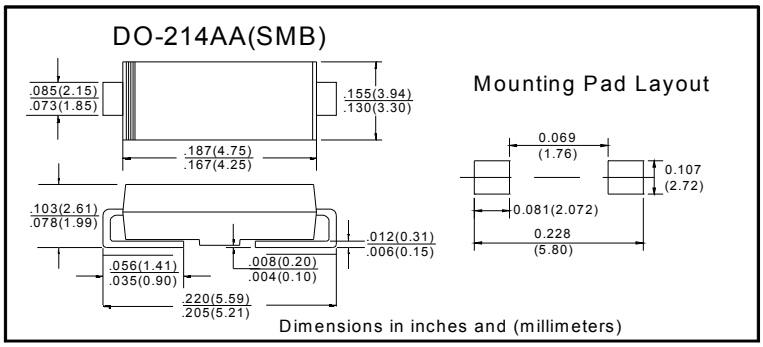
瞬变电压抑制二极管 Transient Voltage Suppressor Diodes

■特征 Features

- P_{PP} 600W
- V_{BR} 5.0V-440V

■外形尺寸和印记Outline Dimensions and Mark



■用途 Applications

- 箝位电压用 Clamping Voltage

■极限值（绝对最大额定值）
Limiting Values (Absolute Maximum Rating)

参数名称 Item	符号 Symbol	单位 Unit	条件 Conditions	最大值 Max
最大损耗功率(1)(2) Peak power dissipation	P_{PPM}	W	在10/1000us 波形下测试 with a 10/1000us waveform	600
最大脉冲电流(1) Peak pulse current	I_{PPM}	A	在10/1000us 波形下测试 with a 10/1000us waveform	见下面表格 See Next Table
功率损耗 Power dissipation	P_D	W	无限散热片@ TL=75℃ On infinite heat sink at T_L=75℃	5.0
最大正向浪涌电流(2) Peak forward surge current	I_{FSM}	A	8.3ms正弦半波，仅单向型 8.3 ms single half sine-wave unidirectional only	100
工作结温和存储温度范围 Operating junction and storage temperature range	T_J,T_{STG}	℃		-55 to +150

■电特性 （Ta=25℃ 除非另有规定）
Electrical Characteristics（Ta=25℃ Unless otherwise specified）

参数名称 Item	符号 Symbol	单位 Unit	条件 Conditions	最大值 Max
最大瞬间正向电压(3) Maximum instantaneous forward Voltage	V_F	V	在50A下测试，仅单向型 at 50A for unidirectional only	3.5/5.0
典型热阻 Thermal resistance	$R_{\theta JL}$	℃/W	结到引线 junction to lead	20
	$R_{\theta JA}$	℃/W	结到环境 junction to ambient	100

备注：Notes:

(1) 不重复脉冲电流，如图3，在T_A= 25℃下功率降额曲线见如图2。

Non-repetitive current pulse, per Fig. 3 and derated above T_A= 25℃ per Fig.2.

(2) 每个端子安装在 0.2 x 0.2" (5.0 x 5.0 mm)铜焊盘上

Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal

(3) 当产品型号VBR<200V时，VF<3.5V，VBR>201V时，VF<5.0V

VF<3.5V for devices of VBR<200V and VF<5.0V for devices of VBR>201V

■电性参数 (T_A=25℃ 除非另有规定)

Electrical Characteristics (T_A =25℃ unless otherwise noted)

