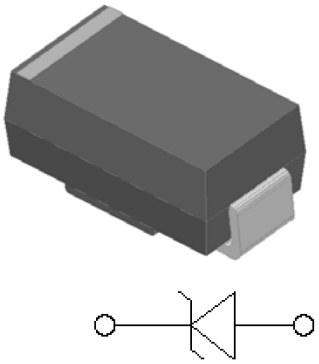
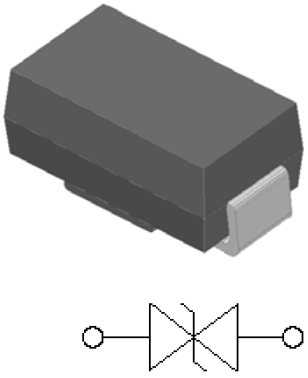
Surface Mount Transient Voltage Suppressor Diodes

Uni-directional



Bi-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 400 W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

Mechanical Data

- **Package**: DO-214AC (SMA)
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

■Maximum Ratings (T_a=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform (1) (2) (Fig.1)	P_{PPM}	W	400
Peak pulse current, with a 10/1000us waveform(1)	I_{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at TL=75℃	P_D	W	1.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (2)	I_{FSM}	A	40
Operating junction and storage temperature range	T_J,T_{STG}	℃	-55 to +150
Electrostatic Discharge（IEC61000-4-2 air discharge）	ESD	KV	±30
Electrostatic Discharge（IEC61000-4-2 contact discharge）			

■Electrical Characteristics（T_a=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 25A for unidirectional only (3)	V_F	V	3.5/5.0
Maximum instantaneous forward voltage @ at 1A for unidirectional only (4)	V_F	V	1.5/2.5

■Thermal Characteristics （T_a=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance(Typical)	$R_{\theta JL}$	℃/W	30
	$R_{\theta JA}$		120

Notes:

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

(2) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

(3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V

(4) V_F<1.5V for devices of V_{BR}<200V and V_F<2.5V for devices of V_{BR}>201V

■Ordering Information (Example)

PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
P4SMA SERIES	F1	Approximate 0.059	5000	/	80000	13” reel
P4SMA SERIES	F2	Approximate 0.059	7500	/	120000	13” reel
P4SMA SERIES	F3	Approximate 0.059	7500	/	60000	13” reel
P4SMA SERIES	F4	Approximate 0.059	1800	7200	57600	7” reel
P4SMA SERIES	F5	Approximate 0.059	2000	8000	64000	7” reel
P4SMA SERIES	F6	Approximate 0.059	5000	/	100000	13” reel

■Electrical Characteristics（T_a=25℃ Unless otherwise specified）

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R(7) @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(6) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(5)(mA)				
P4SMA6.8A	P4SMA6.8CA	6.46	7.14	10	1000	5.8	38.10	10.5
P4SMA7.5A	P4SMA7.5CA	7.13	7.88	10	500	6.4	35.40	11.3
P4SMA8.2A	P4SMA8.2CA	7.79	8.61	10	200	7.0	33.06	12.1
P4SMA9.1A	P4SMA9.1CA	8.65	9.56	1	50	7.8	29.85	13.4
P4SMA10A	P4SMA10CA	9.50	10.50	1	10	8.6	27.59	14.5
P4SMA11A	P4SMA11CA	10.45	11.55	1	5	9.4	25.64	15.6
P4SMA12A	P4SMA12CA	11.40	12.60	1	5	10.2	23.95	16.7
P4SMA13A	P4SMA13CA	12.35	13.65	1	5	11.1	21.98	18.2
P4SMA15A	P4SMA15CA	14.25	15.75	1	1	12.8	18.87	21.2
P4SMA16A	P4SMA16CA	15.20	16.80	1	1	13.6	17.78	22.5
P4SMA18A	P4SMA18CA	17.10	18.90	1	1	15.3	15.87	25.2
P4SMA20A	P4SMA20CA	19.00	21.00	1	1	17.1	14.44	27.7
P4SMA22A	P4SMA22CA	20.90	23.10	1	1	18.8	13.07	30.6
P4SMA24A	P4SMA24CA	22.80	25.20	1	1	20.5	12.05	33.2
P4SMA27A	P4SMA27CA	25.65	28.35	1	1	23.1	10.67	37.5
P4SMA30A	P4SMA30CA	28.50	31.50	1	1	25.6	9.66	41.4
P4SMA33A	P4SMA33CA	31.35	34.65	1	1	28.2	8.75	45.7
P4SMA36A	P4SMA36CA	34.20	37.80	1	1	30.8	8.02	49.9
P4SMA39A	P4SMA39CA	37.05	40.95	1	1	33.3	7.42	53.9

