TAIWAN SEMICONDUCTOR

The Smartest Choice

P4SMA SERIES

400 Watts Suface Mount Transient Voltage Suppressor

SMA/DO-214AC

AEC-Q101 Qualified

Pb-Free

RoHS COMPLIANT

Features

- For surface mounted application in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Excellent clamping capability
- Fast response time: Typically less than 1.0ps from 0 volt to BV min
- Typical I_R less than 1uA above 10V
- High temperature soldering guaranteed: 260℃ / 10 seconds at terminals
- Plastic material used carried Underwriters Laboratory Flammability Classification 94V-0
- 400 watts peak pulse power capability with a 10 / 1000 us waveform
- Green compound with suffix "G" on packing code & prefix "G" on datecode

Mechanical Data

- Case: Molded plastic
- Terminals: Pure tin plated, lead free
- Polarity: Indicated by cathode band
- Packaging: 12mm tape per EIA Std RS-481
- Weight: 0.064 gram

Ordering Information (example)

Part No.	Package	Packing	Packing code	Packing code (Green)
P4SMA11	SMA	1.8K / 7" REEL	R3	R3G

Maximum Ratings and Electrical Characteristics

Rating at 25 ℃ ambient temperature unless otherwise specified.

Type Number	Symbol	Value	Unit
Peak Power Dissipation at T_A=25℃, Tp=1ms(Note 1)	P_{PK}	400	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)(Note 2)	I_{FSM}	40	Amps
Maximum Instantaneous Forward Voltage at 25 A for Unidirectional Only	V_F	3.5	Volts
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	℃

Note 1: Non-repetitive Current Pulse Per Fig. 3 and Derated above T_A=25℃ Per Fig. 2

Note 2: Mounted on 5 x 5mm Copper Pads to Each Terminal

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types P4SMA6.8 through Types P4SMA200A
2. Electrical Characterstics Apply in Both Directions

Version:I13

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RATINGS AND CHARACTERISTIC CURVES (P4SMA SERIES)

