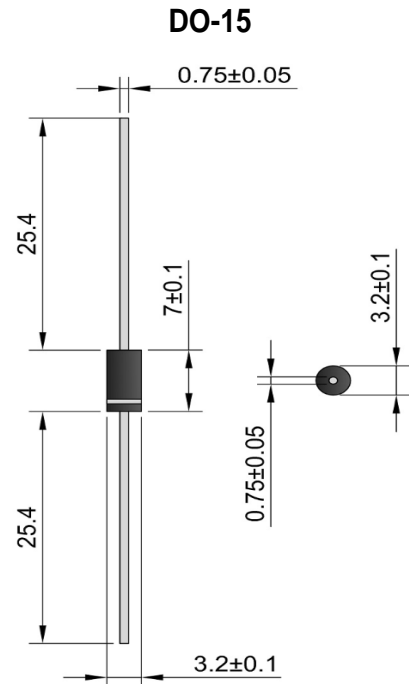


Features

- Glass Passivated Die Construction
- 500W Peak Pulse Power Dissipation
- 5.0V – 220V Standoff Voltage
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Voltage
- Typical Response Time < 1nS
- Plastic Case Material has UL Flammability Classification Rating 94V-0

Mechanical Data

- Case: DO-15, Molded Plastic
- Terminals: Plated Leads Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band Except Bi-Directional
- Weight: 0.40 grams (approx.)
- Mounting Position: Any
- Marking: Type Number
- **Lead Free: For RoHS / Lead Free Version**


Maximum Ratings and Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Peak Pulse Power Dissipation on 10/1000 μS Waveform (Note 1, 2, 5) | PPPM | 500 | W |
| Peak Pulse Current on 10/1000 μS Waveform (Note 1) | IPPM | See Table 1 | A |
| Peak Forward Surge Current (Note 2, 3) | IFSM | 70 | A |
| Maximum Instantaneous Forward Voltage at 35A (Note 3, 4) | V _F | 3.5 / 5.0 | V |
| Power Dissipation at T _L = 75°C (Note 2) | P _D | 3.0 | W |
| Typical Thermal Resistance, Junction to Ambient (Note 2) | R _{JA} | 75 | °C/W |
| Typical Thermal Resistance, Junction to Lead (Note 2) | R _{JL} | 20 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

- Note: 1. Non-repetitive current pulse per Figure 5 and derated above $T_A = 25^{\circ}\text{C}$ per Figure 1.
 2. Mounted on 40 x 40 x 1.0mm thick copper pads to each terminal that maintained at a distance of 9.5mm from the case.
 3. Measured on 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum. For uni-directional devices only.
 4. $V_F < 3.5\text{V}$ for $V_{BR} \leq 200\text{V}$ and $V_F < 5.0\text{V}$ for $V_{BR} \geq 201\text{V}$.
 5. Peak pulse power waveform is 10/1000 μS .

