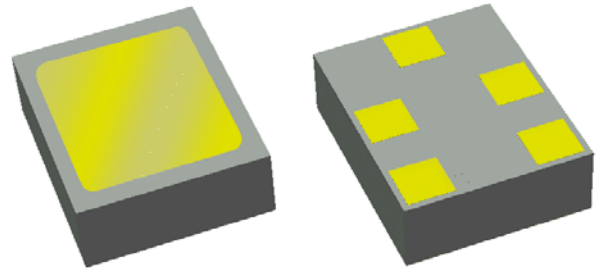


Data Sheet

Features

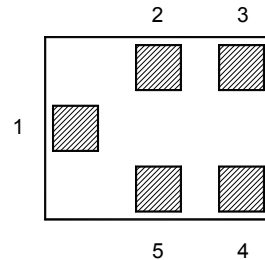
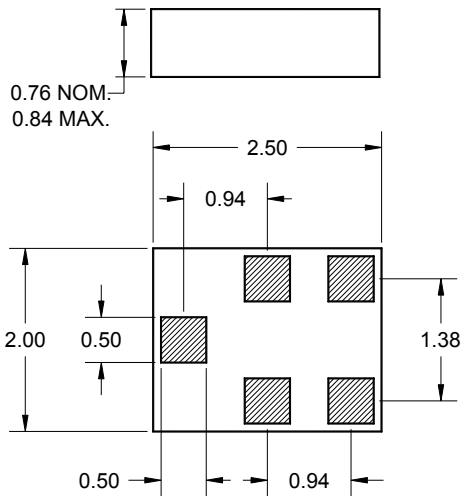
- For GSM-850 and CDMA applications
- Usable bandwidth 25 MHz
- Low loss
- High attenuation
- Single-ended input
- Balanced output
- Superior amplitude and phase balance
- Ceramic Surface Mount Package (SMP)
- Hermetic



Package Pin Configuration

Surface Mount 2.50 x 2.00 x 0.76 mm

Bottom View



| Pin No. | Description |
|---------|-------------------|
| 1 | Input, Unbalanced |
| 2,5 | Case ground |
| 3,4 | Output, Balanced |

Dimensions shown are nominal in millimeters
 All tolerances are $\pm 0.10\text{mm}$

Body: Al_2O_3 ceramic
 Lid: Kovar or Alloy 42, Au over Ni plated
 Terminations: Au plating 0.5 - 1.0 μm ,
 over a 2 - 6 μm Ni plating

Data Sheet

Electrical Specifications ⁽¹⁾

Operating Temperature: ⁽²⁾ +25 °C

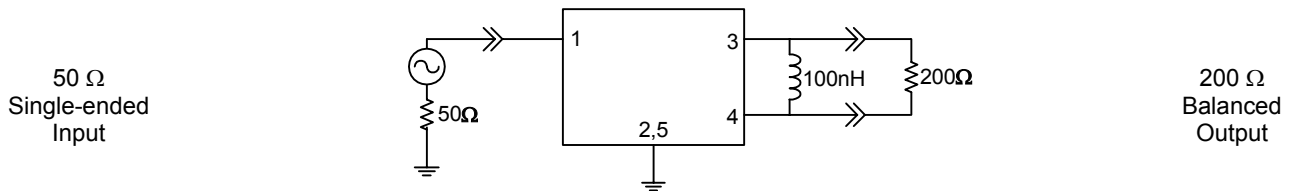
| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---------------------------------------------------------------------------------------|---------|---------------|---------|----------|
| Center Frequency | - | 881.5 | - | MHz |
| Maximum Insertion Loss 869 - 894 MHz | - | 2.4 | 2.8 | dB dB |
| Amplitude Variation 869 - 894 MHz | - | 0.7 | 1.5 | dB p-p |
| Absolute Attenuation 100 - 824 MHz | 40 | 70 | - | dB |
| 824 - 849 MHz | 38 | 40 | - | dB |
| 914 - 970 MHz | 23 | 27 | - | dB |
| 970 - 3000 MHz | 40 | 60 | - | dB |
| 3000 - 6000 MHz | 35 | 50 | - | dB |
| Input/Output VSWR 869 - 894 MHz | - | 1.5 | 1.8 | |
| Output Amplitude Balance (S₃₁/S₂₁) 869 - 894 MHz | -1 | ±0.5 | 1 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 869 - 894 MHz | 170 | 177-183 | 190 | degree |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 200Ω 100nH | - | Ω |