FIG. 1 PEAK PULSE POWER RATING CURVE

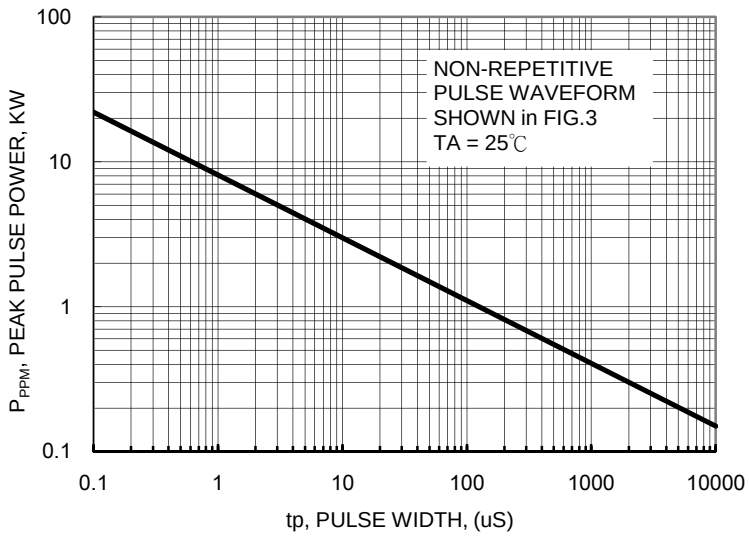


FIG.2 PULSE DERATING CURVE

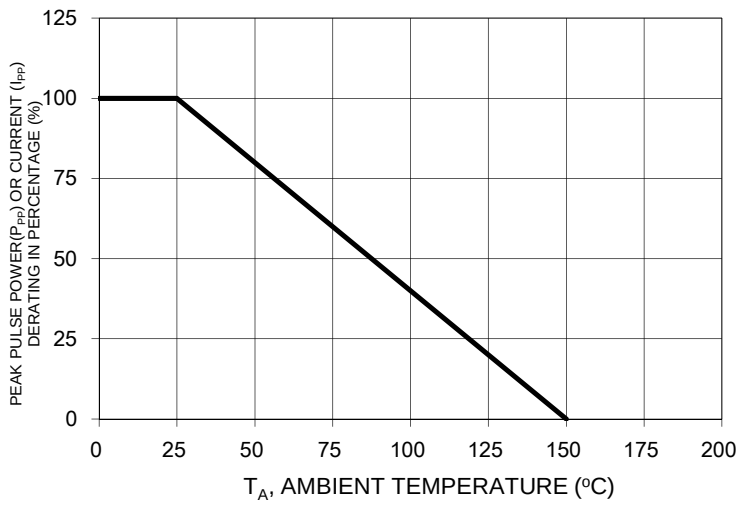


FIG. 3 CLAMPING POWER PULSE WAVEFORM

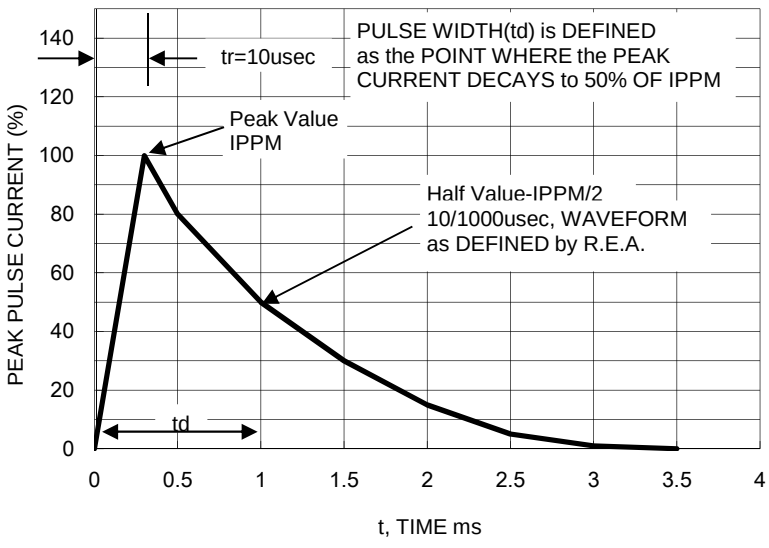


FIG. 4 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

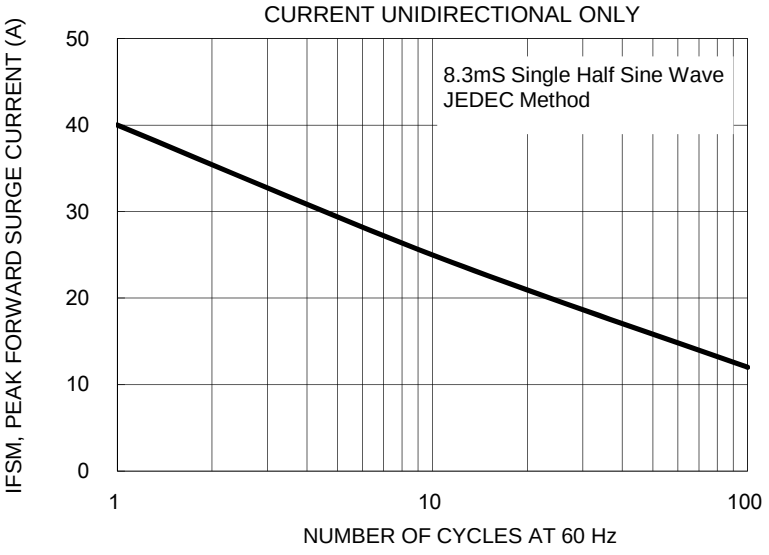
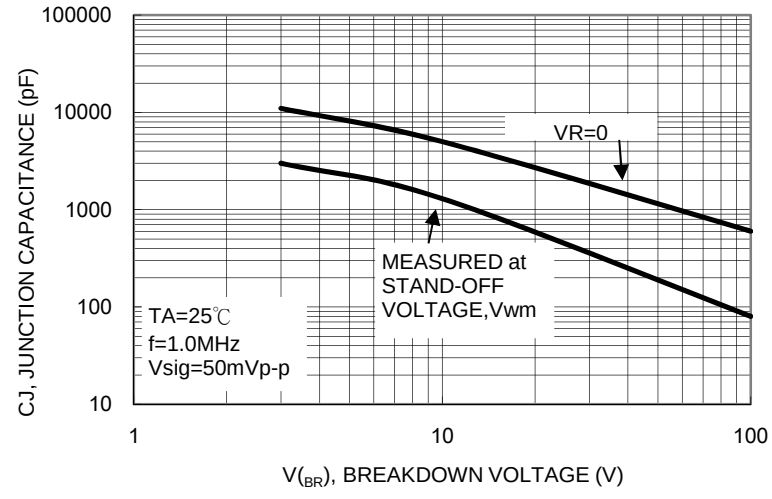


