Features

Regulated Converter

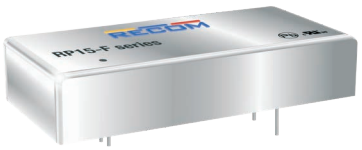
- 2:1 input voltage range
- 1.6kVDC isolation
- UL certified
- Efficiency up to 88%
- Six-sided continuous shield
- Fixed operating frequency

RECOM
DC/DC Converter

RP15-F

15 Watt 2“ x 1“ Single and Dual Output

3 YEAR warranty



RoHS 6/6 compliant 10 from 10 — REACH compliant — c UL us E196683

EAC

UL60950-1 certified

Description

The RP15-F series DC/DC converters are certified to UL 60950-1 and to cUL 60950-1. This makes them ideal for all telecom and industrial applications where approved safety standards are required. The industry standard 2” x 1” package meets military standards for thermal shock and vibration tolerance.

Selection Guide

Part Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Output Current [mA]	Input (1) Current [mA]	Efficiency (1) typ. [%]	Max. Capacitive Load (2) [µF]
RP15-123.3SF (3,4)	9-18	3.3	4000	1392	79	10200
RP15-1205SF (3,4)	9-18	5	3000	1524	82	7050
RP15-1212SF (3,4)	9-18	12	1250	1453	86	1035
RP15-1215SF (3,4)	9-18	15	1000	1453	86	705
RP15-243.3SF (3,4)	18-36	3.3	4000	688	80	10200
RP15-2405SF (3,4)	18-36	5	3000	744	84	7050
RP15-2412SF (3,4)	18-36	12	1250	735	85	1035
RP15-2415SF (3,4)	18-36	15	1000	735	85	705
RP15-483.3SF (3,4)	36-75	3.3	4000	340	81	10200
RP15-4805SF (3,4)	36-75	5	3000	377	83	7050
RP15-4812SF (3,4)	36-75	12	1250	359	87	1035
RP15-4815SF (3,4)	36-75	15	1000	363	86	705
RP15-1205DF (3,4)	9-18	±5	±1500	1506	83	±1020
RP15-1212DF (3,4)	9-18	±12	±625	1453	86	±495
RP15-1215DF (3,4)	9-18	±15	±500	1488	84	±165
RP15-2405DF (3,4)	18-36	±5	±1500	744	84	±1020
RP15-2412DF (3,4)	18-36	±12	±625	727	86	±495
RP15-2415DF (3,4)	18-36	±15	±500	727	86	±165
RP15-4805DF (3,4)	36-75	±5	±1500	368	85	±1020
RP15-4812DF (3,4)	36-75	±12	±625	355	88	±495
RP15-4815DF (3,4)	36-75	±15	±500	359	87	±165

Notes:

Note1: Maximum values at nominal input voltage and full load
Note2: Max. Cap load is tested at minimum input and constant resistive load

Model Numbering

RP15-____F/_-

- nom. Input Voltage
- Output Voltage
- Single or Dual
- *“Package (4)”*
- *“CTRL Logic (3)”*

Notes:

Note3: no suffix for standard part without CTRL pin
add suffix “P” for CTRL function with positive logic (1=ON, 0=OFF)
add suffix “N” for CTRL function with negative logic (0=ON, 1=OFF)
Note4: add suffix “-HC” for premounted Heat-sink with clips

Ordering Examples

RP15-2405SF/P = 24V input, 5V output, single, positive logic CTRL pin
RP15-4812DF/N-HC = 48V input, ±12V output, dual, negative logic CTRL pin, Heat-sink premounted

Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

BASIC CHARACTERISTICS

Parameter	Condition		Min.	Typ.	Max.
Input Filter					Pi-Type
Input Voltage Range	nom. Vin = 12VDC nom. Vin = 24VDC nom. Vin = 48VDC		9VDC 18VDC 36VDC	12VDC 24VDC 48VDC	18VDC 36VDC 75VDC
Input Surge Voltage	100ms max.	nom. Vin = 12VDC nom. Vin = 24VDC nom. Vin = 48VDC			36VDC 50VDC 100VDC
Input Reflected Ripple Current [5]				20mAp-p	
Minimum Load [6]			10%		
Start-up Time	Power up			20ms	
ON/OFF CTRL [7]	Positive Logic	DC-DC ON DC-DC OFF			Open or 3.5VDC < V_{CTRL}< 12VDC Short or 0VDC < V_{CTRL}< 1.2VDC
	Negative Logic	DC-DC ON DC-DC OFF			Short or 0VDC < V_{CTRL}< 1.2VDC Open or 3.5VDC < V_{CTRL}< 12VDC
Input Current of CTRL pin	DC-DC ON		-0.5mA		+1.0mA
Standby Current	DC-DC OFF			20mA	
Internal Operating Frequency	Single Dual		450kHz 270kHz	500kHz 300kHz	550kHz 330kHz
Ripple and Noise	20MHz BW	Single Dual		50mVp-p 75mVp-p	

