

Silicon Avalanche Diodes

600W Surface Mount Transient Voltage Suppressors

P6SMBJ Series



Protect sensitive electronics against voltage transients induced by inductive load switching and lightning. Ideal for the protection of I/O interfaces, Vcc bus and other integrated circuits.

FEATURES

- Stand-off voltage range 5.5 to 185 Volts
- Uni-directional and Bi-directional
- Glass passivated junction
- Jedec package designed to meet SM assembly needs
- Low lead inductance
- 100% surge tested
- UL recognised

MAXIMUM RATING

- Peak Pulse Power (Ppk) 600 Watts (10 x 1000μs)@25°C (see diagram on page 3 for wave form)
- 1.5 watt steady state
- Response time: 1 x 10⁻¹² secs (theoretical)
- Forward surge rating: 100A, 8.3 ms single half sine-wave (uni-directional only)
- Operating & storage temp.: -55°C to +150°C

MECHANICAL CHARACTERISTICS

- Case: DO-214AA moulded plastic over glass passivated junction UL94V(O) (Thermoset) Epoxy
- Terminals: Solder plated solderable per MIL-STD-750 Method 2026
- Solderable leads: 230°C for 10 seconds.
- Marking: cathode band (positive terminal, uni-directional devices only), device code, logo
- Weight: 0.093 gram (approx).

Agency Approvals: Recognized under the Components Program of Underwriters Laboratories.

Agency File Number: E128662

ORDERING INFORMATION

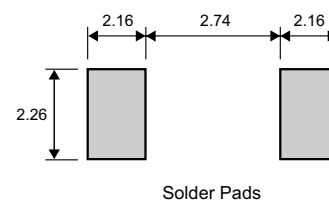
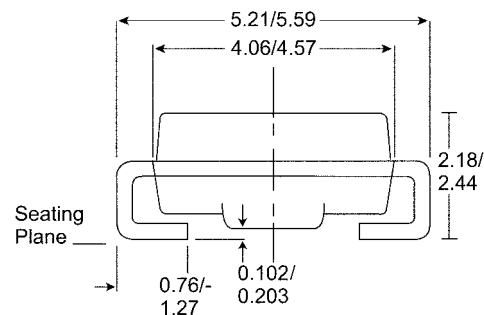
P6SMBJ