产品型号（单向）Part Number (Uni)	产品型号（双向）Part Number (Bi)	击穿电压 V_{BR}@I_T Breakdown Voltage V_{BR}@I_T			最大反向漏电流 I_R @V_{WM} Maximum Reverse Leakage I_R (3) (μA)	最大工作电压 V_{RWM} Working Peak Reverse Voltage V_{RWM} (V)	最大反向浪涌电流 IPP Maximum Reverse Surge Current IPP(2) (A)	最大箝位电压 Maximum Clamping Voltage Vc @ I_{PP} (V)
		最小 Min(V)	最大 Max (V)	测试电流 IT(1)(mA)				
SMBJ5.0	SMBJ5.0C	6.40	7.30	10	800	5.0	62.5	9.6
SMBJ5.0A	SMBJ5.0CA(4)	6.40	7.07	10	800	5.0	65.2	9.2
SMBJ6.0	SMBJ6.0C	6.67	8.15	10	800	6.0	52.6	11.4
SMBJ6.0A	SMBJ6.0CA	6.67	7.37	10	800	6.0	58.3	10.3
SMBJ6.5	SMBJ6.5C	7.22	8.82	10	500	6.5	48.8	12.3
SMBJ6.5A	SMBJ6.5CA	7.22	7.98	10	500	6.5	53.6	11.2
SMBJ7.0	SMBJ7.0C	7.78	9.51	10	200	7.0	45.1	13.3
SMBJ7.0A	SMBJ7.0CA	7.78	8.60	10	200	7.0	50.0	12.0
SMBJ7.5	SMBJ7.5C	8.33	10.20	1.0	100	7.5	42.0	14.3
SMBJ7.5A	SMBJ7.5CA	8.33	9.21	1.0	100	7.5	46.5	12.9
SMBJ8.0	SMBJ8.0C	8.89	10.90	1.0	50	8.0	40.0	15.0
SMBJ8.0A	SMBJ8.0CA	8.89	9.83	1.0	50	8.0	44.1	13.6
SMBJ8.5	SMBJ8.5C	9.44	11.50	1.0	10	8.5	37.7	15.9
SMBJ8.5A	SMBJ8.5CA	9.44	10.4	1.0	10	8.5	41.7	14.4
SMBJ9.0	SMBJ9.0C	10.00	12.20	1.0	5.0	9.0	35.5	16.9
SMBJ9.0A	SMBJ9.0CA	10.00	11.10	1.0	5.0	9.0	39.0	15.4
SMBJ10	SMBJ10C	11.10	13.60	1.0	5.0	10.0	31.9	18.8
SMBJ10A	SMBJ10CA	11.10	12.30	1.0	5.0	10.0	35.3	17.0
SMBJ11	SMBJ11C	12.20	14.90	1.0	5.0	11.0	29.8	20.1
SMBJ11A	SMBJ11CA	12.20	13.50	1.0	5.0	11.0	33.0	18.2
SMBJ12	SMBJ12C	13.30	16.30	1.0	5.0	12.0	27.3	22.0
SMBJ12A	SMBJ12CA	13.30	14.70	1.0	5.0	12.0	30.2	19.9
SMBJ13	SMBJ13C	14.40	17.60	1.0	5.0	13.0	25.2	23.8
SMBJ13A	SMBJ13CA	14.40	15.90	1.0	5.0	13.0	27.9	21.5
SMBJ14	SMBJ14C	15.60	19.10	1.0	5.0	14.0	23.2	25.8
SMBJ14A	SMBJ14CA	15.60	17.20	1.0	5.0	14.0	25.9	23.2
SMBJ15	SMBJ15C	16.70	20.40	1.0	5.0	15.0	22.3	26.9
SMBJ15A	SMBJ15CA	16.70	18.50	1.0	5.0	15.0	24.6	24.4
SMBJ16	SMBJ16C	17.80	21.80	1.0	5.0	16.0	20.8	28.8
SMBJ16A	SMBJ16CA	17.80	19.70	1.0	5.0	16.0	23.1	26.0
SMBJ17	SMBJ17C	18.90	23.10	1.0	5.0	17.0	19.6	30.5
SMBJ17A	SMBJ17CA	18.90	20.90	1.0	5.0	17.0	21.7	27.6
SMBJ18	SMBJ18C	20.00	24.40	1.0	5.0	18.0	18.6	32.2
SMBJ18A	SMBJ18CA	20.00	22.10	1.0	5.0	18.0	20.5	29.2
SMBJ19	SMBJ19C	21.10	25.70	1.0	5.0	19.0	17.6	34.0
SMBJ19A	SMBJ19CA	21.10	23.30	1.0	5.0	19.0	19.5	30.8
SMBJ20	SMBJ20C	22.20	27.10	1.0	5.0	20.0	16.7	35.8
SMBJ20A	SMBJ20CA	22.20	24.50	1.0	5.0	20.0	18.5	32.4
SMBJ22	SMBJ22C	24.40	29.80	1.0	5.0	22.0	15.2	39.4
SMBJ22A	SMBJ22CA	24.40	26.90	1.0	5.0	22.0	16.9	35.5

