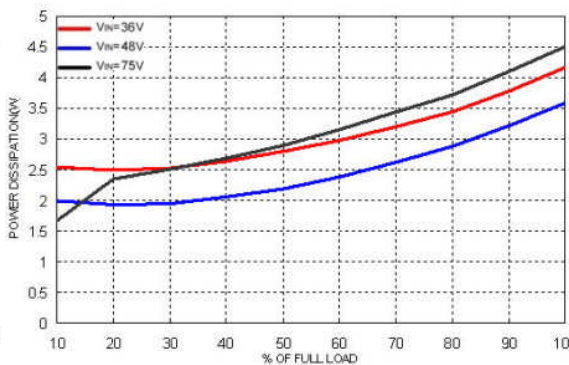**Conduction Emission of EN55022 Class A**

Vin = Vin(nom), Full Load

Conduction Emission of EN55022 Class B

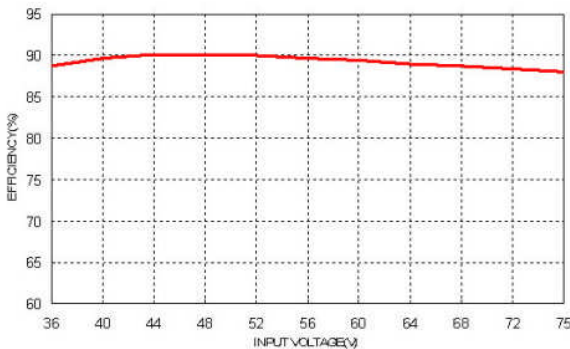Vin = Vin(nom), Full Load

Characteristic Curves (Continued)

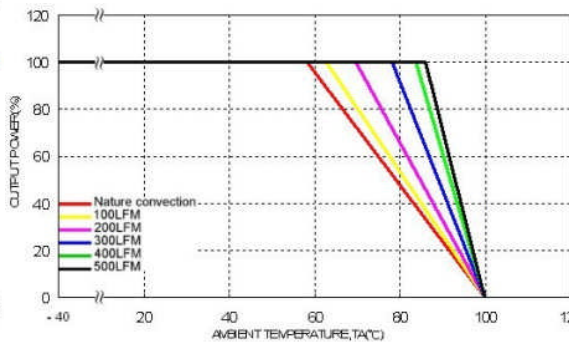All test conditions are at 25°C.The figures are for PXF40-48D3305
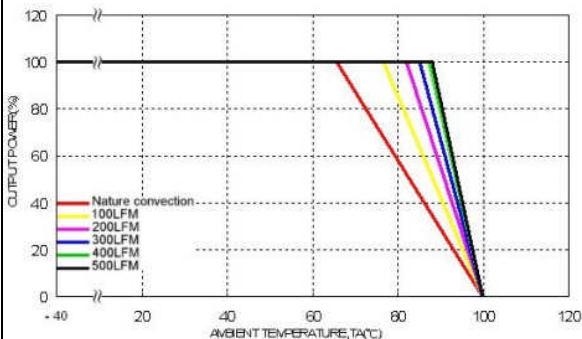

Efficiency Versus Output Current

Power Dissipation Versus Output Current

Efficiency Versus Input Voltage. Full Load
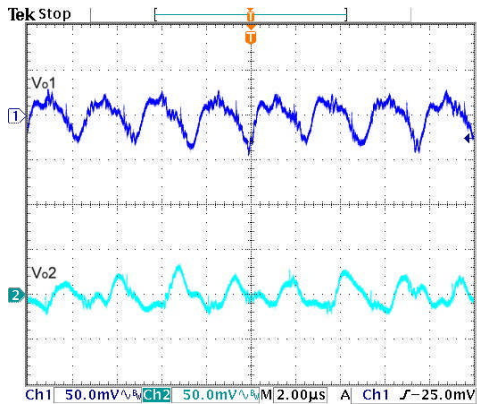