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Voltage

Bi-Directional

5% Voltage Tolerance



All dimensions in mm

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RL

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SILICON DIODE
ARRAYS

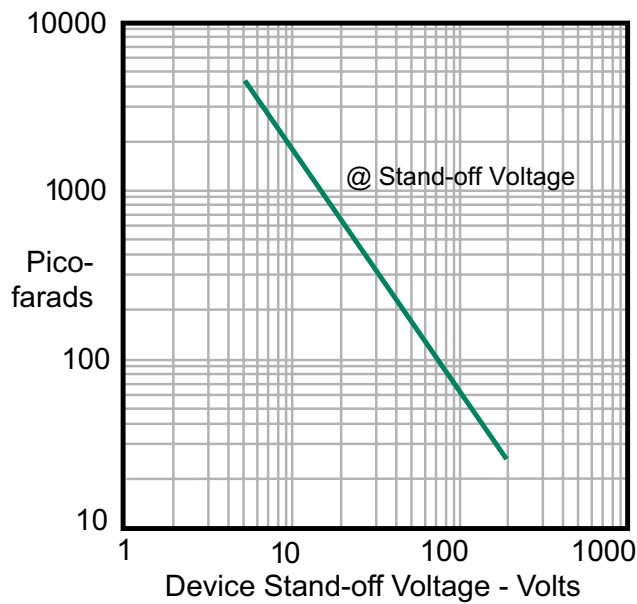


Figure 1 - Capacitance

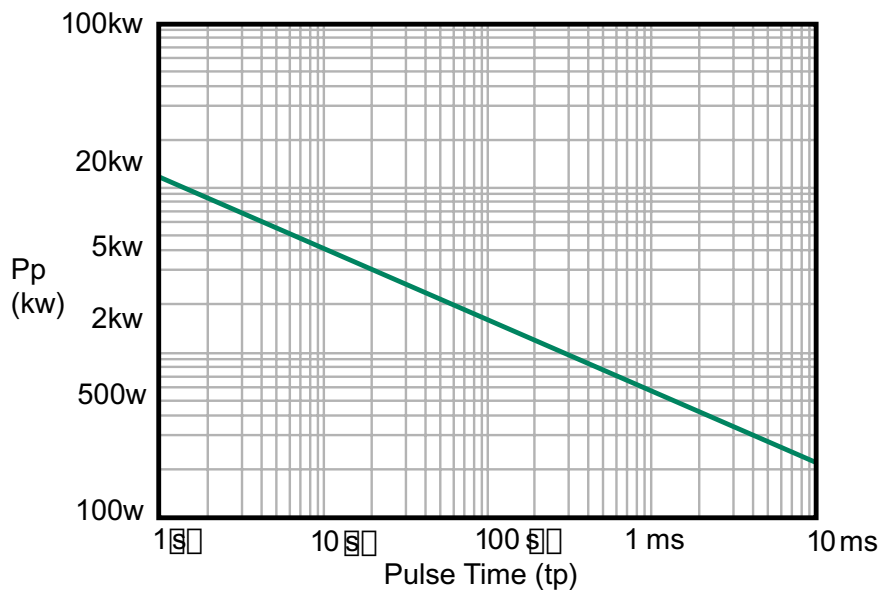


Figure 2 - Peak Pulse Power vs. Pulse Time

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ELECTRICAL SPECIFICATION @ Tamb 25°C