Notes:

1. All specifications are based on the test circuit shown below
2. This specification is valid for room temperature only. The specification over the full temperature range(s) is available on the next page(s)
3. Electrical margin has been built into the design to account for the variations due to manufacturing tolerances
4. This is the complex conjugate of the unmatched filter's impedance resulting in maximum power transfer

Test Circuit:

Actual matching values may vary due to PCB layout and parasitics



Data Sheet

Electrical Specifications ⁽¹⁾

Operating Temperature Range: ⁽²⁾ -30 to +85 °C

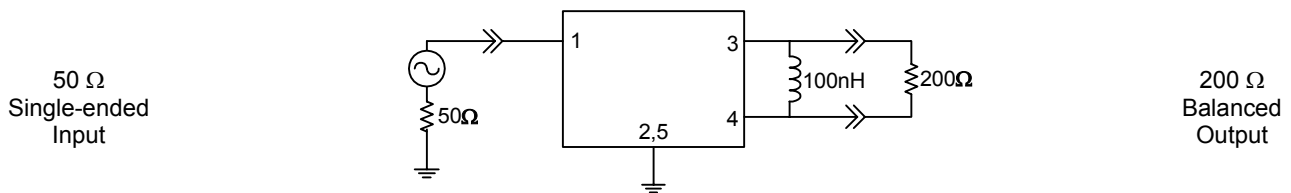
| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---------------------------------------------------------------------------------------|---------|---------------|---------|----------|
| Center Frequency | - | 881.5 | - | MHz |
| Maximum Insertion Loss 869 - 894 MHz | - | 2.4 | 3 | dB dB |
| Amplitude Variation 869 - 894 MHz | - | 0.8 | 1.5 | dB p-p |
| Absolute Attenuation 100 - 824 MHz | 40 | 70 | - | dB |
| 824 - 849 MHz | 35 | 40 | - | dB |
| 914 - 970 MHz | 20 | 27 | - | dB |
| 970 - 3000 MHz | 40 | 60 | - | dB |
| 3000 - 6000 MHz | 35 | 50 | - | dB |
| Input/Output VSWR 869 - 894 MHz | - | 1.5 | 2.0 | |
| Output Amplitude Balance (S₃₁/S₂₁) 869 - 894 MHz | -1 | ±0.5 | 1 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 869 - 894 MHz | 170 | 177-183 | 190 | degree |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 200Ω 100nH | - | Ω |

Notes:

1. All specifications are based on the test circuit shown below
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. This is the complex conjugate of the unmatched filter's impedance resulting in maximum power transfer