FIG. 5 TYPICAL JUNCTION CAPACITANCE



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ELECTRICAL CHARACTERISTICS (TA=25℃ unless otherwise noted)

Device	Device Marking Code	Breakdown Voltage VBR (V) (Note 1)		Test Current IT (mA)	Stand-Off Voltage V_{WM} (V)	Maximum Reverse Leakage @ V_{WM} ID (uA)	Maximum Peak Pulse Current IPPM (A) (Note 2)	Maximum Clamping Voltage @ IPPM Vc(V)	Maximum Temperature Coefficient of VBR(%/℃)
		Min	Max						
P4SMA6.8	ADJ	6.12	7.48	10	5.50	1000	38.0	10.8	0.057
P4SMA6.8A	AEJ	6.46	7.14	10	5.80	1000	40.0	10.5	0.057
P4SMA7.5	AFJ	6.75	8.25	10	6.05	500	35.0	11.7	0.061
P4SMA7.5A	AGJ	7.13	7.88	10	6.40	500	37.0	11.3	0.061
P4SMA8.2	AHJ	7.38	9.02	10	6.63	200	33.0	12.5	0.065
P4SMA8.2A	AKJ	7.79	8.61	10	7.02	200	34.0	12.1	0.065
P4SMA9.1	ALJ	8.19	10.00	1.0	7.37	50	30.0	13.8	0.068
P4SMA9.1A	AMJ	8.65	9.55	1.0	7.78	50	31.0	13.4	0.068
P4SMA10	ANJ	9.00	11.00	1.0	8.10	10	28.0	15.0	0.073
P4SMA10A	APJ	9.50	10.5	1.0	8.55	10	29.0	14.5	0.073
P4SMA11	AQJ	9.90	12.1	1.0	8.92	1	26.0	16.2	0.075
P4SMA11A	ARJ	10.5	11.6	1.0	9.40	1	27.0	15.6	0.075
P4SMA12	ASJ	10.8	13.2	1.0	9.72	1	24.0	17.3	0.078
P4SMA12A	ATJ	11.4	12.6	1.0	10.2	1	25.0	16.7	0.078
P4SMA13	AUJ	11.7	14.3	1.0	10.5	1	22.0	19.0	0.081
P4SMA13A	AVJ	12.4	13.7	1.0	11.1	1	23.0	18.2	0.081
P4SMA15	AWJ	13.5	16.5	1.0	12.1	1	19.0	22.0	0.084
P4SMA15A	AXJ	14.3	15.8	1.0	12.8	1	20.0	21.2	0.084
P4SMA16	AYJ	14.4	17.6	1.0	12.9	1	17.8	23.5	0.086
P4SMA16A	AZJ	15.2	16.8	1.0	13.6	1	18.6	22.5	0.086
P4SMA18	BDJ	16.2	19.8	1.0	14.5	1	16.0	26.5	0.088
P4SMA18A	BEJ	17.1	18.9	1.0	15.3	1	16.5	25.5	0.088
P4SMA20	BFJ	18.0	22.0	1.0	16.2	1	14.0	29.1	0.090
P4SMA20A	BGJ	19.0	21.0	1.0	17.1	1	15.0	27.7	0.090
P4SMA22	BHJ	19.8	24.2	1.0	17.8	1	13.0	31.9	0.092
P4SMA22A	BKJ	20.9	23.1	1.0	18.8	1	13.7	30.6	0.092
P4SMA24	BLJ	21.6	26.4	1.0	19.4	1	12.0	34.7	0.094
P4SMA24A	BMJ	22.8	25.2	1.0	20.5	1	12.6	33.2	0.094
P4SMA27	BNJ	24.3	29.7	1.0	21.8	1	10.7	39.1	0.096
P4SMA27A	BPJ	25.7	28.4	1.0	23.1	1	11.0	37.5	0.096
P4SMA30	BQJ	27.0	33.0	1.0	24.3	1	9.6	43.5	0.097
P4SMA30A	BRJ	28.5	31.5	1.0	25.6	1	10.0	41.4	0.097
P4SMA33	BSJ	29.7	36.3	1.0	26.8	1	8.8	47.7	0.098
P4SMA33A	BTJ	31.4	34.7	1.0	28.2	1	9.0	45.7	0.098
P4SMA36	BUJ	32.4	39.6	1.0	29.1	1	8.0	52.0	0.099
P4SMA36A	BVJ	34.2	37.8	1.0	30.8	1	8.4	49.9	0.099
P4SMA39	BWJ	35.1	42.9	1.0	31.6	1	7.4	56.4	0.100
P4SMA39A	BXJ	37.1	41.0	1.0	33.3	1	7.7	53.9	0.100
P4SMA43	BYJ	38.7	47.3	1.0	34.8	1	6.7	61.9	0.101
P4SMA43A	BZJ	40.9	45.2	1.0	36.8	1	7.0	59.3	0.101
P4SMA47	CDJ	42.3	51.7	1.0	38.1	1	6.2	67.8	0.101
P4SMA47A	CEJ	44.7	49.4	1.0	40.2	1	6.4	64.8	0.101
P4SMA51	CFJ	45.9	56.1	1.0	41.3	1	5.7	73.5	0.102
P4SMA51A	CGJ	48.5	53.6	1.0	43.6	1	6.0	70.1	0.102
P4SMA56	CHJ	50.4	61.6	1.0	45.4	1	5.2	80.5	0.103
P4SMA56A	CKJ	53.2	58.8	1.0	47.8	1	5.4	77.0	0.103
P4SMA62	CLJ	55.8	68.2	1.0	50.2	1	4.7	89.0	0.104
P4SMA62A	CMJ	58.9	65.1	1.0	53.0	1	5.0	85.0	0.104
P4SMA68	CNJ	61.2	74.8	1.0	55.1	1	4.2	98.0	0.104
P4SMA68A	CPJ	64.6	71.4	1.0	58.1	1	4.5	92.0	0.104