Part Number Uni-polar	Device Code	Reverse Standoff Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T			Maximum Reverse Leakage I _R @ V _R (μA)	Maximum Clamping Voltage V _C @ I _{PP} (Volts)	Maximum Peak Pulse Current I _{PP} @ V _C (A)	Maximum Forward Voltage (V _F) @ I _T (Volts)
			Min	Max	(mA)				
P6SMBJ 6V8 / P6SMBJ 6V8C	6V8 / 6V8C	5.50	6.12	7.48	10.0	1000.0 (4)	10.8	56.0	3.5
P6SMBJ 6V8A / P6SMBJ 6V8CA	6V8A / 6V8CA	5.80	6.45	7.14	10.0	1000.0 (4)	10.5	57.0	3.5
P6SMBJ 7V5 / P6SMBJ 7V5C	7V5 / 7V5C	6.05	6.75	8.25	10.0	500.0 (4)	11.7	51.0	3.5
P6SMBJ 7V5A / P6SMBJ 7V5CA	7V5A / 7V5CA	6.40	7.13	7.88	10.0	500.0 (4)	11.3	53.0	3.5
P6SMBJ 8V2 / P6SMBJ 8V2C	8V2 / 8V2C	6.63	7.38	9.02	10.0	200.0 (4)	12.5	48.0	3.5
P6SMBJ 8V2A / P6SMBJ 8V2CA	8V2A / 8V2CA	7.02	7.79	8.61	10.0	200.0 (4)	12.1	50.0	3.5
P6SMBJ 9V1 / P6SMBJ 9V1C	9V1 / 9V1C	7.37	8.19	10.00	1.0	50.0 (4)	13.8	44.0	3.5
P6SMBJ 9V1A / P6SMBJ 9V1CA	9V1A / 9V1CA	7.78	8.65	9.55	1.0	50.0 (4)	13.4	45.0	3.5
P6SMBJ 10 / P6SMBJ 10C	10 / 10C	8.10	9.00	11.00	1.0	10.0 (4)	15.0	40.0	3.5
P6SMBJ 10A / P6SMBJ 10CA	10A / 10CA	8.55	9.50	10.50	1.0	10.0 (4)	14.5	41.0	3.5
P6SMBJ 11 / P6SMBJ 11C	11 / 11C	8.92	9.90	12.10	1.0	5.0 (4)	16.2	37.0	3.5
P6SMBJ 11A / P6SMBJ 11CA	11A / 11CA	9.40	10.50	11.60	1.0	5.0 (4)	15.6	38.0	3.5
P6SMBJ 12 / P6SMBJ 12C	12 / 12C	9.72	10.80	13.20	1.0	5.0 (4)	17.3	35.0	3.5
P6SMBJ 12A / P6SMBJ 12CA	12A / 12CA	10.20	11.40	12.60	1.0	5.0	16.7	36.0	3.5
P6SMBJ 13 / P6SMBJ 13C	13 / 13C	10.50	11.70	14.30	1.0	5.0	19.0	32.0	3.5
P6SMBJ 13A / P6SMBJ 13CA	13A / 13CA	11.10	12.40	13.70	1.0	5.0	18.2	33.0	3.5
P6SMBJ 15 / P6SMBJ 15C	15 / 15C	12.10	13.50	16.50	1.0	5.0	22.0	27.0	3.5
P6SMBJ 15A / P6SMBJ 15CA	15A / 15CA	12.80	14.30	15.80	1.0	5.0	21.2	28.0	3.5
P6SMBJ 16 / P6SMBJ 16C	16 / 16C	12.90	14.40	17.60	1.0	5.0	23.5	26.0	3.5
P6SMBJ 16A / P6SMBJ 16CA	16A / 16CA	13.60	15.20	16.80	1.0	5.0	22.5	27.0	3.5
P6SMBJ 18 / P6SMBJ 18C	18 / 18C	14.50	16.20	19.80	1.0	5.0	26.1	23.0	3.5
P6SMBJ 18A / P6SMBJ 18CA	18A / 18CA	15.30	17.10	18.90	1.0	5.0	25.2	24.0	3.5
P6SMBJ 20 / P6SMBJ 20C	20 / 20C	16.20	18.00	22.00	1.0	5.0	29.1	21.0	3.5
P6SMBJ 20A / P6SMBJ 20CA	20A / 20CA	17.10	19.00	21.00	1.0	5.0	27.7	22.0	3.5
P6SMBJ 22 / P6SMBJ 22C	22 / 22C	17.80	19.80	24.20	1.0	5.0	31.9	19.0	3.5
P6SMBJ 22A / P6SMBJ 22CA	22A / 22CA	18.80	20.90	23.10	1.0	5.0	30.6	20.0	3.5
P6SMBJ 24 / P6SMBJ 24C	24 / 24C	19.40	21.60	26.40	1.0	5.0	34.7	17.0	3.5
P6SMBJ 24A / P6SMBJ 24CA	24A / 24CA	20.50	22.80	25.20	1.0	5.0	33.2	18.0	3.5
P6SMBJ 27 / P6SMBJ 27C	27 / 27C	21.80	24.30	29.70	1.0	5.0	39.1	15.0	3.5
P6SMBJ 27A / P6SMBJ 27CA	27A / 27CA	23.10	25.70	28.40	1.0	5.0	37.5	16.0	3.5
P6SMBJ 30 / P6SMBJ 30C	30 / 30C	24.30	27.00	33.0	1.0	5.0	43.5	14.0	3.5
P6SMBJ 30A / P6SMBJ 30CA	30A / 30CA	25.60	28.50	31.50	1.0	5.0	41.4	14.4	3.5
P6SMBJ 33 / P6SMBJ 33C	30 / 33C	26.80	29.70	36.30	1.0	5.0	47.7	12.6	3.5
P6SMBJ 33A / P6SMBJ 33CA	33A / 33CA	28.20	31.40	34.70	1.0	5.0	45.7	13.2	3.5

Notes:

1. B_v is measured using a pulse of 20 milliseconds or less.
2. V_F for Uni-directional devices, is measured using a 300 microsecond square wave pulse I_F = 50A
3. I_R is doubled for Bi-directional devices only with V_R equal or less than 10 volts.

