

# Literature APPLICATION Guide

## DC Medical Alarms (with Circuitry)

IEC 60601-1-8 AMD2 (2020)



### MSS, MSW, SBS, & SBT:

- **UL File #:** MDAF2.E480572
- **CUL File #:** MDAF8.E480572

### MSS & MSW: 23mm Speaker

### SBS & SBW: 45mm Speaker

### SBT Series: 45mm Piezo Transducer

### IEC 60601-1-8 Notes:

- MSW & SBW Series:
  - IEC supplied sound files
  - Priority tone models meet IEC 60601-1-8 AMD2 (2020) Annex G; Tables G.3 & G.5
- MSS, SBS, & SBT Series:
  - Internally generated tones
  - General tone models meet IEC 60601-1-8 AMD2 (2020) Tables 3 & 4
  - Continuous tone models meet the freq. and rise & fall time listed in IEC 60601-1-8 AMD2 (2020) Table 4, but the user must control the on & off times to meet the other requirements of Tables 3 & 4.

# 23mm Speaker Alarms (With Circuitry)

## MSW Series:

- IEC 60601-1-8 AMD2 (2020): Annex G; Tables G.3 & G.5
- Uses the IEC Supplied .WAV Sound Files

## Sound, Electrical, & Size Characteristics

| Part Number Prefix | Typical Sound Level @ 10 cm (dBa) | Operating Voltage (Vdc) | Ave Current (mA) | Max Instant Current (mA) | Size Dia x Hgt (mm) |
|--------------------|-----------------------------------|-------------------------|------------------|--------------------------|---------------------|
| MSW5               | 85 to 95                          | 2.7 to 5.5              | 150              | 350                      | 23 x 13.5           |

## Model Listing

| Part Number                                     | Sound Type | IEC 60601-1-8 Table | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone Medical | Mounting Type |
|-------------------------------------------------|------------|---------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Single Low Priority General Medical Tone</b> |            |                     |                              |                              |                              |               |
| MSW5GL                                          | General    | G.3                 | Low Priority                 | N/A                          | N/A                          | 2 PC Pins     |

|                                            |          |           |              |     |     |           |
|--------------------------------------------|----------|-----------|--------------|-----|-----|-----------|
| <b>Single Medium Priority Medical Tone</b> |          |           |              |     |     |           |
| MSW5GM                                     | General  | G.3       | Med Priority | N/A | N/A | 2 PC Pins |
| MSW5*M                                     | See Note | G.3 & G.5 | Med Priority | N/A | N/A | 2 PC Pins |

|                                          |          |           |               |     |     |           |
|------------------------------------------|----------|-----------|---------------|-----|-----|-----------|
| <b>Single High Priority Medical Tone</b> |          |           |               |     |     |           |
| MSW5GH                                   | General  | G.3       | High Priority | N/A | N/A | 2 PC Pins |
| MSW5*H                                   | See Note | G.3 & G.5 | High Priority | N/A | N/A | 2 PC Pins |

|                                             |          |           |              |              |               |           |
|---------------------------------------------|----------|-----------|--------------|--------------|---------------|-----------|
| <b>Three Priority General Medical Tones</b> |          |           |              |              |               |           |
| MSW5G                                       | General  | G.3       | Low Priority | Med Priority | High Priority | 5 PC Pins |
| MSW5*                                       | See Note | G.3 & G.5 | Low Priority | Med Priority | High Priority | 5 PC Pins |

Note: \* = C (Cardiac), D (Drug or Fluid Delivery), E (Equipment/Supply Failure),  
P (Artificial Perfusion), T (Temp-Energy), or V (Ventilation)

