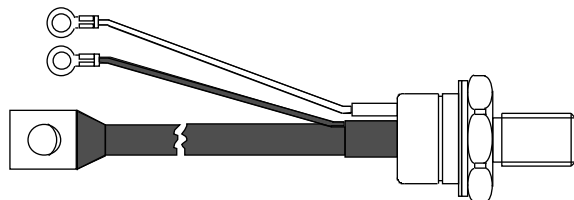


Phase Control Thyristors (Stud Version), 80 A



TO-209AC (TO-94)

FEATURES

- Hermetic glass-metal seal
- International standard case TO-209AC (TO-94)
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level



RoHS
COMPLIANT

TYPICAL APPLICATIONS

- DC motor controls
- Controlled DC power supplies
- AC controllers

PRODUCT SUMMARY

$I_{T(AV)}$	80 A
-------------	------

MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{T(AV)}$		80	A
	T_C	85	°C
$I_{T(RMS)}$		125	A
I_{TSM}	50 Hz	1900	
	60 Hz	1990	
I^2t	50 Hz	18	kA ² s
	60 Hz	16	
V_{DRM}/V_{RRM}		400 to 1200	V
t_q	Typical	110	µs
T_J		- 40 to 125	°C

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	V_{DRM}/V_{RRM} , MAXIMUM REPETITIVE PEAK AND OFF-STATE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK VOLTAGE V	I_{DRM}/I_{RRM} MAXIMUM AT $T_J = 125\text{ °C}$ mA
80RIA 81RIA	40	400	500	15
	80	800	900	
	120	1200	1300	

80RIA...PbF, 81RIA...PbF, 82RIA...PbF Series



Vishay Semiconductors

Phase Control Thyristors
(Stud Version), 80 A

ABSOLUTE MAXIMUM RATINGS						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average on-state current at case temperature	I _{T(AV)}	180° conduction, half sine wave			80	A
					85	°C
Maximum RMS on-state current	I _{T(RMS)}	DC at 75 °C case temperature			125	A
Maximum peak, one-cycle non-repetitive surge current	I _{TSM}	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T _J = T _J maximum	1900	
		t = 8.3 ms			1990	
		t = 10 ms	100 % V _{RRM} reapplied		1600	
		t = 8.3 ms			1675	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage		18	
		t = 8.3 ms			16	
		t = 10 ms	100 % V _{RRM} reapplied	12.7		
		t = 8.3 ms		11.7		
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			180.5	kA ² /s
Low level value of threshold voltage	V _{T(TO)1}	(16.7 % × π × I _{T(AV)}) < I < π × I _{T(AV)} , T _J = T _J maximum			0.99	V
High level value of threshold voltage	V _{T(TO)2}	(I > π × I _{T(AV)}), T _J = T _J maximum			1.13	
Low level value of on-state slope resistance	r _{t1}	(16.7 % × π × I _{T(AV)}) < I < π × I _{T(AV)} , T _J = T _J maximum			2.29	mΩ
High level value of on-state slope resistance	r _{t2}	(I > π × I _{T(AV)}), T _J = T _J maximum			1.84	
Maximum on-state voltage	V _{TM}	I _{pk} = 250 A, T _J = 25 °C, t _p = 10 ms sine pulse			1.60	V
Maximum holding current	I _H	T _J = 25 °C, anode supply 12 V resistive load			200	mA
Typical latching current	I _L				400	

SWITCHING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum non-repetitive rate of rise of turned-on current	di/dt	$T_J = 125 \text{ °C}$, $V_d = \text{Rated } V_{DRM}$, $I_{TM} = 2 \times di/dt$ snubber 0.2 μF, 15 Ω, gate pulse: 20 V, 65 Ω, $t_p = 6 \text{ μs}$, $t_r = 0.5 \text{ μs}$ Per JEDEC standard RS-397, 5.2.2.6.	300	A/μs
Typical delay time	t_d	Gate pulse: 10 V, 15 Ω source, $t_p = 6 \text{ μs}$, $t_r = 0.1 \text{ μs}$, $V_d = \text{Rated } V_{DRM}$, $I_{TM} = 50 \text{ A}$, $T_J = 25 \text{ °C}$	1	μs
Typical turn-off time	t_q	$I_{TM} = 50 \text{ A}$, $T_J = T_J \text{ maximum}$, $di/dt = -5 \text{ A/μs}$, $V_R = 50 \text{ V}$, $dV/dt = 20 \text{ V/μs}$, gate bias: 0 V 25 Ω, $t_p = 500 \text{ μs}$	110	

