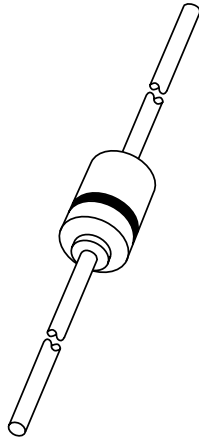


DATA SHEET



BZV85 series Voltage regulator diodes

Product specification
Supersedes data of 1996 Apr 26

1999 May 11

Voltage regulator diodes

BZV85 series

FEATURES

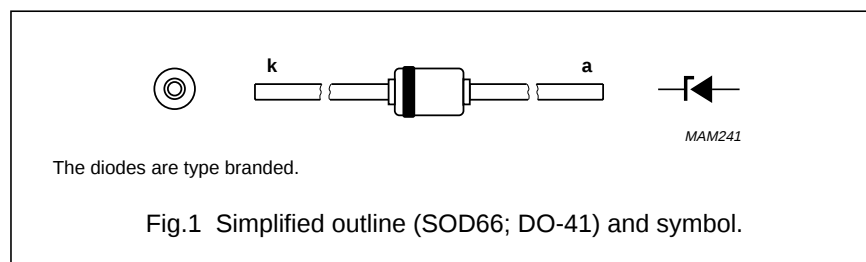
- Total power dissipation: max. 1.3 W
- Tolerance series: approx. $\pm 5\%$
- Working voltage range: nom. 3.6 to 75 V (E24 range)
- Non-repetitive peak reverse power dissipation: max. 60 W.

APPLICATIONS

- Stabilization purposes.

DESCRIPTION

Medium-power voltage regulator diodes in hermetically sealed leaded glass SOD66 (DO-41) packages. The diodes are available in the normalized E24 approx. $\pm 5\%$ tolerance range. The series consists of 33 types with nominal working voltages from 3.6 to 75 V (BZV85-C3V6 to BZV85-C75).



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_F	continuous forward current		—	500	mA
I_{ZSM}	non-repetitive peak reverse current	$t_p = 100 \mu s$; square wave; $T_j = 25^\circ C$ prior to surge; see Fig.3	see Table "Per type"		
		$t_p = 10 ms$; half sinewave; $T_j = 25^\circ C$ prior to surge	see Table "Per type"		
P_{tot}	total power dissipation	$T_{amb} = 25^\circ C$; lead length 10 mm; note 1	—	1	W
		note 2	—	1.3	W
P_{ZSM}	non-repetitive peak reverse power dissipation	$t_p = 100 \mu s$; square wave; $T_j = 25^\circ C$ prior to surge	—	60	W
T_{stg}	storage temperature		-65	+200	$^\circ C$
T_j	junction temperature		—	200	$^\circ C$

Notes

1. Device mounted on a printed circuit-board with 1 cm² copper area per lead.
2. If the leads are kept at $T_{tp} = 55^\circ C$ at 4 mm from body.

ELECTRICAL CHARACTERISTICS

Total series

$T_j = 25^\circ C$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
V_F	forward voltage	$I_F = 50 mA$; see Fig.4	1	V

