

**SURFACE MOUNT
UNIDIRECTIONAL AND BIDIRECTIONAL
TRANSIENT VOLTAGE SUPPRESSORS**

**REVERSE VOLTAGE - 6.8 to 200 VOLTS
FORWARD CURRENT - 400 Amperes**

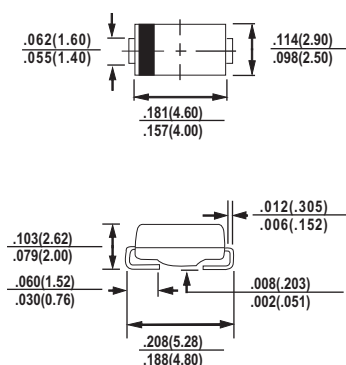
FEATURES

- Rating to 200V VBR
- For surface mounted applications
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL flammability classification 94V-0
- Fast response time: typically less than 1.0ps for Uni-direction, less than 5.0ns for Bi-direction, from 0 Volts to BV min

MECHANICAL DATA

- Case: Molded Plastic
- Polarity: By cathode band denotes uni-directional device none cathode band denotes bi-directional device
- Weight: 0.002 ounces, 0.064 grams

SMA



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%

| CHARACTERISTICS | SYMBOL | VALUE | UNIT |
|---|--------------------|-------------|-------|
| Peak Power Dissipation at T _A =25 °C TP=1ms(Note 1,2) | P _{PK} | Minimum 400 | WATTS |
| Peak Forward Surge Current 8.3ms single half sine-wave super imposed on rated load (JEDEC Method) | I _{FSM} | 40 | AMPS |
| Steady State Power Dissipation at TL=75 °C | P _{M(AV)} | 1.0 | WATTS |
| Maximum Instantaneous forward voltage at 25A for unidirectional devices only (Note 3) | V _F | 3.5 | VOLTS |
| Operating Temperature Range | T _J | -55 to +125 | °C |
| Storage Temperature Range | T _{STG} | -55 to +150 | °C |

NOTES:1. Non-repetitive current pulse, per Fig. 3 and derated above T_A=25 °C per Fig. 1.
2. Thermal Resistance Junction to Lead.
3. 8.3ms single half sine-wave duty cycle=4 pulses per minutes maximum (uni-directional units only).