■Electrical Characteristics（T_a=25℃ Unless otherwise specified）

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R[6] @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}[5] (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T[4](mA)				
P4SMA43A	P4SMA43CA	40.85	45.15	1	1	36.8	6.75	59.3
P4SMA47A	P4SMA47CA	44.65	49.35	1	1	40.2	6.17	64.8
P4SMA51A	P4SMA51CA	48.45	53.55	1	1	43.6	5.71	70.1
P4SMA56A	P4SMA56CA	53.20	58.80	1	1	47.8	5.19	77.0
P4SMA62A	P4SMA62CA	58.90	65.10	1	1	53.0	4.71	85.0
P4SMA68A	P4SMA68CA	64.60	71.40	1	1	58.1	4.35	92.0
P4SMA75A	P4SMA75CA	71.25	78.75	1	1	64.1	3.88	103.0
P4SMA82A	P4SMA82CA	77.90	86.10	1	1	70.1	3.54	113.0
P4SMA91A	P4SMA91CA	86.45	95.55	1	1	77.8	3.20	125.0
P4SMA100A	P4SMA100CA	95.00	105.00	1	1	85.5	2.92	137.0
P4SMA110A	P4SMA110CA	104.50	115.50	1	1	94.0	2.63	152.0
P4SMA120A	P4SMA120CA	114.00	126.00	1	1	102.0	2.42	165.0
P4SMA130A	P4SMA130CA	123.50	136.50	1	1	111.0	2.23	179.0
P4SMA150A	P4SMA150CA	142.50	157.50	1	1	128.0	1.93	207.0
P4SMA160A	P4SMA160CA	152.00	168.00	1	1	136.0	1.83	219.0
P4SMA170A	P4SMA170CA	161.50	178.50	1	1	145.0	1.71	234.0
P4SMA180A	P4SMA180CA	171.00	189.00	1	1	154.0	1.63	246.0
P4SMA200A	P4SMA200CA	190.00	210.00	1	1	171.0	1.46	274.0
P4SMA220A	P4SMA220CA	209.00	231.00	1	1	185.0	1.22	328.0
P4SMA250A	P4SMA250CA	237.50	262.50	1	1	214.0	1.16	344.0
P4SMA300A	P4SMA300CA	285.00	315.00	1	1	256.0	0.97	414.0
P4SMA350A	P4SMA350CA	332.50	367.50	1	1	299.3	0.83	482.0
P4SMA380A	P4SMA380CA	361.00	399.00	1	1	324.9	0.76	524.4
P4SMA400A	P4SMA400CA	380.00	420.00	1	1	342.0	0.72	552.0
P4SMA440A	P4SMA440CA	418.00	462.00	1	1	376.2	0.66	607.2
P4SMA500A	P4SMA500CA	475.00	525.00	1	1	427.5	0.58	690.0
P4SMA520A	P4SMA520CA	494.00	546.00	1	1	444.6	0.56	717.6
P4SMA550A	P4SMA550CA	522.50	577.50	1	1	470.3	0.53	759.0
P4SMA600A	P4SMA600CA	570.00	630.00	1	1	513.0	0.48	828.0

Notes:
(5) Pulse test: t_p≤50ms
(6) Surge current waveform per Fig. 3 and derated per Fig.2.
(7) For bi-directional types having V_{RWM} of 10 V and less, the I_R limit is doubled.