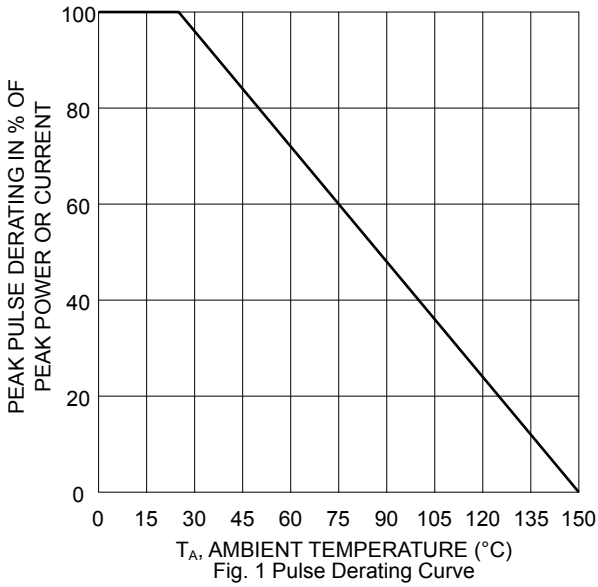


Fig. 1 Pulse Derating Curve

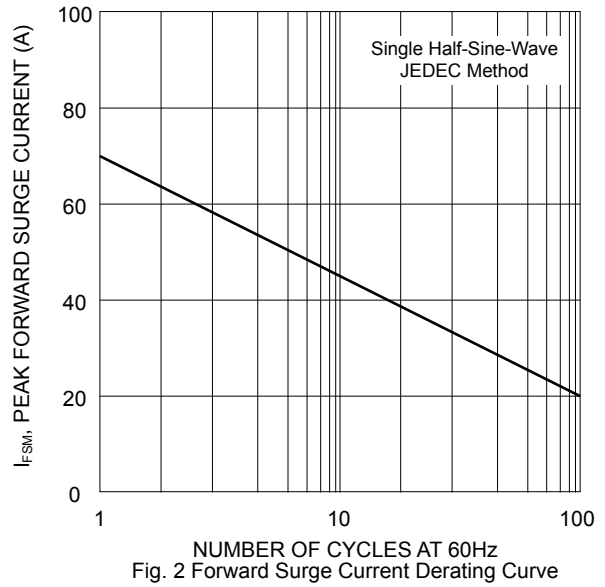


Fig. 2 Forward Surge Current Derating Curve

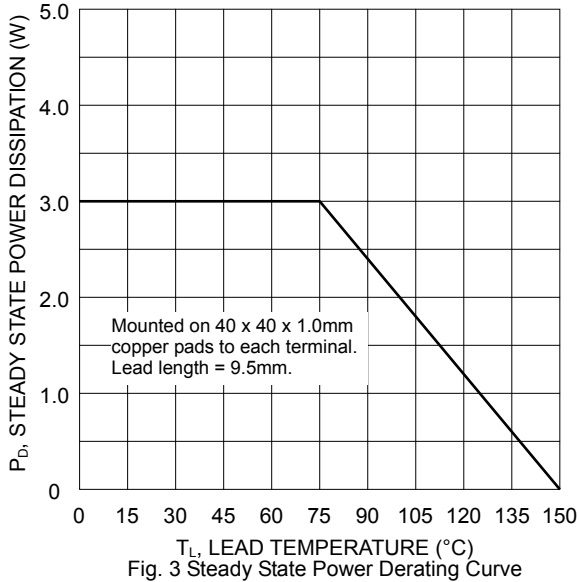


Fig. 3 Steady State Power Derating Curve

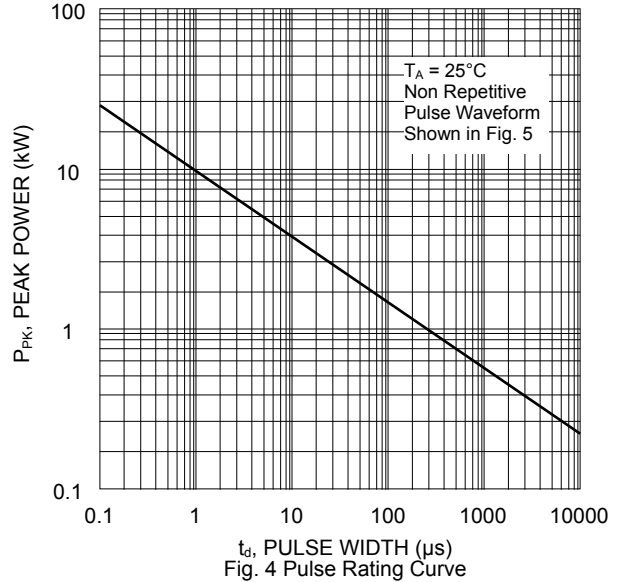


Fig. 4 Pulse Rating Curve

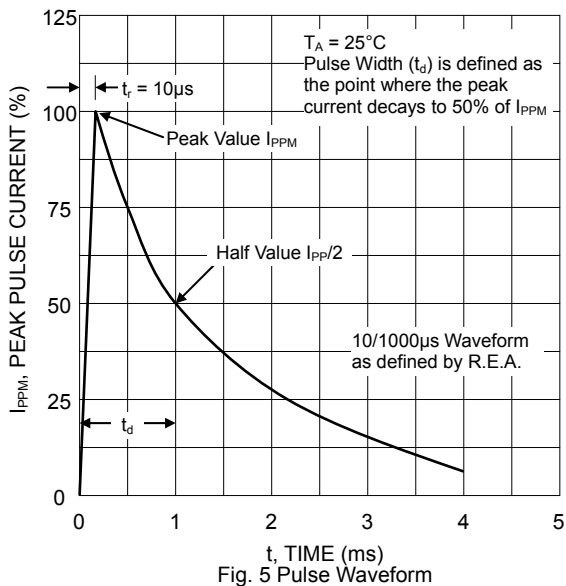


Fig. 5 Pulse Waveform

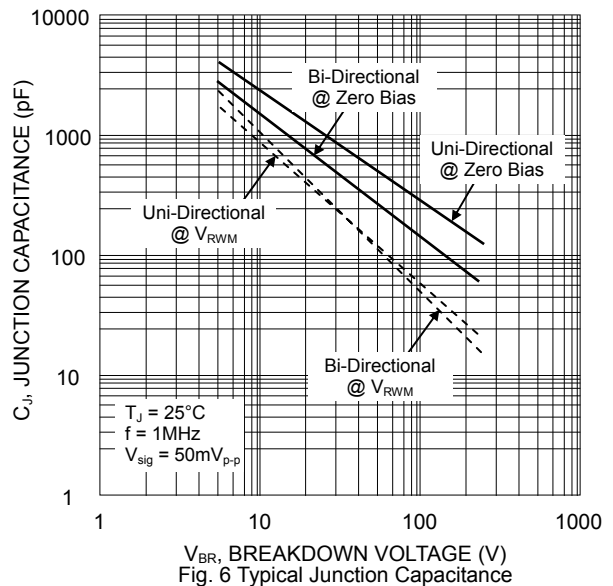


Fig. 6 Typical Junction Capacitance



Electrical Characteristics (@T_A=25°C unless otherwise specified) Table 1

| Uni-Directional Part No. | Bi-Directional Part No. | Reverse Stand-Off Voltage V _{RWM} (V) | Breakdown Voltage V _{BR} (V) @I _T | | Test Current I _T (mA) | Maximum Clamping Voltage @I _{PP} V _C (V) | Peak Pulse Current I _{PP} (A) | Reverse Leakage* @V _{RWM} I _R (μA) |
|--------------------------|-------------------------|--|---|-------|----------------------------------|--|--|--|
| | | | Min. | Max. | | | | |
| SA5.0 | SA5.0C | 5.0 | 6.40 | 7.30 | 10 | 9.6 | 52.08 | 600 |
| SA5.0A | SA5.0CA | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 54.35 | 600 |
| SA6.0 | SA6.0C | 6.0 | 6.67 | 8.15 | 10 | 11.4 | 43.86 | 600 |
| SA6.0A | SA6.0CA | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 48.54 | 600 |
| SA6.5 | SA6.5C | 6.5 | 7.22 | 8.82 | 10 | 12.3 | 40.65 | 400 |
| SA6.5A | SA6.5CA | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 44.64 | 400 |
| SA7.0 | SA7.0C | 7.0 | 7.78 | 9.51 | 10 | 13.3 | 37.59 | 150 |
| SA7.0A | SA7.0CA | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 41.67 | 150 |
| SA7.5 | SA7.5C | 7.5 | 8.33 | 10.20 | 1 | 14.3 | 34.97 | 50 |
| SA7.5A | SA7.5CA | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 38.76 | 50 |
| SA8.0 | SA8.0C | 8.0 | 8.89 | 10.90 | 1 | 15.0 | 33.33 | 25 |
| SA8.0A | SA8.0CA | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 36.76 | 25 |
