



FEATURES:

- Ultra-wide Input range 66-160VDC
- Efficiency up to 90%
- Input under voltage lockout
- Continued short circuit protection
- Input / Output Isolation 3000VDC
- Operating Temperature: -40°C to +100°C
- OVP, OCP, OTP
- On-Off, Trim and Output Sense controls

Models
Single output



Model	Input Voltage (V)	Max Input Current FL NL (mA)	Output Voltage (V)	Output Current max (A)	Isolation (VDC)	Max Capacitive Load (uF)	Efficiency (%)
AM50QB-11005S-NZ	66-160	528 15	5	10	3000	7500	88
AM50QB-11012S-NZ	66-160	528 15	12	4.167	3000	6000	88
AM50QB-11015S-NZ	66-160	528 15	15	3.333	3000	4700	88
AM50QB-11024S-NZ	66-160	516 15	24	2.083	3000	3000	90

Add suffix “-K” for optional heat sink

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	110	66-160		VDC
Filter	π(Pi) Network			
Startup time		25		ms
Absolute Maximum Rating			-0.7 - 180	VDC
Peak Input Voltage time			1	s
On/Off control	ON – open or 3.5-12VDC; OFF – short to -Vin or 0-1.2VDC, Idle current 2mA			
Under voltage lockout		58		VDC
Input reflected current		50		mA

Isolation Specifications

Parameters	Conditions	Rated	Maximum	Units
Tested I/O voltage	60 sec, 1mA	3000		VDC
Tested Input / Case voltage	60 sec, 1mA	1500		VDC
Tested Output / Case voltage	60 sec, 1mA	1500		VDC
Resistance	At I/O Isolation 500VDC	>1000		MOhm
Capacitance	I/O 100KHz/0.1V	2200		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±2	±3	%
Line voltage regulation	Vin LL to HL		±0.3	% of Vin
Load voltage regulation	10 – 100% load		±0.5	%
Temperature coefficient			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth	100	300	mV p-p
Voltage adjustment range			-5 to 10	%
Output voltage Sense compensation*			5	%
Over voltage protection			110 - 140	% of Vout
Over current protection		130	180	% of Iout
Short Circuit protection	Continuous, Auto-recovery			
Short circuit restart				
Thermal shutdown	Base plate temperature		115	°C
Transient recovery time	25% load step change	300	500	µs
Transient recovery deviation	25% load step change	±3	±5	%

*NOTE: If Output Sense is not used, short +Vout with +Sense and -Vout with -Sense. Keep the connection track between +Vout with +Sense and -Vout with -Sense as short as possible for stable performance.

General Specifications

Parameters	Conditions	Minimum	Maximum	Units
Switching frequency	100% load	220		KHz
Base plate temperature	See derating curves	-40 to +100		°C
Storage temperature	-55 to +125			°C
Maximum case temperature				105 °C
Thermal resistance	Without heatsink – Natural convection	10.7		°C/W
	Without heatsink – 200LFM convection	6		
	Without heatsink – 400LFM convection	5		
	Without heatsink – 1000LFM convection	4		
	With heatsink – Natural convection	5.1		
	With heatsink – 200LFM convection	2.8		
	With heatsink – 400LFM convection	2.2		
	With heatsink – 1000LFM convection	1.8		
Cooling	Natural convection or forced air			
Humidity	Non-condensing	5	95	% RH
Case material	Black heat resistant plastic (UL94-V0)			
Weight	Without heatsink	46		g
	With heatsink	76		
Dimensions (L x W x H)	Without heatsink	2.39 x 1.54 x 0.50 inches	60.8 x 39.2 x 12.7 mm	
	With heatsink	2.44 x 1.54 x 1.21 inches	62.0 x 39.2 x 30.8 mm	
MTBF	>500,000 hours (MIL-HDBK -217F, Ground Benign, t=+25°C)			
Maximum soldering temperature	1.5mm from case for 10 sec	300		°C

Environment Approval

Parameters	Conditions
Cooling	EN60068-2-1
Dry heat	EN60068-2-2
Damp heat	EN60068-2-30
Shock and Vibrations	IEC/EN61373

