

FrelTec GmbH

Mathildenstr. 10A
82319 Starnberg
Germany

FrelTec
TVS
SMA

SMA

FrelTec TVS

SPECIFICATION

633	SMAJ____xx	SMAX	L05
Type	Type	Package	Packing
633: TVS	SMAJ____	SMA	L05: tape and Reel(embossed tape) for 5000 pc (13"reel)

All products according to RoHS(2015/863/EU)

FrelTec

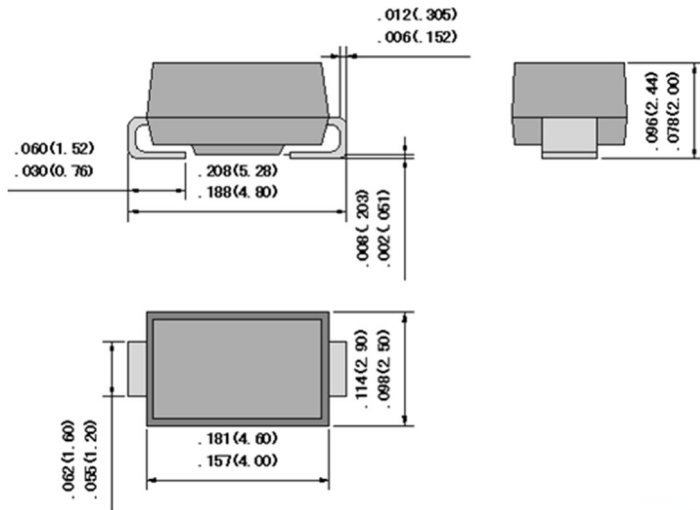
SMA

FrelTec

TVS

SMAJ _____

PACKAGE OUTLINE



FrelTec

SMA

FrelTec TVS

Maximum Ratings & Characteristics
Ratings at 25°C ambient temperature unless otherwise specified,

Parameter	Symbols	Value	Unit
Peak Pulse Power Dissipation on 10/1000us waveform (Note1,Note2),	PPPM	Minimum 400	W
Peak Pulse Current of on 10/1000us waveform,(Note1,3)	IPPM	See Table	A
Steady State Power Dissipation at TL =75°C,Lead lengths,375", (9,5mm) (Note2),	PM(AV)	3,3	W
Peak Forward Surge Current,8,3ms Single Half Sine-Wave	IFSM	40	A
Operating junction and Storage Temperature Range,	TJ , TSTG	-65 to +150	°C

Notes:

- 1, Non-repetitive current pulse, per Fig, 3 and derated above TA = 25°C per Fig,2
- 2, Mounted on 5,0mm x 5,0mm (0,03mm thick) Copper Pads to each terminal,
- 3, 8,3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum,

Part No		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage MN,@IT	Breakdown Voltage MAX,@IT	Test Current	Maximum Clamping Voltage @IPP	Peak Pulse Current	Reverse Leakage @VRWM
UNT-POLAR	BI-POLAR	UNI	BI	VRWM(V)	VBR MIN,(V)	VBR Max,(V)	IT(mA)	Vc(v)	Ipp(A)	IR(uA)
SMAJ5,0A	SMAJ5,0CA	AE	WE	5	6,4	7	10	9,2	43,5	800
SMAJ6,0A	SMAJ6,0CA	AG	WG	6	6,67	7,37	10	10,3	38,8	800
SMAJ6,5A	SMAJ6,5CA	AK	WK	6,5	7,22	7,98	10	11,2	35,7	500
SMAJ7,0A	SMAJ7,0CA	AM	WM	7	7,78	8,6	10	12	33,3	200
SMAJ7,5A	SMAJ7,5CA	AP	WP	7,5	8,33	9,21	1	12,9	31	100