BLOCKING				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum critical rate of rise of off-state voltage	dV/dt	$T_J = 125 \text{ °C}$ exponential to 67 % rated V_{DRM}	500	V/μs
Maximum peak reverse and off-state leakage current	I_{RRM} , I_{DRM}	$T_J = 125 \text{ °C}$ rated V_{DRM}/V_{RRM} applied	15	mA



80RIA...PbF, 81RIA...PbF, 82RIA...PbF Series

Phase Control Thyristors
(Stud Version), 80 A

Vishay Semiconductors

TRIGGERING					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak gate power	P _{GM}	T _J = T _J maximum, t _p ≤ 5 ms		12	W
Maximum average gate power	P _{G(AV)}	T _J = T _J maximum, f = 50 Hz, d% = 50		3	
Maximum peak positive gate current	I _{GM}	T _J = T _J maximum, t _p ≤ 5 ms		3	A
Maximum peak positive gate voltage	+ V _{GM}			20	V
Maximum peak negative gate voltage	- V _{GM}			10	
Maximum DC gate current required to trigger	I _{GT}	T _J = - 40 °C	Maximum required gate trigger/ current/voltage are the lowest value which will trigger all units 6 V anode to cathode applied	270	mA
		T _J = 25 °C		120	
		T _J = 125 °C		60	
Maximum DC gate voltage required to trigger	V _{GT}	T _J = - 40 °C		3.5	V
		T _J = 25 °C		2.5	
		T _J = 125 °C		1.5	
DC gate current not to trigger	I _{GD}	T _J = T _J maximum	Maximum gate current/voltage not to trigger is the maximum value which will not trigger any unit with rated V _{DRM} anode to cathode applied	6	mA
DC gate voltage not to trigger	V _{GD}			0.25	V

THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum operating junction temperature range	T _J		- 40 to 125	°C
Maximum storage temperature range	T _{Stg}		- 40 to 150	
Maximum thermal resistance, junction to case	R _{thJC}	DC operation	0.30	K/W
Maximum thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth, flat and greased	0.1	
Mounting torque, ± 10 %		Non-lubricated threads	15.5 (137)	N · m (lbf · in)
		Lubricated threads	14 (120)	
Approximate weight			130	g
Case style		See dimensions - link at the end of datasheet	TO-209AC (TO-94)	

80RIA...PbF, 81RIA...PbF, 82RIA...PbF Series

Vishay Semiconductors

Phase Control Thyristors
(Stud Version), 80 A



ΔR_{thJC} CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.042	0.030	$T_J = T_J \text{ maximum}$	K/W
120°	0.050	0.052		
90°	0.064	0.070		
60°	0.095	0.100		
30°	0.164	0.165		