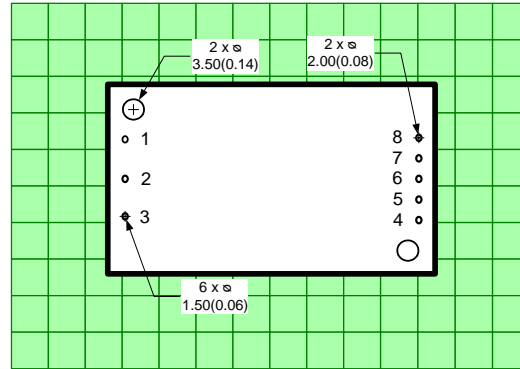
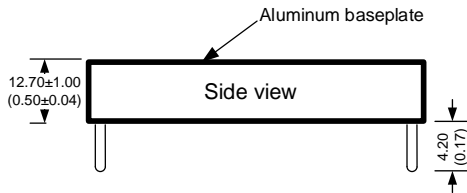
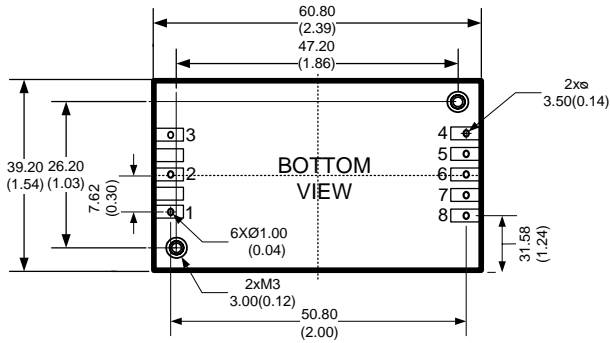
Safety Specifications

Parameters	Conditions
Standards	EN 55022, Class B, with external filter & EN 55024: 2010 IEC 61000-4-2, Contact ±6KV, Air ±8KV, Criteria B IEC 61000-4-3, 10V/m, Criteria A IEC 61000-4-4, ±2KV, Criteria B, with external filter IEC 61000-4-5, ±2KV, Criteria B; EN50155, ±1.8KV; with external filter IEC 61000-4-6, 10Vrms, Criteria A EN50155 100%0%, 10ms, with external filter

Pin Out Specifications

Pin	Single
1	+Vin
2	On/Off Control
3	-Vin
4	-Vout
5	-Sense
6	Trim
7	+Sense
8	+Vout

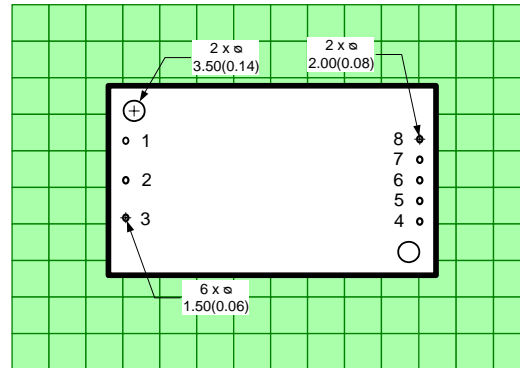
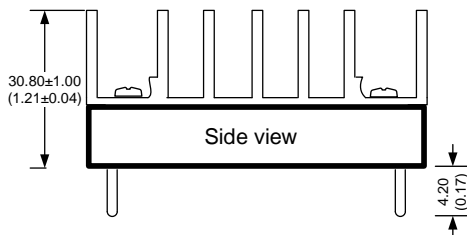
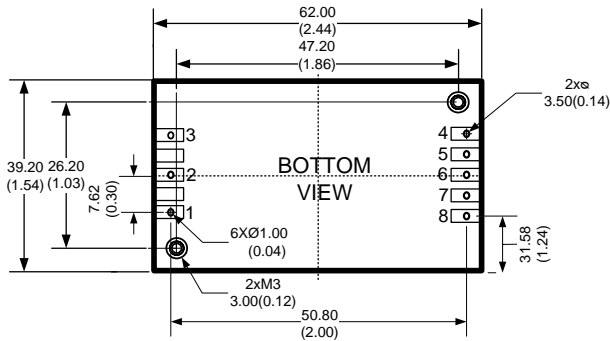
Dimensions