Voltage regulator diodes

BZV85 series

Per type

$T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

BZV85- CXXX	WORKING VOLTAGE V _Z (V) at I _{Ztest}		DIFFERENTIAL RESISTANCE r _{dif} (Ω) at I _{Ztest}	TEMP. COEFF. S _Z (mV/K) at I _{Ztest} see Figs 5 and 6		TEST CURRENT I _{Ztest} (mA)	DIODE CAP. C _d (pF) at f = 1 MHz; V _R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I _{ZSM}		
	MIN.	MAX.		MAX.	MIN.			MAX.	I _R (μA)	V _R (V)	at t _p = 100 μs; T _{amb} = 25 °C	at t _p = 10 ms; T _{amb} = 25 °C
											MAX. (A)	MAX. (mA)
3V6	3.4	3.8	15	−3.5	−1.0	60	450	50	1.0	8.0	2000	
3V9	3.7	4.1	15	−3.5	−1.0	60	450	10	1.0	8.0	1950	
4V3	4.0	4.6	13	−2.7	0	50	450	5	1.0	8.0	1850	
4V7	4.4	5.0	13	−2.0	+0.7	45	300	3	1.0	8.0	1800	
5V1	4.8	5.4	10	−0.5	+2.2	45	300	3	2.0	8.0	1750	
5V6	5.2	6.0	7	0	2.7	45	300	2	2.0	8.0	1700	
6V2	5.8	6.6	4	0.6	3.6	35	200	2	3.0	7.0	1620	
6V8	6.4	7.2	3.5	1.3	4.3	35	200	2	4.0	7.0	1550	
7V5	7.0	7.9	3	2.5	5.5	35	150	1	4.5	5.0	1500	
8V2	7.7	8.7	5	3.1	6.1	25	150	0.7	5.0	5.0	1400	
9V1	8.5	9.6	5	3.8	7.2	25	150	0.7	6.5	4.0	1340	
10	9.4	10.6	8	4.7	8.5	25	90	0.2	7.0	4.0	1200	
11	10.4	11.6	10	5.3	9.3	20	85	0.2	7.7	3.0	1100	
12	11.4	12.7	10	6.3	10.8	20	85	0.2	8.4	3.0	1000	
13	12.4	14.1	10	7.4	12.0	20	80	0.2	9.1	3.0	900	
15	13.8	15.6	15	8.9	13.6	15	75	0.05	10.5	2.5	760	
16	15.3	17.1	15	10.7	15.4	15	75	0.05	11.0	1.75	700	
18	16.8	19.1	20	11.8	17.1	15	70	0.05	12.5	1.75	600	
20	18.8	21.2	24	13.6	19.1	10	60	0.05	14.0	1.75	540	
22	20.8	23.3	25	16.6	22.1	10	60	0.05	15.5	1.5	500	
24	22.8	25.6	30	18.3	24.3	10	55	0.05	17	1.5	450	
27	25.1	28.9	40	20.1	27.5	8	50	0.05	19	1.2	400	
30	28.0	32.0	45	22.4	32.0	8	50	0.05	21	1.2	380	

Voltage regulator diodes

BZV85 series

BZV85- CXXX	WORKING VOLTAGE V _Z (V) at I _{Ztest}		DIFFERENTIAL RESISTANCE r _{dif} (Ω) at I _{Ztest}	TEMP. COEFF. S _Z (mV/K) at I _{Ztest} see Figs 5 and 6		TEST CURRENT I _{Ztest} (mA)	DIODE CAP. C _d (pF) at f = 1 MHz; V _R = 0 V	REVERSE CURRENT at REVERSE VOLTAGE		NON-REPETITIVE PEAK REVERSE CURRENT I _{ZSM}	
	MIN.	MAX.	MAX.	MIN.	MAX.			I _R (μA)	V _R (V)	at t _p = 100 μs; T _{amb} = 25 °C	at t _p = 10 ms; T _{amb} = 25 °C
							MAX.	MAX.		MAX. (A)	MAX. (mA)
33	31.0	35.0	45	24.8	35.0	8	45	0.05	23	1.0	350
36	34.0	38.0	50	27.2	39.9	8	45	0.05	25	0.9	320
39	37.0	41.0	60	29.6	43.0	6	45	0.05	27	0.8	296
43	40.0	46.0	75	34.0	48.3	6	40	0.05	30	0.7	270
47	44.0	50.0	100	37.4	52.5	4	40	0.05	33	0.6	246
51	48.0	54.0	125	40.8	56.5	4	40	0.05	36	0.5	226
56	52.0	60.0	150	46.8	63.0	4	40	0.05	39	0.4	208
62	58.0	66.0	175	52.2	72.5	4	35	0.05	43	0.4	186
68	64.0	72.0	200	60.5	81.0	4	35	0.05	48	0.35	171
75	70.0	80.0	225	66.5	88.0	4	35	0.05	53	0.3	161