SMA

TVS

SMAJ8,0A	SMAJ8,0CA	AR	WR	8	8,89	9,83	1	13,6	29,4	50
SMAJ8,5A	SMAJ8,5CA	AT	WT	8,5	9,44	10,4	1	14,4	27,8	20
SMAJ9,0A	SMAJ9,0CA	AV	WV	9	10	11,1	1	15,4	26	10
SMAJ10A	SMAJ10CA	AX	WX	10	11,1	12,3	1	17	23,5	5
SMAJ11A	SMAJ11CA	AZ	WZ	11	12,2	13,5	1	18,2	22	1
SMAJ12A	SMAJ12CA	BE	XE	12	13,3	14,7	1	19,9	20,1	1
SMAJ13A	SMAJ13CA	BG	XG	13	14,4	15,9	1	21,5	18,6	1
SMAJ14A	SMAJ14CA	BK	XK	14	15,6	17,2	1	23,2	17,2	1
SMAJ15A	SMAJ15CA	BM	XM	15	16,7	18,5	1	24,4	16,4	1
SMAJ16A	SMAJ16CA	BP	XP	16	17,8	19,7	1	26	15,4	1
SMAJ17A	SMAJ17CA	BR	XR	17	18,9	20,9	1	27,6	14,5	1
SMAJ18A	SMAJ18CA	BT	XT	18	20	22,1	1	29,2	13,7	1
SMAJ20A	SMAJ20CA	BV	XV	20	22,2	24,5	1	32,4	12,3	1
SMAJ22A	SMAJ22CA	BX	XX	22	24,4	26,9	1	35,5	11,3	1
SMAJ24A	SMAJ24CA	BZ	XZ	24	26,7	29,5	1	38,9	10,3	1
SMAJ26A	SMAJ26CA	CE	YE	26	28,9	31,9	1	42,1	9,5	1
SMAJ28A	SMAJ28CA	CG	YG	28	31,1	34,4	1	45,4	8,8	1
SMAJ30A	SMAJ30CA	CK	YK	30	33,3	36,8	1	48,4	8,3	1
SMAJ33A	SMAJ33CA	CM	YM	33	36,7	40,6	1	53,3	7,5	1
SMAJ36A	SMAJ36CA	CP	YP	36	40	44,2	1	58,1	6,9	1
SMAJ40A	SMAJ40CA	CR	YR	40	44,4	49,1	1	64,5	6,2	1
SMAJ43A	SMAJ43CA	CT	YT	43	47,8	52,8	1	69,4	5,8	1
SMAJ45A	SMAJ45CA	CV	YV	45	50	55,3	1	72,7	5,5	1
SMAJ48A	SMAJ48CA	CX	YX	48	53,3	58,9	1	77,4	5,2	1
SMAJ51A	SMAJ51CA	CZ	YZ	51	56,7	62,7	1	82,4	4,9	1
SMAJ54A	SMAJ54CA	RE	ZE	54	60	66,3	1	87,1	4,6	1
SMAJ58A	SMAJ58CA	RG	ZG	58	64,4	71,2	1	93,6	4,3	1
SMAJ60A	SMAJ60CA	RK	ZK	60	66,7	73,7	1	96,8	4,1	1
SMAJ64A	SMAJ64CA	RM	ZM	64	71,1	78,6	1	103	3,9	1
SMAJ70A	SMAJ70CA	RP	ZP	70	77,8	86	1	113	3,5	1
SMAJ75A	SMAJ75CA	RR	ZR	75	83,3	92,1	1	121	3,3	1
SMAJ78A	SMAJ78CA	RT	ZT	78	86,7	95,8	1	126	3,2	1
SMAJ85A	SMAJ85CA	RV	ZV	85	94,4	104	1	137	2,9	1
SMAJ90A	SMAJ90CA	RX	ZX	90	100	111	1	146	2,7	1
SMAJ100A	SMAJ100CA	RZ	ZZ	100	111	123	1	162	2,5	1
SMAJ110A	SMAJ110CA	SE	VE	110	122	135	1	177	2,3	1
SMAJ120A	SMAJ120CA	SG	VG	120	133	147	1	193	2,1	1
SMAJ130A	SMAJ130CA	SK	VK	130	144	159	1	209	1,9	1
SMAJ150A	SMAJ150CA	SM	VM	150	167	185	1	243	1,6	1
SMAJ160A	SMAJ160CA	SP	VP	160	178	197	1	259	1,5	1