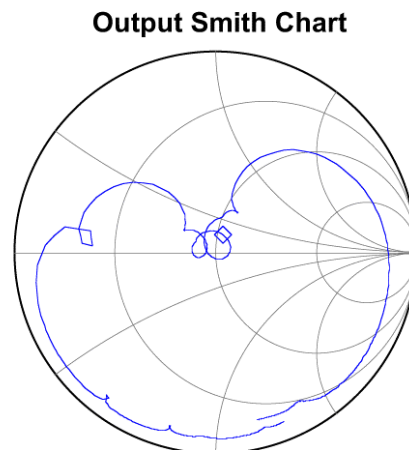
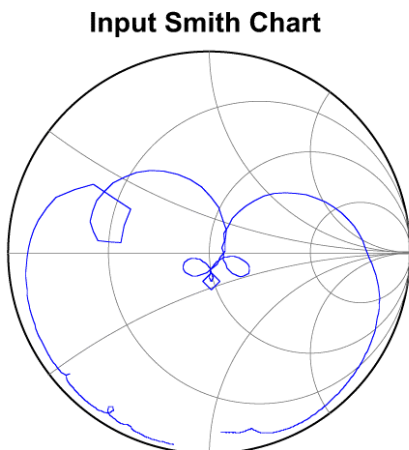
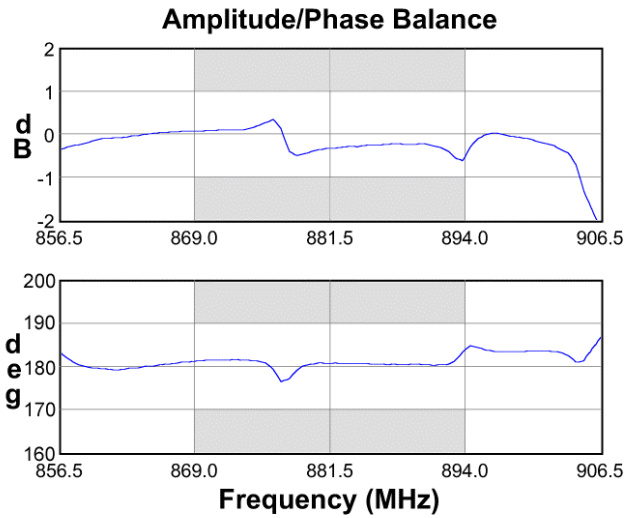
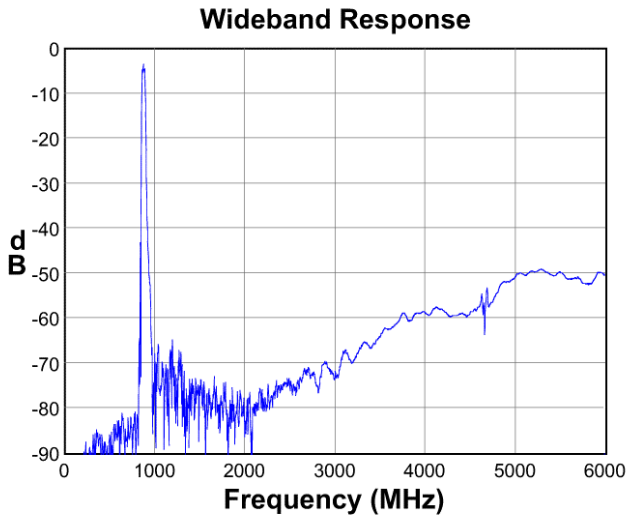
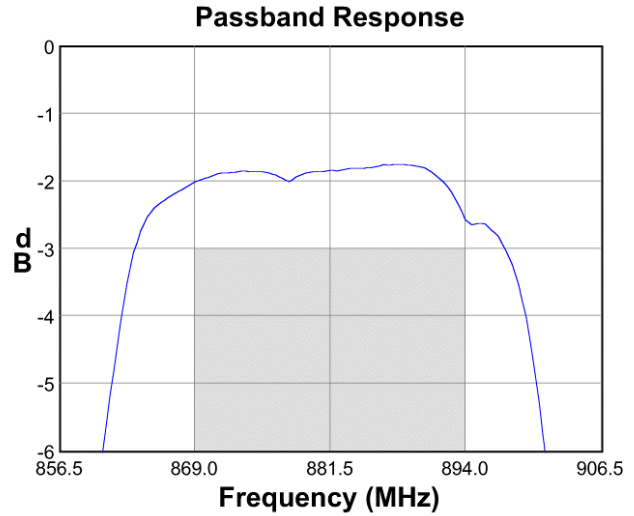
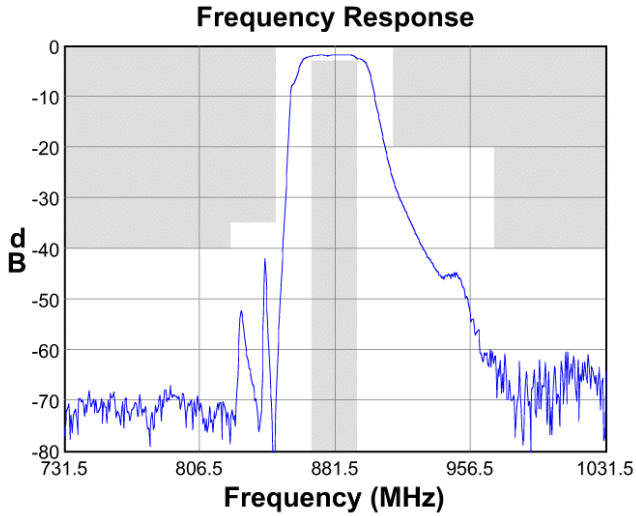
Test Circuit:

Actual matching values may vary due to PCB layout and parasitics



Data Sheet

Typical Performance (at +25°C)