## 23mm Speaker Alarms (With Circuitry)

### Model Listing (Con't)

| Part Number                                                        | Sound Type | IEC 60601-1-8 Table | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|--------------------------------------------------------------------|------------|---------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Two Priority Medical Tones &amp; One Other Non-Medical Tone</b> |            |                     |                              |                              |                              |               |
| MSW5GLHCT                                                          | General    | G.3                 | Low Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| MSW5GLHFP                                                          | General    | G.3                 | Low Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| MSW5GLHMP                                                          | General    | G.3                 | Low Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| MSW5GLHSP                                                          | General    | G.3                 | Low Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| MSW5GLMCT                                                          | General    | G.3                 | Low Priority                 | Med Priority                 | Continuous                   | 5 PC Pins     |
| MSW5GLMFP                                                          | General    | G.3                 | Low Priority                 | Med Priority                 | Fast Pulse                   | 5 PC Pins     |
| MSW5GLMMP                                                          | General    | G.3                 | Low Priority                 | Med Priority                 | Medium Pulse                 | 5 PC Pins     |
| MSW5GLMSP                                                          | General    | G.3                 | Low Priority                 | Med Priority                 | Slow Pulse                   | 5 PC Pins     |
| MSW5GMHCT                                                          | General    | G.3                 | Med Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| MSW5GMHFP                                                          | General    | G.3                 | Med Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| MSW5GMHMP                                                          | General    | G.3                 | Med Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| MSW5GMHSP                                                          | General    | G.3                 | Med Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| MSW5*LHCT                                                          | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| MSW5*LHFP                                                          | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| MSW5*LHMP                                                          | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| MSW5*LHSP                                                          | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| MSW5*LMCT                                                          | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Continuous                   | 5 PC Pins     |
| MSW5*LMFP                                                          | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Fast Pulse                   | 5 PC Pins     |
| MSW5*LMMP                                                          | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Medium Pulse                 | 5 PC Pins     |
| MSW5*LMSP                                                          | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Slow Pulse                   | 5 PC Pins     |
| MSW5*MHCT                                                          | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| MSW5*MHFP                                                          | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| MSW5*MHMP                                                          | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| MSW5*MHSP                                                          | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |

| Part Number                                                        | Sound Type | IEC 60601-1-8 Table | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone 2500 Hz | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|--------------------------------------------------------------------|------------|---------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>One Priority Medical Tone &amp; Two Other Non-Medical Tones</b> |            |                     |                              |                              |                              |               |
| MSW5GLCFP                                                          | General    | G.3                 | Low Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSW5GLCMP                                                          | General    | G.3                 | Low Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSW5GLCSP                                                          | General    | G.3                 | Low Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| MSW5GHC FP                                                         | General    | G.3                 | High Priority                | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSW5GHCMP                                                          | General    | G.3                 | High Priority                | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSW5GHCSP                                                          | General    | G.3                 | High Priority                | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| MSW5*MC FP                                                         | See Note   | G.3 & G.5           | Med Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSW5*MCMP                                                          | See Note   | G.3 & G.5           | Med Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSW5*MCSP                                                          | See Note   | G.3 & G.5           | Med Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| MSW5*HCFP                                                          | See Note   | G.3 & G.5           | High Priority                | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSW5*HCM P                                                         | See Note   | G.3 & G.5           | High Priority                | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSW5*HCSP                                                          | See Note   | G.3 & G.5           | High Priority                | Continuous                   | Slow Pulse                   | 5 PC Pins     |

Note: \* = C (Cardiac), D (Drug or Fluid Delivery), E (Equipment/Supply Failure),  
P (Artificial Perfusion), T (Temp-Energy), or V (Ventilation)

# 23mm Speaker Alarms (With Circuitry)

## MSS Series:

- IEC 60601-1-8 AMD2 (2020)
- Tones are generated internally (Tables 3 & 4)

## Sound, Electrical, & Size Characteristics

| Part Number Prefix | Typical Sound Level @ 10 cm (dBa) | Operating Voltage (Vdc) | Ave Current (mA) | Max Instant Current (mA) | Size Dia x Hgt (mm) |
|--------------------|-----------------------------------|-------------------------|------------------|--------------------------|---------------------|
| MSS5               | 85 to 95                          | 4.5 to 5.5              | 150              | 400                      | 23 x 13.5           |

Note: For continuous P/N MSS5M0, Average Current = 200 mA and Max Instant Current = 250 mA

## Model Listing

| Part Number                           | Sound Type | Mounting Type | IEC 60601-1-8 Table | Comment                                                   |
|---------------------------------------|------------|---------------|---------------------|-----------------------------------------------------------|
| <b>Single Continuous Medical Tone</b> |            |               |                     |                                                           |
| MSS5M0                                | Continuous | 2 PC Pins     | 4                   | User must control the on & off times to meet Tables 3 & 4 |

| Part Number                                     | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone Medical | Mounting Type |
|-------------------------------------------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Single Low Priority General Medical Tone</b> |            |                      |                              |                              |                              |               |
| MSS5GL                                          | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | 2 PC Pins     |

