MTC15 series

XP Power

15W Baseplate cooled

DC-DC converters

The MTC15 is a COTS DC-DC converter developed specifically for the defense and avionics market. This product has a full military specification while offering the short lead-times and cost benefits of a COTS component.

The MTC15 uses a forward converter design switching at 450kHz giving excellent size, efficiency and EMC performance. The input range is designed to provide short term operation over 10V to 50VDC to enable the converter to work at full power through the dips and surges commonly seen in vehicle and aircraft applications. A soft start circuit provides well controlled outputs with no overshoot.

Comprehensive control functions such as voltage trim, remote sense, inhibit and frequency synchronization to an external source are standard features. When used in conjunction with the MTF input filter module the MTC15 complies to MIL-STD-461; MIL-STD-1275; MIL-STD-704.

Features

- Regulated single outputs 3.3V to 28VDC
- Regulated dual outputs ±12V & ±15VDC
- 10V to 50VDC input range
- Baseplate cooled
- Designed for vetronic & avionic use
- MIL-STD-461 & DEF-STAN-59-411
- MIL-STD-1275 & DEF-STAN-61-5
- -40°C to +100°C operating temperature
- -55°C operation available on certain models
- 3 year warranty

Applications

COTS | Industrial | Technology

Dimensions

Single output:
40.0 x 26.0 x 9.7mm (1.57” x 1.02” x 0.38”)

Dual output:
40.0 x 26.0 x 12.7mm (1.57” x 1.02” x 0.5”)

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number[2]	Output power	Output voltage			Output current	Input current[5]		Efficiency
		Nominal	Minimum[1]	Maximum[1]		No load	Full load	
MTC1528S3V3	10W	3.3 VDC	3.3 VDC	4.0 VDC	3.03A	0.04A	0.46A	77%
MTC1528S3V3-LT[3]		3.3 VDC	3.3 VDC	4.0 VDC	3.03A	0.04A	0.46A	77%
MTC1528S05		5.0 VDC	4.0 VDC	6.0 VDC	2.40A	0.05A	0.53A	81%
MTC1528S05-LT[3]	12W	5.0 VDC	4.0 VDC	6.0 VDC	2.40A	0.05A	0.53A	81%
MTC1528S12		12.0 VDC	9.0 VDC	13.8 VDC	1.25A	0.04A	0.67A	80%
MTC1528S15	15W	15.0 VDC	11.0 VDC	17.0 VDC	1.00A	0.05A	0.67A	80%
MTC1528S28	15W	28.0 VDC	20.0 VDC	30.0 VDC	0.54A	0.03A	0.69A	78%
MTC1528D12	15W[5]	±12 VDC			±1.0A[5]	0.03A	0.68A	80%
MTC1528D12-LT[3]	15W[5]	±12 VDC			±1.0A[5]	0.03A	0.68A	80%
MTC1528D15	15W[5]	±15 VDC			±0.8A[5]	0.03A	0.68A	80%

Notes:

1. Indicates maximum and minimum voltage adjustment (maximum includes Remote Sense adjustment).
2. For additional ESS screening, add the suffix ‘-ESS’ to the model number e.g. MTC1528S05-ESS.
3. Suffix ‘-LT’ indicates -55°C extended operating range.
4. Typical with Vin = 28VDC.
5. Max power 15W must not be exceeded.