Data Sheet

Electrical Specifications ⁽¹⁾

Operating Temperature Range: ⁽²⁾ -30 to +85 °C

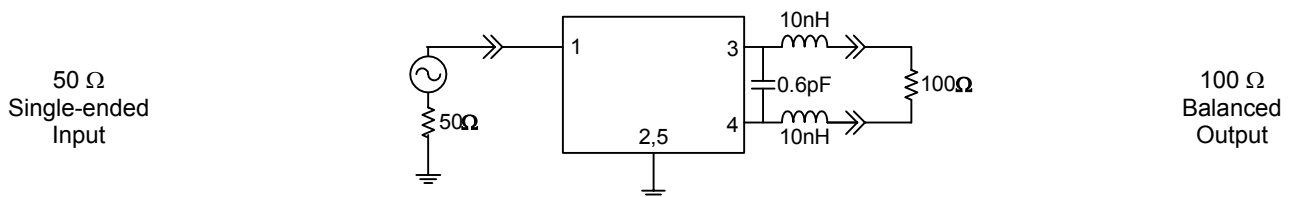
| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---------------------------------------------------------------------------------------|---------|-------------|---------|----------|
| Center Frequency | - | 881.5 | - | MHz |
| Maximum Insertion Loss 869 - 894 MHz | - | 2.4 | 3 | dB dB |
| Amplitude Variation 869 - 894 MHz | - | 0.7 | 1.5 | dB p-p |
| Absolute Attenuation 100 - 824 MHz | 40 | 70 | - | dB |
| 824 - 849 MHz | 35 | 40 | - | dB |
| 914 - 970 MHz | 20 | 27 | - | dB |
| 970 - 3000 MHz | 40 | 60 | - | dB |
| 3000 - 6000 MHz | 35 | 50 | - | dB |
| Input/Output VSWR 869 - 894 MHz | - | 1.5 | 2.0 | |
| Output Amplitude Balance (S₃₁/S₂₁) 869 - 894 MHz | -1 | ±0.5 | 1 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 869 - 894 MHz | 170 | 177-183 | 190 | degree |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 50.5 + j93Ω | - | Ω |

Notes:

1. All specifications are based on the test circuit shown below
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. This is the complex conjugate of the unmatched filter's impedance resulting in maximum power transfer

Test Circuit:

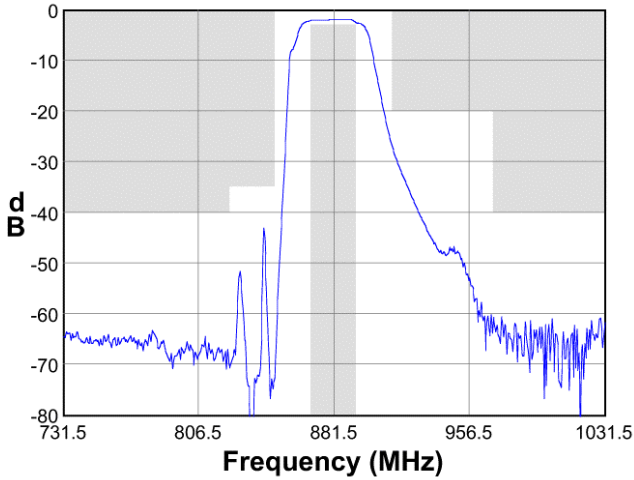
Actual matching values may vary due to PCB layout and parasitics



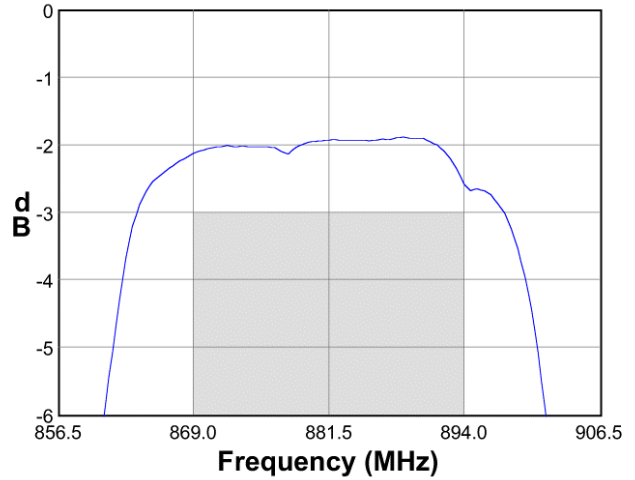
Data Sheet

Typical Performance (at +25°C)