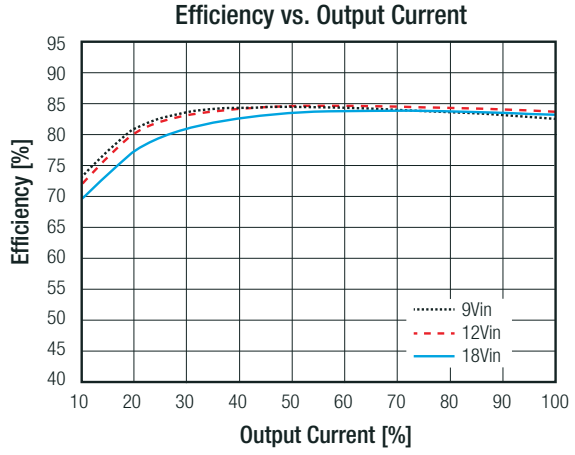
Notes:

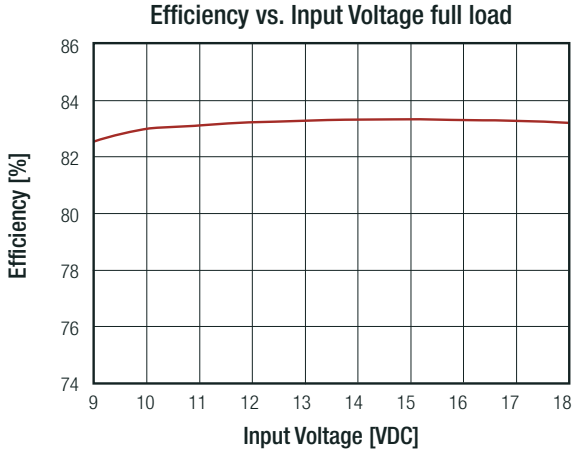
Note5: Simulated source impedance of 12µH. 12µH inductor in series with +Vin

Note6: The RP15-F series requires a minimum of 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification

Note7: If no suffix is specified, the control pin will be omitted. If fitted, the ON/OFF control function can be positive or negative logic. The pin voltage is referenced to -Vin pin

RP15-1205SF





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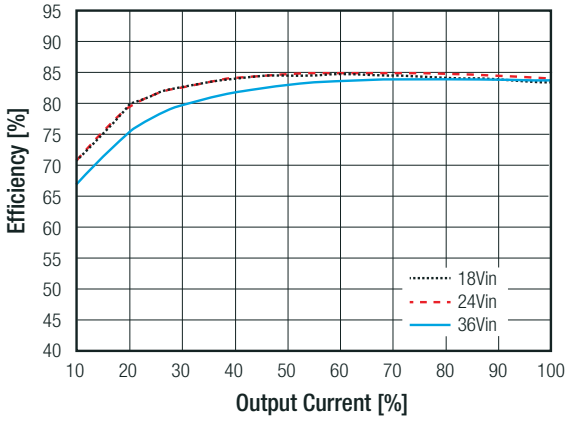
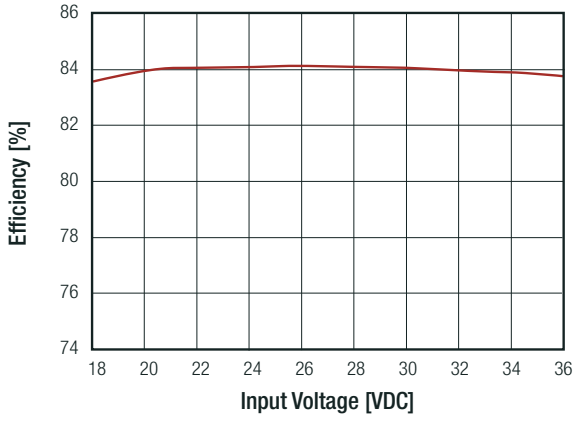
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

