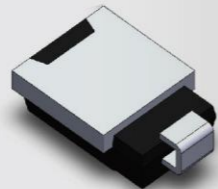
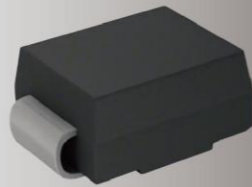
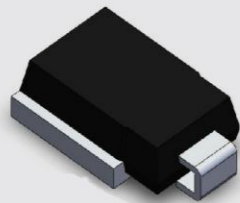
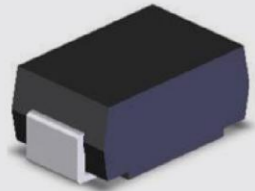
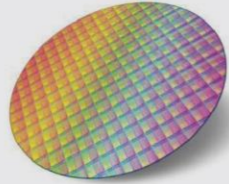


江苏正芯电子  
科技有限公司

ENTERPRISE PRODUCTS  
PRODUCT MANUALS  
产品手册

江苏正芯电子科技有限公司



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# DEVELOPMENT HISTORY OF THE COMPANY

## 公司发展历程

◎2001



江苏云意电气股份有限公司成立，生产制造整流器、二极管、调节器

◎2004



徐州云泰汽车电器有限公司成立，实现模具设计制造、生产精密注塑产品

◎2012

云意公司成功上市（深交所）股票代码：300304

◎2014



江苏云睿电器系统有限公司成立，制造雨刮、刮臂产品

◎2016



云意驱动有限公司成立，从事新能源汽车电机控制器设计及制造

◎2017



上海云领汽车科技有限公司成立

◎2021



正芯电子科技有限公司成立，专业生产制造 TVS

### 使命

致力核心智造、成为客户最佳选择、引领行业发展

### 愿景

成为值得信赖的行业标杆

### 价值观

成就客户、价值为纲、开放诚信、以奋斗者为本

### 三大思维

成果思维、数字思维、内向思维

### YPS精神

做对事、立刻做、做到位

## COMPANY PROFILE 公司简介

江苏正芯电子科技有限公司成立于2021年5月，是江苏云意电气股份有限公司的控股子公司，专业从事功率半导体器件的研发、制造以及销售。

正芯公司产品主要包括：车用大功率整流二极管、TVS、ESD等。产品广泛应用于汽车电子、安防设备、电子/电力设备、通讯设备、计算机及电源模块等领域，从电路设计到产品测试，提供电路保护器件及功率器件一站式服务。

公司研发技术实力雄厚，拥有一支国际化的研发和工艺团队，在台湾建有研发中心。本公司自主研发设计自动化设备，生产效率高，一致性好，可靠度高，满足客户应用需求。差异化的产品理念、多元化的产品创新组合和全产业链的垂直整合能力，支撑我司成为全球优秀半导体供应商。

公司坚持贯彻以客户为中心，以全面质量管理为理念，以追求质量零缺陷为目标，建立了完备的质量管理体系，并不断优化质量管理流程，提高质量管理能力。从产品前期开发，到产品验证、量产过程的控管，公司利用IATF16949管理体系的五大核心工具APQP、FMEA、PPAP、MSA和SPC进行系统质量管控；通过了AEC-Q101认证，保证公司产品质量水平在行业内处于领先地位。

## 瞬态电压抑制二极管

### TRANSIENT VOLTAGE SUPPRESSOR DIODE

瞬态电压抑制二极管 (Transient voltage suppression diode) 也称为TVS二极管，是一种利用二极管雪崩击穿原理制成的突波吸收保护器件。使用时并联在电路中，当TVS管两端经受瞬间的高能量冲击时，他能以极快的速度（纳秒级）使其阻抗降低，同时吸收大电流，将其两端的电压钳位在一定数值上，从而确保后面的元器件免受瞬态高能量的冲击而损坏。

瞬态功率范围为 200-6600W

钳位电为 5-440V

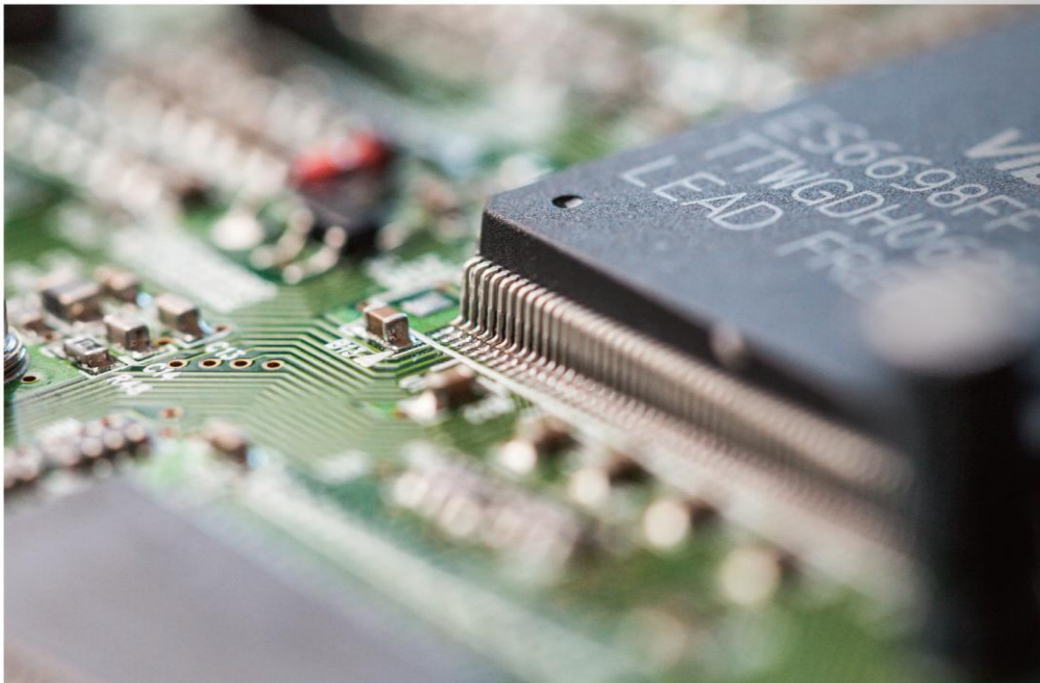


FIG.1:V- I curve characteristics (Uni-directional)

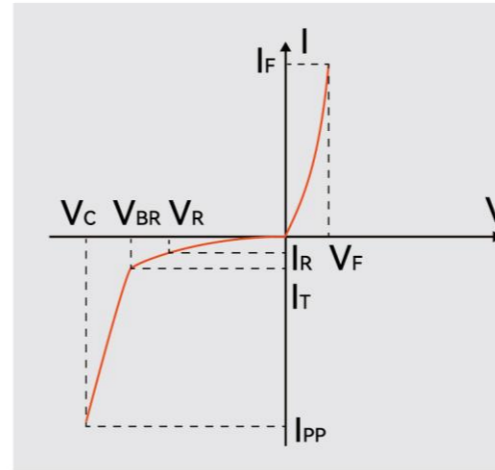
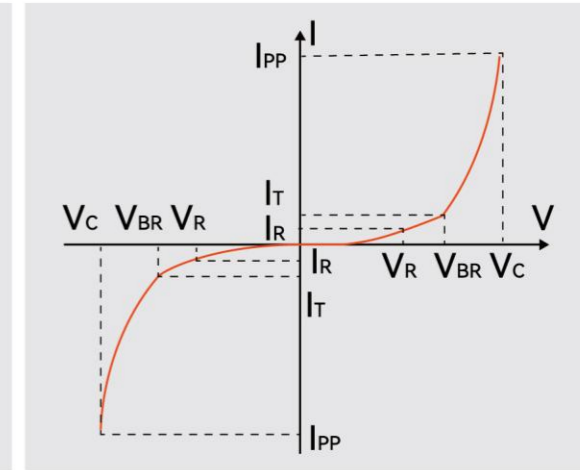


FIG.2:V- | curve characteristics (Bi-directional)

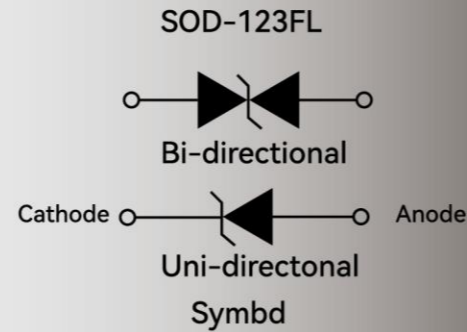
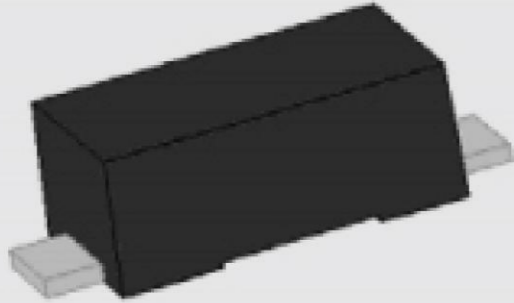