Note

- The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

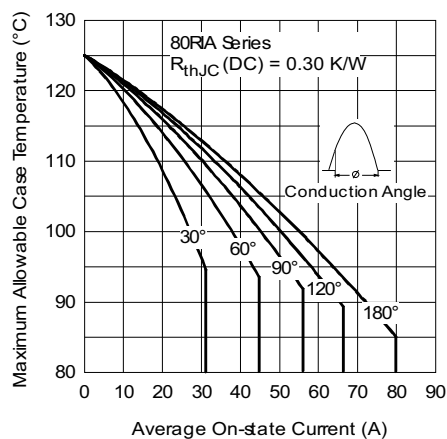


Fig. 1 - Current Ratings Characteristics

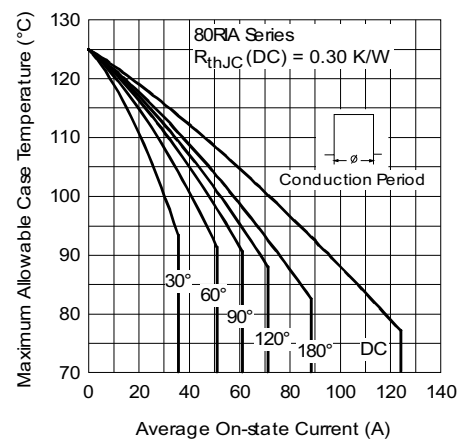


Fig. 2 - Current Ratings Characteristics

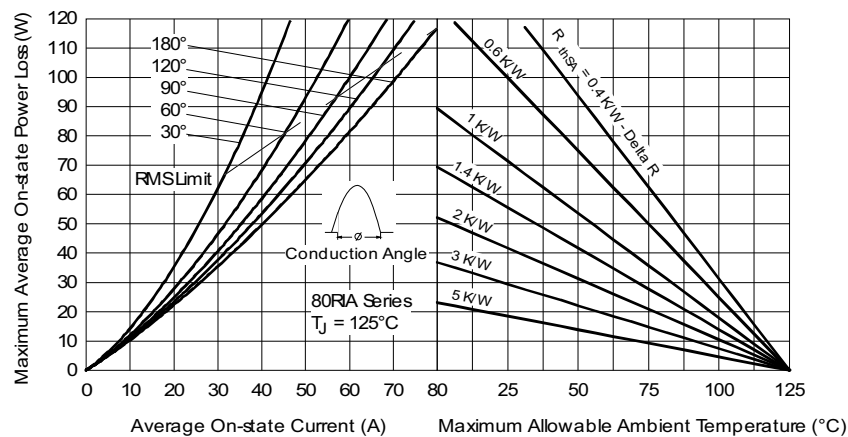


Fig. 3 - On-State Power Loss Characteristics



80RIA...PbF, 81RIA...PbF, 82RIA...PbF Series

Phase Control Thyristors
(Stud Version), 80 A

Vishay Semiconductors

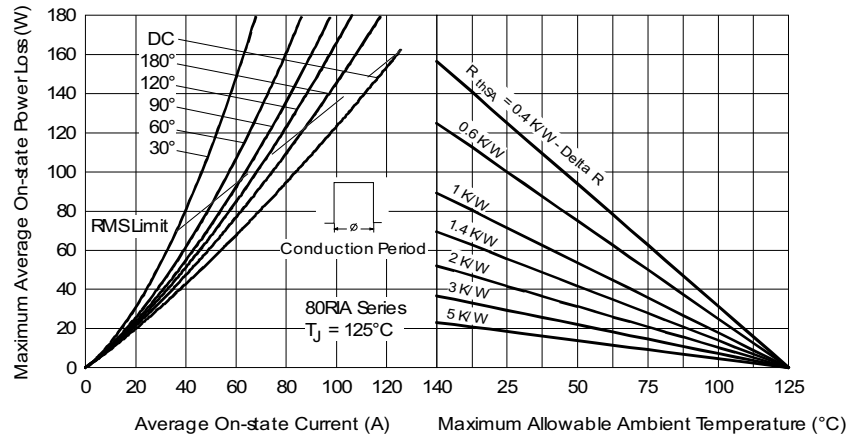


Fig. 4 - On-State Power Loss Characteristics

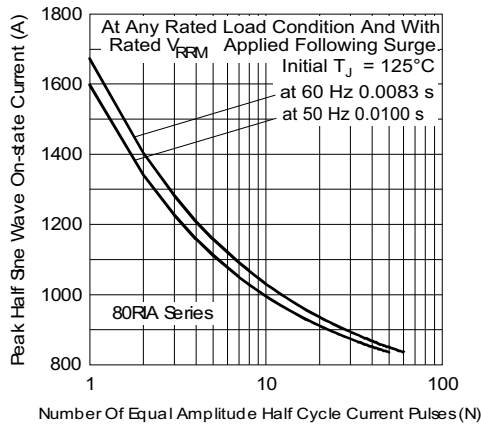


Fig. 5 - Maximum Non-Repetitive Surge Current