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		Min	Max						
P4SMA75	CQJ	67.5	82.5	1.0	60.7	1	3.8	108	0.105
P4SMA75A	CRJ	71.3	78.8	1.0	64.1	1	4.0	103	0.105
P4SMA82	CSJ	73.8	90.2	1.0	66.4	1	3.5	118	0.105
P4SMA82A	CTJ	77.9	86.1	1.0	70.1	1	3.7	113	0.105
P4SMA91	CUJ	81.9	100	1.0	73.7	1	3.2	131	0.106
P4SMA91A	CVJ	86.5	95.5	1.0	77.8	1	3.3	125	0.106
P4SMA100	CWJ	90	110	1.0	81.0	1	2.9	144	0.106
P4SMA100A	CXJ	95	105	1.0	85.5	1	3.0	137	0.106
P4SMA110	CYJ	99	121	1.0	89.2	1	2.6	158	0.107
P4SMA110A	CZJ	105	116	1.0	94.0	1	2.7	152	0.107
P4SMA120	RDJ	108	132	1.0	97.2	1	2.4	173	0.107
P4SMA120A	REJ	114	126	1.0	102.0	1	2.5	165	0.107
P4SMA130	RFJ	117	143	1.0	105.0	1	2.2	187	0.107
P4SMA130A	RGJ	124	137	1.0	111.0	1	2.3	179	0.107
P4SMA150	RHJ	135	165	1.0	121.0	1	1.9	215	0.108
P4SMA150A	RKJ	143	158	1.0	128.0	1	2.0	207	0.108
P4SMA160	RLJ	144	176	1.0	130.0	1	1.8	230	0.108
P4SMA160A	RMJ	152	168	1.0	136.0	1	1.9	219	0.108
P4SMA170	RNJ	153	187	1.0	138.0	1	1.7	244	0.108
P4SMA170A	RPJ	162	179	1.0	145.0	1	1.8	234	0.108
P4SMA180	RQJ	162	198	1.0	146.0	1	1.6	258	0.108
P4SMA180A	RRJ	171	189	1.0	154.0	1	1.7	246	0.108
P4SMA200	RSJ	180	220	1.0	162.0	1	1.4	287	0.108
P4SMA200A	RTJ	190	210	1.0	171.0	1	1.51	274	0.108

Notes:

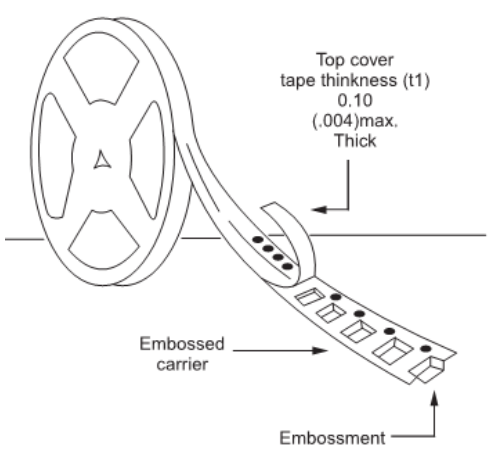
1. V_{BR} measure after I_T applied for 300us, I_T=square wave pulse or equivalent.
2. Surge current waveform per Figure. 3 and derate per Figure. 2.
3. For bipolar types having V_{WM} of 10 volts and under, the I_D limit is doubled.
4. For bidirectional use C or CA suffix for types PS4MA6.8 through P4SMA200A.
5. All terms and symbols are consistent with ANSI/IEEE C62.35.