Package	Device Series	PPP	V <sub>RWM</sub> /V	I <sub>R</sub> @ V <sub>RWM</sub> /uA	Page
SOD-123FL	SMF	200	5-170	1-400	5-7
SMA	SMAJ	400	5-160	1-800	8-10
SMB	SMBJ	600	5-440	1-800	11-13
SMC	SMCJ	1500	5-440	1-1000	14-16
	SMDJ	3000	5-220	5-1000	17-19
	5.0SMDJ	5000	12-170	5-800	20-22
DO-218	DO-218	6600	10-43	10-15	23-24



## FEATURES

RoHS

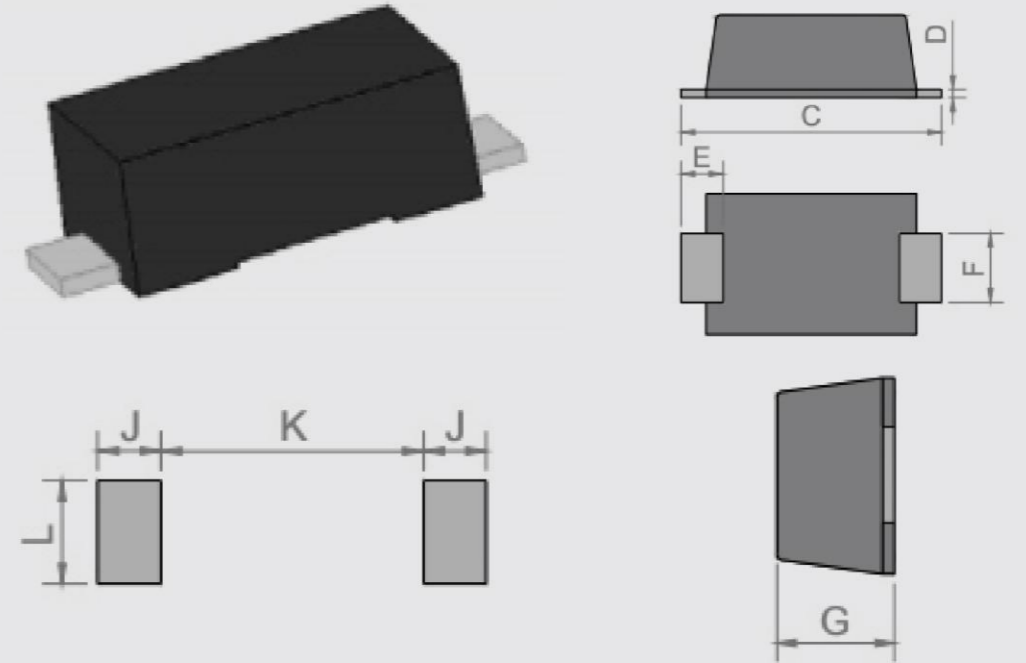


- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 200W peak pulse power capability at 10/1000 $\mu$ s waveform.
- Typical IR less than 1 $\mu$ A above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260 $^{\circ}$ C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}$ C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.
- IEC61000-4-2 (ESD)  $\pm$ 30kV (air),  $\pm$ 30kV (contact).

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	$T_{STG}/T_J$	-55 to +150	$^{\circ}$ C
Peak pulse power dissipation at 10/1000 $\mu$ s waveform	$P_{PP}$	200	W
Maximum instantaneous forward voltage at 20A for unidirectional	$V_F$	3.5	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	100	$^{\circ}$ C /W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	220	$^{\circ}$ C /W

## PACKAGE MECHANICAL DATA

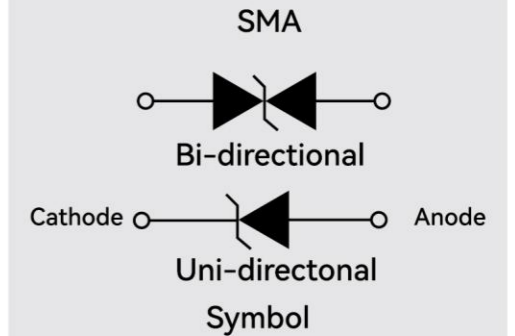
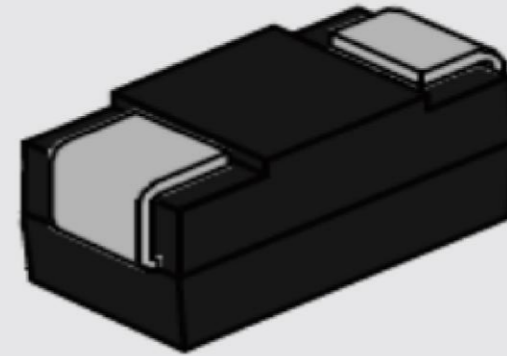


SOD-123FL

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	1.60	2.00	0.063	0.079
C	3.45	3.95	0.136	0.156
D	0.10	0.25	0.004	0.01
E	0.3	0.9	0.012	0.035
F	0.80	1.20	0.031	0.047
G	0.70	1.00	0.028	0.039
J	1.30		0.051	
K		1.70		0.067
L	1.30		0.051	

Part Number		V <sub>RWM</sub>	V <sub>BR@IT</sub>		I <sub>T</sub>	I <sub>R@VRWM</sub>	I <sub>PP</sub>	V <sub>C @ I<sub>PP</sub></sub>
(Uni)	(Bi)	Max (V)	Min(V)	Max (V)	mA	Max(μA)	A	V
SMF5.0A	SMF5.0CA	5.0	6.40	7.07	10	400.0	21.74	9.2
SMF6.0A	SMF6.0CA	6.0	6.67	7.37	10	400.0	19.42	10.3
SMF6.5A	SMF6.5CA	6.5	7.22	7.98	10	250.0	17.86	11.2
SMF7.0A	SMF7.0CA	7.0	7.78	8.60	10	100.0	16.67	12.0
SMF7.5A	SMF7.5CA	7.5	8.33	9.21	1	50.0	15.50	12.9
SMF8.0A	SMF8.0CA	8.0	8.89	9.83	1	25.0	14.71	13.6
SMF8.5A	SMF8.5CA	8.5	9.44	10.40	1	10.0	13.89	14.4
SMF9.0A	SMF9.0CA	9.0	10.00	11.10	1	5.0	12.99	15.4
SMF10A	SMF10CA	10.0	11.10	12.30	1	2.5	11.76	17.0
SMF11A	SMF11CA	11.0	12.20	13.50	1	2.5	10.99	18.2
SMF12A	SMF12CA	12.0	13.30	14.70	1	2.5	10.05	19.9
SMF13A	SMF13CA	13.0	14.40	15.90	1	1.0	9.30	21.5
SMF14A	SMF14CA	14.0	15.60	17.20	1	1.0	8.62	23.2
SMF15A	SMF15CA	15.0	16.70	18.50	1	1.0	8.20	24.4
SMF16A	SMF16CA	16.0	17.80	19.70	1	1.0	7.69	26.0
SMF17A	SMF17CA	17.0	18.90	20.90	1	1.0	7.25	27.6
SMF18A	SMF18CA	18.0	20.00	22.10	1	1.0	6.85	29.2
SMF19A	SMF19CA	19.0	21.10	23.30	1	1.0	6.54	30.6
SMF20A	SMF20CA	20.0	22.20	24.50	1	1.0	6.17	32.4
SMF22A	SMF22CA	22.0	24.40	26.90	1	1.0	5.63	35.5
SMF24A	SMF24CA	24.0	26.70	29.50	1	1.0	5.14	38.9
SMF26A	SMF26CA	26.0	28.90	31.90	1	1.0	4.75	42.1
SMF28A	SMF28CA	28.0	31.10	34.40	1	1.0	4.41	45.4
SMF30A	SMF30CA	30.0	33.30	36.80	1	1.0	4.13	48.4
SMF33A	SMF33CA	33.0	36.70	40.60	1	1.0	3.75	53.3
SMF36A	SMF36CA	36.0	40.00	44.20	1	1.0	3.44	58.1
SMF40A	SMF40CA	40.0	44.40	49.10	1	1.0	3.10	64.5
SMF43A	SMF43CA	43.0	47.80	52.80	1	1.0	2.88	69.4
SMF45A	SMF45CA	45.0	50.00	55.30	1	1.0	2.75	72.7
SMF48A	SMF48CA	48.0	53.30	58.90	1	1.0	2.58	77.4
SMF51A	SMF51CA	51.0	56.70	62.70	1	1.0	2.43	82.4
SMF54A	SMF54CA	54.0	60.00	66.30	1	1.0	2.30	87.1
SMF58A	SMF58CA	58.0	64.40	71.20	1	1.0	2.14	93.6
SMF60A	SMF60CA	60.0	66.70	73.70	1	1.0	2.07	96.8
SMF64A	SMF64CA	64.0	71.10	78.60	1	1.0	1.94	103.0
SMF70A	SMF70CA	70.0	77.80	86.00	1	1.0	1.77	113.0
SMF75A	SMF75CA	75.0	83.30	92.10	1	1.0	1.65	121.0
SMF78A	SMF78CA	78.0	86.70	95.80	1	1.0	1.59	126.0
SMF85A	SMF85CA	85.0	94.40	104.00	1	1.0	1.46	137.0
SMF90A	SMF90CA	90.0	100.00	111.00	1	1.0	1.37	146.0
SMF100A	SMF100CA	100.0	111.00	123.00	1	1.0	1.23	162.0
SMF110A	SMF110CA	110.0	122.00	135.00	1	1.0	1.13	177.0
SMF120A	SMF120CA	120.0	133.00	147.00	1	1.0	1.04	193.0
SMF130A	SMF130CA	130.0	144.00	159.00	1	1.0	0.96	209.0
SMF140A	SMF140CA	140.0	155.00	171.00	1	1.0	0.89	224.0
SMF150A	SMF150CA	150.0	167.00	185.00	1	1.0	0.82	243.0
SMF160A	SMF160CA	160.0	178.00	197.00	1	1.0	0.77	259.0
SMF170A	SMF170CA	170.0	189.00	209.00	1	1.0	0.73	275.0