|                                                 |         |       |              |     |     |           |
|-------------------------------------------------|---------|-------|--------------|-----|-----|-----------|
| <b>Single Low Priority General Medical Tone</b> |         |       |              |     |     |           |
| MSS5GM                                          | General | 3 & 4 | Med Priority | N/A | N/A | 2 PC Pins |

|                                                 |         |       |               |     |     |           |
|-------------------------------------------------|---------|-------|---------------|-----|-----|-----------|
| <b>Single Low Priority General Medical Tone</b> |         |       |               |     |     |           |
| MSS5GH                                          | General | 3 & 4 | High Priority | N/A | N/A | 2 PC Pins |

|                                                 |         |       |              |              |               |           |
|-------------------------------------------------|---------|-------|--------------|--------------|---------------|-----------|
| <b>Single Low Priority General Medical Tone</b> |         |       |              |              |               |           |
| MSS5G                                           | General | 3 & 4 | Low Priority | Med Priority | High Priority | 5 PC Pins |

| Part Number                                                        | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|--------------------------------------------------------------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Two Priority Medical Tones &amp; One Other Non-Medical Tone</b> |            |                      |                              |                              |                              |               |
| MSS5GLHCT                                                          | General    | 3 & 4                | Low Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| MSS5GLHFP                                                          | General    | 3 & 4                | Low Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| MSS5GLHMP                                                          | General    | 3 & 4                | Low Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| MSS5GLHSP                                                          | General    | 3 & 4                | Low Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| MSS5GLMCT                                                          | General    | 3 & 4                | Low Priority                 | Med Priority                 | Continuous                   | 5 PC Pins     |
| MSS5GLMFP                                                          | General    | 3 & 4                | Low Priority                 | Med Priority                 | Fast Pulse                   | 5 PC Pins     |
| MSS5GLMMP                                                          | General    | 3 & 4                | Low Priority                 | Med Priority                 | Medium Pulse                 | 5 PC Pins     |
| MSS5GLMSP                                                          | General    | 3 & 4                | Low Priority                 | Med Priority                 | Slow Pulse                   | 5 PC Pins     |
| MSS5GMHCT                                                          | General    | 3 & 4                | Med Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| MSS5GMHFP                                                          | General    | 3 & 4                | Med Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| MSS5GMHMP                                                          | General    | 3 & 4                | Med Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| MSS5GMHSP                                                          | General    | 3 & 4                | Med Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |

# 23mm Speaker Alarms (With Circuitry)

## Model Listing (Con't)

| Part Number                                                                | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone 2500 Hz | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|----------------------------------------------------------------------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>One Priority General Medical Tone &amp; Two Other Non-Medical Tones</b> |            |                      |                              |                              |                              |               |
| MSS5GLCFP                                                                  | General    | 3 & 4                | Low Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSS5GLCMP                                                                  | General    | 3 & 4                | Low Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSSGLCSP                                                                   | General    | 3 & 4                | Low Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| MSS5GMCFP                                                                  | General    | 3 & 4                | Med Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSS5GMCMP                                                                  | General    | 3 & 4                | Med Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSS5GMCSP                                                                  | General    | 3 & 4                | Med Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| MSS5GHCFP                                                                  | General    | 3 & 4                | High Priority                | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| MSS5GHCMP                                                                  | General    | 3 & 4                | High Priority                | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| MSS5GHCSP                                                                  | General    | 3 & 4                | High Priority                | Continuous                   | Slow Pulse                   | 5 PC Pins     |

# 45mm Speaker Alarms (With Circuitry)

## SBW Series:

- IEC 60601-1-8 AMD2 (2020): Annex G; Tables G.3 & G.5
- Uses the IEC Supplied .WAV Sound Files
- Features Volume Control via an External Resistor

## Sound, Electrical, & Size Characteristics

| Part Number Prefix | Typical Sound Level @ 10 cm (dBa) | Operating Voltage (Vdc) | Ave Current (mA) | Max Instant Current (mA) | Size Dia x Hgt (mm) |
|--------------------|-----------------------------------|-------------------------|------------------|--------------------------|---------------------|
| SBW12              | 95 to 105**                       | 9 to 12                 | 200              | 630                      | 45.5 x 14.25        |

\*\* All models have volume control via an external resistor. See the alarm data sheet for details.

| Part Number Suffix | Termination Type | Part Size Dia x Hgt (mm) |
|--------------------|------------------|--------------------------|
| PC                 | PC Pins**        | 44.5 x 14.25             |

\*\* All models come with 7 PC pins, but on models with only one tone, not all PC Pins will need to be utilized. See the alarm data sheet for details.