■ **Characteristics** (Typical)

FIG1:Peak Pulse Power Rating Curve

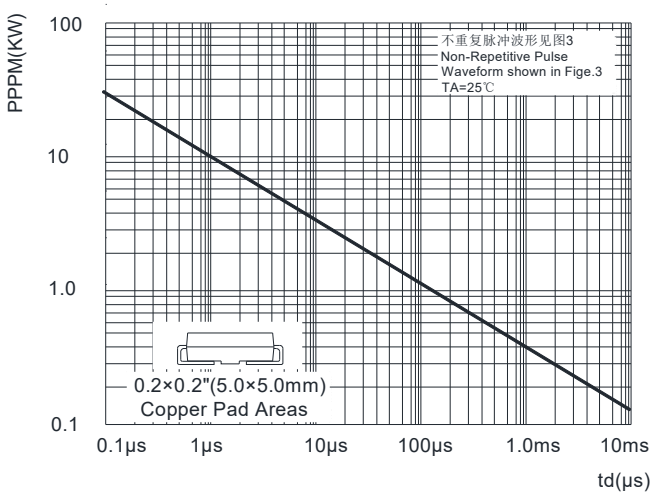


FIG2: Pulse Power or Current vs. Initial Junction Temperature

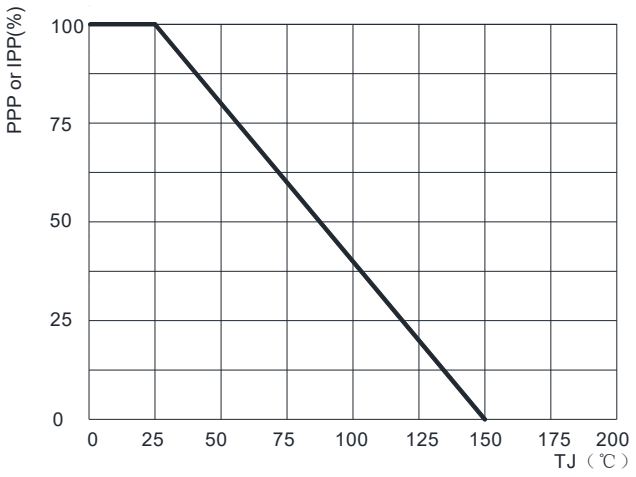


FIG3: Pulse Waveform

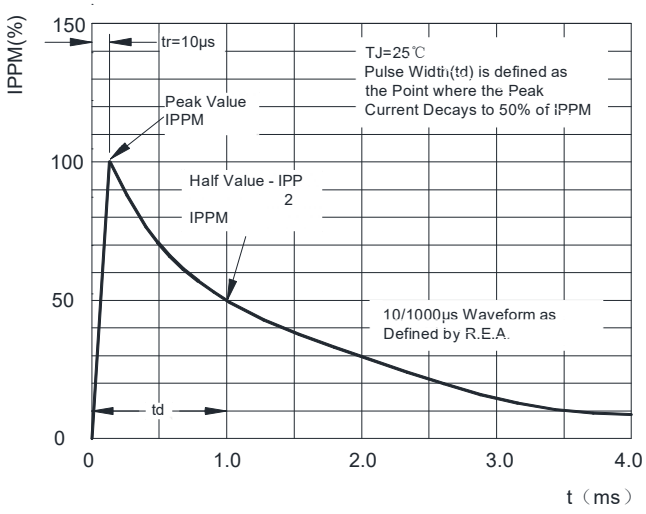


FIG4:Typical Transient Thermal Impedance

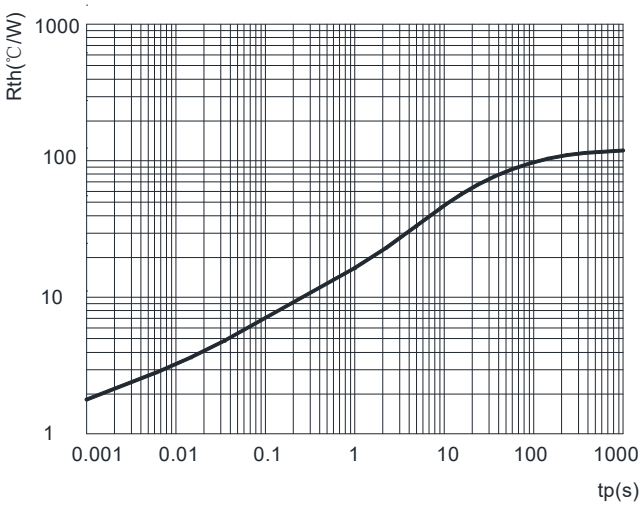
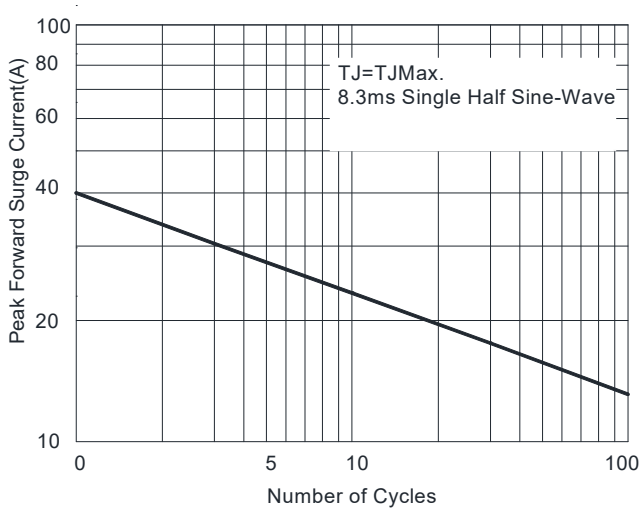