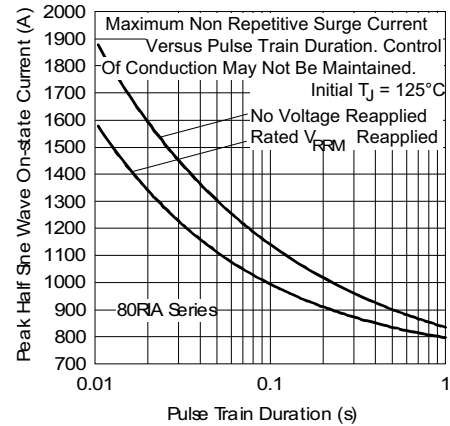


Fig. 6 - Maximum Non-Repetitive Surge Current

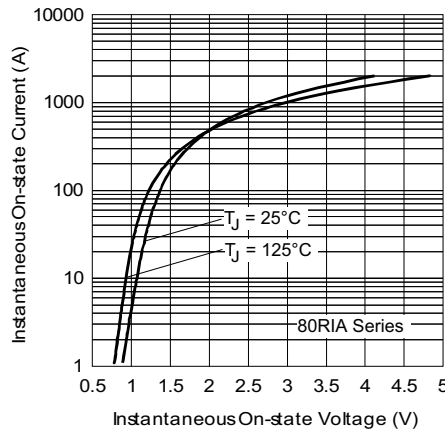


Fig. 7 - On-State Voltage Drop Characteristics

80RIA...PbF, 81RIA...PbF, 82RIA...PbF Series



Vishay Semiconductors

Phase Control Thyristors
(Stud Version), 80 A

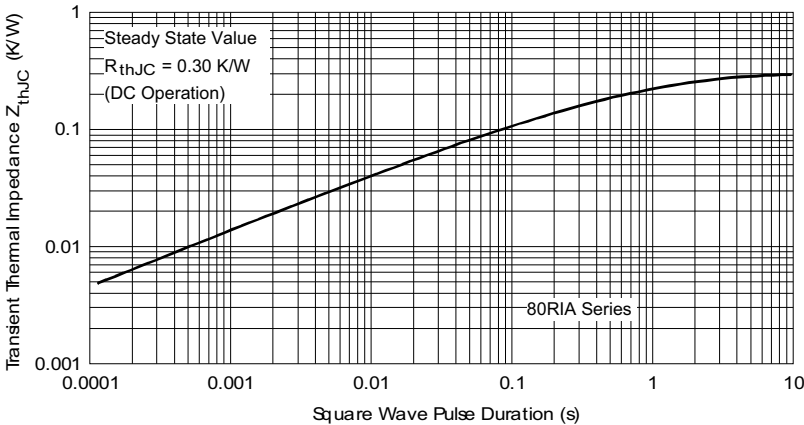


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

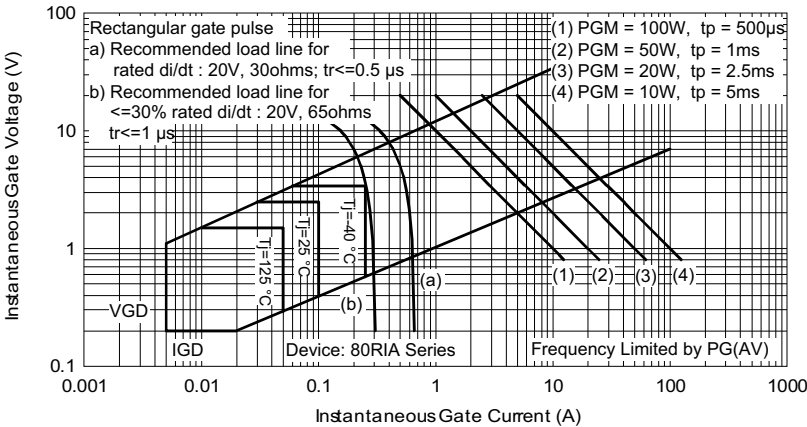


Fig. 9 - Gate Characteristics

ORDERING INFORMATION TABLE

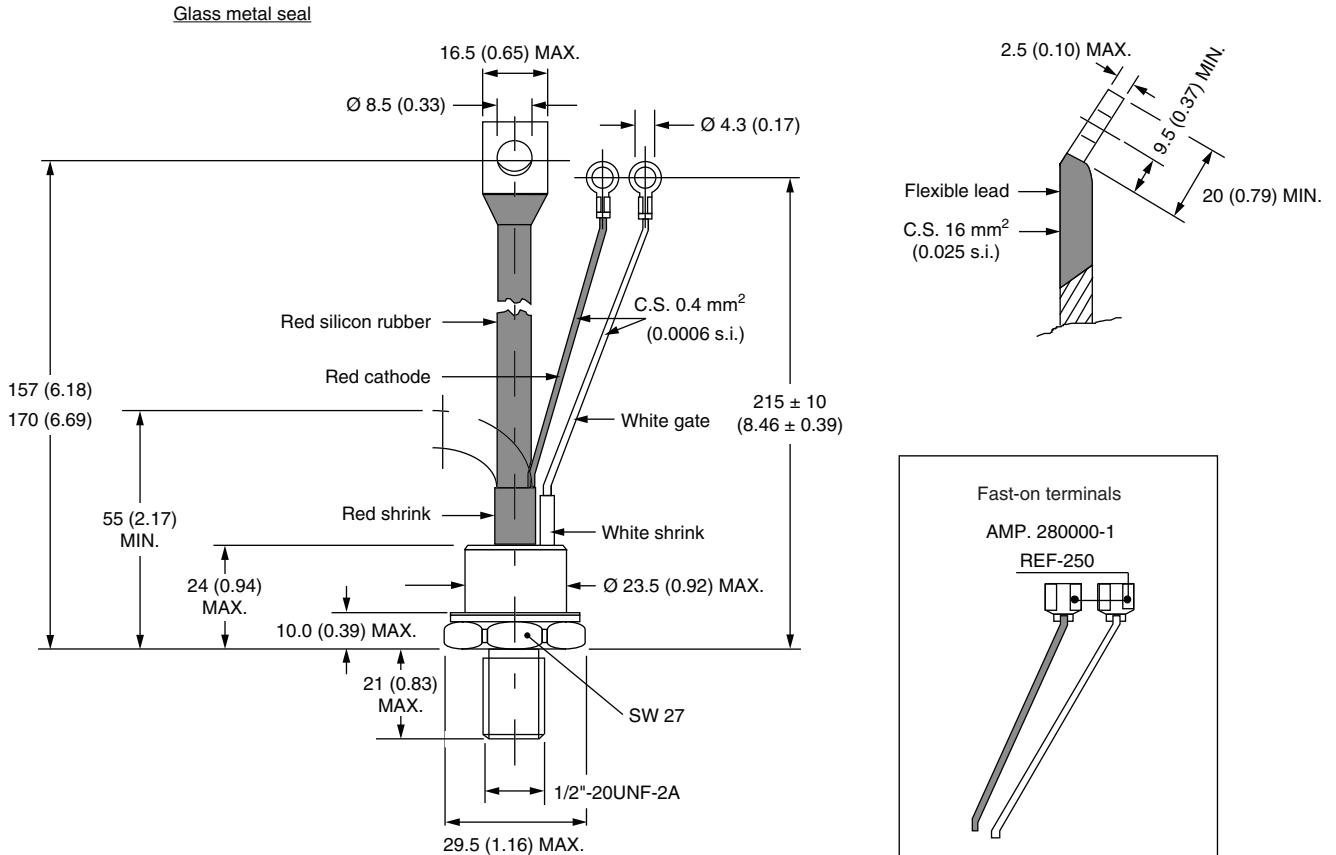
Device code	8	0	RIA	120	M	PbF
	①	②	③	④	⑤	⑥
①	- $I_{TAV} \times 10$ A					
②	- • 0 = Eyelet terminals (gate and auxiliary cathode leads) • 1 = Fast-on terminals (gate and auxiliary cathode leads) • 2 = Flag terminals (gate and auxiliary cathode terminals)					
③	- RIA = Essential part number					
④	- Voltage code $\times 100 = V_{RRM}$ (see Voltage Ratings table)					
⑤	- • None = Stud base 1/2"-20UNF- 2 A threads • M = Stud base metric threads M12 x 1.75 E 6					
⑥	- Lead (Pb)-free					

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95362
------------	--

TO-209AC (TO-94) for 80RIA Series

DIMENSIONS in millimeters (inches)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9