

Features

- ◆ Ultra Wide 6:1 Input Voltage Ranges
3-18 VDC
- ◆ Efficiency Up to 80%
- ◆ No Minimum Load
- ◆ Compact SIP-8 Package
- ◆ Continuous Short-Circuit Protection
- ◆ I/O Isolation Voltage 1600 VDC
- ◆ Over Temperature Protection
- ◆ High Capacitive Loading Capability
- ◆ Temperature Range -40°C to 75 °C
- ◆ Input Over Voltage Protection
- ◆ 3 Years Product Warranty



The APXDD Series is a family of isolated high performance 3W DC/DC converter modules featuring ultra-wide 6:1(3-18V) input voltage ranges and regulated single and double output versions.

The product comes in a rugged, sealed industry standard SIP-8 package.

The very wide input voltage range makes these converters interesting solution for battery operated systems.

Very low isolation capacitance makes these converters suitable for IGBT driver applications.

Typical applications are in telecom, datacom, industry control and railway systems for on board power distribution.

Selection Guide

Order Code	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max. (mA)	Input Current		Max Capacitive Load ⁽¹⁾ (uF)	Efficiency ⁽²⁾ typ. (%)
				No load (mA)	Max load (mA)		
APXDD3-09S05	3 – 18 (9 nominal)	5	600	3	453	16400	72
APXDD3-09S09		9	330	5	417	7220	79
APXDD3-09S12		12	250	10	473	3220	72
APXDD3-09S15		15	200	12	477	2470	70
APXDD3-09S24		24	125	14	445	1100	75
APXDD3-09S28		28	110	19	465	940	72
APXDD3-09D05		±5	±300	3	443	8000/8000	75
APXDD3-09D12		±12	±125	5	455	1470/1470	73
APXDD3-09D15		±15	±100	10	480	1470/1470	70

Notes:

1. Maximum capacitive load is defined capacitive load that will allow start up in under 500ms with full resistive load.
2. Efficiency is measured in full load and nominal input voltage.

Input Specifications	
Start-up Voltage	2.7 VDC
Under Voltage Shut Down	2.6 VDC
Over Voltage Protection ON Voltage ⁽¹⁾	18 – 18.15 VDC
Over Voltage Protection OFF Voltage	17.5 – 17.65 VDC
Short Circuit Input Power	1700 – 3000 mW
Input Filter	Internal Capacitor

Notes:

- Applying input voltage greater than this voltage cause the converter shut down and for starting again the input voltage should be decreased to belower than over voltage protection OFF voltage.

Output Specifications			
Voltage Set Accuracy	No Load , Nominal Vin	5V models	-2% max.
		9V models	-3% max.
		12V models	3% max.
		15V models	-2.5% max.
		24V models	4 % max.
		28V models	5% max.
		±5V models	-2% max.
		±12V models	3% max.
		±15V models	-2.5% max.
Output Voltage Balance	Dual Output, Balanced Loads	±5V models	0.5% max.
		±12V models	0.15% max.
		±15V models	0.2% max.
Line Regulation	Input Voltage Range, Half Load	5V models	0.25% max.
		9V models	1.5% max.
		12V models	0.1% max.
		15V models	0.2% max.
		24V models	0.4% max.
		28V models	0.2% max.
		±5V models	0.25% max.
		±12V models	1.5% max.
		±15V models	0.2% max.
Load Regulation	Nominal Vin,10% to 100% Load Variation	5V models	-3% max.
		9V models	0.2% max.
		12V models	0.6% max.
		15V models	1% max.
		24V models	1.5% max.
		28V models	1.2% max.
		±5V models	-1% max.
		±12V models	0.4% max.
		±15V models	0.9% max.
Cross Regulation	Nominal Vin,25% Load One Output,10% to 100% Load Variation Other Output	±5V models	-8% max.
		±12V models	-3% max.
		±15V models	-3% max.
Temperature coefficient			±0.04% /°C
Minimum load			Not Required ⁽¹⁾
Short Circuit Protection			Continious, Automatic Recovery
Over Current Protection			120 – 150 %