FIG. 1 - PULS E DERA TING CUR VE

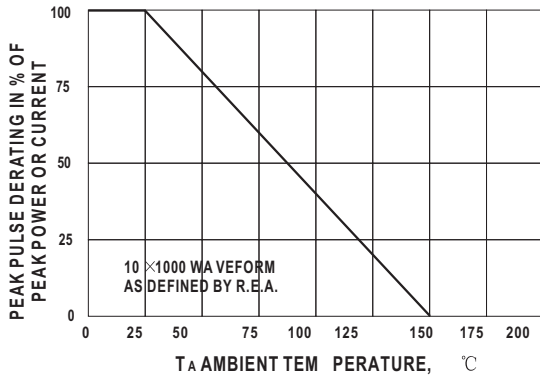


FIG. 2 - M AXIMUM NON -REP ETIT IVE SUR GE CUR REN T

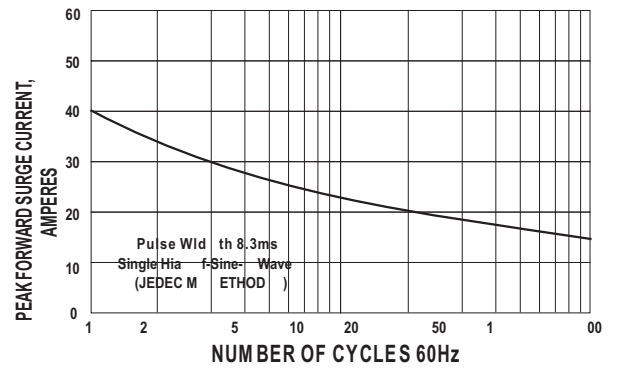


FIG.3 - PULSE WAVEFORM

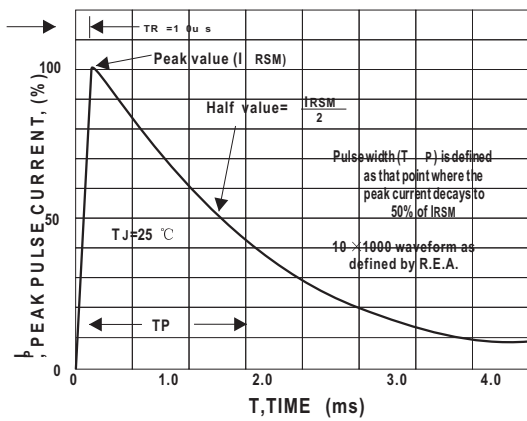


FIG. 4 - T YP IC AL JU NC TIO N C APA C I T A N C E

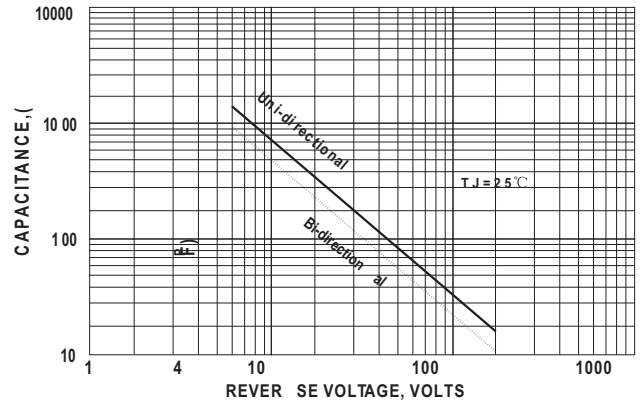


FIG. 5 - PULSE RATING CUR VE

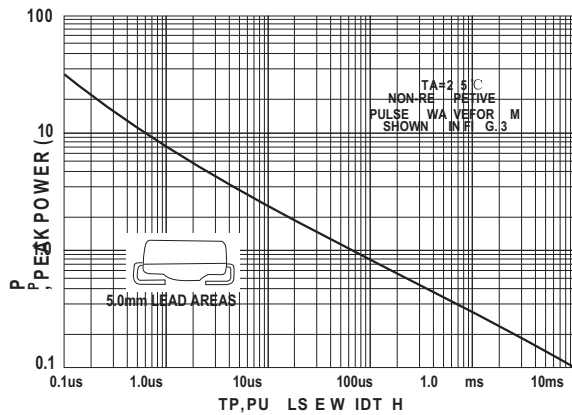
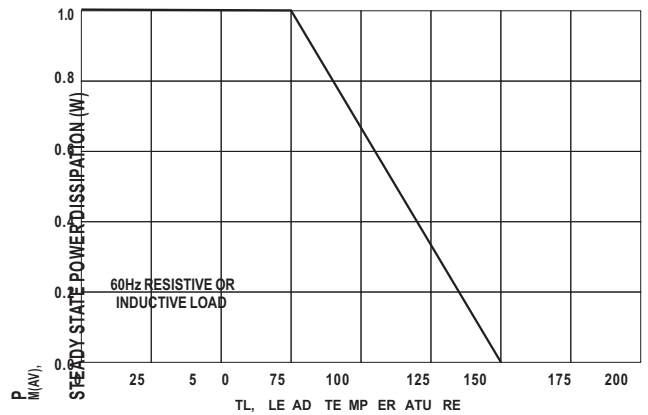