■电性参数 (T_A=25℃ 除非另有规定)

Electrical Characteristics (T_A =25℃ unless otherwise noted)

产品型号（单向）Part Number (Uni)	产品型号（双向）Part Number (Bi)	击穿电压 V_{BR}@I_T Breakdown Voltage V_{BR}@I_T			最大反向漏电流 I_R @V_{WM} Maximum Reverse Leakage I_R (3) (μA)	最大工作电压 V_{RWM} Working Peak Reverse Voltage V_{RWM} (V)	最大反向浪涌电流 IPP Maximum Reverse Surge Current IPP(2) (A)	最大箝位电压 Maximum Clamping Voltage Vc @ I_{PP} (V)
		最小 Min(V)	最大 Max (V)	测试电流 IT(1)(mA)				
SMBJ24	SMBJ24C	26.70	32.60	1.0	5.0	24.0	14.0	43.0
SMBJ24A	SMBJ24CA	26.70	29.50	1.0	5.0	24.0	15.4	38.9
SMBJ26	SMBJ26C	28.90	35.30	1.0	5.0	26.0	12.9	46.6
SMBJ26A	SMBJ26CA	28.90	31.90	1.0	5.0	26.0	14.3	42.1
SMBJ28	SMBJ28C	31.10	38.00	1.0	5.0	28.0	12.0	50.0
SMBJ28A	SMBJ28CA	31.10	34.40	1.0	5.0	28.0	13.2	45.4
SMBJ30	SMBJ30C	33.30	40.70	1.0	5.0	30.0	11.2	53.5
SMBJ30A	SMBJ30CA	33.30	36.80	1.0	5.0	30.0	12.4	48.4
SMBJ33	SMBJ33C	36.70	44.90	1.0	5.0	33.0	10.2	59.0
SMBJ33A	SMBJ33CA	36.70	40.60	1.0	5.0	33.0	11.3	53.3
SMBJ36	SMBJ36C	40.00	48.90	1.0	5.0	36.0	9.3	64.3
SMBJ36A	SMBJ36CA	40.00	44.20	1.0	5.0	36.0	10.3	58.1
SMBJ40	SMBJ40C	44.40	54.30	1.0	5.0	40.0	8.4	71.4
SMBJ40A	SMBJ40CA	44.40	49.10	1.0	5.0	40.0	9.3	64.5
SMBJ43	SMBJ43C	47.80	58.40	1.0	5.0	43.0	7.8	76.7
SMBJ43A	SMBJ43CA	47.80	52.80	1.0	5.0	43.0	8.6	69.4
SMBJ45	SMBJ45C	50.00	61.10	1.0	5.0	45.0	7.5	80.3
SMBJ45A	SMBJ45CA	50.00	55.30	1.0	5.0	45.0	8.3	72.7
SMBJ48	SMBJ48C	53.30	65.10	1.0	5.0	48.0	7.0	85.5
SMBJ48A	SMBJ48CA	53.30	58.90	1.0	5.0	48.0	7.8	77.4
SMBJ51	SMBJ51C	56.70	69.30	1.0	5.0	51.0	6.6	91.1
SMBJ51A	SMBJ51CA	56.70	62.70	1.0	5.0	51.0	7.3	82.4
SMBJ54	SMBJ54C	60.00	73.30	1.0	5.0	54.0	6.2	96.3
SMBJ54A	SMBJ54CA	60.00	66.30	1.0	5.0	54.0	6.9	87.1
SMBJ58	SMBJ58C	64.40	78.70	1.0	5.0	58.0	5.8	103.0
SMBJ58A	SMBJ58CA	64.40	71.20	1.0	5.0	58.0	6.4	93.6
SMBJ60	SMBJ60C	66.70	81.50	1.0	5.0	60.0	5.6	107.0
SMBJ60A	SMBJ60CA	66.70	73.70	1.0	5.0	60.0	6.2	96.8
SMBJ64	SMBJ64C	71.10	86.90	1.0	5.0	64.0	5.2	114.0
SMBJ64A	SMBJ64CA	71.10	78.60	1.0	5.0	64.0	5.8	103.0
SMBJ70	SMBJ70C	77.80	95.10	1.0	5.0	70.0	4.8	125.0
SMBJ70A	SMBJ70CA	77.80	86.00	1.0	5.0	70.0	5.3	113.0
SMBJ75	SMBJ75C	83.30	102.00	1.0	5.0	75.0	4.5	134.0
SMBJ75A	SMBJ75CA	83.30	92.10	1.0	5.0	75.0	5.0	121.0
SMBJ78	SMBJ78C	86.70	106.00	1.0	5.0	78.0	4.3	139.0
SMBJ78A	SMBJ78CA	86.70	95.80	1.0	5.0	78.0	4.8	126.0
SMBJ80	SMBJ80C	88.90	108.80	1.0	5.0	80.0	4.2	143.2
SMBJ80A	SMBJ80CA	88.80	97.60	1.0	5.0	80.0	4.6	129.6