## FEATURES



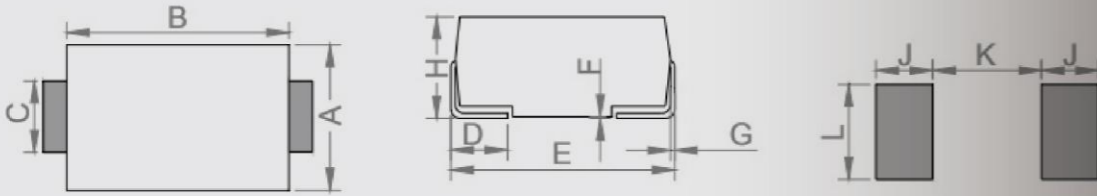
- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 400W peak pulse power capability at 10/1000μs waveform.
- Typical IR less than 1μA above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260°C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T <sub>STG</sub> /T <sub>J</sub>	-55 to +150	°C
Peak pulse power dissipation at 10/1000μs waveform	P <sub>PP</sub>	400	W
Maximum instantaneous forward voltage at 20A for unidirectional	V <sub>F</sub>	5.0	V
Typical thermal resistance junction to lead	R <sub>θJL</sub>	30	°C / W
Typical thermal resistance junction to ambient	R <sub>θJA</sub>	120	°C / W



# PACKAGE MECHANICAL DATA



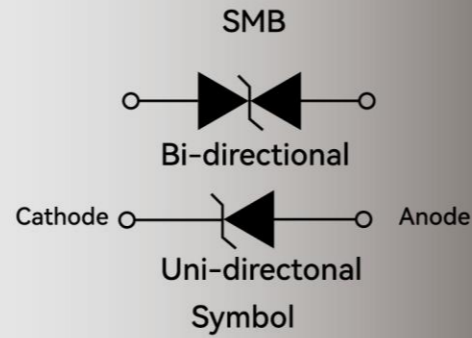
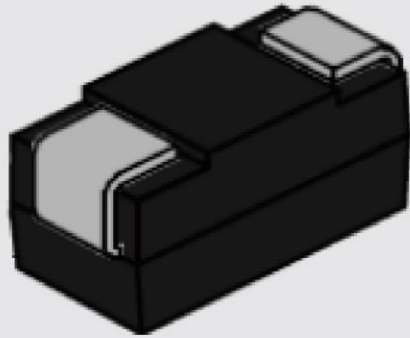
DO-214AC(SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	4.15	4.65	0.163	0.183
C	1.25	1.65	0.049	0.065
D	0.95	1.52	0.037	0.060
E	1.90	5.30	0.193	0.209
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.00	2.44	0.079	0.096
J	2.00		0.079	
K		2.30		0.091
L	1.80		0.071	

Part Number		V <sub>RWM</sub>	V <sub>BR@IT</sub>		I <sub>T</sub>	I <sub>R@VRWM</sub>	I <sub>PP</sub>	V <sub>C @ I<sub>PP</sub></sub>
(Uni)	(Bi)	Max(V)	Min(V)	Max(V)	mA	Max(μA)	A	V
SMAJ5.0A	SMAJ5.0CA	5.0	6.40	7.07	10	800	43.38	9.2
SMAJ6.0A	SMAJ6.0CA	6.0	6.67	7.37	10	800	38.83	10.3
SMAJ6.5A	SMAJ6.5CA	6.5	7.22	7.98	10	500	35.71	11.2
SMAJ7.0A	SMAJ7.0CA	7.0	7.78	8.60	10	200	33.33	12.0
SMAJ7.5A	SMAJ7.5CA	7.5	8.33	9.21	1	100	31.01	12.9
SMAJ8.0A	SMAJ8.0CA	8.0	8.89	9.83	1	50	29.41	13.6
SMAJ8.5A	SMAJ8.5CA	8.5	9.44	10.40	1	10	27.78	14.4
SMAJ9.0A	SMAJ9.0CA	9.0	10.00	11.10	1	5	25.97	15.4
SMAJ10A	SMAJ10CA	10.0	11.10	12.30	1	5	23.53	17.0

Part Number		V <sub>RWM</sub>	V <sub>BR@IT</sub>		I <sub>T</sub>	I <sub>R@VRWM</sub>	I <sub>PP</sub>	V <sub>C @ I<sub>PP</sub></sub>
(Uni)	(Bi)	Max(V)	Min(V)	Max(V)	mA	Max(μA)	A	V
SMAJ11A	SMAJ11CA	11.0	12.20	13.50	1	5	21.98	18.2
SMAJ12A	SMAJ12CA	12.0	13.30	14.70	1	1	20.10	19.9
SMAJ13A	SMAJ13CA	13.0	14.40	15.90	1	1	18.60	21.5
SMAJ14A	SMAJ14CA	14.0	15.60	17.20	1	1	17.24	23.2
SMAJ15A	SMAJ15CA	15.0	16.70	18.50	1	1	16.39	24.4
SMAJ16A	SMAJ16CA	16.0	17.80	19.70	1	1	15.40	26.0
SMAJ17A	SMAJ17CA	17.0	18.90	20.90	1	1	14.49	27.6
SMAJ18A	SMAJ18CA	18.0	20.00	22.10	1	1	13.70	29.2
SMAJ19A	SMAJ19CA	19.0	21.10	23.30	1	1	13.00	30.8
SMAJ20A	SMAJ20CA	20.0	22.20	24.50	1	1	12.35	32.4
SMAJ22A	SMAJ22CA	22.0	24.40	26.90	1	1	11.27	35.5
SMAJ24A	SMAJ24CA	24.0	26.70	29.50	1	1	10.28	38.9
SMAJ26A	SMAJ26CA	26.0	28.90	31.90	1	1	9.50	42.1
SMAJ28A	SMAJ28CA	28.0	31.10	34.40	1	1	8.81	45.4
SMAJ30A	SMAJ30CA	30.0	33.30	36.80	1	1	8.26	48.4
SMAJ33A	SMAJ33CA	33.0	36.70	40.60	1	1	7.50	53.3
SMAJ36A	SMAJ36CA	36.0	40.00	44.20	1	1	6.88	58.1
SMAJ40A	SMAJ40CA	40.0	44.40	49.10	1	1	6.20	64.5
SMAJ43A	SMAJ43CA	43.0	47.80	52.80	1	1	5.76	69.4
SMAJ45A	SMAJ45CA	45.0	50.00	55.30	1	1	5.50	72.7
SMAJ48A	SMAJ48CA	48.0	53.30	58.90	1	1	5.17	77.4
SMAJ51A	SMAJ51CA	51.0	56.70	62.70	1	1	4.85	82.4
SMAJ54A	SMAJ54CA	54.0	60.00	66.30	1	1	4.59	87.1
SMAJ58A	SMAJ58CA	58.0	64.40	71.2	1	1	4.27	93.6
SMAJ60A	SMAJ60CA	60.0	66.70	73.7	1	1	4.13	96.8
SMAJ64A	SMAJ64CA	64.0	71.10	78.6	1	1	3.88	103
SMAJ70A	SMAJ70CA	70.0	77.80	86	1	1	3.54	113
SMAJ75A	SMAJ75CA	75.0	83.30	92.1	1	1	3.31	121
SMAJ78A	SMAJ78CA	78.0	86.70	95.8	1	1	3.17	126
SMAJ85A	SMAJ85CA	85.0	94.40	104	1	1	2.92	137
SMAJ90A	SMAJ90CA	90.0	100.00	111	1	1	2.74	146
SMAJ100A	SMAJ100CA	100.0	111.00	123	1	1	2.47	162
SMAJ110A	SMAJ110CA	110.0	122.00	135	1	1	2.26	177
SMAJ120A	SMAJ120CA	120.0	133.00	147	1	1	2.07	193
SMAJ130A	SMAJ130CA	130.0	144.00	159	1	1	1.91	209
SMAJ140A	SMAJ140CA	140.0	155.00	171	1	1	1.76	226.8
SMAJ150A	SMAJ150CA	150.0	167.00	185	1	1	1.65	243
SMAJ160A	SMAJ160CA	160.0	178.00	197	1	1	1.54	259
SMAJ200A	SMAJ200CA	200.0	224.00	247	1	1	1.23	324
SMAJ220A	SMAJ220CA	220.0	246.00	272	1	1	1.12	356
SMAJ250A	SMAJ250CA	250.0	279.00	309	1	1	0.99	405
SMAJ300A	SMAJ300CA	300.0	335.00	371	1	1	0.82	486
SMAJ350A	SMAJ350CA	350.0	391.00	432	1	1	0.71	567
SMAJ400A	SMAJ400CA	400.0	447.00	494	1	1	0.62	648
SMAJ440A	SMAJ440CA	440.0	492.00	543	1	1	0.56	713