RP15-2405SF

Efficiency vs. Output Current

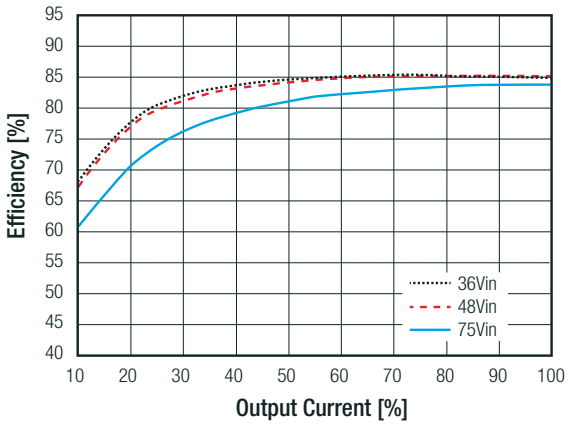


Efficiency vs. Input Voltage full load

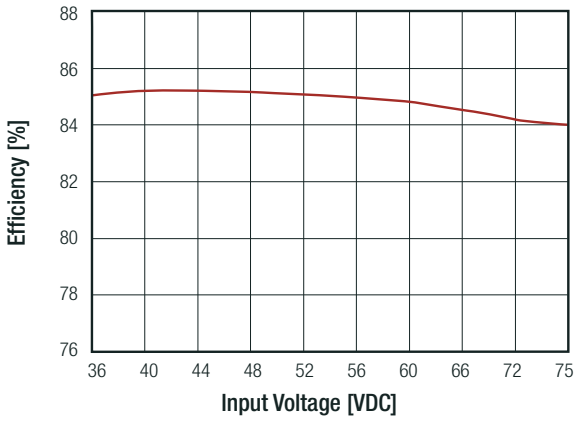


RP15-4805SF

Efficiency vs. Output Current



Efficiency vs. Input Voltage full load



REGULATIONS			
Parameter	**Condition**		**Value**
Output Accuracy			±1.0%
Line Regulation	low line to high line, full load		±0.5%
Load Regulation	10% to 100% load	Single Dual	±0.5% ±0.1%
Cross Regulation	asymmetrical 25%<>100% load		±5.0%
Transient Response Recovery Time	25% load step change		250µs typ.

Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

PROTECTIONS

Parameter	Condition		Value
Short Circuit Protection (SCP)			continuous, automatic recovery
Over Voltage Protection (OVP)	zener diode clamp	3.3Vout 5Vout 12Vout 15Vout	3.9VDC 6.2VDC 15VDC 18VDC
Over Load Protection (OLP)	% of Iout rated		150% typ.
Isolation Voltage [8]	I/P to O/P I/P to O/P to case		1.6kVDC/ 1 minute 1.6kVDC/ 1 minute
Isolation Resistance	Viso= 500VDC		1GΩ min.
Isolation Capacitance			300pF typ.

Notes:

Note8: For repeat Hi-Pot testing, reduce the time and/or the test voltage

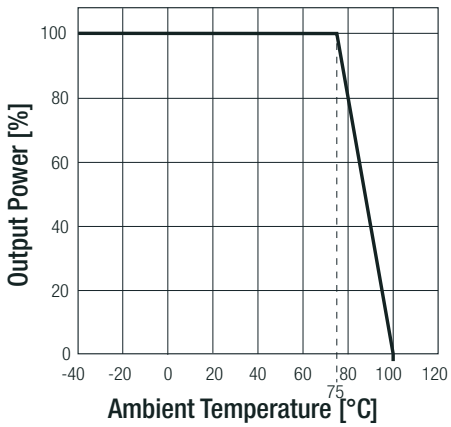
Note9: This power module is not internally fused. An input line fuse must always be used

ENVIRONMENTAL

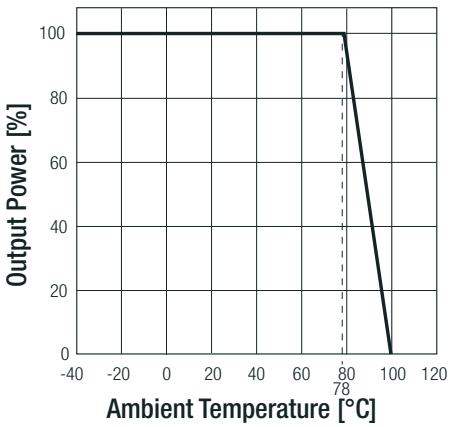
Parameter	Condition		Value
Operating Temperature Range	without derating with derating		-40°C to +75°C -40°C to +100°C
Maximum Case Temperature			+100°C
Temperature Coefficient			±0.02%/K max.
Thermal Impedance	@ natural convection 0.1m/s	without heat-sink with heat-sink	12K/W 10K/W
Operating Humidity	non-condensing		5% - 95% RH
Operating Altitude			2000m
Thermal Shock			according to MIL-STD-810F
Vibration			according to MIL-STD-810F
MTBF	MIL-HDBK-217F, G.B. Bellcore TR-NWT-000332 [10]		2318 x 10^3 hours 2041 x 10^3 hours