FIG. 6 - S T E A D Y S T A T E P O W E R D E R A T I N G C U R V E





| Device Uni-Directional | Device Bi-Directional | Device Marking Code | | Breakdown Voltage VBR Volts | | | Working Peak Reverse Voltage | Maximum Reverse leakage at V _{RWM} | Maximum Reverse Surge Current | Maximum Reverse Voltage at I _{RSM} (Clamping Voltage) |
|------------------------|-----------------------|---------------------|------|-----------------------------|------|-----------|------------------------------|---|-------------------------------|--|
| | | (UNI) | (BI) | Min. | Max. | @IT(maA) | V _{RWM} (VOLTS) | IR(μ A) | I _{RSM} (Amps) | V _{RSM} (Volts) |
| SMA68 | SMA68C | ADK | ADM | 6.12 | 7.48 | 100 | 5.50 | 1000 | 37.0 | 10.8 |
| SMA68A | SMA68CA | AEK | AEM | 6.45 | 7.13 | 100 | 5.80 | 1000 | 38.1 | 10.5 |
| SMA75 | SMA75C | AFK | AFM | 6.75 | 8.25 | 100 | 6.05 | 500 | 34.2 | 11.7 |
| SMA75A | SMA75CA | AGK | AGM | 7.13 | 7.88 | 100 | 6.40 | 500 | 35.4 | 11.3 |
| SMA82 | SMA82C | AHK | AHM | 7.38 | 9.02 | 100 | 6.63 | 200 | 32.0 | 12.5 |
| SMA82A | SMA82CA | AKK | AKM | 7.79 | 8.61 | 100 | 7.02 | 200 | 33.1 | 12.1 |
| SMA9.1 | SMA9.1C | ALK | ALM | 8.19 | 10.0 | 100 | 7.37 | 50.0 | 29.0 | 13.8 |
| SMA9.1A | SMA9.1CA | AVK | AVM | 8.65 | 9.55 | 100 | 7.78 | 50.0 | 29.8 | 13.4 |
| SMA10 | SMA10C | ANK | ANM | 9.00 | 11.0 | 1.0 | 8.10 | 20.0 | 26.7 | 15.0 |
| SMA10A | SMA10CA | APK | APM | 9.50 | 10.5 | 1.0 | 8.55 | 20.0 | 27.6 | 14.5 |
| SMA11 | SMA11C | ACK | ACM | 9.90 | 12.1 | 1.0 | 8.92 | 5.0 | 24.7 | 16.2 |
| SMA11A | SMA11CA | ARK | ARM | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 25.6 | 15.6 |
| SMA12 | SMA12C | ASK | ASM | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 23.1 | 17.3 |
| SMA12A | SMA12CA | ATK | ATM | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 23.9 | 16.7 |
| SMA13 | SMA13C | ALK | ALM | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 21.0 | 19.0 |
| SMA13A | SMA13CA | AKK | AKM | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 22.0 | 18.2 |
| SMA15 | SMA15C | AVK | AVM | 13.5 | 16.3 | 1.0 | 12.1 | 5.0 | 18.2 | 22.0 |
| SMA15A | SMA15CA | AXK | AXM | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 18.7 | 21.2 |
| SMA16 | SMA16C | AYK | AYM | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 17.0 | 23.5 |
| SMA16A | SMA16CA | AZK | AZM | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 17.8 | 22.5 |
| SMA18 | SMA18C | BDK | BDM | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 15.1 | 26.5 |
| SMA18A | SMA18CA | BEK | BEM | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 15.7 | 25.5 |
| SMA20 | SMA20C | BFK | BFM | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 13.7 | 29.1 |
| SMA20A | SMA20CA | BGK | BGM | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 14.4 | 27.7 |
| SMA22 | SMA22C | BHK | BHM | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 12.5 | 31.9 |
| SMA22A | SMA22CA | BKK | BKM | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 13.1 | 30.6 |
| SMA24 | SMA24C | BLK | BLM | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 11.5 | 34.7 |
| SMA24A | SMA24CA | BVK | BVM | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 12.0 | 33.2 |
| SMA27 | SMA27C | BNK | BNM | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 10.2 | 39.1 |
| SMA27A | SMA27CA | BPK | BPM | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 10.7 | 37.5 |
| SMA30 | SMA30C | BTk | BOM | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 9.2 | 43.5 |
| SMA30A | SMA30CA | BRK | BRM | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 9.7 | 41.4 |
| SMA33 | SMA33C | BSK | BOM | 29.7 | 35.3 | 1.0 | 26.8 | 5.0 | 8.4 | 47.7 |
| SMA33A | SMA33CA | BTk | BTM | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 8.8 | 45.7 |
| SMA36 | SMA36C | BUK | BUM | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 7.7 | 52.0 |
| SMA36A | SMA36CA | BVK | BVM | 34.2 | 37.8 | 1.0 | 30.3 | 5.0 | 8.0 | 49.9 |
| SMA39 | SMA39C | BNK | BOM | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 7.1 | 56.4 |
| SMA39A | SMA39CA | BVK | BVM | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 7.4 | 53.9 |
| SMA43 | SMA43C | BYK | BYM | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 6.5 | 61.9 |
| SMA43A | SMA43CA | BZK | BZM | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 6.7 | 59.3 |