| SA8.5 | SA8.5C | 8.5 | 9.44 | 11.50 | 1 | 15.9 | 31.45 | 10 |
| SA8.5A | SA8.5CA | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 34.72 | 10 |
| SA9.0 | SA9.0C | 9.0 | 10.00 | 12.20 | 1 | 16.9 | 29.59 | 5 |
| SA9.0A | SA9.0CA | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 32.47 | 5 |
| SA10 | SA10C | 10.0 | 11.10 | 13.60 | 1 | 18.8 | 26.60 | 1 |
| SA10A | SA10CA | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 29.41 | 1 |
| SA11 | SA11C | 11.0 | 12.20 | 14.90 | 1 | 20.1 | 24.88 | 1 |
| SA11A | SA11CA | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 27.47 | 1 |
| SA12 | SA12C | 12.0 | 13.30 | 16.30 | 1 | 22.0 | 22.73 | 1 |
| SA12A | SA12CA | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 25.13 | 1 |
| SA13 | SA13C | 13.0 | 14.40 | 17.60 | 1 | 23.8 | 21.01 | 1 |
| SA13A | SA13CA | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 23.26 | 1 |
| SA14 | SA14C | 14.0 | 15.60 | 19.10 | 1 | 25.8 | 19.38 | 1 |
| SA14A | SA14CA | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 21.55 | 1 |
| SA15 | SA15C | 15.0 | 16.70 | 20.40 | 1 | 26.9 | 18.59 | 1 |
| SA15A | SA15CA | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 20.49 | 1 |
| SA16 | SA16C | 16.0 | 17.80 | 21.80 | 1 | 28.8 | 17.36 | 1 |
| SA16A | SA16CA | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 19.23 | 1 |
| SA17 | SA17C | 17.0 | 18.90 | 23.10 | 1 | 30.5 | 16.39 | 1 |
| SA17A | SA17CA | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 18.12 | 1 |
| SA18 | SA18C | 18.0 | 20.00 | 24.40 | 1 | 32.2 | 15.53 | 1 |
| SA18A | SA18CA | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 17.12 | 1 |
| SA20 | SA20C | 20.0 | 22.20 | 27.10 | 1 | 35.8 | 13.97 | 1 |
| SA20A | SA20CA | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 15.43 | 1 |
| SA22 | SA22C | 22.0 | 24.40 | 29.80 | 1 | 39.4 | 12.69 | 1 |
| SA22A | SA22CA | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 14.08 | 1 |