SMA

TVS

SMAJ170A	SMAJ170CA	SR	VR	170	189	209	1	275	1,5	1
SMAJ180A	SMAJ180CA	ST	VT	180	201	222	1	292	1,4	1
SMAJ190A	SMAJ190CA	SU	YU	190	211	233	1	308	1,3	1
SMAJ200A	SMAJ200CA	SV	VV	200	224	247	1	324	1,2	1
SMAJ210A	SMAJ210CA	SW	YW	210	237	263	1	340	1,2	1
SMAJ220A	SMAJ220CA	GE	VX	220	246	272	1	356	1,1	1
SMAJ250A	SMAJ250CA	SZ	VZ	250	279	309	1	405	1	1
SMAJ300A	SMAJ300CA	TE	UE	300	335	371	1	486	0,8	1
SMAJ350A	SMAJ350CA	TG	UG	350	391	432	1	567	0,7	1
SMAJ400A	SMAJ400CA	TK	UK	400	447	494	1	648	0,6	1
SMAJ440A	SMAJ440CA	TM	UM	440	492	543	1	713	0,6	1

Notes: For bidirectional type having VRWM of 10 volts and less, the IR limit is double.

SMA

FrelTec TVS

Characteristics(Typical)

Figure 1 - Peak Pulse Power Rating Curve

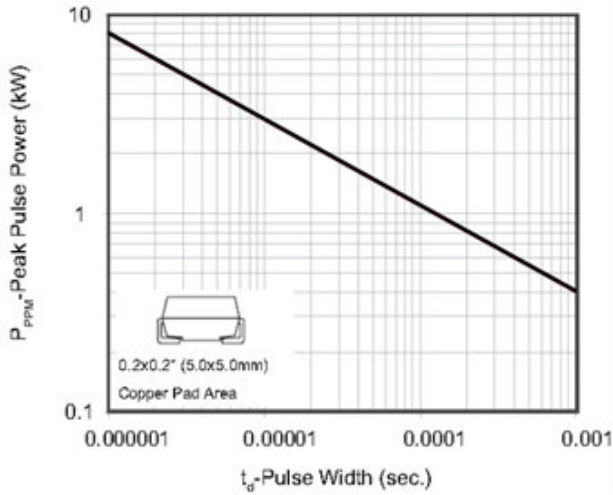


Figure 2 - Pulse Derating Curve

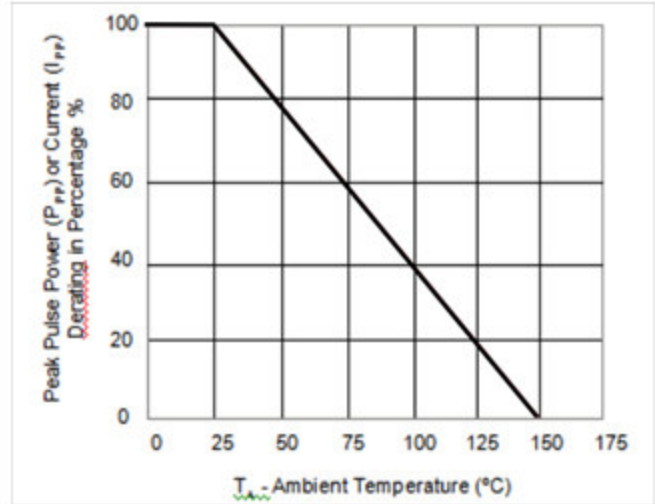


Figure 3 - Pulse Waveform

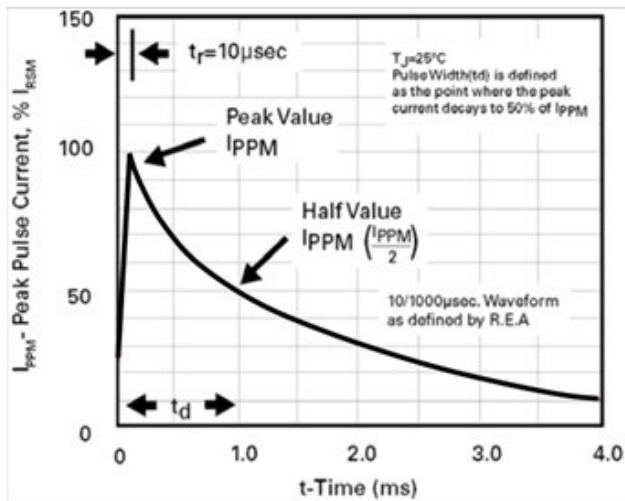
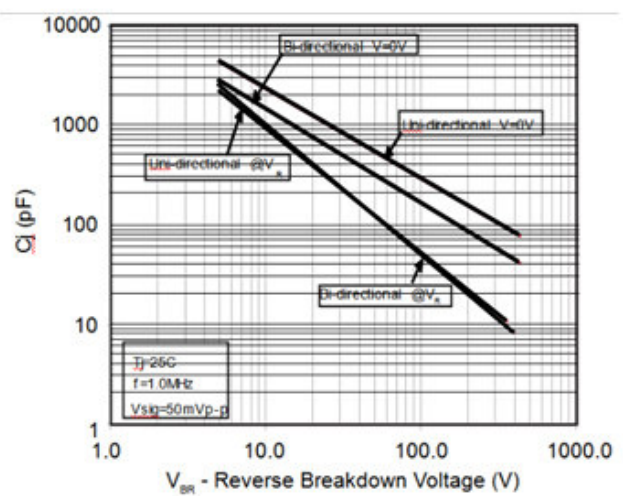