Voltage regulator diodes

BZV85 series

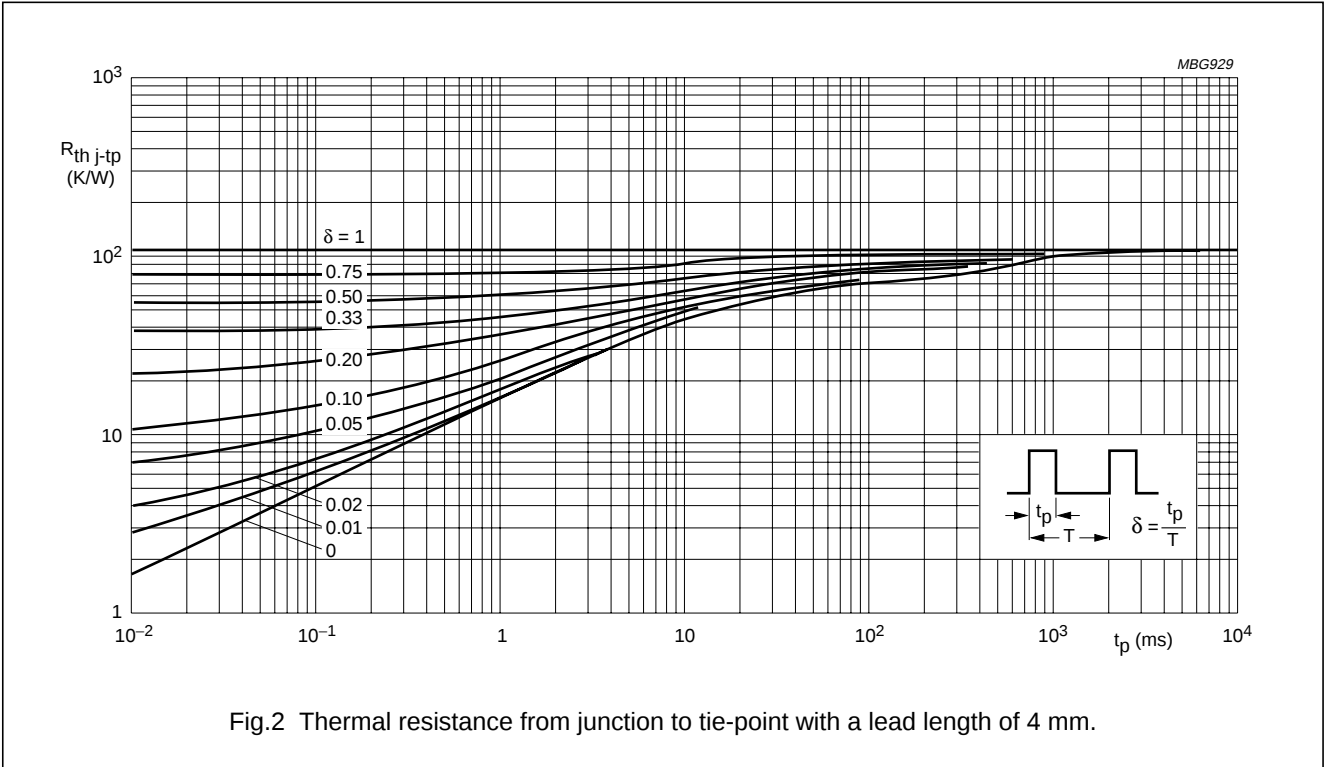
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point	lead length 4 mm; see Fig.2	110	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	lead length 10 mm; note 1	175	K/W