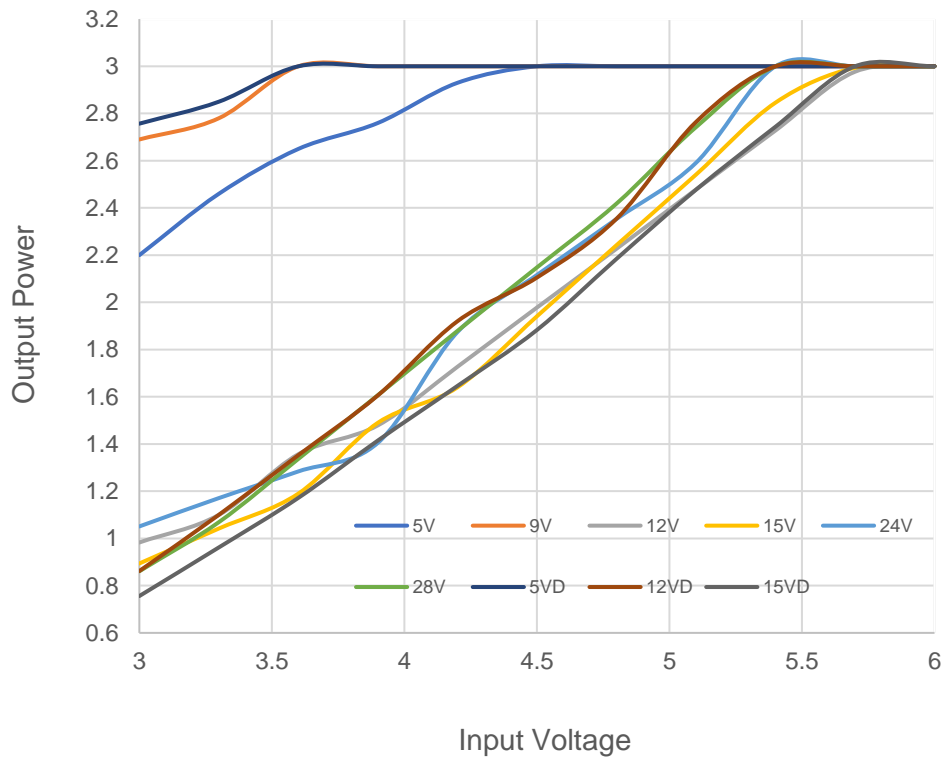
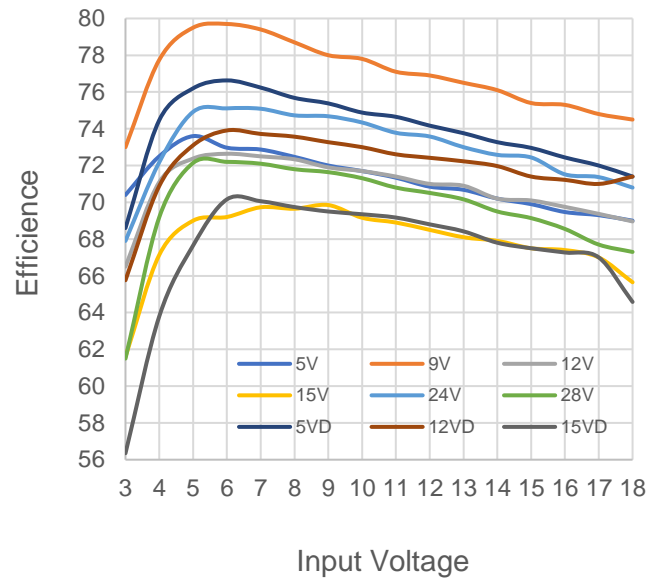
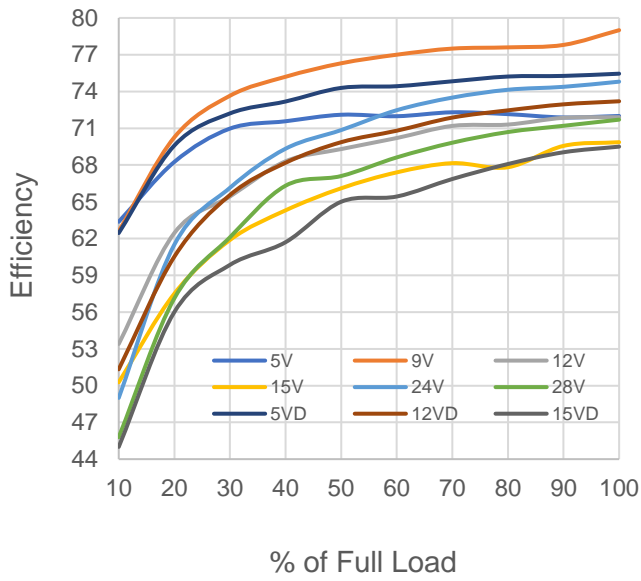
Start-up Time	Nominal Vin, Full Load		4 – 30 mS
Transient response	25% Load Step Change (50-75%), Nominal Vin	5V models	300 uS typ.
		9V models	425 uS typ.
		12V models	500 uS typ.
		15V models	310 uS typ.
		24V models	300 uS typ.
		28V models	300 uS typ.
		±5V models	375 uS typ.
		±12V models	200 uS typ.
		±15V models	350 uS typ.
Transient Response Deviation	25% Load Step Change (50-75%), Nominal Vin	5V models	11% max.
		9V models	7% max.
		12V models	3% max.
		15V models	2% max.
		24V models	1.7% max.
		28V models	1% max.
		±5V models	3.5% max.
		±12V models	1% max.
		±15V models	1% max.
Ripple & Noise	Nominal Vin, Full Load, 20 MHz Bandwidth	5V models	60 mV max.
		9V models	60 mV max.
		12V models	110 mV max.
		15V models	120 mV max.
		24V models	500 mV max.
		28V models	640 mV max.
		±5V models	70 mV max.
		±12V models	120 mV max.
		±15V models	120 mV max.