## Model Listing

| Part Number                                     | Sound Type | IEC 60601-1-8 Table | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone Medical | Mounting Type |
|-------------------------------------------------|------------|---------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Single Low Priority General Medical Tone</b> |            |                     |                              |                              |                              |               |
| SBW12GLPC                                       | General    | G.3                 | Low Priority                 | N/A                          | N/A                          | PC Pins       |

|                                            |          |           |              |     |     |         |
|--------------------------------------------|----------|-----------|--------------|-----|-----|---------|
| <b>Single Medium Priority Medical Tone</b> |          |           |              |     |     |         |
| SBW12GMPC                                  | General  | G.3       | Med Priority | N/A | N/A | PC Pins |
| SBW12*MPC                                  | See Note | G.3 & G.5 | Med Priority | N/A | N/A | PC Pins |

|                                          |          |           |               |     |     |         |
|------------------------------------------|----------|-----------|---------------|-----|-----|---------|
| <b>Single High Priority Medical Tone</b> |          |           |               |     |     |         |
| SBW12GHPC                                | General  | G.3       | High Priority | N/A | N/A | PC Pins |
| SBW12*HPC                                | See Note | G.3 & G.5 | High Priority | N/A | N/A | PC Pins |

|                                             |          |           |              |              |               |         |
|---------------------------------------------|----------|-----------|--------------|--------------|---------------|---------|
| <b>Three Priority General Medical Tones</b> |          |           |              |              |               |         |
| SBW12GPC                                    | General  | G.3       | Low Priority | Med Priority | High Priority | PC Pins |
| SBW12*PC                                    | See Note | G.3 & G.5 | Low Priority | Med Priority | High Priority | PC Pins |

Note: \* = **C** (Cardiac), **D** (Drug or Fluid Delivery), **E** (Equipment/Supply Failure), **P** (Artificial Perfusion), **T** (Temp-Energy), or **V** (Ventilation)

# 45mm Speaker Alarms (With Circuitry)

## Model Listing (Con't)

| Part Number                                                        | Sound Type | IEC 60601-1-8 Table | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|--------------------------------------------------------------------|------------|---------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Two Priority Medical Tones &amp; One Other Non-Medical Tone</b> |            |                     |                              |                              |                              |               |
| SBW12GLHCTPC                                                       | General    | G.3                 | Low Priority                 | High Priority                | Continuous                   | PC Pins       |
| SBW12GLHFPPC                                                       | General    | G.3                 | Low Priority                 | High Priority                | Fast Pulse                   | PC Pins       |
| SBW12GLHMPPC                                                       | General    | G.3                 | Low Priority                 | High Priority                | Medium Pulse                 | PC Pins       |
| SBW12GLHSPPC                                                       | General    | G.3                 | Low Priority                 | High Priority                | Slow Pulse                   | PC Pins       |
| SBW12GLMCTPC                                                       | General    | G.3                 | Low Priority                 | Med Priority                 | Continuous                   | PC Pins       |
| SBW12GLMFPPC                                                       | General    | G.3                 | Low Priority                 | Med Priority                 | Fast Pulse                   | PC Pins       |
| SBW12GLMMPPC                                                       | General    | G.3                 | Low Priority                 | Med Priority                 | Medium Pulse                 | PC Pins       |
| SBW12GLMSPPC                                                       | General    | G.3                 | Low Priority                 | Med Priority                 | Slow Pulse                   | PC Pins       |
| SBW12GMHCTPC                                                       | General    | G.3                 | Med Priority                 | High Priority                | Continuous                   | PC Pins       |
| SBW12GMHFPPC                                                       | General    | G.3                 | Med Priority                 | High Priority                | Fast Pulse                   | PC Pins       |
| SBW12GMHMPPC                                                       | General    | G.3                 | Med Priority                 | High Priority                | Medium Pulse                 | PC Pins       |
| SBW12GMHSPPC                                                       | General    | G.3                 | Med Priority                 | High Priority                | Slow Pulse                   | PC Pins       |
| SBW12*LHCTPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Continuous                   | PC Pins       |
| SBW12*LHFPPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Fast Pulse                   | PC Pins       |
| SBW12*LHMPPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Medium Pulse                 | PC Pins       |
| SBW12*LHSPPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | High Priority                | Slow Pulse                   | PC Pins       |
| SBW12*LMCTPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Continuous                   | PC Pins       |
| SBW12*LMFPPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Fast Pulse                   | PC Pins       |
| SBW12*LMMPPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Medium Pulse                 | PC Pins       |
| SBW12*LMSPPC                                                       | See Note   | G.3 & G.5           | Low Priority                 | Med Priority                 | Slow Pulse                   | PC Pins       |
| SBW12*MHCTPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Continuous                   | PC Pins       |
| SBW12*MHFPPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Fast Pulse                   | PC Pins       |
| SBW12*MHMPPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Medium Pulse                 | PC Pins       |
| SBW12*MHSPPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | High Priority                | Slow Pulse                   | PC Pins       |