## FEATURES

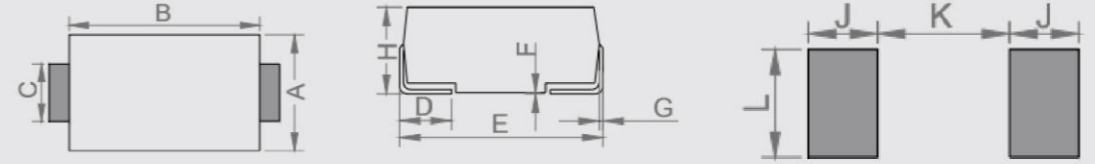


- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 600W peak pulse power capability at 10/1000 $\mu$ s waveform.
- Typical IR less than 1 $\mu$ A above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260 $^{\circ}$ C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}$ C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	$T_{STG}/T_J$	-55 to +150	$^{\circ}$ C
Peak pulse power dissipation at 10/1000 $\mu$ s waveform	$P_{PP}$	600	W
Maximum instantaneous forward voltage at 20A for unidirectional	$V_F$	5.0	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	$^{\circ}$ C /W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	100	$^{\circ}$ C /W

## PACKAGE MECHANICAL DATA



DO-214AA(SMA)

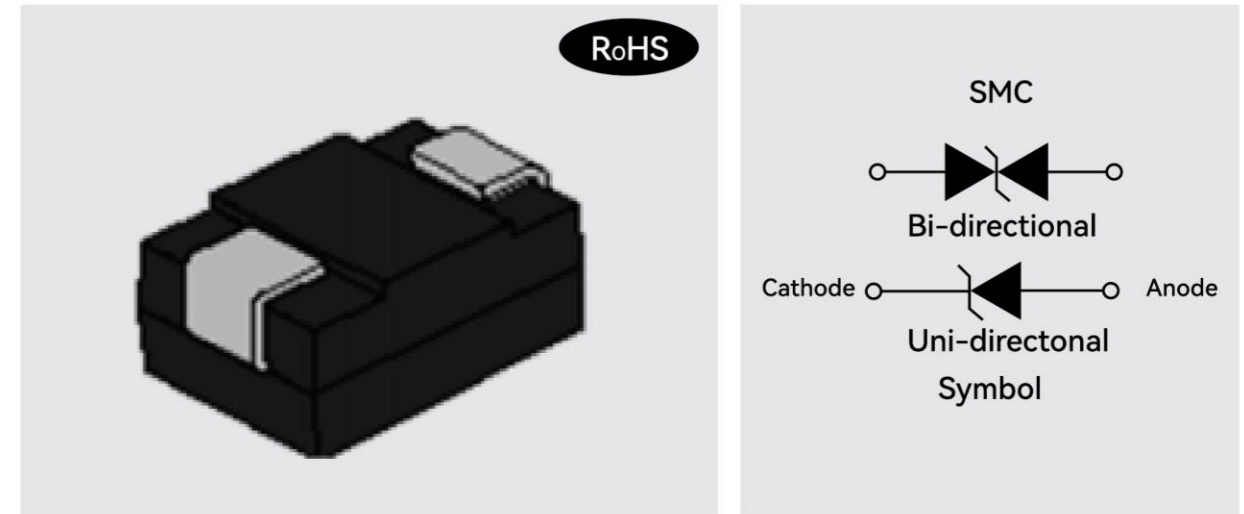
Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.30	3.94	0.130	0.155
B	4.30	4.80	0.169	0.189
C	1.90	2.20	0.075	0.087
D	0.95	1.52	0.037	0.060
E	5.20	5.60	0.205	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.10	2.40	0.083	0.094
J	2.20		0.087	
K		2.60		0.102
L	2.30		0.091	

Part Number		$V_{RWM}$	$V_{BR@I_T}$		$I_T$	$I_R@V_{RWM}$	$I_{PP}$	$V_C @ I_{PP}$
(Uni)	(Bi)	Max(V)	Min(V)	Max (V)	mA	Max( $\mu$ A)	A	V
SMBJ5.0A	SMBJ5.0CA(4)	5.0	6.40	7.07	10	800	65.22	9.2
SMBJ6.0A	SMBJ6.0CA	6.0	6.67	7.37	10	800	58.25	10.3
SMBJ6.5A	SMBJ6.5CA	6.5	7.22	7.98	10	500	53.57	11.2
SMBJ7.0A	SMBJ7.0CA	7.0	7.78	8.6	10	200	50	12.0
SMBJ7.5A	SMBJ7.5CA	7.5	8.33	9.21	1	100	46.51	12.9
SMBJ8.0A	SMBJ8.0CA	8.0	8.89	9.83	1	50	44.12	13.6
SMBJ8.5A	SMBJ8.5CA	8.5	9.44	10.4	1	10	41.67	14.4
SMBJ9.0A	SMBJ9.0CA	9.0	10.00	11.1	1	5	38.96	15.4
SMBJ10A	SMBJ10CA	10.0	11.10	12.3	1	5	35.29	17.0
SMBJ11A	SMBJ11CA	11.0	12.20	13.5	1	5	32.97	18.2