Notes:

1. Just in double output models, negative output need 0.8% full load to meet the specifications. No minimum load condition doesn't harm the converter.

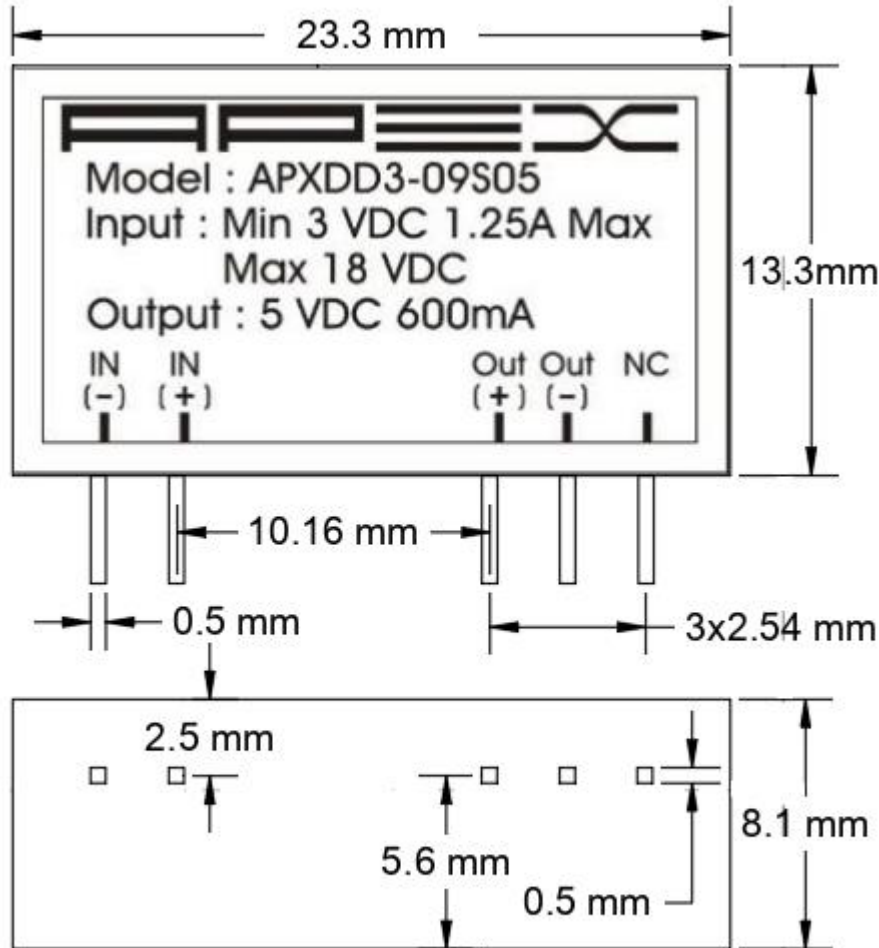
General Specifications		
Isolation Voltage	Test For 1 Minute, Below 100 nA	1600 VDC
Isolation Resistance	1600 VDC	50 GΩ
Isolation Capacitance	1KHz, 1V	30 pF max.
Switching Frequency		400 KHz
Temperature Range		-40 – 75 °C
Case Temperature Rise	Nominal Vin, Full Load, Still Air	30 – 40 °C
Cooling System		Natural Convection(20LFM)
Storage Temperature		-55 to 125 °C
Humidity	Without Condensing	95 %RH max.
Case Temperature		+100 °C max.
Weight		4.7 g max.

Characteristic Curves



Dimensions and Pin-out

Tolerances : ± 0.25 mm



Bottom view

Pin-out Double

- | | |
|---|---------|
| 1 | GND In |
| 2 | +Vin |
| 6 | +Vout |
| 7 | Com |
| 8 | GND Out |

Pin-out Single

- | | |
|---|---------------|
| 1 | GND In |
| 2 | +Vin |
| 6 | +Vout |
| 7 | GND Out |
| 8 | Not Connected |