Figure 4 - Typical Junction Capacitance



SMA

Figure 5 - Steady State Power
Dissipation Derating Curve

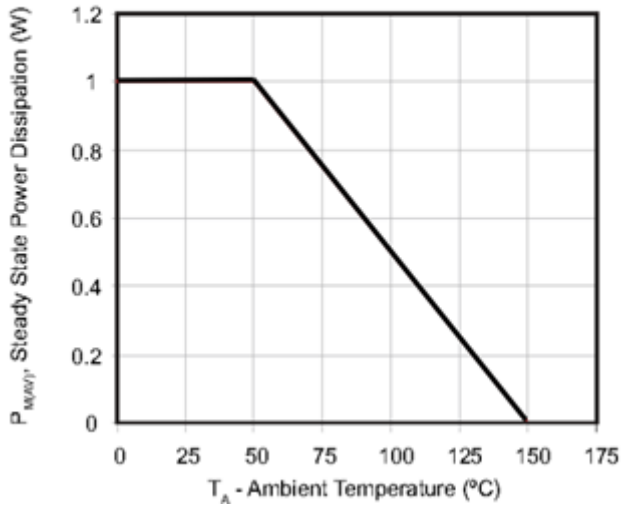
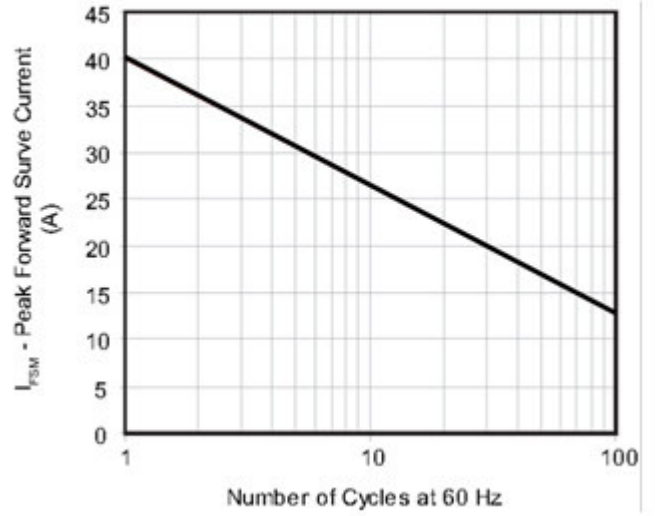
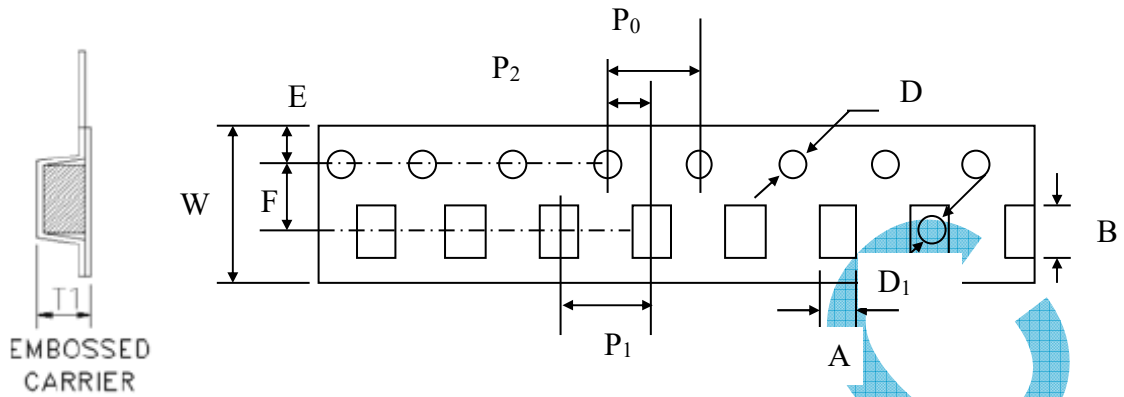