Part Number		V <sub>RWM</sub>	V <sub>BR@IT</sub>		I <sub>T</sub>	I <sub>R@V<sub>RWM</sub></sub>	I <sub>PP</sub>	V <sub>C @ I<sub>PP</sub></sub>
(Uni)	(Bi)	Max(V)	Min(V)	Max (V)	mA	Max(μA)	A	V
SMBJ12A	SMBJ12CA	12.0	13.30	14.7	1	5	30.15	19.9
SMBJ13A	SMBJ13CA	13.0	14.40	15.9	1	1	27.91	21.5
SMBJ14A	SMBJ14CA	14.0	15.60	17.2	1	1	25.86	23.2
SMBJ15A	SMBJ15CA	15.0	16.70	18.5	1	1	24.59	24.4
SMBJ16A	SMBJ16CA	16.0	17.80	19.7	1	1	23.08	26.0
SMBJ17A	SMBJ17CA	17.0	18.90	20.9	1	1	21.74	27.6
SMBJ18A	SMBJ18CA	18.0	20.00	22.1	1	1	20.55	29.2
SMBJ19A	SMBJ19CA	19.0	21.10	23.3	1	1	19.49	30.8
SMBJ20A	SMBJ20CA	20.0	22.20	24.5	1	1	18.52	32.4
SMBJ22A	SMBJ22CA	22.0	24.40	26.9	1	1	16.9	35.5
SMBJ24A	SMBJ24CA	24.0	26.70	29.5	1	1	15.42	38.9
SMBJ26A	SMBJ26CA	26.0	28.90	31.9	1	1	14.25	42.1
SMBJ28A	SMBJ28CA	28.0	31.10	34.4	1	1	13.22	45.4
SMBJ30A	SMBJ30CA	30.0	33.30	36.8	1	1	12.4	48.4
SMBJ33A	SMBJ33CA	33.0	36.70	40.6	1	1	11.26	53.3
SMBJ36A	SMBJ36CA	36	40	44.2	1	1	10.33	58.1
SMBJ40A	SMBJ40CA	40	44.4	49.1	1	1	9.30	64.5
SMBJ43A	SMBJ43CA	43	47.8	52.8	1	1	8.65	69.4
SMBJ45A	SMBJ45CA	45	50	55.3	1	1	8.25	72.7
SMBJ48A	SMBJ48CA	48	53.3	58.9	1	1	7.75	77.4
SMBJ51A	SMBJ51CA	51	56.7	62.7	1	1	7.28	82.4
SMBJ54A	SMBJ54CA	54	60	66.3	1	1	6.89	87.1
SMBJ58A	SMBJ58CA	58	64.4	71.2	1	1	6.41	93.6
SMBJ60A	SMBJ60CA	60	66.7	73.7	1	1	6.20	96.8
SMBJ64A	SMBJ64CA	64	71.1	78.6	1	1	5.83	103
SMBJ70A	SMBJ70CA	70	77.8	86.0	1	1	5.31	113
SMBJ75A	SMBJ75CA	75	83.3	92.1	1	1	4.96	121
SMBJ78A	SMBJ78CA	78	86.7	95.8	1	1	4.76	126
SMBJ85A	SMBJ85CA	85	94.4	104.0	1	1	4.38	137
SMBJ90A	SMBJ90CA	90	100	111.0	1	1	4.11	146
SMBJ100A	SMBJ100CA	100	111	123.0	1	1	3.70	162
SMBJ110A	SMBJ110CA	110	122	135.0	1	1	3.39	177
SMBJ120A	SMBJ120CA	120	133	147.0	1	1	3.11	193
SMBJ130A	SMBJ130CA	130	144	159.0	1	1	2.87	209
SMBJ140A	SMBJ140CA	140	155	171.0	1	1	2.65	226.8
SMBJ150A	SMBJ150CA	150	167	185.0	1	1	2.47	243
SMBJ160A	SMBJ160CA	160	178	197.0	1	1	2.32	259
SMBJ170A	SMBJ170CA	170	189	209.0	1	1	2.18	275
SMBJ180A	SMBJ180CA	180	200	220.0	1	1	2.06	291.6
SMBJ188A	SMBJ188CA	188	209	231.0	1	1	2.00	304.0
SMBJ200A	SMBJ200CA	200	224	247.0	1	1	1.85	324
SMBJ220A	SMBJ220CA	220	246	272.0	1	1	1.69	356
SMBJ250A	SMBJ250CA	250	279	309.0	1	1	1.48	405
SMBJ300A	SMBJ300CA	300	335	371.0	1	1	1.23	486
SMBJ350A	SMBJ350CA	350	391	432.0	1	1	1.06	567
SMBJ400A	SMBJ400CA	400	447	494.0	1	1	0.93	648
SMBJ440A	SMBJ440CA	440	492	543.0	1	1	0.84	713

## FEATURES

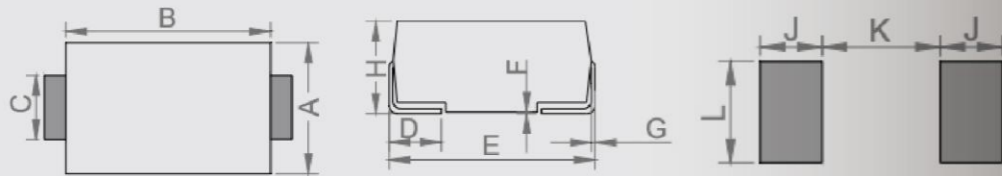


- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 5000W peak pulse power capability at 10/1000μs waveform.
- Typical IR less than 1μA above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260°C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T <sub>STG</sub> /T <sub>J</sub>	-55 to +150	°C
Peak pulse power dissipation at 10/1000μs waveform	P <sub>PP</sub>	1500	W
Maximum instantaneous forward voltage at 20A for unidirectional	V <sub>F</sub>	5.0	V
Typical thermal resistance junction to lead	R <sub>θJL</sub>	15	°C /W
Typical thermal resistance junction to ambient	R <sub>θJA</sub>	75	°C /W

# PACKAGE MECHANICAL DATA



DO-214AB(SMC)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

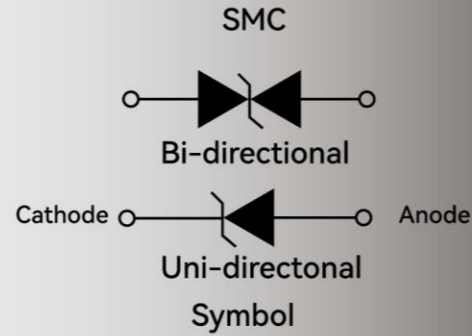
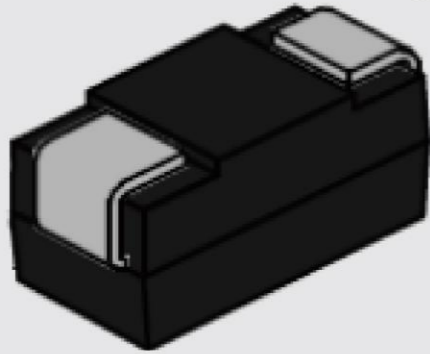
Part Number		$V_{RWM}$	$V_{BR@I_T}$		$I_T$	$I_{R@V_{RWM}}$	$I_{PP}$	$V_C @ I_{PP}$
(Uni)	(Bi)	Max(V)	Min(V)	Max (V)	mA	Max( $\mu$ A)	A	V
SMCJ5.0A	SMCJ5.0CA (4)	5.0	6.4	7.07	10	1000	163.04	9.2
SMCJ6.0A	SMCJ6.0CA	6.0	6.67	7.37	10	1000	145.63	10.3
SMCJ6.5A	SMCJ6.5CA	6.5	7.22	7.98	10	500	133.93	11.2
SMCJ7.0A	SMCJ7.0CA	7.0	7.78	8.6	10	200	125	12
SMCJ7.5A	SMCJ7.5CA	7.5	8.33	9.21	1	100	116.28	12.9
SMCJ8.0A	SMCJ8.0CA	8.0	8.89	9.83	1	50	110.29	13.6
SMCJ8.5A	SMCJ8.5CA	8.5	9.44	10.4	1	20	104.17	14.4
SMCJ9.0A	SMCJ9.0CA	9.0	10	11.1	1	10	97.4	15.4
SMCJ10A	SMCJ10CA	10.0	11.1	12.3	1	5	88.24	17
SMCJ11A	SMCJ11CA	11.0	12.2	13.5	1	5	82.42	18.2