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ELECTRICAL SPECIFICATION @ Tamb 25°C

Part Number	Device Code	Reverse Standoff Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T			Maximum Reverse Leakage I_R @ V_R (μA)	Maximum Clamping Voltage V_C @ I_{PP} (Volts)	Maximum Peak Pulse Current I_{PP} @ V_C (A)	Maximum Forward Voltage (V_F) @ I_T (Volts)
			Min	Max	(mA)				
P6SMBJ 36 / P6SMBJ 36C	36 / 36C	29.10	32.40	39.60	1.0	5.0	52.0	11.6	3.5
P6SMBJ 36A / P6SMBJ 36CA	36A / 36CA	30.80	34.20	37.80	1.0	5.0	49.9	12.0	3.5
P6SMBJ 39 / P6SMBJ 39C	39 / 39C	31.60	35.10	42.90	1.0	5.0	56.4	10.5	3.5
P6SMBJ 39A / P6SMBJ 39CA	39A / 39CA	33.30	37.10	41.00	1.0	5.0	53.9	11.2	3.5
P6SMBJ 43 / P6SMBJ 43C	43 / 43C	34.80	38.70	47.30	1.0	5.0	61.9	9.6	3.5
P6SMBJ 43A / P6SMBJ 43CA	43A / 43CA	36.80	40.90	45.20	1.0	5.0	59.3	10.1	3.5
P6SMBJ 47 / P6SMBJ 47C	47 / 47C	38.10	42.30	51.70	1.0	5.0	67.8	8.9	3.5
P6SMBJ 47A / P6SMBJ 47CA	47A / 47CA	40.20	44.70	49.40	1.0	5.0	64.8	9.3	3.5
P6SMBJ 51 / P6SMBJ 51C	51 / 51C	41.30	45.90	56.10	1.0	5.0	73.5	8.2	3.5
P6SMBJ 51A / P6SMBJ 51CA	51A / 51CA	43.60	48.50	53.60	1.0	5.0	70.1	8.6	3.5
P6SMBJ 56 / P6SMBJ 56C	56 / 56C	45.4	50.40	61.60	1.0	5.0	80.5	7.4	3.5
P6SMBJ 56A / P6SMBJ 56CA	56A / 56CA	47.8	53.20	58.80	1.0	5.0	77.0	7.8	3.5
P6SMBJ 62 / P6SMBJ 62C	62 / 62C	50.2	55.80	68.20	1.0	5.0	89.0	6.8	3.5
P6SMBJ 62A / P6SMBJ 62CA	62A / 62CA	53.0	58.90	65.10	1.0	5.0	85.0	7.1	3.5
P6SMBJ 68 / P6SMBJ 68C	68 / 68C	55.1	61.20	74.80	1.0	5.0	98.0	6.1	3.5
P6SMBJ 68A / P6SMBJ 68CA	68A / 68CA	58.1	64.60	71.40	1.0	5.0	92.0	6.5	3.5
P6SMBJ 75 / P6SMBJ 75C	75 / 75C	60.7	67.50	82.50	1.0	5.0	108.0	5.5	3.5
P6SMBJ 75A / P6SMBJ 75CA	75A / 75CA	64.1	71.30	78.80	1.0	5.0	103.0	5.8	3.5
P6SMBJ 82 / P6SMBJ 82C	82 / 82C	66.4	73.80	90.20	1.0	5.0	118.0	5.1	3.5
P6SMBJ 82A / P6SMBJ 82CA	82A / 82CA	70.1	77.90	86.10	1.0	5.0	113.0	5.3	3.5
P6SMBJ 91 / P6SMBJ 91C	91 / 91C	73.7	81.90	100.00	1.0	5.0	131.0	4.5	3.5
P6SMBJ 91A / P6SMBJ 91CA	91A / 91CA	77.8	86.50	95.50	1.0	5.0	125.0	4.8	3.5
P6SMBJ 100 / P6SMBJ 100C	100 / 100C	81.0	90.00	110.00	1.0	5.0	144.0	4.2	3.5
P6SMBJ 100A / P6SMBJ 100CA	100A / 100CA	85.5	95.00	105.00	1.0	5.0	137.0	4.4	3.5
P6SMBJ 110 / P6SMBJ 110C	110 / 110C	89.2	99.00	121.00	1.0	5.0	158.0	3.8	3.5
P6SMBJ 110A / P6SMBJ 110CA	110A / 110CA	94.0	105.00	116.00	1.0	5.0	152.0	4.0	3.5
P6SMBJ 120 / P6SMBJ 120C	120 / 120C	97.2	108.00	132.00	1.0	5.0	173.0	3.5	3.5
P6SMBJ 120A / P6SMBJ 120CA	120A / 120CA	102.0	114.00	126.00	1.0	5.0	165.0	3.6	3.5
P6SMBJ 130 / P6SMBJ 130C	130 / 130C	105.0	117.00	143.00	1.0	5.0	187.0	3.2	3.5
P6SMBJ 130A / P6SMBJ 130CA	130A / 130CA	111.0	124.00	137.00	1.0	5.0	179.0	3.3	3.5
P6SMBJ 150 / P6SMBJ 150C	150 / 150C	121.0	135.00	165.00	1.0	5.0	215.0	2.8	3.5
P6SMBJ 150A / P6SMBJ 150CA	150A / 150CA	128.0	143.00	158.00	1.0	5.0	207.0	2.9	3.5