Note

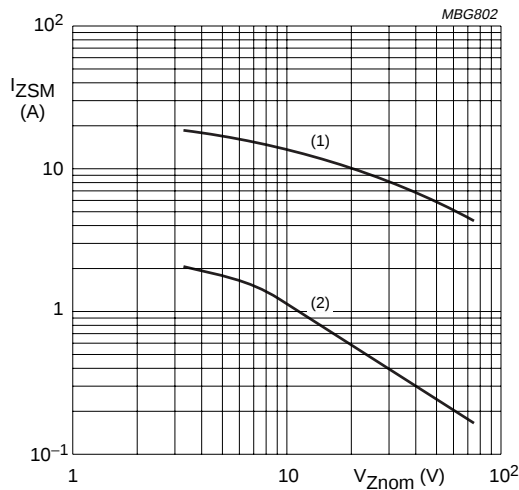
1. Device mounted on a printed circuit-board with 1 cm² copper area per lead.

GRAPHICAL DATA



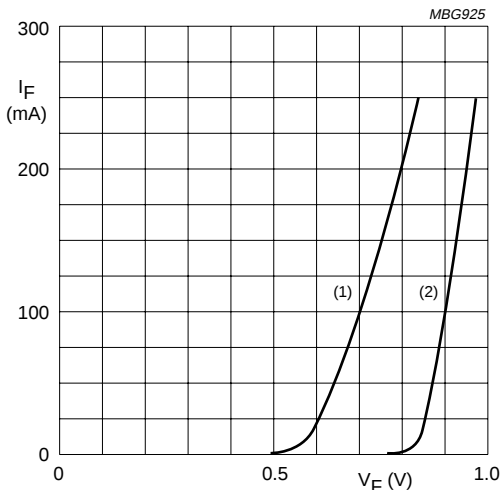
Voltage regulator diodes

BZV85 series



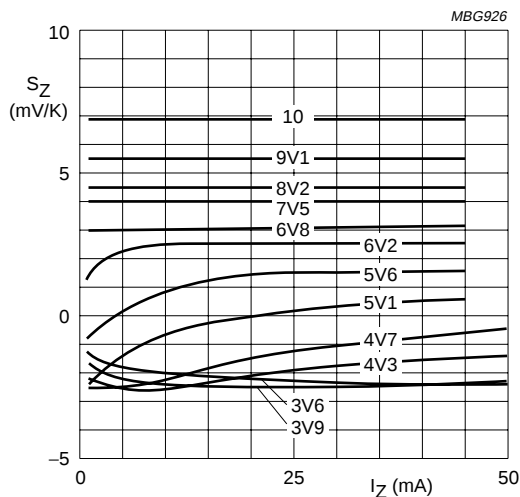
(1) $t_p = 10 \mu s$; half sinewave; $T_{amb} = 25^\circ C$.
(2) $t_p = 10 ms$; half sinewave; $T_{amb} = 25^\circ C$.

Fig.3 Non-repetitive peak reverse current as a function of the nominal working voltage.



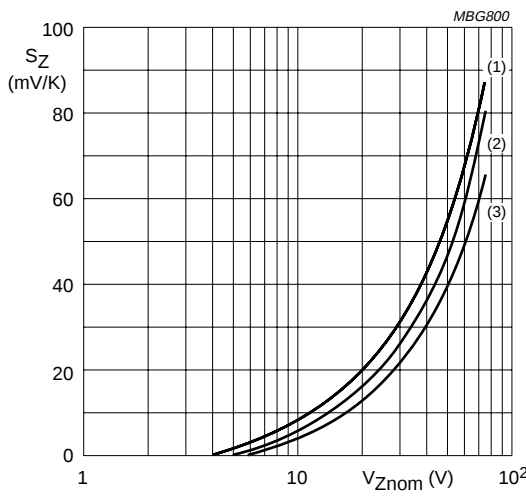
(1) $T_j = 200^\circ C$.
(2) $T_j = 25^\circ C$.

Fig.4 Forward current as a function of forward voltage; typical values.



BZV85-C3V6 to C10.
 $T_j = 25$ to $150^\circ C$.
For types above 7.5 V the temperature coefficient is independent of current; see Table "Per type".