| Part Number                                                        | Sound Type | IEC 60601-1-8 Table | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone 2500 Hz | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|--------------------------------------------------------------------|------------|---------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>One Priority Medical Tone &amp; Two Other Non-Medical Tones</b> |            |                     |                              |                              |                              |               |
| SBW12GLCFPPC                                                       | General    | G.3                 | Low Priority                 | Continuous                   | Fast Pulse                   | PC Pins       |
| SBW12GLCMPPC                                                       | General    | G.3                 | Low Priority                 | Continuous                   | Medium Pulse                 | PC Pins       |
| SBW12GLCSPPC                                                       | General    | G.3                 | Low Priority                 | Continuous                   | Slow Pulse                   | PC Pins       |
| SBW12GMCFFPC                                                       | General    | G.3                 | Med Priority                 | Continuous                   | Fast Pulse                   | PC Pins       |
| SBW12GMCMPPC                                                       | General    | G.3                 | Med Priority                 | Continuous                   | Medium Pulse                 | PC Pins       |
| SBW12GMCSPPC                                                       | General    | G.3                 | Med Priority                 | Continuous                   | Slow Pulse                   | PC Pins       |
| SBW12GHCFPPC                                                       | General    | G.3                 | High Priority                | Continuous                   | Fast Pulse                   | PC Pins       |
| SBW12GHCMPPC                                                       | General    | G.3                 | High Priority                | Continuous                   | Medium Pulse                 | PC Pins       |
| SBW12GHCSPPC                                                       | General    | G.3                 | High Priority                | Continuous                   | Slow Pulse                   | PC Pins       |
| SBW12*MCFPPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | Continuous                   | Fast Pulse                   | PC Pins       |
| SBW12*MCMPPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | Continuous                   | Medium Pulse                 | PC Pins       |
| SBW12*MCSPPC                                                       | See Note   | G.3 & G.5           | Med Priority                 | Continuous                   | Slow Pulse                   | PC Pins       |
| SBW12*HCFPPC                                                       | See Note   | G.3 & G.5           | High Priority                | Continuous                   | Fast Pulse                   | PC Pins       |
| SBW12*HCMPPC                                                       | See Note   | G.3 & G.5           | High Priority                | Continuous                   | Medium Pulse                 | PC Pins       |
| SBW12*HCSPPC                                                       | See Note   | G.3 & G.5           | High Priority                | Continuous                   | Slow Pulse                   | PC Pins       |

Note: \* = C (Cardiac), D (Drug or Fluid Delivery), E (Equipment/Supply Failure), P (Artificial Perfusion), T (Temp-Energy), or V (Ventilation)

# 45mm Speaker Alarms (With Circuitry)

## SBS Series:

- IEC 60601-1-8 AMD2 (2020)
- Tones are generated internally (Tables 3 & 4)

## Sound, Electrical, & Size Characteristics

| Part Number Prefix | Typical Sound Level @ 10 cm (dBa) | Operating Voltage (Vdc) | Ave Current (mA) | Max Instant Current (mA) | Size Dia x Hgt (mm) |
|--------------------|-----------------------------------|-------------------------|------------------|--------------------------|---------------------|
| SBS12              | 95 to 105                         | 9 to 12                 | 200              | 630                      | 45.5 x 14.25        |

Note: For continuous part numbers, Ave Current = 300 mA and Max Instant Current = 400 mA

| Part Number Suffix | Termination Type       | Part Size Dia x Hgt (mm) |
|--------------------|------------------------|--------------------------|
| PC                 | PC Pins (2 to 5 pins)  | 44.5 x 14.25             |
| FL                 | Flange with Bare Wires | 64.5 x 14.25             |