| SA24 | SA24C | 24.0 | 26.70 | 32.60 | 1 | 43.0 | 11.63 | 1 |
| SA24A | SA24CA | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 12.85 | 1 |
| SA26 | SA26C | 26.0 | 28.90 | 35.30 | 1 | 46.6 | 10.73 | 1 |
| SA26A | SA26CA | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 11.88 | 1 |
| SA28 | SA28C | 28.0 | 31.10 | 38.00 | 1 | 50.0 | 10.00 | 1 |
| SA28A | SA28CA | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 11.01 | 1 |
| SA30 | SA30C | 30.0 | 33.30 | 40.70 | 1 | 53.5 | 9.35 | 1 |
| SA30A | SA30CA | 30.0 | 33.30 | 36.80 | 1 | 48.4 | 10.33 | 1 |
| SA33 | SA33C | 33.0 | 36.70 | 44.90 | 1 | 59.0 | 8.47 | 1 |
| SA33A | SA33CA | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 9.38 | 1 |
| SA36 | SA36C | 36.0 | 40.00 | 48.90 | 1 | 64.3 | 7.78 | 1 |
| SA36A | SA36CA | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 8.61 | 1 |
| SA40 | SA40C | 40.0 | 44.40 | 54.30 | 1 | 71.4 | 7.00 | 1 |
| SA40A | SA40CA | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 7.75 | 1 |
| SA43 | SA43C | 43.0 | 47.80 | 58.40 | 1 | 76.7 | 6.52 | 1 |
| SA43A | SA43CA | 43.0 | 47.80 | 52.80 | 1 | 69.4 | 7.20 | 1 |
| SA45 | SA45C | 45.0 | 50.00 | 61.10 | 1 | 80.3 | 6.23 | 1 |
| SA45A | SA45CA | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 6.88 | 1 |
| SA48 | SA48C | 48.0 | 53.30 | 65.10 | 1 | 85.5 | 5.85 | 1 |
| SA48A | SA48CA | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 6.46 | 1 |
| SA51 | SA51C | 51.0 | 56.70 | 69.30 | 1 | 91.1 | 5.49 | 1 |
| SA51A | SA51CA | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 6.07 | 1 |
| SA54 | SA54C | 54.0 | 60.00 | 73.30 | 1 | 96.3 | 5.19 | 1 |
| SA54A | SA54CA | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 5.74 | 1 |
| SA58 | SA58C | 58.0 | 64.40 | 78.70 | 1 | 103.0 | 4.85 | 1 |
| SA58A | SA58CA | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 5.34 | 1 |