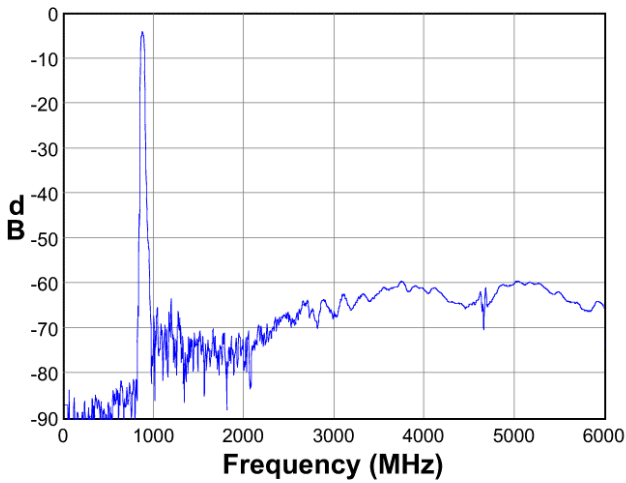
Frequency Response



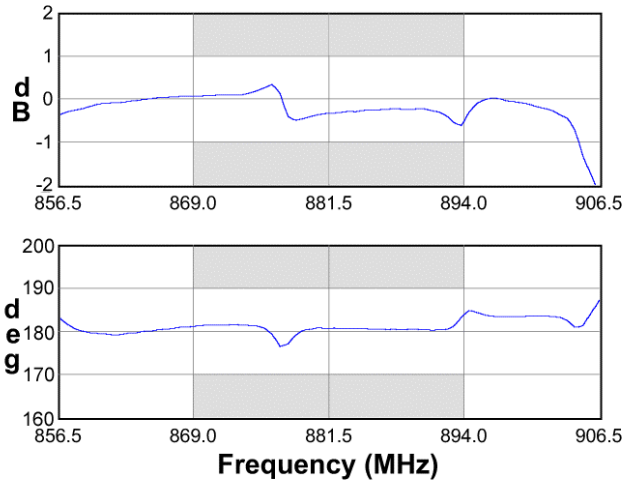
Passband Response



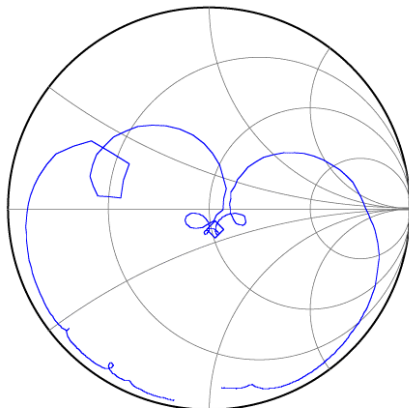
Wideband Response



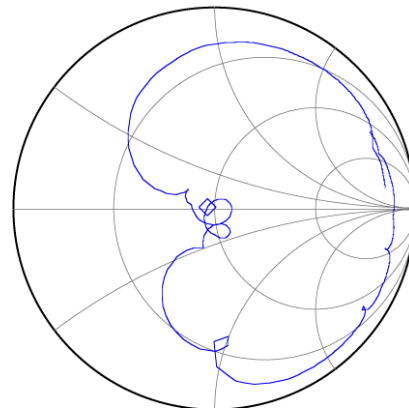
Amplitude/Phase Balance



Input Smith Chart



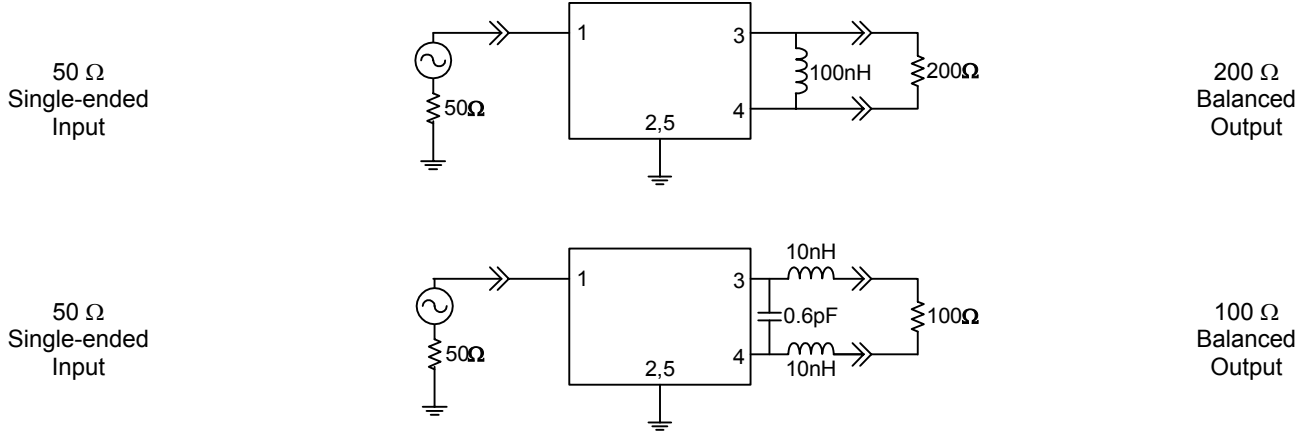
Output Smith Chart



Data Sheet

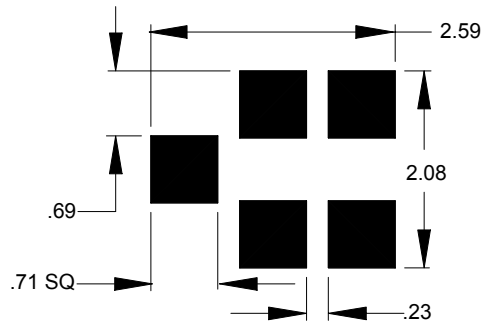
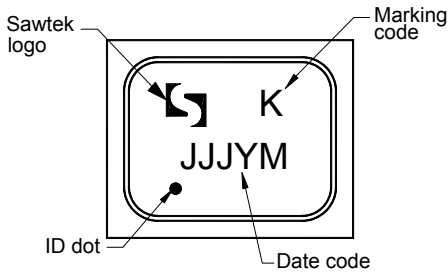
Matching Schematics

Actual matching values may vary due to PCB layout and parasitics



Marking

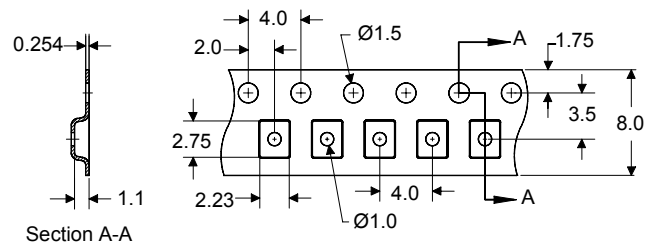
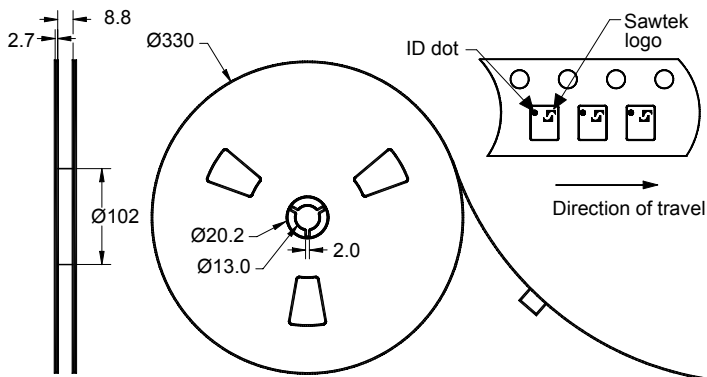
PCB Footprint



The date code consists of: JJJ = Julian day,
Y = last digit of year, M = manufacturing site code

This footprint represents a recommendation only
Dimensions shown are nominal in millimeters

Tape and Reel




Dimensions shown are nominal in millimeters
Packaging quantity: 10000 units/reel

Data Sheet

Maximum Ratings

| Parameter | Symbol | Minimum | Maximum | Unit |
|-----------------------------|------------------|---------|---------|------|
| Operating Temperature Range | T | -30 | +85 | °C |
| Storage Temperature Range | T _{stg} | -40 | +85 | °C |

Warnings

- Electrostatic Sensitive Device (ESD) 
- Avoid ultrasonic exposure

Material Content

- Does not contain lead (Pb) or other RoHS restricted materials

Links to Additional Technical Information

[PCB Layout Tips](#)

[Qualification Flowchart](#)

[Soldering Profile](#)

[S-Parameters](#)

[Other Technical Information](#)

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[Representatives or distributors](#)