## Model Listing

| Part Number                           | Sound Type            | IEC 60601-1-8 Table | Mounting Type       |
|---------------------------------------|-----------------------|---------------------|---------------------|
| <b>Single Continuous Medical Tone</b> |                       |                     |                     |
| SBS12M0PC                             | Continuous (see note) | 4 (see note)        | 2 PC Pins           |
| SBS12M0FL                             | Continuous (see note) | 4 (see note)        | Flange w/Bare Wires |

Notes: Continuous tone models meet the freq. and rise & fall times listed in IEC 60601-1-8 Table 4, but the user must control the on & off times to meet the other requirements of Tables 3 & 4

| Part Number                                     | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone Medical | Mounting Type       |
|-------------------------------------------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------------|
| <b>Single Low Priority General Medical Tone</b> |            |                      |                              |                              |                              |                     |
| SBS12GLPC                                       | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | 2 PC Pins           |
| SBS12GLFL                                       | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | Flange w/Bare Wires |

|                                                    |         |       |              |     |     |                     |
|----------------------------------------------------|---------|-------|--------------|-----|-----|---------------------|
| <b>Single Medium Priority General Medical Tone</b> |         |       |              |     |     |                     |
| SBS12GMPC                                          | General | 3 & 4 | Med Priority | N/A | N/A | 2 PC Pins           |
| SBS12GMFL                                          | General | 3 & 4 | Med Priority | N/A | N/A | Flange w/Bare Wires |

|                                                  |         |       |               |     |     |                     |
|--------------------------------------------------|---------|-------|---------------|-----|-----|---------------------|
| <b>Single High Priority General Medical Tone</b> |         |       |               |     |     |                     |
| SBS12GHPC                                        | General | 3 & 4 | High Priority | N/A | N/A | 2 PC Pins           |
| SBS12GHFL                                        | General | 3 & 4 | High Priority | N/A | N/A | Flange w/Bare Wires |

|                                             |         |       |              |              |               |           |
|---------------------------------------------|---------|-------|--------------|--------------|---------------|-----------|
| <b>Three Priority General Medical Tones</b> |         |       |              |              |               |           |
| SBS12M1PC                                   | General | 3 & 4 | Low Priority | Med Priority | High Priority | 5 PC Pins |

# 45mm Speaker Alarms (With Circuitry)

## Model Listing (Con't)

| Part Number                                                                | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|----------------------------------------------------------------------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Two Priority General Medical Tones &amp; One Other Non-Medical Tone</b> |            |                      |                              |                              |                              |               |
| SBS12GLHCTPC                                                               | General    | 3 & 4                | Low Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| SBS12GLHFPPC                                                               | General    | 3 & 4                | Low Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| SBS12GLHMPPC                                                               | General    | 3 & 4                | Low Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| SBS12GLHSPPC                                                               | General    | 3 & 4                | Low Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| SBS12GLMCTPC                                                               | General    | 3 & 4                | Low Priority                 | Med Priority                 | Continuous                   | 5 PC Pins     |
| SBS12GLMFPPC                                                               | General    | 3 & 4                | Low Priority                 | Med Priority                 | Fast Pulse                   | 5 PC Pins     |
| SBS12GLMMPPC                                                               | General    | 3 & 4                | Low Priority                 | Med Priority                 | Medium Pulse                 | 5 PC Pins     |
| SBS12GLMSPPC                                                               | General    | 3 & 4                | Low Priority                 | Med Priority                 | Slow Pulse                   | 5 PC Pins     |
| SBS12GMHCTPC                                                               | General    | 3 & 4                | Med Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| SBS12GMHFPPC                                                               | General    | 3 & 4                | Med Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| SBS12GMHMPPC                                                               | General    | 3 & 4                | Med Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| SBS12GMHSPPC                                                               | General    | 3 & 4                | Med Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |

| Part Number                                                                | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone 2500 Hz | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|----------------------------------------------------------------------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>One Priority General Medical Tone &amp; Two Other Non-Medical Tones</b> |            |                      |                              |                              |                              |               |
| SBS12GLCFPPC                                                               | General    | 3 & 4                | Low Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBS12GLCMPPC                                                               | General    | 3 & 4                | Low Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBS12GLCSPPC                                                               | General    | 3 & 4                | Low Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBS12GHCFFPC                                                               | General    | 3 & 4                | High Priority                | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBS12GHCMPPC                                                               | General    | 3 & 4                | High Priority                | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBS12GHCSPPC                                                               | General    | 3 & 4                | High Priority                | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBS12GMCFFPC                                                               | General    | 3 & 4                | Medium Priority              | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBS12GMCMPPC                                                               | General    | 3 & 4                | Medium Priority              | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBS12GMCSPPC                                                               | General    | 3 & 4                | Medium Priority              | Continuous                   | Slow Pulse                   | 5 PC Pins     |