Derating Output Current Versus Ambient Temperature and Airflow
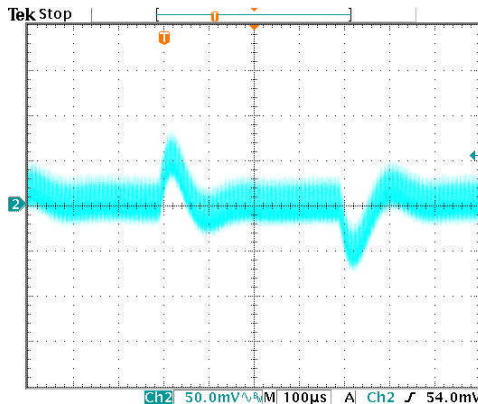
Vin = Vin(nom)

Derating Output Current Versus Ambient Temperature with Heat-Sink

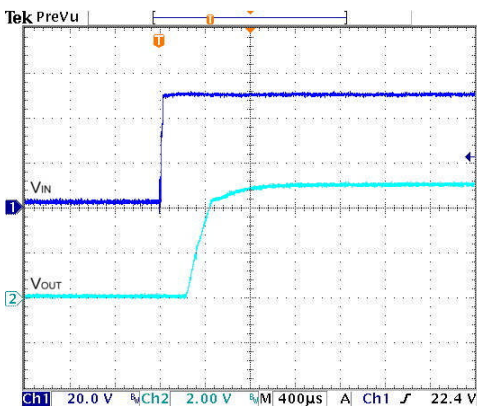**and Airflow ,Vin = Vin(nom)**

Characteristic Curves (Continued)

All test conditions are at 25°C. The figures are for PXF40-48D3305

Typical Output Ripple and Noise.

Vin = Vin(nom), Full Load

+5Vo:

Transient Response to Dynamic Load Change from

100% to 75% to 100% of Full Load ; Vin = Vin(nom)

+3.3Vo:Full load

Typical Input Start-Up and Output Rise Characteristic

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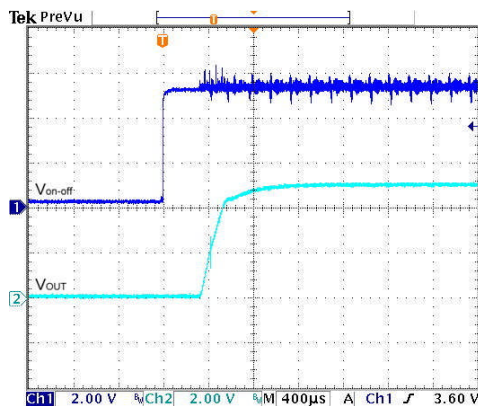
Using ON/OFF Voltage Start-Up and Vo Rise Characteristic

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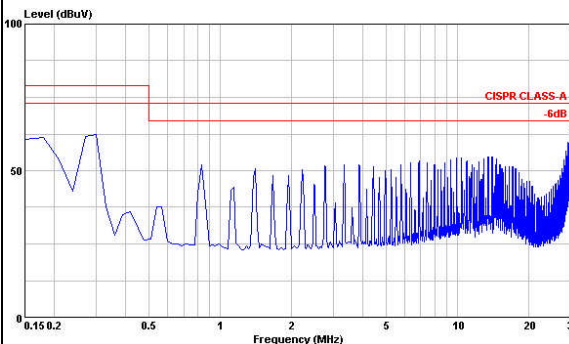
Conduction Emission of EN55022 Class A

Vin = Vin(nom), Full Load

Conduction Emission of EN55022 Class B

Vin = Vin(nom), Full Load

Test Configurations

Input reflected-ripple current measurement test:

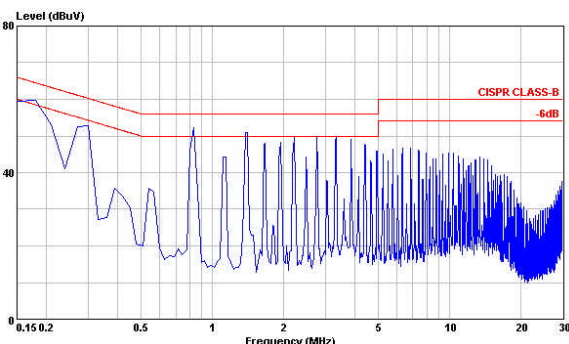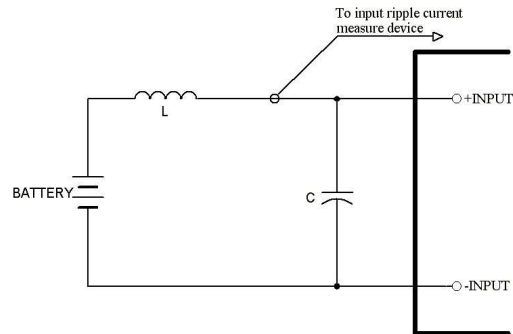| Component	Value	Voltage	Reference
L	12µH	----	----
C	220µF	100V	Aluminum Electrolytic Capacitor

Peak-to-peak output ripple & noise measurement test:
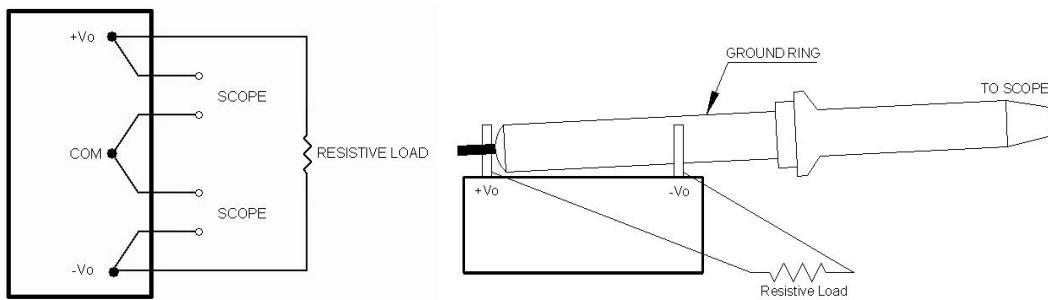
Output voltage and efficiency measurement test:
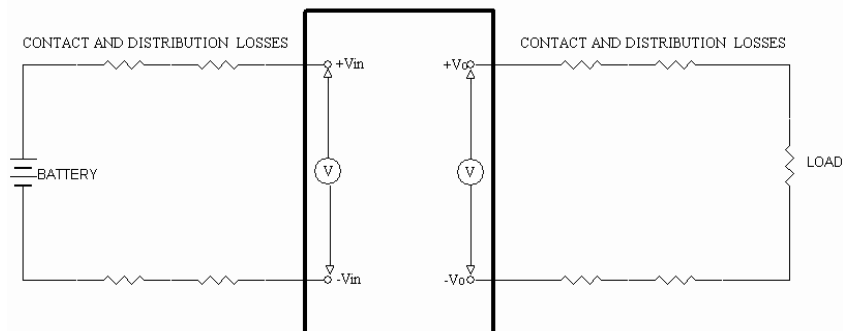
Note: All measurements are taken at the module terminals.

$$Efficiency = \left(\frac{V_o \times I_o}{V_{in} \times I_{in}} \right) \times 100\%$$

EMC Considerations

Suggested Schematic for EN55022 Conducted Emission Class A Limits

Recommended Layout with Input Filter

To meet conducted emissions EN55022 CLASS A needed the following components:

PXF40-12Dxx

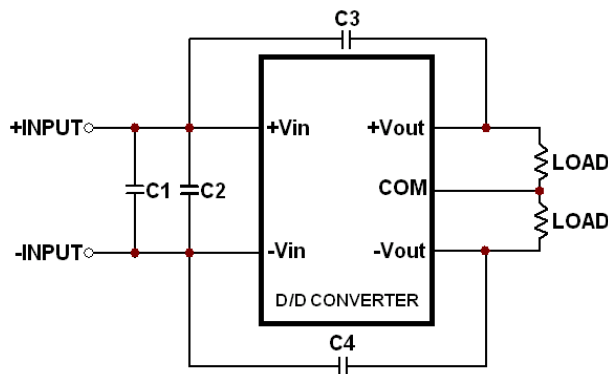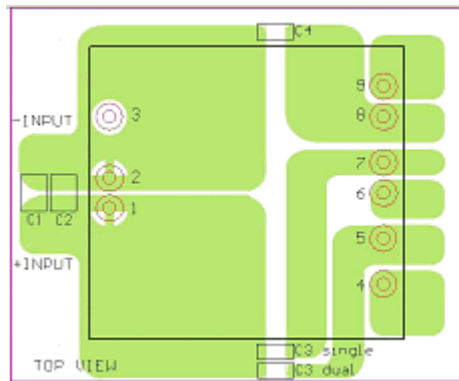| Component	Value	Voltage	Reference
C1	6.8uF	50V	1812 MLCC
C3, C4	1000pF	2KV	1808 MLCC

PXF40-24Dxx

Component	Value	Voltage	Reference
C1	6.8uF	50V	1812 MLCC
C3, C4	1000pF	2KV	1808 MLCC

PXF40-48Dxx

Component	Value	Voltage	Reference
C1	2.2uF	100V	1812 MLCC
C3, C4	1000pF	2KV	1808 MLCC

EMC Considerations (Continued)
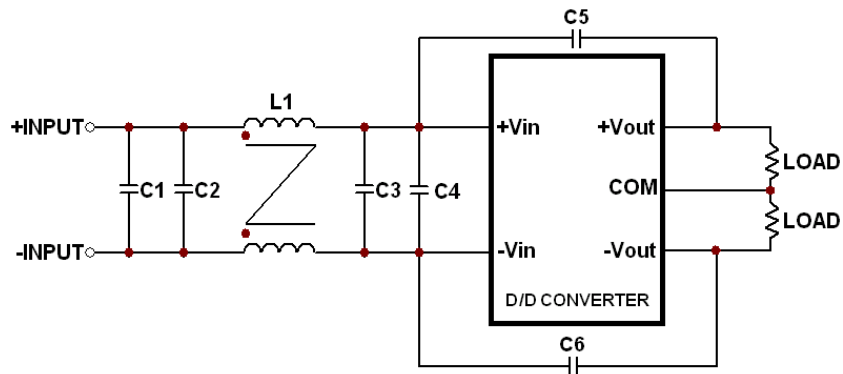
Suggested Schematic for EN55022 Conducted Emission Class B Limits
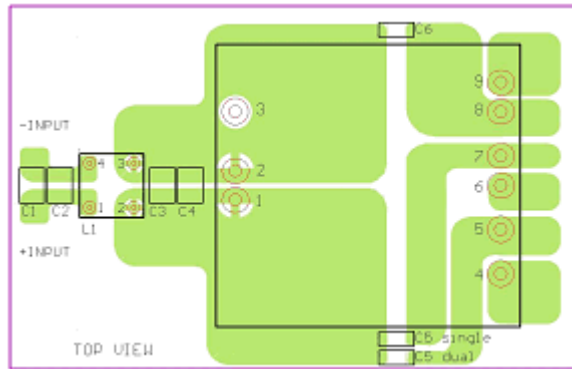
Recommended Layout with Input Filter

To meet conducted emissions EN55022 CLASS B needed the following components:

PXF40-12Dxx

Component	Value	Voltage	Reference
C1, C3	4.7uF	50V	1812 MLCC
C5, C6	1000pF	2KV	1808 MLCC
L1	450uH	----	Common Choke

PXF40-24Dxx

Component	Value	Voltage	Reference
C1, C3	6.8uF	50V	1812 MLCC
C5, C6	1000pF	2KV	1808 MLCC
L1	450uH	----	Common Choke

PXF40-48Dxx

Component	Value	Voltage	Reference
C1, C2	2.2uF	100V	1812 MLCC
C3, C4	2.2uF	100V	1812 MLCC
C5, C6	1000pF	2KV	1808 MLCC
L1	830uH	----	Common Choke