Derating Graph [11]

RP15-4812SF



RP15-4812SF-HC



Notes:

Note10: BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment)

Note11: Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact RECOM Techsupport for detailed information

Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

SAFETY AND CERTIFICATIONS		
Certificate Type (Safety)	**Condition**	**Standard**
Information Technology Equipment, General Requirements for Safety	E196683	UL60950-1, 2nd Edition, 2011 CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition, 2011
EAC	RU-AT.49.09571	TP TC 004/2011
RoHS2		RoHS-2011/65/EU + AM-2015/863

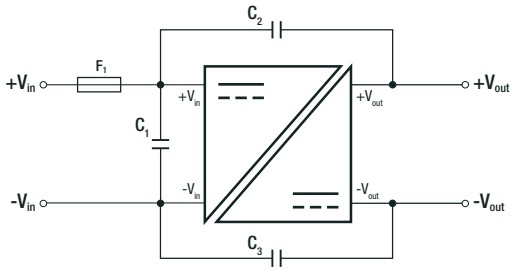
EMC Compliance	**Condition**	**Standard / Criterion**
Electromagnetic compatibility of multimedia equipment - Emission requirements	with external filter (see filter suggestion below)	EN55032, Class A and B
ESD Electrostatic discharge immunity test	Air ±8kV and Contact ±6kV	EN61000-4-2, Criteria B
Radiated, radio-frequency, electromagnetic field immunity test	10 V/m	EN61000-4-3, Criteria A
Fast Transient and Burst Immunity (12)	±2kV	EN61000-4-4, Criteria B
Surge Immunity (12)	±1kV	EN61000-4-5, Criteria B
Immunity to conducted disturbances, induced by radio-frequency fields	10 Vr.m.s	EN61000-4-6, Criteria A
Power Magnetic Field Immunity	100A/m continuous; 1000A/m 1s	EN61000-4-8, Criteria A

Notes:

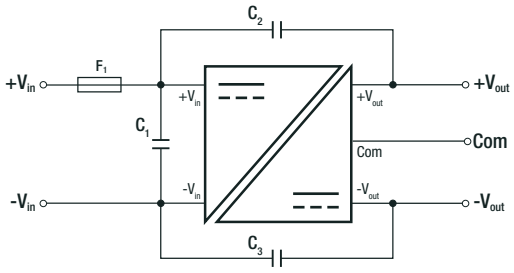
Note12: An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5
Recom suggests Nippon chemi-con KY series 220µF/100V

EMC Filtering Suggestions according to EN55032

Single



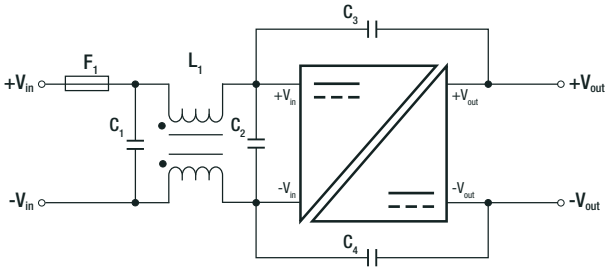
Dual



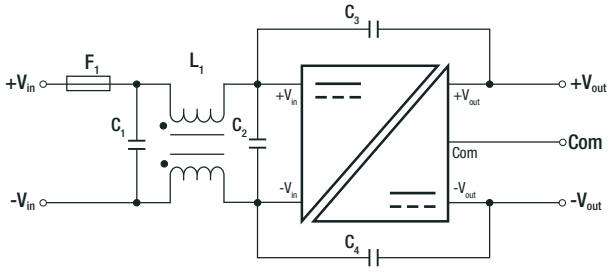
Component List Class A

MODEL	C1	C2	C3
RP15-12xxSF, RP15-12xxDF	6.8µF/50V, 1812 MLCC	1000pF/2kV, 1808 MLCC	1000pF/2kV, 1808 MLCC
RP15-24xxSF, RP15-24xxDF	2.2µF/50V, 1812 MLCC	1000pF/2kV, 1808 MLCC	1000pF/2kV, 1808 MLCC
RP15-48xxSF, RP15-48xxDF	1.5µF/100V, 1812 MLCC	1000pF/2kV, 1808 MLCC	1000pF/2kV, 1808 MLCC