# 45mm Piezo Transducer Alarms (With Circuitry)

**SBT Series:** IEC 60601-1-8 AMD2 (2020): Tables 3 & 4

## **Sound, Electrical, & Size Characteristics**

| Part Number Prefix | Typical Sound Level @ 10 cm (dBa) | Operating Voltage (Vdc) | Ave Current (mA) | Max Instant Current (mA) |
|--------------------|-----------------------------------|-------------------------|------------------|--------------------------|
| SBT5               | 85 to 95                          | 3.3 to 5                | 35               | 300                      |
| SBT12              | 85 to 95                          | 9 to 12                 | 25               | 75                       |

| Part Number Suffix | Termination Type        | Part Size Dia x Hgt (mm) |
|--------------------|-------------------------|--------------------------|
| PC                 | PC Pins                 | 44.5 x 14.25             |
| FL                 | Flange Mount with Wires | 64.5 x 14.25             |

## **Model Listing**

| Part Number                           | Rated Voltage | Sound Type | IEC 60601-1-8 Table | Mounting Type       |
|---------------------------------------|---------------|------------|---------------------|---------------------|
| <b>Single Continuous Medical Tone</b> |               |            |                     |                     |
| SBT5LM0PC                             | 5 Vdc         | Continuous | 4 (see note)        | 2 PC Pins           |
| SBT5LM0FL                             | 5 Vdc         | Continuous | 4 (see note)        | Flange w/Bare Wires |
| SBT12M0PC                             | 12 Vdc        | Continuous | 4 (see note)        | 2 PC Pins           |
| SBT12M0FL                             | 12 Vdc        | Continuous | 4 (see note)        | Flange w/Bare Wires |

**Note:** Continuous tone models meet the freq. and rise & fall times listed in IEC 60601-1-8 Table 4, but the user must control the on & off times to meet the other requirements of Tables 3 & 4

| Part Number                                        | Rated Voltage | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone Medical | Mounting Type       |
|----------------------------------------------------|---------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------------|
| <b>Single Low Priority General Medical Tone</b>    |               |            |                      |                              |                              |                              |                     |
| SBT5GLPC                                           | 5 Vdc         | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | 2 PC Pins           |
| SBT5GLFL                                           | 5 Vdc         | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | Flange w/Bare Wires |
| SBT12GLPC                                          | 12 Vdc        | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | 2 PC Pins           |
| SBT12GLFL                                          | 12 Vdc        | General    | 3 & 4                | Low Priority                 | N/A                          | N/A                          | Flange w/Bare Wires |
| <b>Single Medium Priority General Medical Tone</b> |               |            |                      |                              |                              |                              |                     |
| SBT5GMPC                                           | 5 Vdc         | General    | 3 & 4                | Med Priority                 | N/A                          | N/A                          | 2 PC Pins           |
| SBT5GMFL                                           | 5 Vdc         | General    | 3 & 4                | Med Priority                 | N/A                          | N/A                          | Flange w/Bare Wires |
| SBT12GMPC                                          | 12 Vdc        | General    | 3 & 4                | Med Priority                 | N/A                          | N/A                          | 2 PC Pins           |
| SBT12GMFL                                          | 12 Vdc        | General    | 3 & 4                | Med Priority                 | N/A                          | N/A                          | Flange w/Bare Wires |
| <b>Single High Priority General Medical Tone</b>   |               |            |                      |                              |                              |                              |                     |
| SBT5GHPC                                           | 5 Vdc         | General    | 3 & 4                | High Priority                | N/A                          | N/A                          | 2 PC Pins           |
| SBT5GHFL                                           | 5 Vdc         | General    | 3 & 4                | High Priority                | N/A                          | N/A                          | Flange w/Bare Wires |
| SBT12GHPC                                          | 12 Vdc        | General    | 3 & 4                | High Priority                | N/A                          | N/A                          | 2 PC Pins           |
| SBT12GHFL                                          | 12 Vdc        | General    | 3 & 4                | High Priority                | N/A                          | N/A                          | Flange w/Bare Wires |

| Part Number                                 | Rated Voltage | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone Medical | Mounting Type |
|---------------------------------------------|---------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Three Priority General Medical Tones</b> |               |            |                      |                              |                              |                              |               |
| SBT5LM1PC                                   | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Med Priority                 | High Priority                | 5 PC Pins     |
| SBT12M1PC                                   | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Med Priority                 | High Priority                | 5 PC Pins     |

