

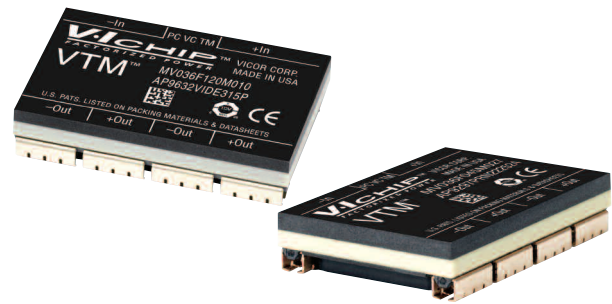
# 28V V.I Chip™ DC-DC Modules

MILITARY

## VTM™ POINT-OF-LOAD CURRENT MULTIPLIER

### FEATURES

- Isolated 1 – 50 Vdc output
- Power: Up to 100 A or 120 W
- 1  $\mu$ s transient response
- 3 MHz switching frequency
- Efficiency: Up to 96.5%
- -55°C to +125°C operation (Tj)
- Size: 1.28" x 0.87" x 0.26" (32,5 x 22 x 6,6 mm)



### PRODUCT INFORMATION

The VTM put isolated current multiplication and voltage division directly at the point-of-load (POL) and an upstream PRM controls the Factorized Bus voltage supplied to the VTM to provide line and load regulation. Utilizing a Sine Amplitude Converter (SAC), VTMs offer unprecedented performance in the critical areas of speed, noise, efficiency and density.

The isolated VTM is available with twelve voltage division ratios from 1:1 to 1:32 and provides the user with flexibility to supply up to 100 A or 120 W at any output voltage from 1 to 50 Vdc in a surface mount package occupying only 1 in<sup>2</sup>.

### GENERAL SPECIFICATIONS

(36 V<sub>IN</sub>, full load, 25°C ambient)

PARAMETER INPUT	MIN	TYP	MAX	UNIT	NOTE
Input voltage range	26	36	50	Vdc	
Input dV/dt			1.0	V/ $\mu$ s	
Input overvoltage turn-on	50.5	54.4		Vdc	
Input overvoltage turn-off		55.5	57.5	Vdc	
Input current			3.5	A	Continuous
No load power dissipation	1.5	3.0	6.0	W	Low line to high line

PARAMETER OUTPUT	MIN	TYP	MAX	UNIT	NOTE
Output voltage range		See Table 1		Vdc	
Rated DC current	0		100	A	26 – 50 V <sub>in</sub> (see table)
Peak repetitive current			150	% I <sub>max</sub> (A)	Pulse width 1 ms, max duty cycle 10%, baseline power 50%
DC current limit		160		% I <sub>max</sub> (A)	Module will shut down when current limit is reached or exceeded
Current share accuracy		5.0	10	%	
Efficiency			96.5	%	Model dependent
Output overvoltage set point		110	115	%	V <sub>out</sub> max
Output ripple voltage				mV	
No external bypass	50		250	mV	
With 10 $\mu$ F bypass capacitor	2.0		20	mV	
Switching frequency	2.5	3.0	3.6	MHz	Model dependent
Line regulation (K)	0.99	1	1.01		V <sub>out</sub> = K•V <sub>in</sub> at no load
Load Regulation		R <sub>out</sub> Min	R <sub>out</sub> Max	M $\Omega$	See Table 1
Transient response					
Response time			200	ns	
Recovery time			1.0	$\mu$ s	

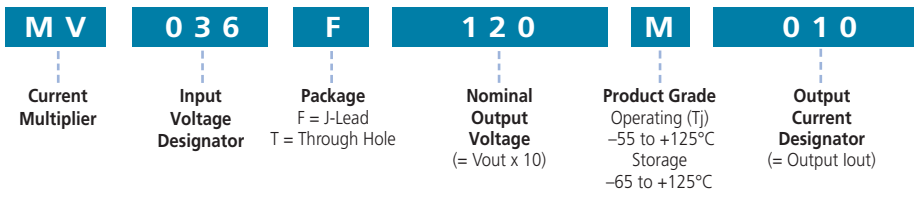
PARAMETER GENERAL	MIN	TYP	MAX	UNIT	NOTE
MTBF (MV036F030M040)					
MIL-HDBK-217F		4,832 869 681		1,000 hrs	25°C, GB 50°C NS 65°C AIC
Isolation specifications					
Voltage	2,250			Vdc	Input to Output
Capacitance		3,000		pF	Input to Output
Resistance	10			M $\Omega$	Input to Output
Mechanical					
Weight		0.53 / 15		oz / g	
Dimensions					
Length		1.28 / 32,5		in / mm	
Width		0.87 / 22		in / mm	
Height		0.26 / 6,6		in / mm	
Thermal					
Over temperature shut down	+125	+130	+135	°C	Junction temperature
Thermal capacity		9.3		Ws/°C	
Junction-to-case thermal impedance (R <sub>thJC</sub> )		1.1		°C/W	
Junction-to-ambient (R <sub>thJA</sub> )		5.0		°C/W	With 0.25" heat sink

# 28 V V.I Chip™ DC-DC Modules

## VTM™ POINT-OF-LOAD CURRENT MULTIPLIER

MILITARY

### VTM PART NUMBERING



### VTM FAMILY PART NUMBERS & RANGES

PART NUMBER	K-FACTOR	NOMINAL VOUT RANGE (VDC)	RATED OUTPUT CURRENT (A)	MIN	ROUT (M) NOM	MAX
MV036F011M100	1/32	0.8 – 1.6	100	0.5	0.85	1.3
MV036F015M080	1/24	1.1 – 2.0	80	1.0	1.25	1.5
MV036F022M055	1/16	1.7 – 3.1	55	1.4	1.75	2.0
MV036F030M040	1/12	2.2 – 4.1	40	1.45	2.4	3.4
MV036F045M027	1/8	3.3 – 6.2	27	3.5	5.1	6.6
MV036F060M020	1/6	4.3 – 8.3	20	5.0	8.0	10
MV036F072M017 <sup>[a]</sup>	1/5	6.4 – 10.0	16.6	6.0	9.6	12
MV036F090M013	1/4	6.5 – 12.5	13.3	6.9	9.3	11.6
MV036F120M010	1/3	8.7 – 16.6	10.0	25	31	35
MV036F180M007	1/2	13.0 – 25.0	6.7	27.5	35.7	46.4
MV036F240M005	2/3	17.4 – 33.3	5.0	49.3	70.6	91.8
MV036F360M003	1	26.0 – 50.0	3.3	140	170	200

Table 1

<sup>[a]</sup> Low line input voltage 32 V

### MECHANICAL DRAWING $\frac{in}{(mm)}$