DIV: 2.54 x 2.54

Dimensions: mm (inch)
Case Tolerance: ± 0.50 (0.02)
Pin Tolerance: ± 1.50 (0.06)
Pin diameter Tolerance: ± 0.10 (0.004)
Pin 1, 2, 3, 5, 6 & 7 diameter: 1.00 (0.04)
Pin 4 & 8 diameter: 1.50 (0.06)
Mounting hole screw torque: max 0.4 N m

With optional heatsink

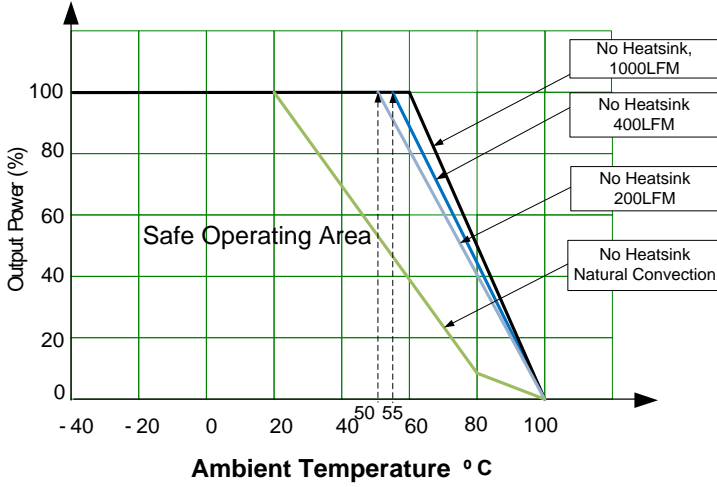


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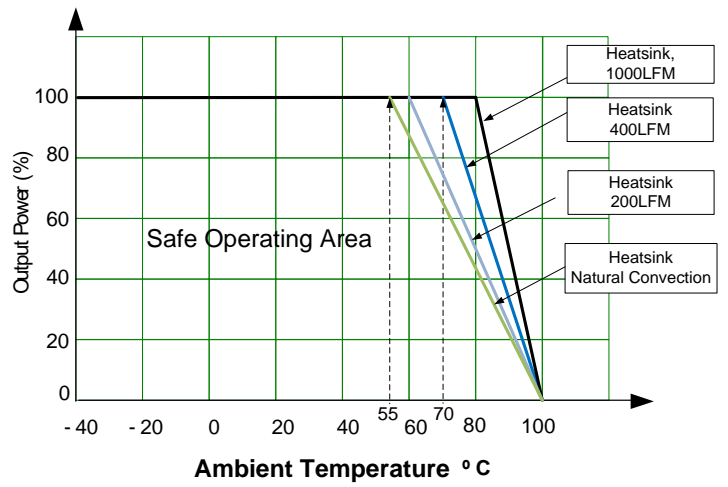
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Derating