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	15.5		40	VDC	
Transient input range		10		VDC	10s
		50			1s
Turn on		<15.5		VDC	
Turn off		<10		VDC	
Input reverse voltage protection	None				
Max. input current	See models and ratings table				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	See models and ratings table				
Output voltage trim	See models and ratings table				
Minimum load	No minimum load required				
Line regulation		±1		%	Vout nominal (15.5-40.0Vin)
Load regulation		±1		%	Vout nominal
Cross regulation		±3		%	With 150mA min load (dual output only)
Output set tolerance		±100		mV	Or ±2% whichever is greater
Ripple and noise			75	mV pk-pk	≤5Vout, 20MHz bandwidth
			1	% pk-pk	>5Vout, 20MHz bandwidth
Overvoltage protection	110		120	%	
Overcurrent protection	105		150	%	At nominal input voltage
Short circuit protection	Trip and restart				
Overtemperature protection	102		107	°C	2°C to 5°C hysteresis
Remote sense		0.5		V	Single output only
Load step output transient		<±3		%	Vout nominal (25-75% load)
Line step recovery		500		µs	Within 1% of nominal value
Start up time		<100		ms	
Maximum capacitive load			300	µF	Iout maximum start up within 100ms

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency	See models & ratings table				
Isolation: input to output		1500		VDC	
Isolation: input to case		1000		VDC	
Isolation: output to case		500		VDC	
Switching frequency		450		kHz	
Frequency synchronization	400		500	kHz	
Inhibit	Off = TTL Low or short circuit, On = TTL High or open circuit				
Power density		1.48 (24.4)		W/cm^3 (W/in^3)	
Mean time between failure		890		kHrs	MIL-HDBK-217F at +40°C, GF

MTC15 series

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating base plate	-40		+100	°C	-55°C to +100°C extended range '-LT'
Storage temperature	-55		+125	°C	
Operating humitidy			95	%RH	240hrs MIL-STD-810D Method 507.2
Cooling	Conduction cooling through baseplate				
Operating altitude		21,336 (70,000)		metres (ft)	
Shock		100		g	MIL-STD-810D Method 516.3
Vibration	5		500	Hz	MIL-STD-810D Method 514.3
Bump		2000		Bumps	In each axis 40g MIL-STD-810D Method 516.3
Salt atmosphere		48		Hrs	MIL-STD-810E Method 509.3

All standard products are stress-screened and electrically tested over the operating temperature range. See notes for option details.

EMC: emissions

Phenomenon	Standard	Test level	Notes & conditions
Conducted	MIL-STD-461E/F/G DEF-STAN 59-411	CE102 DCE01/DCE02	MTF50 filter module required to meet these standards

EMC: Immunity

Phenomenon	Standard	Test level	Criteria	Notes & conditions
ESD immunity	MIL-STD-704 A, MIL-STD-704 B-F, MIL-STD-1275A/B/C/D/E (MTF50 filter module required to meet these standards)			
Conducted susceptibility	MIL-STD-461E/F/G CS101, CS114,CS115,CS116, DEF-STAN 61-5 part 6 issue 5 (MTF50 filter module required to meet these standards)			

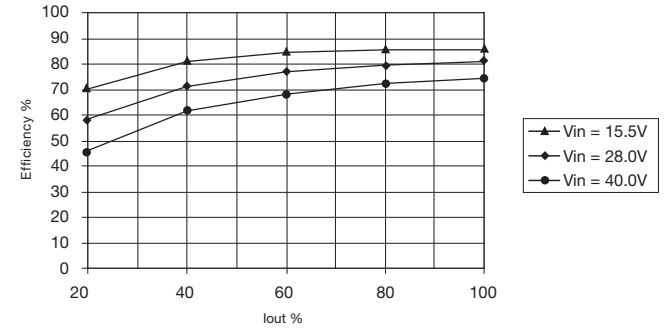
Safety approvals

Safety agency	Standard	Test level	Notes & conditions
CE	Meets all applicable directives		
UKCA	Meets all applicable legislation		