| Device Uni-Directional | Device Bi-Directional | Device Marking Code | | Breakdown Voltage VBR Volts | | | Working Peak Reverse Voltage | Maximum Reverse leakage at V _{RWM} | Maximum Reverse Surge Current | Maximum Reverse Voltage at I _{RSM} (Clamping Voltage) |
|------------------------|-----------------------|---------------------|------|-----------------------------|------|---------|------------------------------|---|-------------------------------|--|
| | | (UNI) | (BI) | Min. | Max. | @IT(mA) | V _{RWM} (VOLTS) | IR(μA) | I _{RSM} (Amps) | V _{RSM} (Volts) |
| SMA47 | SMA47C | CDK | CDM | 423 | 517 | 1.0 | 38.1 | 5.0 | 590 | 67.8 |
| SMA47A | SMA47CA | CEK | CEM | 447 | 394 | 1.0 | 40.2 | 5.0 | 617 | 64.8 |
| SMA51 | SMA51C | CFK | CFM | 459 | 561 | 1.0 | 41.3 | 5.0 | 544 | 73.5 |
| SMA51A | SMA51CA | CGK | CGM | 485 | 436 | 1.0 | 43.6 | 5.0 | 571 | 70.1 |
| SMA56 | SMA56C | CHK | CHM | 504 | 616 | 1.0 | 45.4 | 5.0 | 497 | 80.5 |
| SMA56A | SMA56CA | CKK | CKM | 532 | 588 | 1.0 | 47.8 | 5.0 | 519 | 77.0 |
| SMA62 | SMA62C | ACLK | CLM | 558 | 682 | 1.0 | 50.2 | 5.0 | 449 | 89.0 |
| SMA62A | SMA62CA | CMK | CMM | 589 | 651 | 1.0 | 53.0 | 5.0 | 470 | 85.0 |
| SMA68 | SMA68C | CNK | CNM | 612 | 748 | 1.0 | 55.1 | 5.0 | 408 | 98.1 |
| SMA68A | SMA68CA | CPK | CPM | 646 | 714 | 1.0 | 58.1 | 5.0 | 435 | 92.0 |
| SMA75 | SMA75C | CQK | CQM | 675 | 825 | 1.0 | 60.7 | 5.0 | 370 | 108 |
| SMA75A | SMA75CA | CRK | CRM | 713 | 788 | 1.0 | 64.1 | 5.0 | 388 | 103 |
| SMA82 | SMA82C | CSK | CSM | 738 | 902 | 1.0 | 66.4 | 5.0 | 339 | 118 |