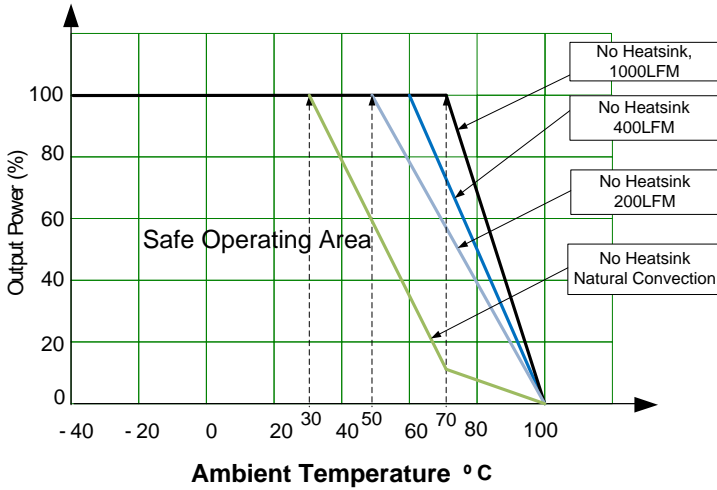
AM50QB-11005S-NZ



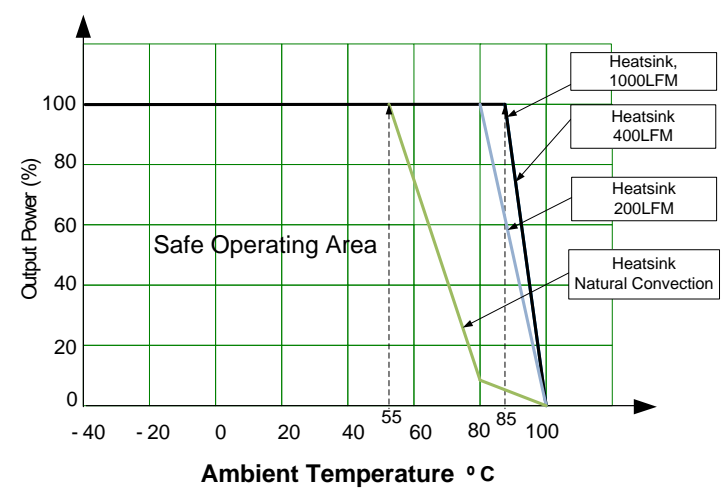
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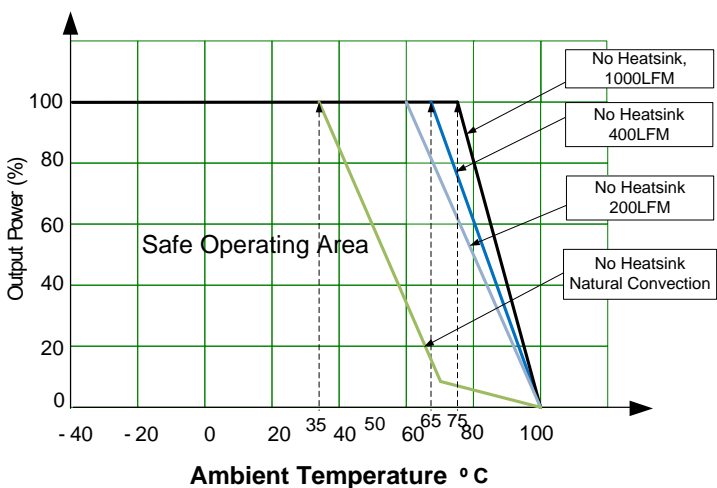
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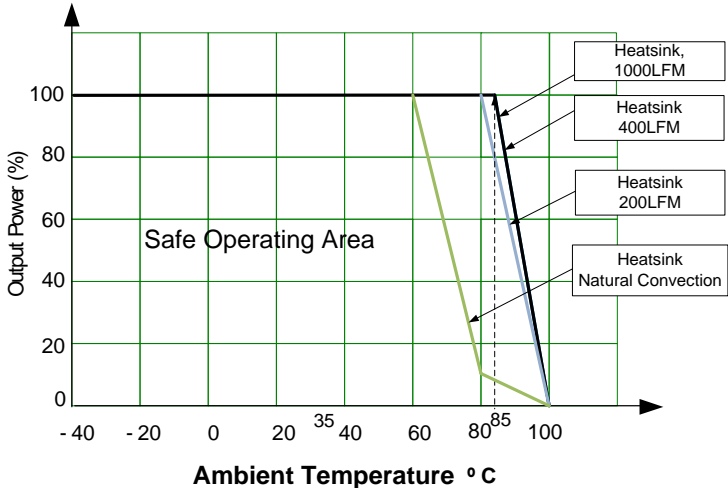
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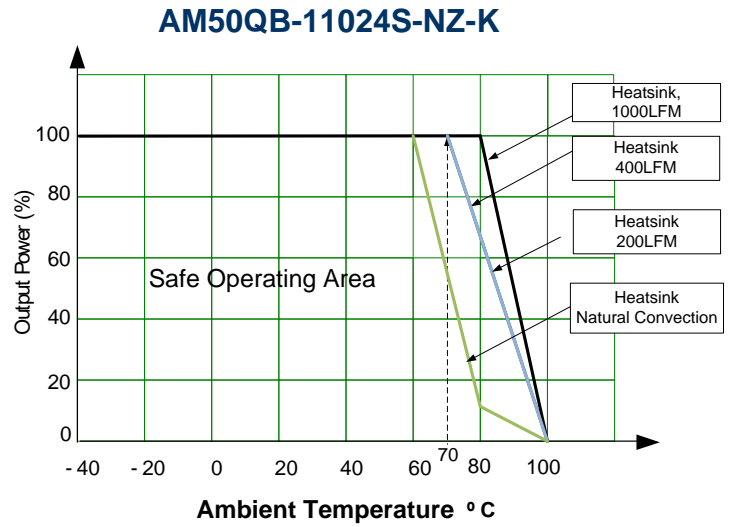
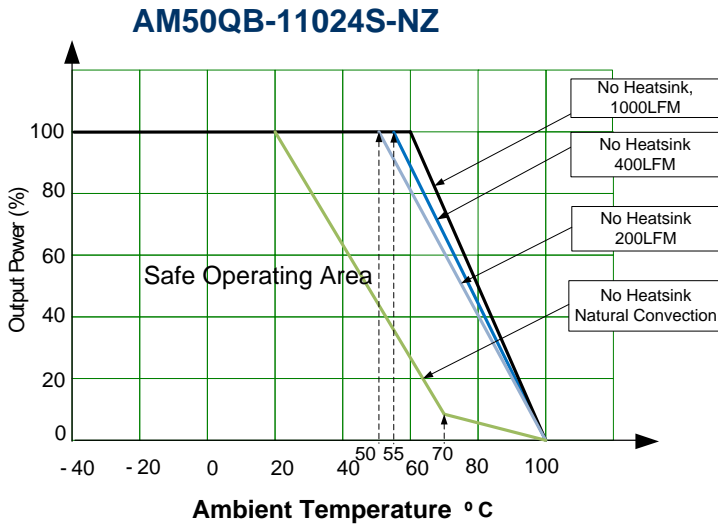