■电性参数 (T_A =25℃ 除非另有规定)

Electrical Characteristics (T_A =25℃ unless otherwise noted)

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		最小 Min(V)	最大 Max (V)	测试电流 IT(1)(mA)				
SMBJ85	SMBJ85C	94.40	115.00	1.0	5.0	85.0	4.0	151.0
SMBJ85A	SMBJ85CA	94.40	104.00	1.0	5.0	85.0	4.4	137.0
SMBJ90	SMBJ90C	100.00	122.00	1.0	5.0	90.0	3.7	160.0
SMBJ90A	SMBJ90CA	100.00	111.00	1.0	5.0	90.0	4.1	146.0
SMBJ100	SMBJ100C	111.00	136.00	1.0	5.0	100.0	3.3	179.0
SMBJ100A	SMBJ100CA	111.00	123.00	1.0	5.0	100.0	3.7	162.0
SMBJ110	SMBJ110C	122.00	149.00	1.0	5.0	110.0	3.1	196.0
SMBJ110A	SMBJ110CA	122.00	135.00	1.0	5.0	110.0	3.4	177.0
SMBJ120	SMBJ120C	133.00	163.00	1.0	5.0	120.0	2.8	214.0
SMBJ120A	SMBJ120CA	133.00	147.00	1.0	5.0	120.0	3.1	193.0
SMBJ130	SMBJ130CA	144.00	176.00	1.0	5.0	130.0	2.6	231.0
SMBJ130A	SMBJ130CA	144.00	159.00	1.0	5.0	130.0	2.9	209.0
SMBJ140	SMBJ140C	155.70	190.40	1.0	5.0	140.0	2.4	250.6
SMBJ140A	SMBJ140CA	155.00	171.00	1.0	5.0	140.0	2.6	226.8
SMBJ150	SMBJ150C	167.00	204.00	1.0	5.0	150.0	2.2	268.0
SMBJ150A	SMBJ150CA	167.00	185.00	1.0	5.0	150.0	2.5	243.0
SMBJ160	SMBJ160C	178.00	218.00	1.0	5.0	160.0	2.1	287.0
SMBJ160A	SMBJ160CA	178.00	197.00	1.0	5.0	160.0	2.3	259.0
SMBJ170	SMBJ170C	189.00	231.00	1.0	5.0	170.0	2.0	304.0
SMBJ170A	SMBJ170CA	189.00	209.00	1.0	5.0	170.0	2.2	275.0
SMBJ180	SMBJ180C	200.20	244.80	1.0	5.0	180.0	1.8	322.2
SMBJ180A	SMBJ180CA	200.00	220.00	1.0	5.0	180.0	2.1	291.6
SMBJ190	SMBJ190C	211.30	258.40	1.0	5.0	190.0	1.7	340.1
SMBJ190A	SMBJ190CA	211.00	232.00	1.0	5.0	190.0	1.9	307.8
SMBJ200A	SMBJ200CA	224.00	247.00	1.0	5.0	200.0	1.8	324.0
SMBJ220A	SMBJ220CA	246.00	272.00	1.0	5.0	220.0	1.7	356.0
SMBJ250A	SMBJ250CA	279.00	309.00	1.0	5.0	250.0	1.5	405.0
SMBJ300A	SMBJ300CA	335.00	371.00	1.0	5.0	300.0	1.2	486.0
SMBJ350A	SMBJ350CA	391.00	432.00	1.0	5.0	350.0	1.0	567.0
SMBJ400A	SMBJ400CA	447.00	494.00	1.0	5.0	400.0	0.9	648.0
SMBJ440A	SMBJ440CA	492.00	543.00	1.0	5.0	440.0	0.8	713.0