Notes:

1. B_V is measured using a pulse of 20 milliseconds or less.
2. V_F , for Uni-directional devices, is measured using a 300 microsecond square wave pulse $I_F = 50A$.
3. I_R is doubled for Bi-directional devices only with V_R equal or less than 10 volts.

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ELECTRICAL SPECIFICATION @ Tamb 25°C

Part Number	Device Code	Reverse Standoff Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T			Maximum Reverse Leakage I_R @ V_R (μA)	Maximum Clamping Voltage V_C @ I_{PP} (Volts)	Maximum Peak Pulse Current I_{PP} @ V_C (A)	Maximum Forward Voltage (V_F) @ I_T (Volts)
			Min	Max	(mA)				
P6SMBJ 160 / P6SMBJ 160C	160 / 160C	130.0	144.00	176.00	1.0	5.0	230.0	2.6	3.5
P6SMBJ 160A / P6SMBJ 160CA	160A / 160CA	136.0	152.00	168.00	1.0	5.0	219.0	2.7	3.5
P6SMBJ 170 / P6SMBJ 170C	170 / 170C	138.0	153.00	187.00	1.0	5.0	244.0	2.5	3.5
P6SMBJ 170A / P6SMBJ 170CA	170A / 170CA	145.0	162.00	179.00	1.0	5.0	234.0	2.6	3.5
P6SMBJ 180 / P6SMBJ 180C	180 / 180C	146.0	162.00	198.00	1.0	5.0	258.0	2.3	3.5
P6SMBJ 180A / P6SMBJ 180CA	180A / 180CA	154.0	171.00	189.00	1.0	5.0	246.0	2.4	3.5
P6SMBJ 200 / P6SMBJ 200C	200 / 200C	162.0	180.00	220.00	1.0	5.0	287.0	2.1	3.5
P6SMBJ 200A / P6SMBJ 200CA	200A / 200CA	171.0	190.00	210.00	1.0	5.0	274.0	2.2	3.5
P6SMBJ 220 / P6SMBJ 220C	220 / 220C	175.0	198.00	242.00	1.0	5.0	344.0	1.8	3.5
P6SMBJ 220A / P6SMBJ 220CA	220A / 220CA	185.0	209.00	231.00	1.0	5.0	328.0	1.8	3.5

Notes:

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3. I_R is doubled for Bi-directional devices only with V_R equal or less than 10 volts.