AM50QB-11015S-NZ

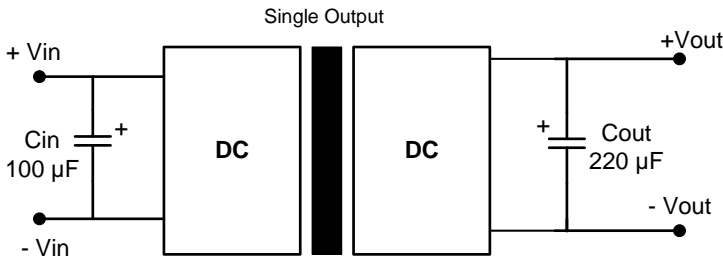


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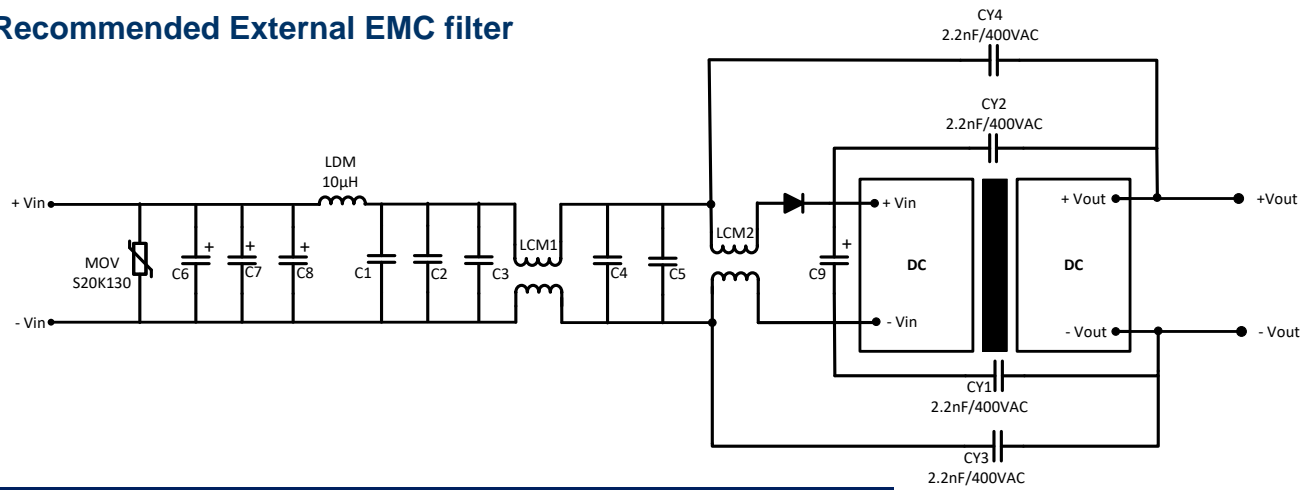