Single



Dual



Component List Class B

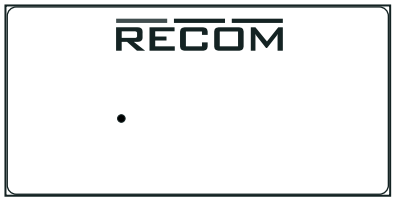
MODEL	C1	C2	C3/C4	L1
RP15-12xxSF RP15-12xxDF	4.7µF/50V 1812 MLCC	N/A	1000pF/2kV 1808 MLCC	CMC: 325µH ref.: WE 744290321 ref.: CMC-06
RP15-24xxSF RP15-24xxDF	3.3µF/50V 1812 MLCC	N/A	1000pF/2kV 1808 MLCC	CMC: 325µH ref.: WE 744290321 ref.: CMC-06
RP15-48xxSF RP15-48xxDF	2.2µF/100V 1812 MLCC	2.2µF/100V 1812 MLCC	1000pF/2kV 1808 MLCC	CMC: 325µH ref.: WE 744290321 ref.: CMC-06

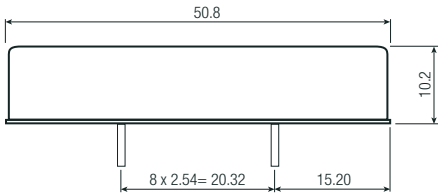
Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

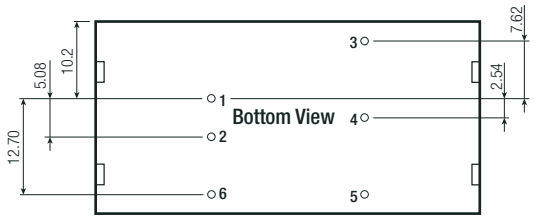
DIMENSIONS and PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Material	case base potting	nickel coated copper non-conductive black plastic epoxy (UL94V-0)
Dimensions (LxWxH)	without Heat-sink with Heat-sink	50.8 x 25.4 x 10.2mm 56.8 x 25.4 x 16.8mm
Weight	without Heat-sink with Heat-sink	27g 37.89g

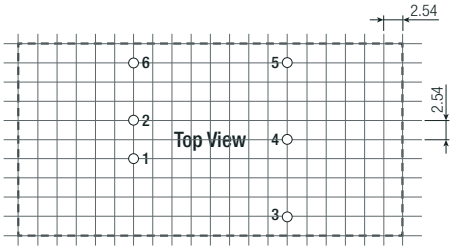
Dimension Drawing (mm)

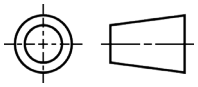






Recommended Footprint Details



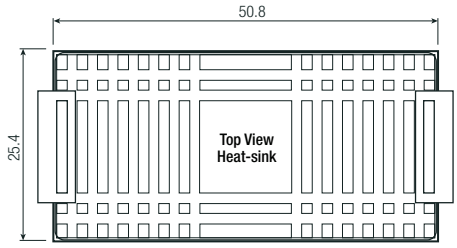


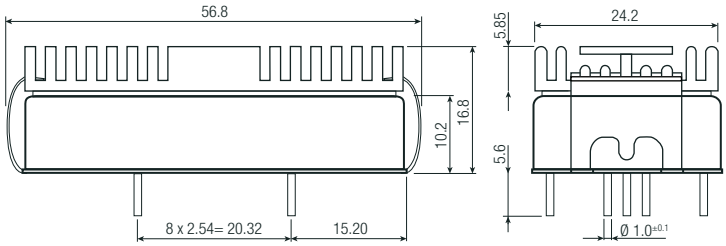
Pinning Information

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	no Pin	Com
5	-Vout	-Vout
6	CTRL (3)	CTRL (3)

Tolerance: xx.x= ±0.5mm
xx.xx= ±0.25mm

Dimension Drawing with Heat-sink (mm)





Specifications (measured @ Ta= 25°C, nom. Vin, full load unless otherwise stated)

PACKAGING INFORMATION			
Parameter	**Type**		**Value**
Packaging Dimension (LxWxH)	tube tray	without heat-sink with heat-sink	255.0 x 54.0 x 22.0mm 302.5 x 222.0 x 20.0mm
Packaging Quantity	tube tray	without heat-sink with heat-sink	9pcs 20pcs
Storage Temperature Range			-55°C to +125°C
Storage Humidity	non-condensing		5% - 95% RH

The product information and specifications may be subject to changes even without prior written notice.The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without RECOM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless RECOM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of RECOM products in such safety-critical applications.

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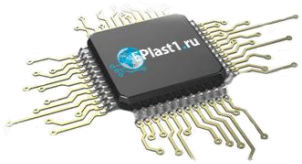
Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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