| SMA82A | SMA82CA | CTK | CTM | 778 | 860 | 1.0 | 70.1 | 5.0 | 354 | 113 |
| SMA91 | SMA91C | CUK | CUM | 819 | 100 | 1.0 | 73.7 | 5.0 | 305 | 131 |
| SMA91A | SMA91CA | CVK | CVM | 865 | 955 | 1.0 | 77.8 | 5.0 | 320 | 125 |
| SMA100 | SMA100C | CWK | CWM | 90.0 | 110 | 1.0 | 81.0 | 5.0 | 278 | 144 |
| SMA100A | SMA100CA | CXK | CXM | 95.5 | 105 | 1.0 | 85.5 | 5.0 | 292 | 137 |
| SMA110 | SMA110C | CYK | CYM | 99.0 | 121 | 1.0 | 89.2 | 5.0 | 253 | 158 |
| SMA110A | SMA110CA | CZK | CZM | 105 | 116 | 1.0 | 94.0 | 5.0 | 263 | 152 |
| SMA120 | SMA120C | RDK | DDM | 108 | 132 | 1.0 | 97.2 | 5.0 | 231 | 173 |
| SMA120A | SMA120CA | REK | DEM | 114 | 126 | 1.0 | 102 | 5.0 | 242 | 165 |
| SMA130 | SMA130C | RFK | RFM | 117 | 143 | 1.0 | 105 | 5.0 | 214 | 187 |
| SMA130A | SMA130CA | RGK | RGM | 124 | 137 | 1.0 | 111 | 5.0 | 223 | 179 |
| SMA150 | SMA150C | RHK | RHM | 135 | 165 | 1.0 | 121 | 5.0 | 186 | 215 |
| SMA150A | SMA150CA | RJK | RJM | 143 | 158 | 1.0 | 128 | 5.0 | 193 | 207 |
| SMA160 | SMA160C | RLK | RLM | 144 | 176 | 1.0 | 130 | 5.0 | 174 | 230 |
| SMA160A | SMA160CA | RMK | RMM | 152 | 168 | 1.0 | 136 | 5.0 | 183 | 219 |
| SMA170 | SMA170C | RNK | RNM | 153 | 187 | 1.0 | 138 | 5.0 | 164 | 244 |
| SMA170A | SMA170CA | RPK | RPM | 162 | 179 | 1.0 | 145 | 5.0 | 171 | 234 |
| SMA180 | SMA180C | RQK | RQM | 162 | 198 | 1.0 | 146 | 5.0 | 155 | 258 |
| SMA180A | SMA180CA | RRK | RRM | 171 | 189 | 1.0 | 154 | 5.0 | 163 | 246 |
| SMA200 | SMA200C | RSK | RSM | 180 | 220 | 1.0 | 162 | 5.0 | 139 | 287 |
| SMA200A | SMA200CA | RTK | RTM | 190 | 210 | 1.0 | 171 | 5.0 | 146 | 274 |