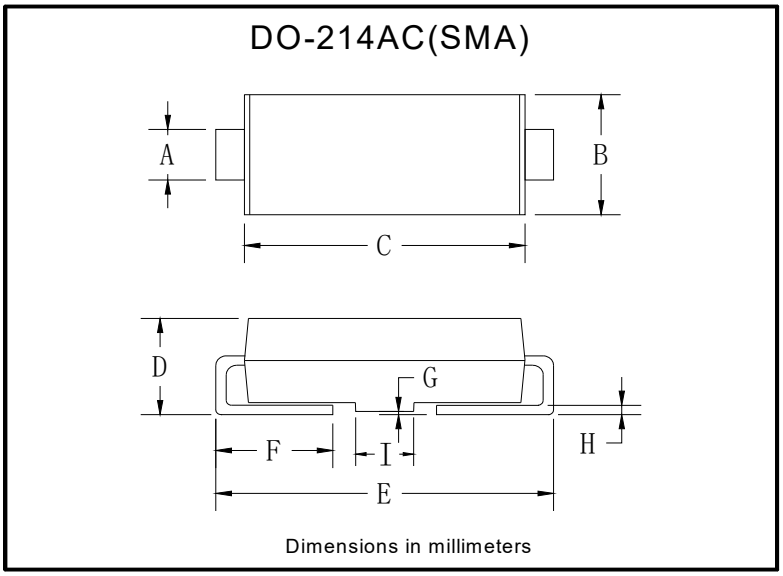


FIG5: Maximum Non-Repetitive Surge Current

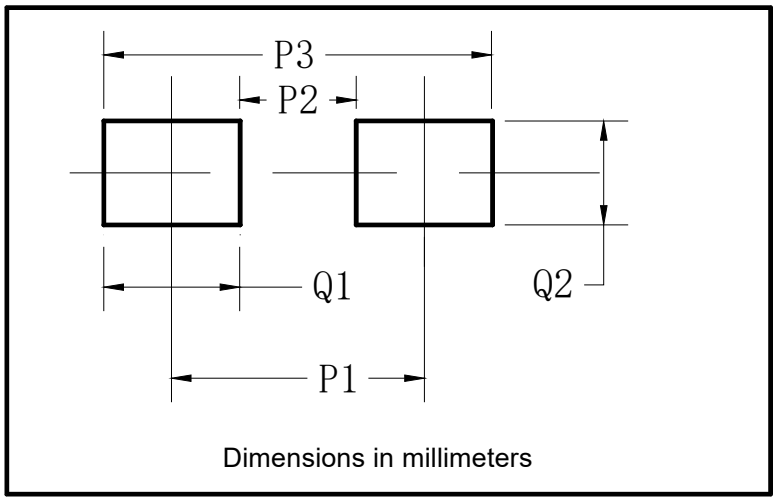


■ Outline Dimensions



DO-214AC(SMA)		
Dim	Min	Max
A	1.25	1.58
B	2.40	2.83
C	4.00	4.75
D	1.90	2.30
E	4.93	5.28
F	0.76	1.41
G	0.05	0.20
H	0.15	0.31
I	1.70	2.10

■Suggested Pad Layout



DO-214AC(SMA)	
Dim	Millimeters
P1	4.00
P2	1.50
P3	6.50
Q1	2.50
Q2	1.70

Notice

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