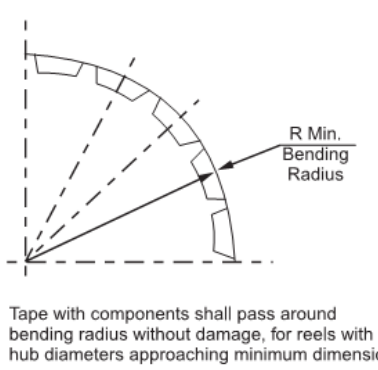
Ordering information

Part No.	Package	Packing	Packing code	Packing code (Green)
P4SMAxx (Note)	SMA	1.8K / 7" REEL	R3	R3G
	SMA	7.5K / 13" REEL	R2	R2G
	SMA	7.5K / 13" Plastic REEL	M2	M2G
	Folded SMA	1.8K / 7" REEL	F3	F3G
	Folded SMA	7.5K / 13" REEL	F2	F2G
	Folded SMA	7.5K / 13" Plastic REEL	F4	F4G
	C SMA	1.8K / 7" REEL	E3	E3G
	C SMA	7.5K / 13" REEL	E2	E2G

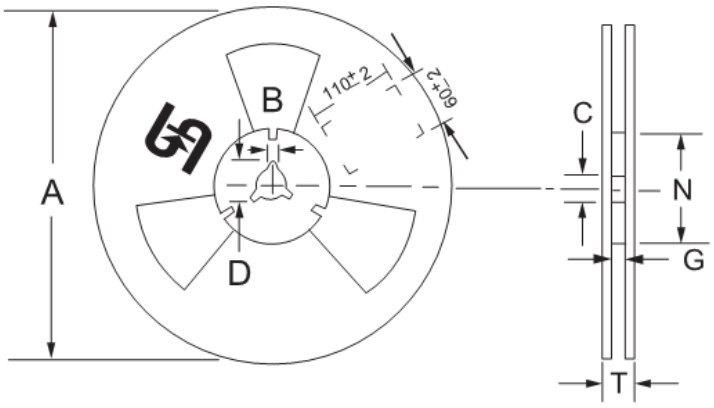
Note: "x" is Device Code from "6.8" thru "200".

Tape & Reel specification





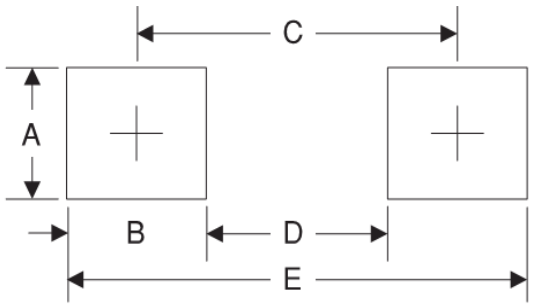
Tape with components shall pass around bending radius without damage, for reels with hub diameters approaching minimum dimension



Reel Size	Tape Size	A	B	C	D	N	G	T
		±2.0	±0.4	+0.5;-0.2	min	±1.0	+0.8;-0	max
7"	12mm	178	1.9	13	21	62	12.2	14.6
Reel Size	Tape Size	A	B	C	D	N	G	T
		max	±0.5	±0.5	min	±0.5	+2.0;-0	max
13"	12mm	330	2	13	20.2	75	12.4	18.4