- NOTES: 1. Suffix A denotes 5% tolerance device, no suffix denotes 10% tolerance device.
2. Add suffix C or CA after part number to specify Bi-directional devices.
3. For bidirectional devices having VR of 10 volts and under, the IR limit is doubled.



| Device Uni-Directional | Device Bi-Directional | Device Marking Code | | Breakdown Voltage VBR Volts | | | Working Peak Reverse Voltage | Maximum Reverse leakage at V _{RWM} | Maximum Reverse Surge Current | Maximum Reverse Voltage at I _{RSM} (Clamping Voltage) |
|------------------------|-----------------------|---------------------|------|-----------------------------|------|-----------|------------------------------|---|-------------------------------|--|
| | | (UNI) | (BI) | Min. | Max. | @IT(maA) | V _{RWM} (VOLTS) | IR(μA) | I _{RSM} (Amps) | V _{RSM} (Volts) |
| SMA68 | SMA68C | ADK | ADM | 6.12 | 7.48 | 100 | 5.50 | 1000 | 37.0 | 10.8 |
| SMA68A | SMA68CA | AEK | AEM | 6.45 | 7.13 | 100 | 5.80 | 1000 | 38.1 | 10.5 |
| SMA75 | SMA75C | AFK | AFM | 6.75 | 8.25 | 100 | 6.05 | 500 | 34.2 | 11.7 |
| SMA75A | SMA75CA | AGK | AGM | 7.13 | 7.88 | 100 | 6.40 | 500 | 35.4 | 11.3 |
| SMA82 | SMA82C | AHK | AHM | 7.38 | 9.02 | 100 | 6.63 | 200 | 32.0 | 12.5 |
| SMA82A | SMA82CA | AKK | AKM | 7.79 | 8.61 | 100 | 7.02 | 200 | 33.1 | 12.1 |
| SMA9.1 | SMA9.1C | ALK | ALM | 8.19 | 10.0 | 100 | 7.37 | 50.0 | 29.0 | 13.8 |
| SMA9.1A | SMA9.1CA | AVK | AVM | 8.65 | 9.55 | 100 | 7.78 | 50.0 | 29.8 | 13.4 |
| SMA10 | SMA10C | ANK | ANM | 9.00 | 11.0 | 1.0 | 8.10 | 20.0 | 26.7 | 15.0 |
| SMA10A | SMA10CA | APK | APM | 9.50 | 10.5 | 1.0 | 8.55 | 20.0 | 27.6 | 14.5 |
| SMA11 | SMA11C | ACK | ACM | 9.90 | 12.1 | 1.0 | 8.92 | 5.0 | 24.7 | 16.2 |
| SMA11A | SMA11CA | ARK | ARM | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 25.6 | 15.6 |
| SMA12 | SMA12C | ASK | ASM | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 23.1 | 17.3 |
| SMA12A | SMA12CA | ATK | ATM | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 23.9 | 16.7 |
| SMA13 | SMA13C | ALK | ALM | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 21.0 | 19.0 |
| SMA13A | SMA13CA | AKK | AKM | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 22.0 | 18.2 |
| SMA15 | SMA15C | AVK | AVM | 13.5 | 16.3 | 1.0 | 12.1 | 5.0 | 18.2 | 22.0 |
| SMA15A | SMA15CA | AXK | AXM | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 18.7 | 21.2 |
| SMA16 | SMA16C | AYK | AYM | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 17.0 | 23.5 |
| SMA16A | SMA16CA | AZK | AZM | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 17.8 | 22.5 |
| SMA18 | SMA18C | BDK | BDM | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 15.1 | 26.5 |
| SMA18A | SMA18CA | BEK | BEM | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 15.7 | 25.5 |
| SMA20 | SMA20C | BFK | BFM | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 13.7 | 29.1 |
| SMA20A | SMA20CA | BCK | BKM | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 14.4 | 27.7 |
| SMA22 | SMA22C | BHK | BHM | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 12.5 | 31.9 |
| SMA22A | SMA22CA | BKK | BKM | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 13.1 | 30.6 |
| SMA24 | SMA24C | BLK | BLM | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 11.5 | 34.7 |
| SMA24A | SMA24CA | BVK | BVM | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 12.0 | 33.2 |
| SMA27 | SMA27C | BNK | BNM | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 10.2 | 39.1 |
| SMA27A | SMA27CA | BPK | BPM | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 10.7 | 37.5 |
| SMA30 | SMA30C | BTk | BOM | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 9.2 | 43.5 |
| SMA30A | SMA30CA | BRK | BOM | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 9.7 | 41.4 |
| SMA33 | SMA33C | BSK | BOM | 29.7 | 35.3 | 1.0 | 26.8 | 5.0 | 8.4 | 47.7 |
| SMA33A | SMA33CA | BTk | BOM | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 8.8 | 45.7 |
| SMA36 | SMA36C | BUK | BUM | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 7.7 | 52.0 |
| SMA36A | SMA36CA | BVK | BUM | 34.2 | 37.8 | 1.0 | 30.3 | 5.0 | 8.0 | 49.9 |
| SMA39 | SMA39C | BNK | BOM | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 7.1 | 56.4 |
| SMA39A | SMA39CA | BVK | BOM | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 7.4 | 53.9 |
| SMA43 | SMA43C | BYK | BYM | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 6.5 | 61.9 |
| SMA43A | SMA43CA | BZK | BZM | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 6.7 | 59.3 |