Part Number		$V_{RWM}$	$V_{BR@I_T}$		$I_T$	$I_{R@V_{RWM}}$	$I_{PP}$	$V_C @ I_{PP}$
(Uni)	(Bi)	Max(V)	Min(V)	Max (V)	mA	Max( $\mu$ A)	A	V
SMCJ12A	SMCJ12CA	12.0	13.3	14.7	1	5	75.38	19.9
SMCJ13A	SMCJ13CA	13.0	14.4	15.9	1	5	69.77	21.5
SMCJ14A	SMCJ14CA	14.0	15.6	17.2	1	5	64.66	23.2
SMCJ15A	SMCJ15CA	15.0	16.7	18.5	1	5	61.48	24.4
SMCJ16A	SMCJ16CA	16.0	17.8	19.7	1	5	57.69	26
SMCJ17A	SMCJ17CA	17.0	18.9	20.9	1	5	54.35	27.6
SMCJ18A	SMCJ18CA	18.0	20	22.1	1	5	51.37	29.2
SMCJ19A	SMCJ19CA	19.0	21.1	23.3	1	5	48.73	30.8
SMCJ20A	SMCJ20CA	20.0	22.2	24.5	1	5	46.3	32.4
SMCJ22A	SMCJ22CA	22.0	24.4	26.9	1	1	42.25	35.5
SMCJ24A	SMCJ24CA	24.0	26.7	29.5	1	1	38.56	38.9
SMCJ26A	SMCJ26CA	26.0	28.9	31.9	1	1	35.63	42.1
SMCJ28A	SMCJ28CA	28.0	31.1	34.4	1	1	33.04	45.4
SMCJ30A	SMCJ30CA	30.0	33.3	36.8	1	1	30.99	48.4
SMCJ33A	SMCJ33CA	33.0	36.7	40.6	1	1	28.14	53.3
SMCJ36A	SMCJ36CA	36.0	40	44.2	1	1	25.82	58.1
SMCJ40A	SMCJ40CA	40.0	44.4	49.1	1	1	23.26	64.5
SMCJ43A	SMCJ43CA	43.0	47.8	52.8	1	1	21.61	69.4
SMCJ45A	SMCJ45CA	45.0	50	55.3	1	1	20.63	72.7
SMCJ48A	SMCJ48CA	48.0	53.3	58.9	1	1	19.38	77.4
SMCJ51A	SMCJ51CA	51.0	56.7	62.7	1	1	18.2	82.4
SMCJ54A	SMCJ54CA	54	60	66.3	1	1	17.22	87.1
SMCJ58A	SMCJ58CA	58	64.4	71.2	1	1	16.03	93.6
SMCJ60A	SMCJ60CA	60	66.7	73.7	1	1	15.50	96.8
SMCJ64A	SMCJ64CA	64	71.1	78.6	1	1	14.56	103
SMCJ70A	SMCJ70CA	70	77.8	86.0	1	1	13.27	113
SMCJ75A	SMCJ75CA	75	83.3	92.1	1	1	12.40	121
SMCJ78A	SMCJ78CA	78	86.7	95.8	1	1	11.90	126
SMCJ85A	SMCJ85CA	85	94.4	104.0	1	1	10.95	137
SMCJ90A	SMCJ90CA	90	100	111.0	1	1	10.27	146
SMCJ100A	SMCJ100CA	100	111	123.0	1	1	9.26	162
SMCJ110A	SMCJ110CA	110	122	135.0	1	1	8.47	177
SMCJ120A	SMCJ120CA	120	133	147.0	1	1	7.77	193
SMCJ130A	SMCJ130CA	130	144	159.0	1	1	7.18	209
SMCJ140A	SMCJ140CA	140	155	171.0	1	1	6.61	226.8
SMCJ150A	SMCJ150CA	150	167	185.0	1	1	6.17	243
SMCJ160A	SMCJ160CA	160	178	197.0	1	1	5.79	259
SMCJ170A	SMCJ170CA	170	189	209.0	1	1	5.45	275
SMCJ180A	SMCJ180CA	180	200	220.0	1	1	5.14	291.6
SMCJ200A	SMCJ200CA	200	224	247.0	1	1	4.63	324
SMCJ220A	SMCJ220CA	220	246	272.0	1	1	4.20	356
SMCJ250A	SMCJ250CA	250	279	309.0	1	1	3.70	405
SMCJ300A	SMCJ300CA	300	335	371.0	1	1	3.10	486
SMCJ350A	SMCJ350CA	350	391	432.0	1	1	2.65	567
SMCJ400A	SMCJ400CA	400	447	494.0	1	1	2.31	648
SMCJ440A	SMCJ440CA	440	492	543.0	1	1	2.10	713



## FEATURES

RoHS

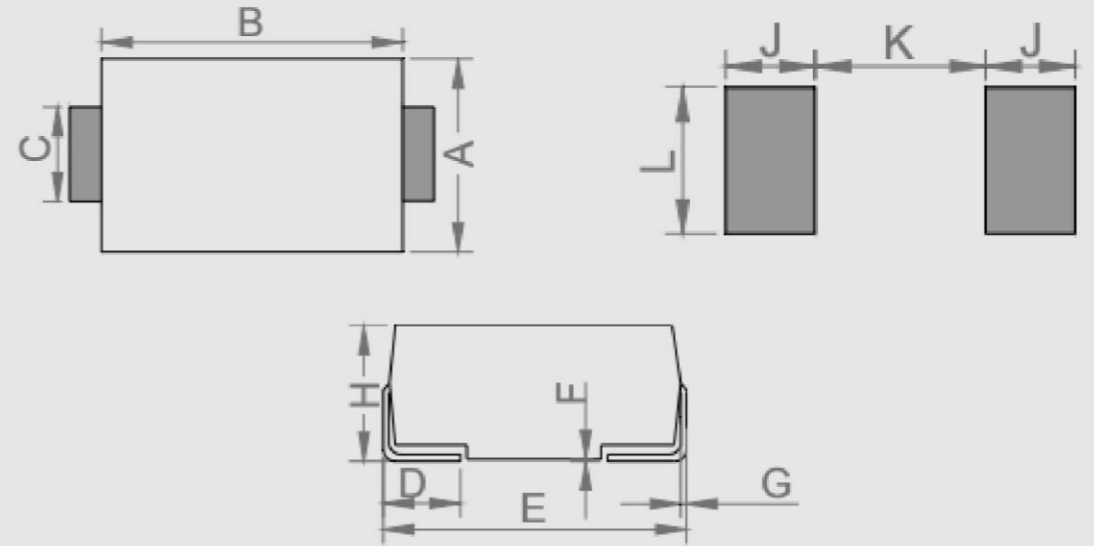


- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 3000W peak pulse power capability at 10/1000 $\mu$ s waveform.
- Typical IR less than 1 $\mu$ A above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260 $^{\circ}$ C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}$ C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	$T_{STG}/T_J$	-55 to +150	$^{\circ}$ C
Peak pulse power dissipation at 10/1000 $\mu$ s waveform	$P_{PP}$	3000	W
Maximum instantaneous forward voltage at 20A for unidirectional	$V_F$	5.0	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^{\circ}$ C /W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}$ C /W

## PACKAGE MECHANICAL DATA

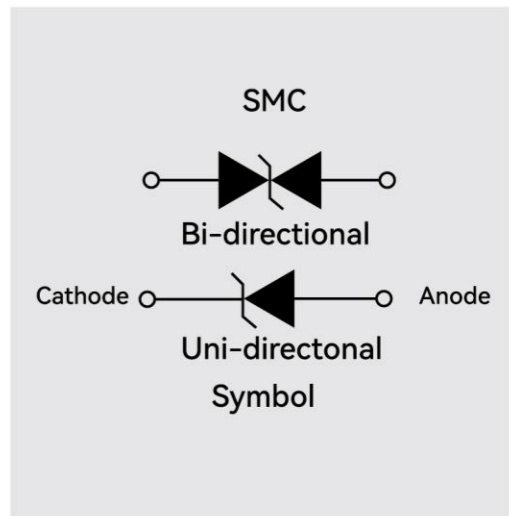
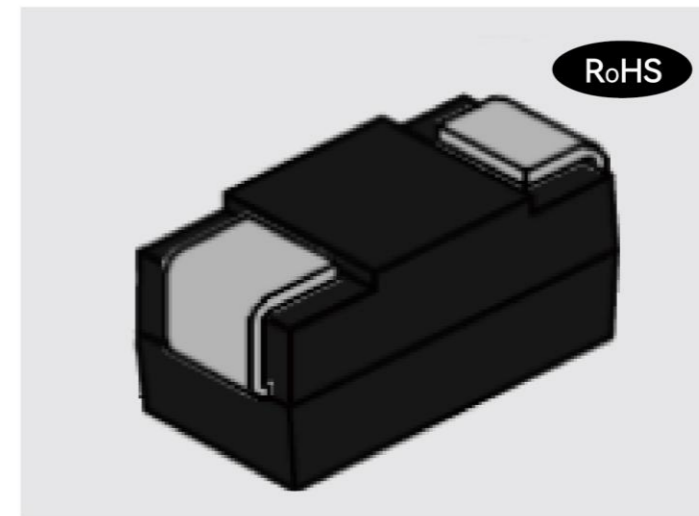