Figure 6 - Maximum Non-Repetitive
Forward Surge Current Uni-Directional Only



SPECIFICATION

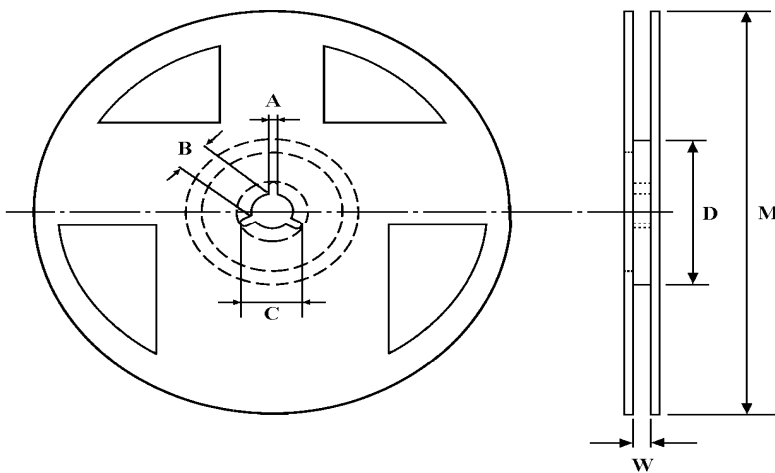
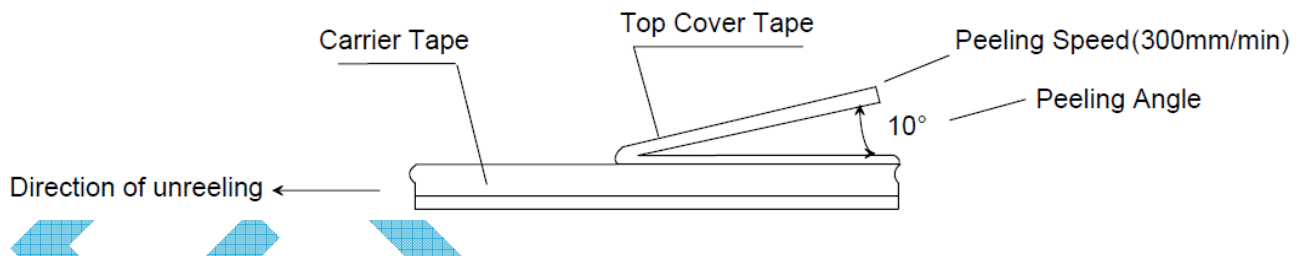
Tape And Reel Package



Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD	ΦD ₁	T1
	4,30 ±0,1	8,20 MAX	12,00±0,30	1,75±0,05	5,5 ±0,05	8,00±0,10	8,00±0,10	2,00±0,05	1,55±0,03	1,5	2,77 MAX

Cover Tape Peel off Strength

Specifications: peel force of top cover tape shall be between 8 to 40g
The peel speed shall be about 300mm/min±5%