# 45mm Piezo Transducer Alarms (With Circuitry)

## Model Listing (Con't)

| Part Number                                                                | Rated Voltage | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone Medical | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|----------------------------------------------------------------------------|---------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>Two Priority General Medical Tones &amp; One Other Non-Medical Tone</b> |               |            |                      |                              |                              |                              |               |
| SBT5GLHCTPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| SBT5GLHFPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| SBT5GLHMPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| SBT5GLHSPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| SBT5GLMCTPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Med Priority                 | Continuous                   | 5 PC Pins     |
| SBT5GLMFPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Med Priority                 | Fast Pulse                   | 5 PC Pins     |
| SBT5GLMMPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Med Priority                 | Medium Pulse                 | 5 PC Pins     |
| SBT5GLMSPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Med Priority                 | Slow Pulse                   | 5 PC Pins     |
| SBT5GMHCTPC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| SBT5GMHFPPC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| SBT5GMHMPPC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| SBT5GMHSPPC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| SBT12GLHCTPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| SBT12GLHFPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| SBT12GLHMPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| SBT12GLHSPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |
| SBT12GLMCTPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Med Priority                 | Continuous                   | 5 PC Pins     |
| SBT12GLMFPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Med Priority                 | Fast Pulse                   | 5 PC Pins     |
| SBT12GLMMPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Med Priority                 | Medium Pulse                 | 5 PC Pins     |
| SBT12GLMSPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Med Priority                 | Slow Pulse                   | 5 PC Pins     |
| SBT12GMHCTPC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | High Priority                | Continuous                   | 5 PC Pins     |
| SBT12GMHFPPC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | High Priority                | Fast Pulse                   | 5 PC Pins     |
| SBT12GMHMPPC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | High Priority                | Medium Pulse                 | 5 PC Pins     |
| SBT12GMHSPPC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | High Priority                | Slow Pulse                   | 5 PC Pins     |

| Part Number                                                                | Rated Voltage | Sound Type | IEC 60601-1-8 Tables | 1 <sup>st</sup> Tone Medical | 2 <sup>nd</sup> Tone 2500 Hz | 3 <sup>rd</sup> Tone 2500 Hz | Mounting Type |
|----------------------------------------------------------------------------|---------------|------------|----------------------|------------------------------|------------------------------|------------------------------|---------------|
| <b>One Priority General Medical Tone &amp; Two Other Non-Medical Tones</b> |               |            |                      |                              |                              |                              |               |
| SBT5GLCFPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBT5GLCMPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBT5GLCSPPC                                                                | 5 Vdc         | General    | 3 & 4                | Low Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBT5GMCFPCC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBT5GMCMPCC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBT5GMCSPCC                                                                | 5 Vdc         | General    | 3 & 4                | Med Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBT5GHCFPPC                                                                | 5 Vdc         | General    | 3 & 4                | High Priority                | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBT5GHCMPPC                                                                | 5 Vdc         | General    | 3 & 4                | High Priority                | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBT5GHCSPPC                                                                | 5 Vdc         | General    | 3 & 4                | High Priority                | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBT12GLCFPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBT12GLCMPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBT12GLCSPPC                                                               | 12 Vdc        | General    | 3 & 4                | Low Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBT12GMCFPCC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBT12GMCMPCC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBT12GMCSPCC                                                               | 12 Vdc        | General    | 3 & 4                | Med Priority                 | Continuous                   | Slow Pulse                   | 5 PC Pins     |
| SBT12GHCFPPC                                                               | 12 Vdc        | General    | 3 & 4                | High Priority                | Continuous                   | Fast Pulse                   | 5 PC Pins     |
| SBT12GHCMPPC                                                               | 12 Vdc        | General    | 3 & 4                | High Priority                | Continuous                   | Medium Pulse                 | 5 PC Pins     |
| SBT12GHCSPPC                                                               | 12 Vdc        | General    | 3 & 4                | High Priority                | Continuous                   | Slow Pulse                   | 5 PC Pins     |

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