DO-214AB(SMC)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

Part Number		V <sub>RWM</sub>	V <sub>BR@IT</sub>		I <sub>T</sub>	I <sub>R@VRWM</sub>	I <sub>PP</sub>	V <sub>C @ I<sub>PP</sub></sub>
(Uni)	(Bi)	Max (V)	Min(V)	Max (V)	mA	Max(μA)	A	V
SMDJ5.0A	SMDJ5.0CA (4)	5	6	7.07	10	1000	326.09	9.2
SMDJ6.0A	SMDJ6.0CA	6	7	7.37	10	1000	291.26	10.3
SMDJ6.5A	SMDJ6.5CA	7	7	7.98	10	500	267.86	11.2
SMDJ7.0A	SMDJ7.0CA	7	8	8.6	10	200	250	12
SMDJ7.5A	SMDJ7.5CA	8	8	9.21	1	100	232.56	12.9
SMDJ8.0A	SMDJ8.0CA	8	9	9.83	1	50	220.59	13.6
SMDJ8.5A	SMDJ8.5CA	9	9	10.4	1	25	208.33	14.4
SMDJ9.0A	SMDJ9.0CA	9	10	11.1	1	10	194.81	15.4
SMDJ10A	SMDJ10CA	10	11	12.3	1	5	176.47	17
SMDJ11A	SMDJ11CA	11	12	13.5	1	5	164.84	18.2
SMDJ12A	SMDJ12CA	12	13	14.7	1	5	150.75	19.9
SMDJ13A	SMDJ13CA	13	14	15.9	1	5	139.53	21.5
SMDJ14A	SMDJ14CA	14	16	17.2	1	5	129.31	23.2
SMDJ15A	SMDJ15CA	15	17	18.5	1	5	122.95	24.4
SMDJ16A	SMDJ16CA	16	18	19.7	1	5	115.38	26
SMDJ17A	SMDJ17CA	17	19	20.9	1	5	108.7	27.6
SMDJ18A	SMDJ18CA	18	20	22.1	1	5	102.74	29.2
SMDJ20A	SMDJ20CA	20	22	24.5	1	5	92.59	32.4
SMDJ22A	SMDJ22CA	22	24	26.9	1	5	84.51	35.5
SMDJ24A	SMDJ24CA	24	27	29.5	1	5	77.12	38.9
SMDJ26A	SMDJ26CA	26	29	31.9	1	5	71.26	42.1
SMDJ28A	SMDJ28CA	28	31	34.4	1	5	66.08	45.4
SMDJ30A	SMDJ30CA	30	33	36.8	1	5	61.98	48.4
SMDJ33A	SMDJ33CA	33	37	40.6	1	5	56.29	53.3
SMDJ36A	SMDJ36CA	36	40	44.2	1	5	51.64	58.1
SMDJ40A	SMDJ40CA	40	44	49.1	1	5	46.51	64.5
SMDJ43A	SMDJ43CA	43	48	52.8	1	5	43.23	69.4
SMDJ45A	SMDJ45CA	45	50	55.3	1	5	41.27	72.7
SMDJ48A	SMDJ48CA	48	53	58.9	1	5	38.76	77.4
SMDJ51A	SMDJ51CA	51	57	62.7	1	5	36.41	82.4
SMDJ54A	SMDJ54CA	54	60	66.3	1	5	34.44	87.1
SMDJ58A	SMDJ58CA	58	64	71.2	1	5	32.05	93.6
SMDJ60A	SMDJ60CA	60	67	73.7	1	5	30.99	96.8
SMDJ64A	SMDJ64CA	64	71	78.6	1	5	29.13	103
SMDJ70A	SMDJ70CA	70	78	86.0	1	5	26.55	113
SMDJ75A	SMDJ75CA	75	83	92.1	1	5	24.79	121
SMDJ78A	SMDJ78CA	78	87	95.8	1	5	23.81	126
SMDJ85A	SMDJ85CA	85	94	104.0	1	5	21.90	137
SMDJ90A	SMDJ90CA	90	100	111.0	1	5	20.55	146
SMDJ100A	SMDJ100CA	100	111	123.0	1	5	18.52	162
SMDJ110A	SMDJ110CA	110	122	135.0	1	5	16.95	177
SMDJ120A	SMDJ120CA	120	133	147.0	1	5	15.54	193
SMDJ130A	SMDJ130CA	130	144	159.0	1	5	14.35	209
SMDJ150A	SMDJ150CA	150	167	185.0	1	5	12.35	243
SMDJ160A	SMDJ160CA	160	178	197.0	1	5	11.58	259
SMDJ170A	SMDJ170CA	170	189	209.0	1	5	10.91	275
SMDJ180A	SMDJ180CA	180	200	220.0	1	5	10.29	291.6
SMDJ220A	SMDJ220CA	220	246	272.0	1	5	8.43	356

## FEATURES



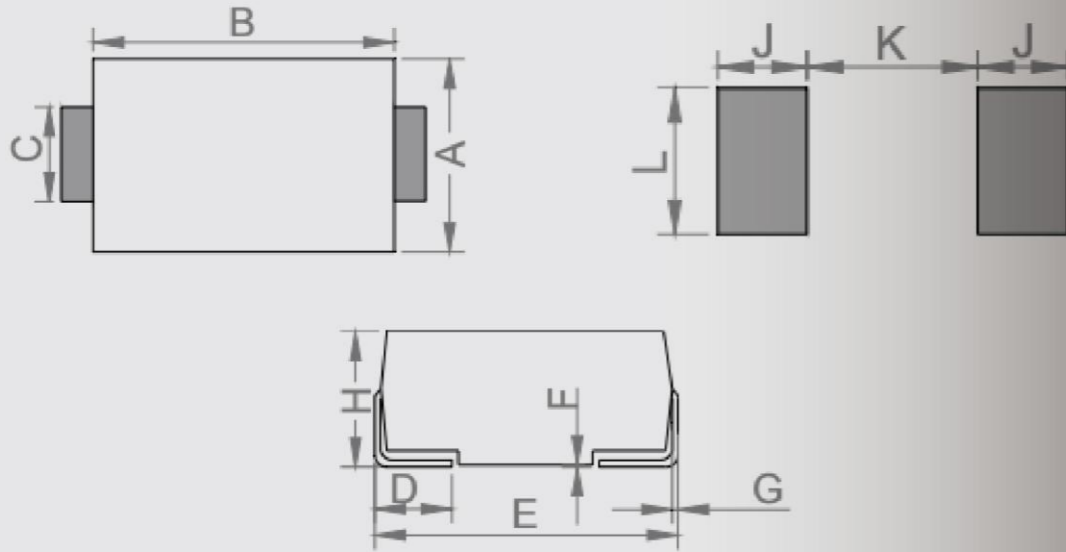
- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 5000W peak pulse power capability at 10/1000μs waveform.
- Typical IR less than 1μA above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260°C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T <sub>STG</sub> /T <sub>J</sub>	-55 to +150	°C
Peak pulse power dissipation at 10/1000μs waveform	P <sub>PP</sub>	5000	W
Maximum instantaneous forward voltage at 20A for unidirectional	V <sub>F</sub>	5.0	V
Typical thermal resistance junction to lead	R <sub>θJL</sub>	15	°C /W
Typical thermal resistance junction to ambient	R <sub>θJA</sub>	75	°C /W