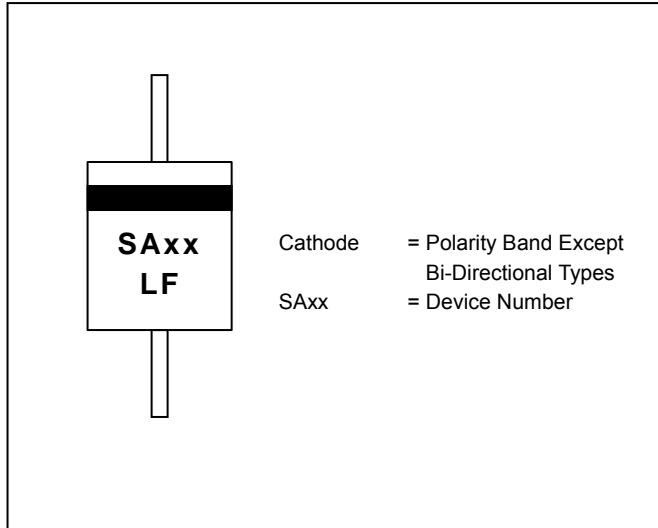
*For bi-directional devices V_{RWM} ≤ 10V, the I_R limit is double.



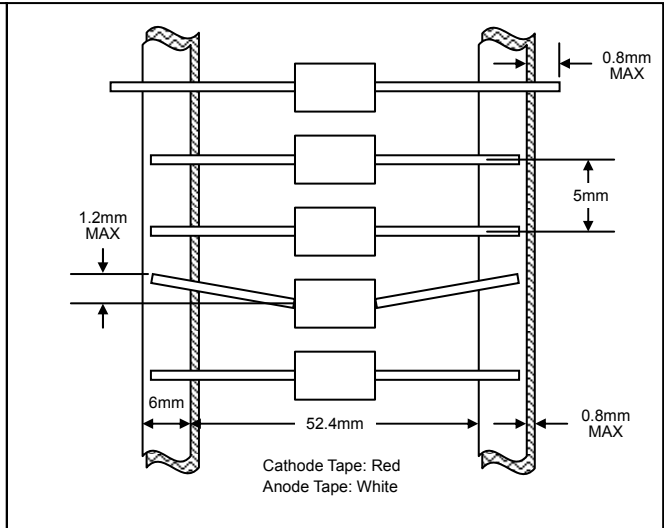
Electrical Characteristics (@T_A=25°C unless otherwise specified) Table 1 (Cont'd)