Fig.5 Temperature coefficient as a function of working current; typical values.



$I_Z = I_{Ztest}$; $T_j = 25$ to $150^\circ C$.
(1) Maximum values.
(2) Typical values.
(3) Minimum values.

Fig.6 Temperature coefficient as a function of nominal working voltage.

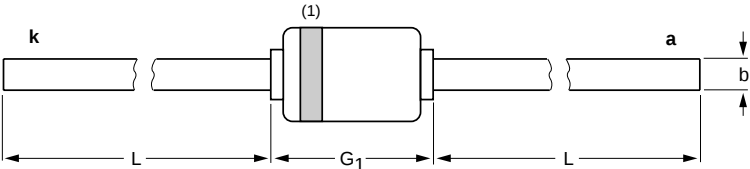
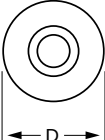
Voltage regulator diodes

BZV85 series

PACKAGE OUTLINE

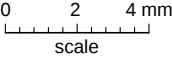
Hermetically sealed glass package; axial leaded; 2 leads

SOD66



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G ₁ max.	L min.
mm	0.81	2.6	4.8	28



Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD66		DO-41				97-06-20

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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Argentina: see South America

Australia: 34 Waterloo Road, NORTH RYDE, NSW 2113,
Tel. +61 2 9805 4455, Fax. +61 2 9805 4466

Austria: Computerstr. 6, A-1101 WIEN, P.O. Box 213,
Tel. +43 1 60 101 1248, Fax. +43 1 60 101 1210

Belarus: Hotel Minsk Business Center, Bld. 3, r. 1211, Volodarski Str. 6,
220050 MINSK, Tel. +375 172 20 0733, Fax. +375 172 20 0773

Belgium: see The Netherlands

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Bulgaria: Philips Bulgaria Ltd., Energoproject, 15th floor,
51 James Bourchier Blvd., 1407 SOFIA,
Tel. +359 2 68 9211, Fax. +359 2 68 9102

Canada: PHILIPS SEMICONDUCTORS/COMPONENTS,
Tel. +1 800 234 7381, Fax. +1 800 943 0087

China/Hong Kong: 501 Hong Kong Industrial Technology Centre,
72 Tat Chee Avenue, Kowloon Tong, HONG KONG,
Tel. +852 2319 7888, Fax. +852 2319 7700

Colombia: see South America

Czech Republic: see Austria

Denmark: Sydhavnsgade 23, 1780 COPENHAGEN V,
Tel. +45 33 29 3333, Fax. +45 33 29 3905

Finland: Sinikalliontie 3, FIN-02630 ESPOO,
Tel. +358 9 615 800, Fax. +358 9 6158 0920

France: 51 Rue Carnot, BP317, 92156 SURESNES Cedex,
Tel. +33 1 4099 6161, Fax. +33 1 4099 6427

Germany: Hammerbrookstraße 69, D-20097 HAMBURG,
Tel. +49 40 2353 60, Fax. +49 40 2353 6300

Hungary: see Austria

India: Philips INDIA Ltd, Band Box Building, 2nd floor,
254-D, Dr. Annie Besant Road, Worli, MUMBAI 400 025,
Tel. +91 22 493 8541, Fax. +91 22 493 0966

Indonesia: PT Philips Development Corporation, Semiconductors Division,
Gedung Philips, Jl. Buncit Raya Kav.99-100, JAKARTA 12510,
Tel. +62 21 794 0040 ext. 2501, Fax. +62 21 794 0080

Ireland: Newstead, Clonskeagh, DUBLIN 14,
Tel. +353 1 7640 000, Fax. +353 1 7640 200

Israel: RAPAC Electronics, 7 Kehilat Saloniki St, PO Box 18053,
TEL AVIV 61180, Tel. +972 3 645 0444, Fax. +972 3 649 1007