# PACKAGE MECHANICAL DATA



DO-214AB(SMC)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

Part Number		V <sub>RWM</sub>	V <sub>BR@IT</sub>		I <sub>T</sub>	I <sub>R@VRWM</sub>	I <sub>PP</sub>	V <sub>C@IPP</sub>
(Uni)	(Bi)	Max (V)	Min(V)	Max (V)	mA	Max(μA)	A	V
5.0SMDJ12A	5.0SMDJ12CA	12.0	13.30	14.7	1.0	800	251.3	19.9
5.0SMDJ13A	5.0SMDJ13CA	13.0	14.40	15.9	1.0	500	232.6	21.5
5.0SMDJ14A	5.0SMDJ14CA	14.0	15.60	17.2	1.0	200	215.5	23.2
5.0SMDJ15A	5.0SMDJ15CA	15.0	16.70	18.5	1.0	100	204.9	24.4
5.0SMDJ16A	5.0SMDJ16CA	16.0	17.80	19.7	1.0	50	192.3	26
5.0SMDJ17A	5.0SMDJ17CA	17.0	18.90	20.9	1.0	20	181.2	27.6
5.0SMDJ18A	5.0SMDJ18CA	18.0	20.00	22.1	1.0	10	171.2	29.2
5.0SMDJ20A	5.0SMDJ20CA	20.0	22.20	24.5	1.0	5	154.3	32.4
5.0SMDJ22A	5.0SMDJ22CA	22.0	24.40	26.9	1.0	5	140.8	35.5
5.0SMDJ24A	5.0SMDJ24CA	24.0	26.70	29.5	1.0	5	128.5	38.9
5.0SMDJ26A	5.0SMDJ26CA	26.0	28.90	31.9	1.0	5	118.8	42.1
5.0SMDJ28A	5.0SMDJ28CA	28.0	31.10	34.4	1.0	5	110.1	45.4
5.0SMDJ30A	5.0SMDJ30CA	30.0	33.30	36.8	1.0	5	103.3	48.4
5.0SMDJ33A	5.0SMDJ33CA	33.0	36.70	40.6	1.0	5	93.8	53.3
5.0SMDJ36A	5.0SMDJ36CA	36.0	40.00	44.2	1.0	5	86.1	58.1
5.0SMDJ40A	5.0SMDJ40CA	40.0	44.40	49.1	1.0	5	77.5	64.5
5.0SMDJ43A	5.0SMDJ43CA	43.0	47.80	52.8	1.0	5	72.0	69.4
5.0SMDJ45A	5.0SMDJ45CA	45.0	50.00	55.3	1.0	5	68.8	72.7
5.0SMDJ48A	5.0SMDJ48CA	48.0	53.30	58.9	1.0	5	64.6	77.4
5.0SMDJ51A	5.0SMDJ51CA	51.0	56.70	62.7	1.0	5	60.7	82.4
5.0SMDJ54A	5.0SMDJ54CA	54.0	60.00	66.3	1.0	5	57.4	87.1
5.0SMDJ58A	5.0SMDJ58CA	58.0	64.40	71.2	1.0	5	53.4	93.6
5.0SMDJ60A	5.0SMDJ60CA	60.0	66.70	73.7	1.0	5	51.7	96.8
5.0SMDJ64A	5.0SMDJ64CA	64.0	71.10	78.6	1.0	5	48.5	103
5.0SMDJ70A	5.0SMDJ70CA	70.0	77.80	86.0	1.0	5	44.2	113
5.0SMDJ75A	5.0SMDJ75CA	75.0	83.30	92.1	1.0	5	41.3	121
5.0SMDJ78A	5.0SMDJ78CA	78.0	86.70	95.8	1.0	5	39.7	126
5.0SMDJ85A	5.0SMDJ85CA	85.0	94.40	104.0	1.0	5	36.5	137
5.0SMDJ90A	5.0SMDJ90CA	90.0	100.00	111.0	1.0	5	34.2	146
5.0SMDJ100A	5.0SMDJ100CA	100.0	111.00	123.0	1.0	5	30.9	162
5.0SMDJ110A	5.0SMDJ110CA	110.0	122.00	135.0	1.0	5	28.2	177
5.0SMDJ120A	5.0SMDJ120CA	120.0	133.00	147.0	1.0	5	25.9	193
5.0SMDJ130A	5.0SMDJ130CA	130.0	144.00	159.0	1.0	5	23.9	209
5.0SMDJ150A	5.0SMDJ150CA	150.0	167.00	185.0	1.0	5	20.6	243
5.0SMDJ160A	5.0SMDJ160CA	160.0	178.00	197.0	1.0	5	19.3	259
5.0SMDJ170A	5.0SMDJ170CA	170.0	189.00	209.0	1.0	5	18.2	275

## FEATURES

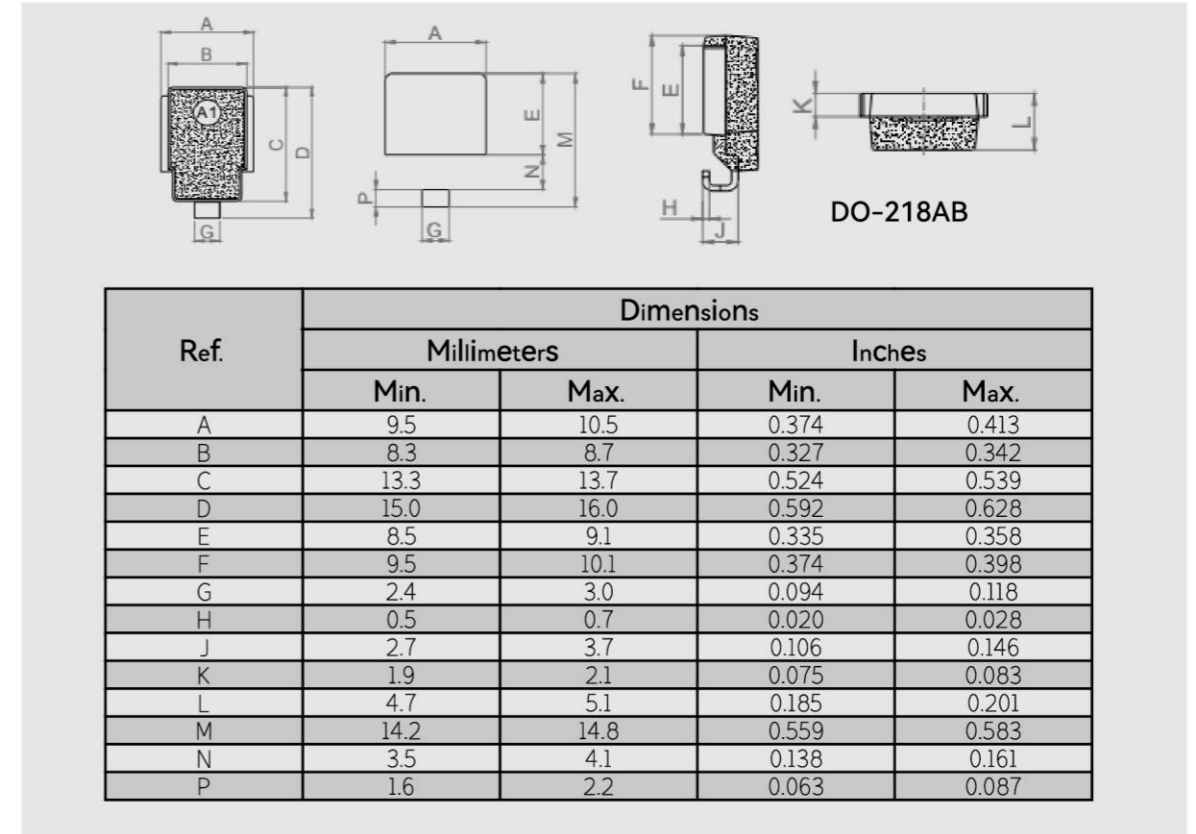


- Low profile package.
- Low inductance.
- Excellent clamping capability.
- 6600W peak pulse power capability at 10/1000μs waveform.
- Typical IR less than 1μA above 10V.
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- High temperature reflow soldering: 260°C/40s at terminals.
- Plastic package has underwriters laboratory flammability 94V-0.
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- Terminal: solder plated, solderable per J-STD-002.
- For surface mounted applications in order to optimize board space.
- IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	$T_{STG}/T_J$	-55 to +150	°C
Peak pulse power dissipation at 10/1000μs waveform	$P_{PP}$	6600	W
Maximum instantaneous forward voltage at 20A for unidirectional	$V_F$	3.5	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	0.85	°C /W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	11	°C /W

## PACKAGE MECHANICAL DATA



Part Number		$V_{RWM}$	$V_{BR@I_T}$		$I_T$	$I_{R@V_{RWM}}$	$I_{PP}$	$V_{C@I_{PP}}$
(Uni)	(Bi)	Max (V)	Min(V)	Max (V)	mA	Max(μA)	A	V
SM8S10A	SM8S10CA	10	11.1	12.3	5	15	10	388.00
SM8S11A	SM8S11CA	11	12.2	13.5	5	10	11	363.00
SM8S12A	SM8S12CA	12	13.3	14.7	5	10	12	332.00
SM8S13A	SM8S13CA	13	14.4	15.9	5	10	13	307.00
SM8S14A	SM8S14CA	14	15.6	17.2	5	10	14	284.00
SM8S15A	SM8S15CA	15	16.7	18.5	5	10	15	270.00
SM8S16A	SM8S16CA	16	17.8	19.7	5	10	16	254.00
SM8S17A	SM8S17CA	17	18.9	20.9	5	10	17	239.00
SM8S18A	SM8S18CA	18	20	22.1	5	10	18	226.00
SM8S20A	SM8S20CA	20	22.2	24.5	5	10	20	204.00
SM8S22A	SM8S22CA	22	24.4	26.9	5	10	22	186.00
SM8S24A	SM8S24CA	24	26.7	29.5	5	10	24	170.00
SM8S26A	SM8S26CA	26	28.9	31.9	5	10	26	157.00
SM8S28A	SM8S28CA	28	31.1	34.4	5	10	28	145.00
SM8S30A	SM8S30CA	30	33.3	36.8	5	10	30	136.00
SM8S33A	SM8S33CA	33	36.7	40.6	5	10	33	124.00
SM8S36A	SM8S36CA	36	40	44.2	5	10	36	114.00
SM8S40A	SM8S40CA	40	44.4	49.1	5	10	40	102.00
SM8S43A	SM8S43CA	43	47.8	52.8	5	10	43	95.10