Typical application circuit



Recommended External EMC filter

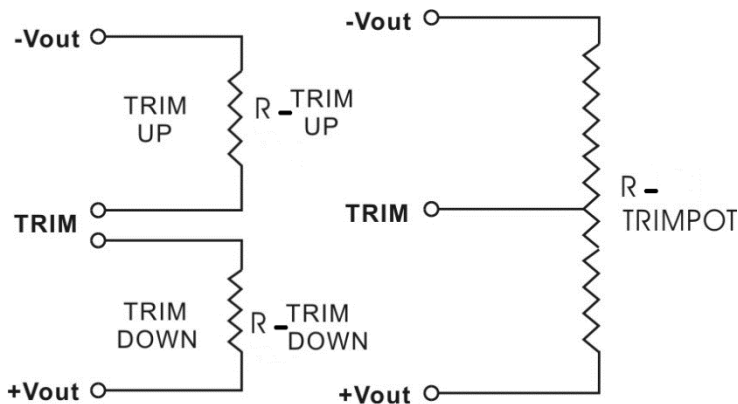


C1, C2, C3, C4 & C5	C6, C7, C8 & C9 (EC type)	LCM1	LCM2	D1
2.2 µF / 250V	100 µF / 400V	2200 µH *2	4700 µH *2	SF306

Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below

Fixed Resistor Variable Potentiometer



Leave open if not used.

AM50QB-11005S-NZ

Trim down %	1	2	3	4	5					
Vout (VDC)	4.95	4.9	4.85	4.8	4.75					
Rt down (KΩ)	54.906	33.833	22.748	15.91	11.272					
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.05	5.1	5.15	5.2	5.25	5.3	5.35	5.4	5.45	5.5
Rt up (KΩ)	-679.667	178.344	72.562	42.868	28.884	20.75	15.43	11.68	8.893	6.742

AM50QB-11012S-NZ

Trim down %	1	2	3	4	5					
Vout (VDC)	11.88	11.76	11.64	11.52	11.4					
Rt down (KΩ)	496.092	301.452	212.527	161.585	128.573					
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.12	12.24	12.36	12.48	12.6	12.72	12.84	12.96	13.08	13.2
Rt up (KΩ)	706.435	158.92	83.879	54.075	38.077	28.095	21.274	16.317	12.552	9.595

AM50QB-11015S-NZ

Trim down %	1	2	3	4	5					
Vout (VDC)	14.85	14.7	14.55	14.4	14.25					
Rt down (KΩ)	643.028	403.954	290.279	223.84	180.26					
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Rt up (KΩ)	1276.5	188.456	95.426	60.777	42.679	31.559	24.034	18.602	14.498	11.287

AM50QB-11024S-NZ

Trim down %	1	2	3	4	5					
Vout (VDC)	23.76	23.52	23.28	23.04	22.8					
Rt down (KΩ)	1289.521	792.049	564.771	434.571	350.197					
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	795.55	176.609	91.778	58.086	40.001	28.717	21.006	15.402	11.146	7.803

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