Italy: PHILIPS SEMICONDUCTORS, Piazza IV Novembre 3,
20124 MILANO, Tel. +39 02 67 52 2531, Fax. +39 02 67 52 2557

Japan: Philips Bldg 13-37, Kohnan 2-chome, Minato-ku,
TOKYO 108-8507, Tel. +81 3 3740 5130, Fax. +81 3 3740 5077

Korea: Philips House, 260-199 Itaewon-dong, Yongsan-ku, SEOUL,
Tel. +82 2 709 1412, Fax. +82 2 709 1415

Malaysia: No. 76 Jalan Universiti, 46200 PETALING JAYA, SELANGOR,
Tel. +60 3 750 5214, Fax. +60 3 757 4880

Mexico: 5900 Gateway East, Suite 200, EL PASO, TEXAS 79905,
Tel. +9-5 800 234 7381, Fax +9-5 800 943 0087

Middle East: see Italy

Netherlands: Postbus 90050, 5600 PB EINDHOVEN, Bldg. VB,
Tel. +31 40 27 82785, Fax. +31 40 27 88399

New Zealand: 2 Wagener Place, C.P.O. Box 1041, AUCKLAND,
Tel. +64 9 849 4160, Fax. +64 9 849 7811

Norway: Box 1, Manglerud 0612, OSLO,
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Pakistan: see Singapore

Philippines: Philips Semiconductors Philippines Inc.,
106 Valero St. Salcedo Village, P.O. Box 2108 MCC, MAKATI,
Metro MANILA, Tel. +63 2 816 6380, Fax. +63 2 817 3474

Poland: Ul. Lukiska 10, PL 04-123 WARSZAWA,
Tel. +48 22 612 2831, Fax. +48 22 612 2327

Portugal: see Spain

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Russia: Philips Russia, Ul. Usatcheva 35A, 119048 MOSCOW,
Tel. +7 095 755 6918, Fax. +7 095 755 6919

Singapore: Lorong 1, Toa Payoh, SINGAPORE 319762,
Tel. +65 350 2538, Fax. +65 251 6500

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2092 JOHANNESBURG, P.O. Box 58088 Newville 2114,
Tel. +27 11 471 5401, Fax. +27 11 471 5398

South America: Al. Vicente Pinzon, 173, 6th floor,
04547-130 SÃO PAULO, SP, Brazil,
Tel. +55 11 821 2333, Fax. +55 11 821 2382

Spain: Balmes 22, 08007 BARCELONA,
Tel. +34 93 301 6312, Fax. +34 93 301 4107

Sweden: Kottbygatan 7, Akalla, S-16485 STOCKHOLM,
Tel. +46 8 5985 2000, Fax. +46 8 5985 2745

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Tel. +41 1 488 2741 Fax. +41 1 488 3263

Taiwan: Philips Semiconductors, 6F, No. 96, Chien Kuo N. Rd., Sec. 1,
TAIPEI, Taiwan Tel. +886 2 2134 2886, Fax. +886 2 2134 2874

Thailand: PHILIPS ELECTRONICS (THAILAND) Ltd.,
209/2 Sanpavuth-Bangna Road Prakanong, BANGKOK 10260,
Tel. +66 2 745 4090, Fax. +66 2 398 0793

Turkey: Yukari Dudullu, Org. San. Blg., 2.Cad. Nr. 28 81260 Umraniye,
ISTANBUL, Tel. +90 216 522 1500, Fax. +90 216 522 1813

Ukraine: PHILIPS UKRAINE, 4 Patrice Lumumba str., Building B, Floor 7,
252042 KIEV, Tel. +380 44 264 2776, Fax. +380 44 268 0461

United Kingdom: Philips Semiconductors Ltd., 276 Bath Road, Hayes,
MIDDLESEX UB3 5BX, Tel. +44 181 730 5000, Fax. +44 181 754 8421

United States: 811 East Arques Avenue, SUNNYVALE, CA 94088-3409,
Tel. +1 800 234 7381, Fax. +1 800 943 0087

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