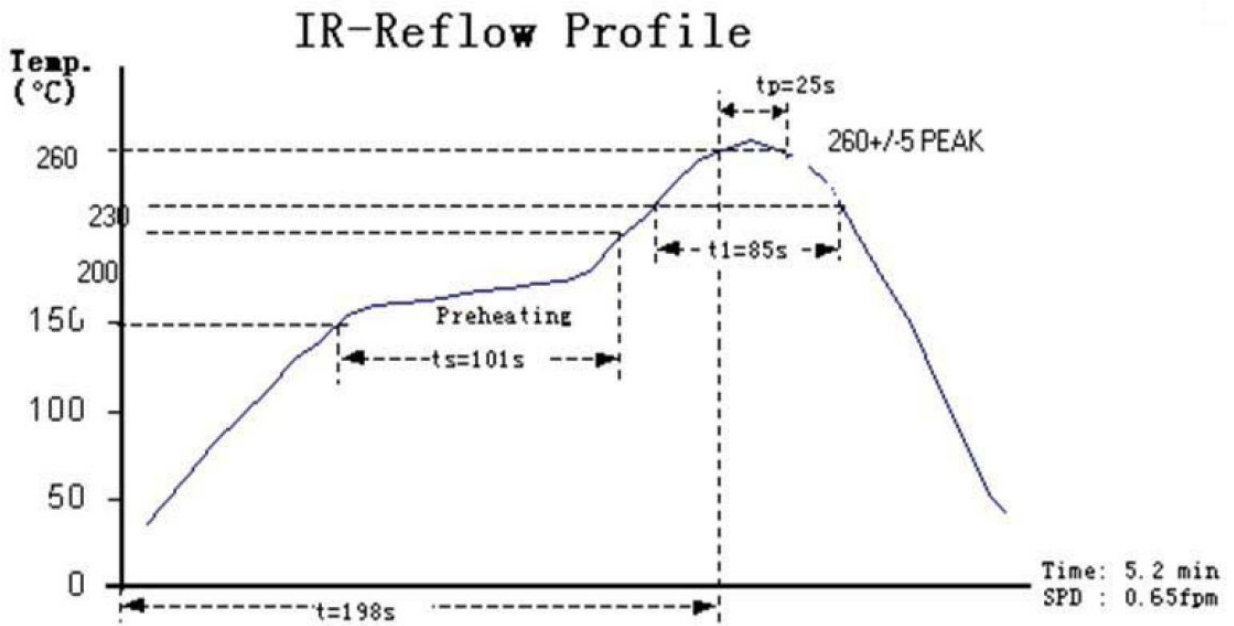
SMA

FrelTec TVS

Type	Packaging	M	A	B	C	D	W	T
	Embossed	178,0±1,0	2±0,5	13,5±0,7	21±0,5	60,0+1,0	13,5±1,0	15,5±1,0

FrelTec

Lead Free Reflow Soldering Profile



Stock period

The performance of these products, including the solderability, is guaranteed for 12 month, provided that they remain packed as they were when delivered and stored at a temperature of 0-35°C and a relative humidity 35-75%RH

Published by FrelTec® GmbH
Mathildenstr, 10A; 82319 Starnberg; Germany
© 2022 FrelTec® GmbH, All Rights Reserved,

The following applies to all products named in this publication:

1. The information describes the type of component and shall not be considered as assured characteristics,
2. Terms of delivery and rights to change design reserved,
3. Some parts of this publication contain statements about the suitability of our products for certain areas of application, These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned, Nevertheless, we explicitly point out that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application, As a rule, FrelTec® is either unfamiliar with individual customer applications or less familiar with them than the customers themselves, For these reasons, it is always ultimately incumbent on the customer to check and decide whether a FrelTec® product with the properties described in the product specification is suitable for use in a particular customer application,
4. We also point out that in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified, In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g, in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g, installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component,
5. The warnings, cautions and product-specific notes must be observed,
6. In order to satisfy certain technical requirements, some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g, because they are classed as “hazardous”), Useful information on this will be found in our Material Data Sheets, Should you have any more detailed questions, please contact our sales offices,
7. We constantly strive to improve our products, Consequently, the products described in this publication may change from time to time, The same is true for the corresponding product specifications, Please check therefore to what extent product descriptions and specifications contained in this publication are still applicable before or when you place an order, We also reserve the right to discontinue production and delivery of products, Consequently, we cannot guarantee that all products named in this publication will always be available,
8. Unless otherwise agreed in individual contracts, all orders are subject to the current version of the “General conditions for the supply of products and services of the electrical and electronics industry” published by the German Electrical and Electronics Industry Association (ZVEI), available at www.freltec.com,
9. As far as patents or other rights of third parties are concerned, liability is only assumed for components per se, not for applications, processes and circuits implemented within components or assemblies,
10. The trade name FrelTec® is a trademark registered or pending in Europe and in other countries,