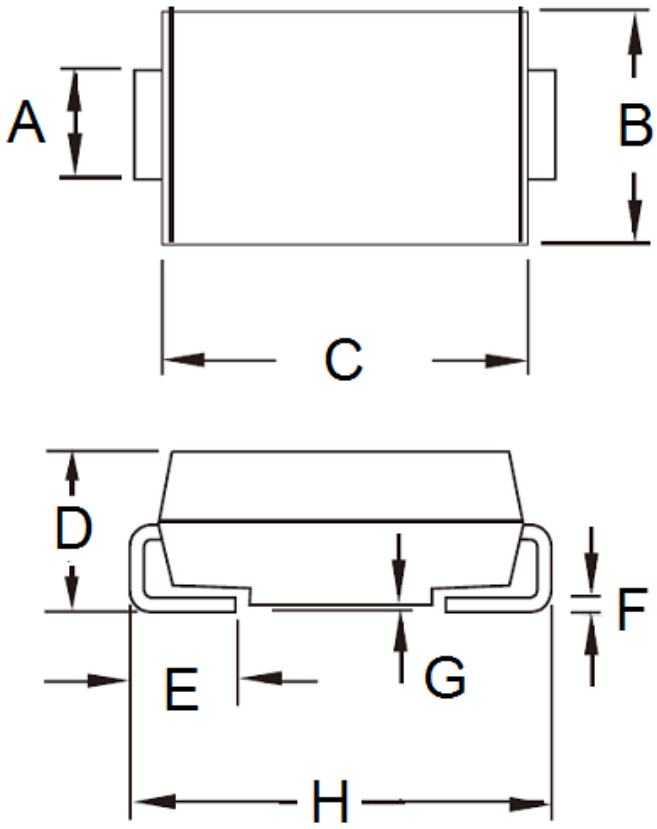
Unit (mm)

Suggested PAD Layout



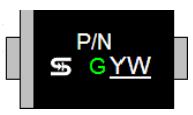
Symbol	Unit(mm)
A	1.78
B	1.51
C	3.92
D	2.41
E	4.43

Package Outline Dimensions



DIM.	Unit(mm)		Unit(inch)	
	Min	Max	Min	Max
A	1.27	1.58	0.050	0.062
B	2.29	2.83	0.090	0.111
C	4.06	4.60	0.160	0.181
D	1.99	2.50	0.078	0.098
E	0.90	1.41	0.035	0.056
F	0.15	0.31	0.006	0.012
G	0.10	0.20	0.004	0.008
H	4.95	5.33	0.195	0.210

Marking Diagram



P/N = Specific Device Code
G = Green Compound
YW = Date Code

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Taiwan Semiconductor:

P4SMA200A P4SMA100A P4SMA100CA P4SMA10A P4SMA10CA P4SMA12A P4SMA12CA P4SMA150A P4SMA150CA P4SMA15A P4SMA15CA P4SMA18A P4SMA18CA P4SMA200CA P4SMA220CA P4SMA22A P4SMA22CA P4SMA24A P4SMA24CA P4SMA27A P4SMA27CA P4SMA30A P4SMA30CA P4SMA33A P4SMA33CA P4SMA36A P4SMA36CA P4SMA39A P4SMA39CA P4SMA43A P4SMA43CA P4SMA47A P4SMA47CA P4SMA51A P4SMA51CA P4SMA56A P4SMA56CA P4SMA62A P4SMA62CA P4SMA68A P4SMA68CA P4SMA20A P4SMA20CA P4SMA75A P4SMA75CA P4SMA91A P4SMA91CA P4SMA110A R2 P4SMA110A R3 P4SMA110CA R2 P4SMA110CA R3 P4SMA11A R2 P4SMA11A R3 P4SMA11CA R2 P4SMA11CA R3 P4SMA120A R2 P4SMA120A R3 P4SMA120CA R2 P4SMA120CA R3 P4SMA130A R2 P4SMA130A R3 P4SMA130CA R2 P4SMA130CA R3 P4SMA13A R2 P4SMA13A R3 P4SMA13CA R2 P4SMA13CA R3 P4SMA160A R2 P4SMA160A R3 P4SMA160CA R2 P4SMA160CA R3 P4SMA16A R2 P4SMA16A R3 P4SMA16CA R2 P4SMA16CA R3 P4SMA170A R2 P4SMA170A R3 P4SMA170CA R2 P4SMA170CA R3 P4SMA180A R2 P4SMA180A R3 P4SMA180CA R2 P4SMA180CA R3 P4SMA6.8A R2 P4SMA6.8A R3 P4SMA6.8CA R2 P4SMA6.8CA R3 P4SMA7.5A R2 P4SMA7.5A R3 P4SMA7.5CA R2 P4SMA7.5CA R3 P4SMA8.2CA R2 P4SMA8.2CA R3 P4SMA82A R2 P4SMA82A R3 P4SMA82CA R2 P4SMA82CA R3 P4SMA9.1A R2 P4SMA9.1A R3 P4SMA9.1CA R2