备注：Notes:

(1) 脉冲测试：t_p≤50ms Pulse test: t_p≤50ms

(2) 浪涌电流波形，如图3，功率降额曲线如图2。

Surge current waveform per Fig. 3 and derated per Fig.2.

(3) 对于双向型，V_{WM}在10V及10V以下，I_R值加倍

For bi-directional types having VWM of 10 V and less, the I_R limit is doubled

(4) 对于双向SMBJ5.0CA，V_{BR}最大值为7.25V

For the bi-directional SMBJ5.0CA, the maximum V_{BR} is 7.25 V

■特性曲线（典型） Characteristics(Typical)

图1：最大脉冲功率曲线
FIG1:Peak Pulse Power Rating Curve

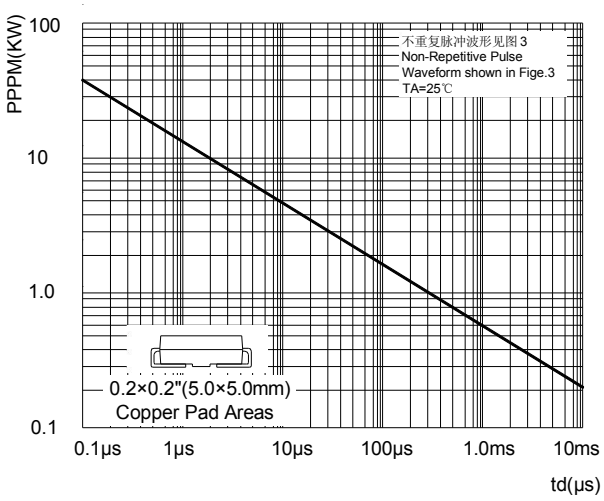

图2：脉冲功率或电流与结温关系
FIG2: Pulse Power or Current vs. Initial Junction Temperature

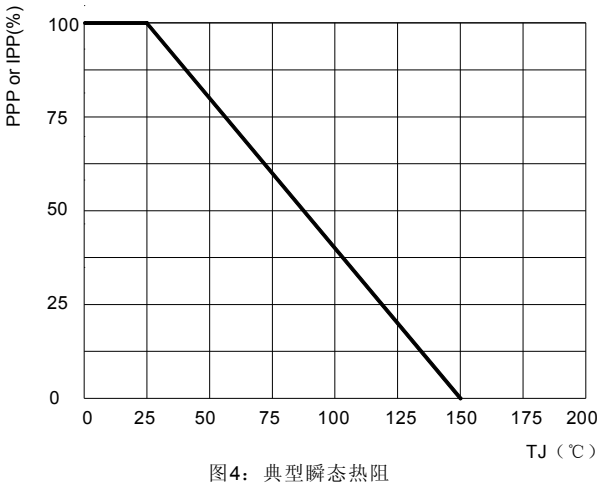

图3：脉冲波形
FIG3: Pulse Waveform

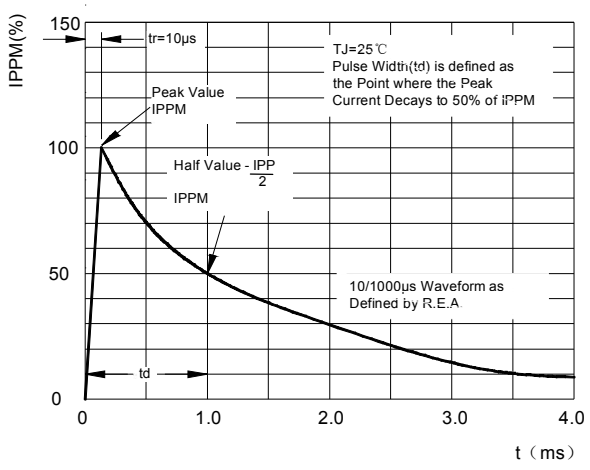

图4：典型瞬态热阻
FIG4:Typical Transient Thermal Impedance

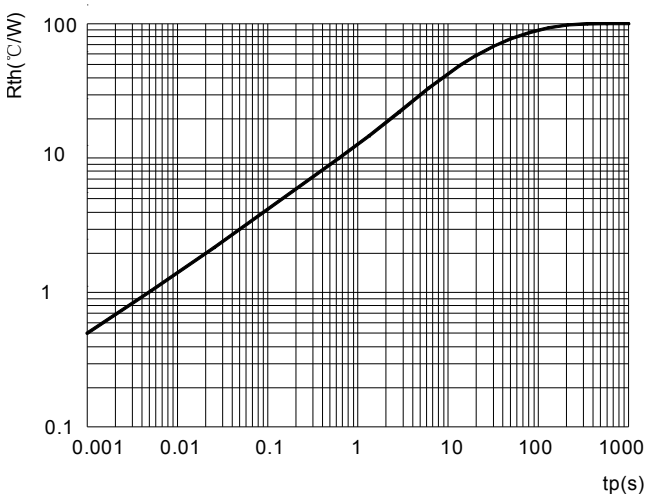

图5：最大不重复浪涌电流
FIG5: Maximum Non-Repetitive Surge Current

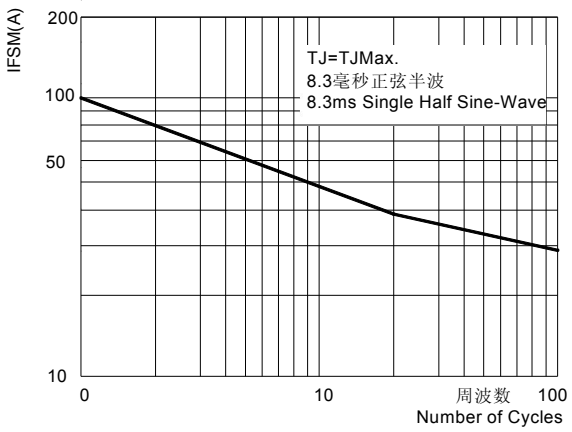

图6：功率损耗曲线
FIG6:Steady State Power Dissipation