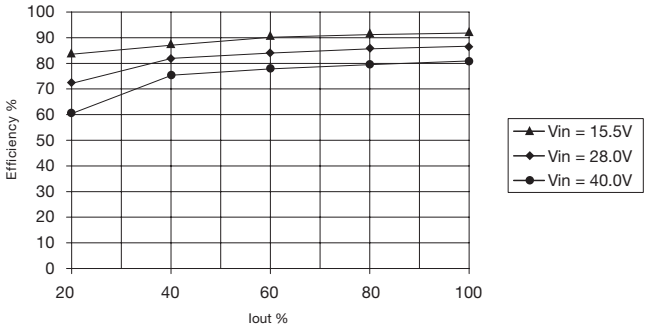
Application notes

Efficiency curves

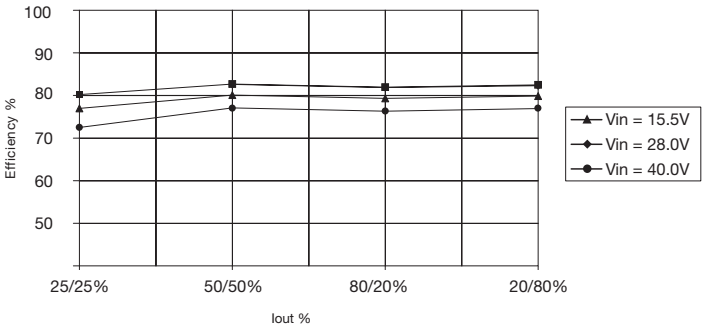
MTC1528S05



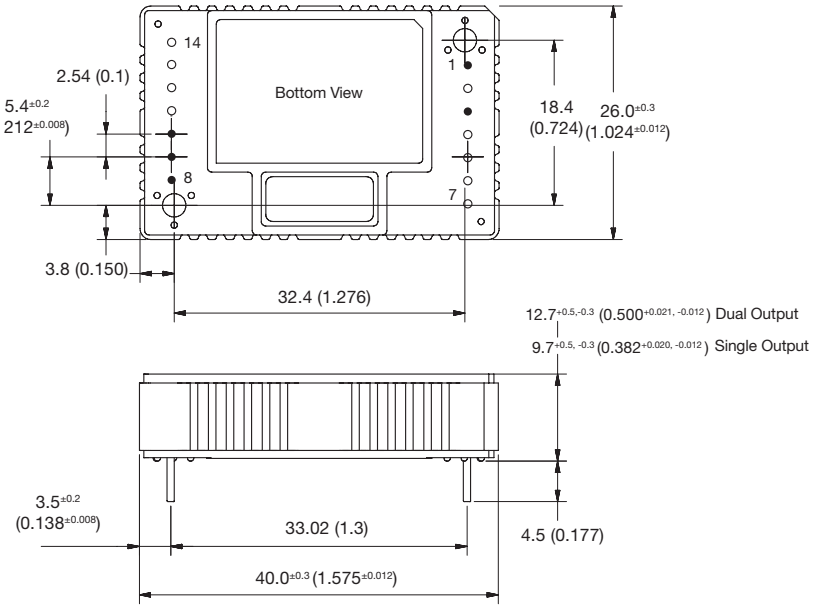
MTC1528S28



MTC1528D15



Mechanical details



Pin connections		
Pin	**Single output**	**Dual output**
1	No Pin	No Pin
2	Case	Case
3	No Pin	No Pin
4	- Vin	- Vin
5	Synchronization	Synchronization
6	+ Vin	+ Vin
7	Inhibit	Inhibit
8	No Pin	No Pin
9	No Pin	No Pin
10	No Pin	-Vout
11	+ Sense	No Pin
12	- Vout	COM
13	Adjust	No Pin
14	+ Vout	+ Vout

Notes:

1. Dimensions are in mm (inches)
2. Tolerance: ±0.5mm (±0.02") except where indicated.
3. Weight: 20g (0.04lb)

4. Materials & Finish:

Pin:	Diameter:	0.8 (0.032)
	Material:	Cu Zn30 2.5µm Ni
	Finish:	0.2-0.5µm AU (HV 170-200)
Case:	Material:	Aluminium (Al Mg Si 0.5)
	Finish:	Chromated
Nameplate:		Non-conductive plastic