| Uni-Directional Part No. | Bi-Directional Part No. | Reverse Stand-Off Voltage V _{RWM} (V) | Breakdown Voltage V _{BR} (V) @I _T | | Test Current I _T (mA) | Maximum Clamping Voltage @I _{PP} V _C (V) | Peak Pulse Current I _{PP} (A) | Reverse Leakage* @V _{RWM} I _R (μA) |
|--------------------------|-------------------------|--|---|--------|----------------------------------|--|--|--|
| | | | Min. | Max. | | | | |
| SA60 | SA60C | 60.0 | 66.70 | 81.50 | 1 | 107.0 | 4.67 | 1 |
| SA60A | SA60CA | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 5.17 | 1 |
| SA64 | SA64C | 64.0 | 71.10 | 86.90 | 1 | 114.0 | 4.39 | 1 |
| SA64A | SA64CA | 64.0 | 71.10 | 78.60 | 1 | 103.0 | 4.85 | 1 |
| SA70 | SA70C | 70.0 | 77.80 | 95.10 | 1 | 125.0 | 4.00 | 1 |
| SA70A | SA70CA | 70.0 | 77.80 | 86.00 | 1 | 113.0 | 4.42 | 1 |
| SA75 | SA75C | 75.0 | 83.30 | 102.00 | 1 | 134.0 | 3.73 | 1 |
| SA75A | SA75CA | 75.0 | 83.30 | 92.10 | 1 | 121.0 | 4.13 | 1 |
| SA78 | SA78C | 78.0 | 86.70 | 106.00 | 1 | 139.0 | 3.60 | 1 |
| SA78A | SA78CA | 78.0 | 86.70 | 95.80 | 1 | 126.0 | 3.97 | 1 |
| SA85 | SA85C | 85.0 | 94.40 | 115.00 | 1 | 151.0 | 3.31 | 1 |
| SA85A | SA85CA | 85.0 | 94.40 | 104.00 | 1 | 137.0 | 3.65 | 1 |
| SA90 | SA90C | 90.0 | 100.00 | 122.00 | 1 | 160.0 | 3.13 | 1 |
| SA90A | SA90CA | 90.0 | 100.00 | 111.00 | 1 | 146.0 | 3.42 | 1 |
| SA100 | SA100C | 100.0 | 111.00 | 136.00 | 1 | 179.0 | 2.79 | 1 |
| SA100A | SA100CA | 100.0 | 111.00 | 123.00 | 1 | 162.0 | 3.09 | 1 |
| SA110 | SA110C | 110.0 | 122.00 | 149.00 | 1 | 196.0 | 2.55 | 1 |
| SA110A | SA110CA | 110.0 | 122.00 | 135.00 | 1 | 177.0 | 2.82 | 1 |
| SA120 | SA120C | 120.0 | 133.00 | 163.00 | 1 | 214.0 | 2.34 | 1 |
| SA120A | SA120CA | 120.0 | 133.00 | 147.00 | 1 | 193.0 | 2.59 | 1 |
| SA130 | SA130C | 130.0 | 144.00 | 176.00 | 1 | 231.0 | 2.16 | 1 |
| SA130A | SA130CA | 130.0 | 144.00 | 159.00 | 1 | 209.0 | 2.39 | 1 |
| SA150 | SA150C | 150.0 | 167.00 | 204.00 | 1 | 268.0 | 1.87 | 1 |
| SA150A | SA150CA | 150.0 | 167.00 | 185.00 | 1 | 243.0 | 2.06 | 1 |
| SA160 | SA160C | 160.0 | 178.00 | 218.00 | 1 | 287.0 | 1.74 | 1 |
| SA160A | SA160CA | 160.0 | 178.00 | 197.00 | 1 | 259.0 | 1.93 | 1 |
| SA170 | SA170C | 170.0 | 189.00 | 231.00 | 1 | 304.0 | 1.64 | 1 |
| SA170A | SA170CA | 170.0 | 189.00 | 209.00 | 1 | 275.0 | 1.82 | 1 |
| SA180 | SA180C | 180.0 | 200.00 | 244.80 | 1 | 322.2 | 1.55 | 1 |
| SA180A | SA180CA | 180.0 | 200.00 | 220.00 | 1 | 291.6 | 1.71 | 1 |
| SA190 | SA190C | 190.0 | 211.00 | 258.40 | 1 | 340.1 | 1.47 | 1 |
| SA190A | SA190CA | 190.0 | 211.00 | 232.00 | 1 | 307.8 | 1.62 | 1 |
| SA200 | SA200C | 200.0 | 220.00 | 282.00 | 1 | 358.0 | 1.40 | 1 |
| SA200A | SA200CA | 200.0 | 220.00 | 256.00 | 1 | 324.0 | 1.54 | 1 |
| SA210 | SA210C | 210.0 | 231.00 | 296.10 | 1 | 376.0 | 1.33 | 1 |
| SA210A | SA210CA | 210.0 | 231.00 | 268.80 | 1 | 340.0 | 1.47 | 1 |
| SA220 | SA220C | 220.0 | 242.00 | 310.20 | 1 | 394.0 | 1.27 | 1 |
| SA220A | SA220CA | 220.0 | 242.00 | 281.60 | 1 | 356.0 | 1.40 | 1 |

MARKING INFORMATION



TAPING SPECIFICATIONS



PACKAGING INFORMATION

TAPE & REEL

330mm
Product ID Label
80±5mm

TAPE & BOX

150mm
255mm
75mm
Product ID Label
Inspection Hole (both ends)

BULK

25mm
200mm
85mm

| Packaging | Reel Diameter / Box Size (mm) | Quantity (PCS) | Carton Size (mm) | Quantity (PCS) | Approx. Gross Weight (KG) |
|------------------------|-------------------------------|----------------|------------------|----------------|---------------------------|
| TAPE & REEL | 330 | 4,000 | 370 x 370 x 420 | 20,000 | 12.0 |
| TAPE & BOX | 255 x 75 x 150 | 3,000 | 400 x 273 x 415 | 30,000 | 15.0 |
| BULK | 200 x 85 x 25 | 1,000 | 459 x 214 x 256 | 40,000 | 17.5 |