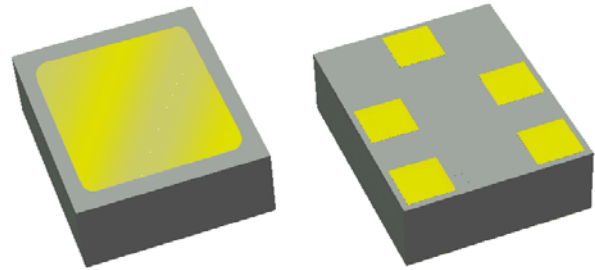


Data Sheet

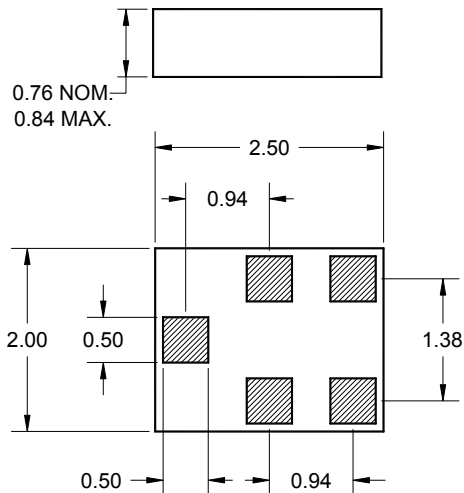
Features

- For EGSM applications
- Usable bandwidth 35 MHz
- High attenuation
- Superior amplitude and phase balance
- Single-ended input
- Balanced output
- Ceramic Surface Mount Package (SMP)
- Small size



Package

Surface Mount 2.50 x 2.00 x 0.76 mm

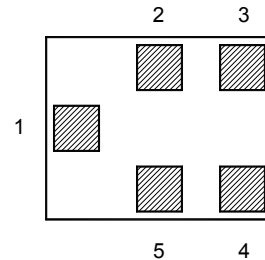


Dimensions shown are nominal in millimeters
 All tolerances are $\pm 0.10\text{mm}$

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

Pin Configuration

Bottom View



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

Data Sheet

Electrical Specifications ⁽¹⁾

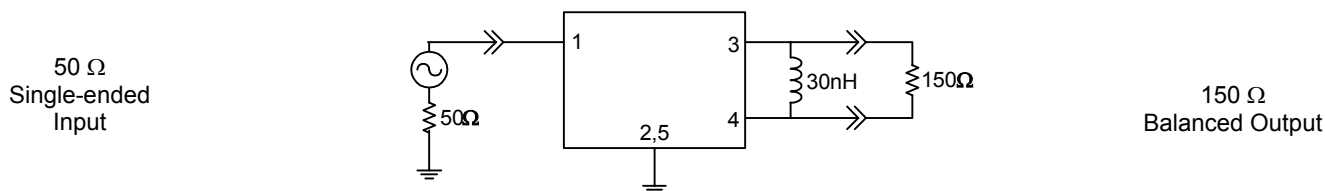
Operating Temperature Range: ⁽²⁾ +25 °C

| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---|----------------------------|----------------------------|-----------------------|----------------------------|
| Center Frequency | - | 942.5 | - | MHz |
| Maximum Insertion Loss 925 - 960 MHz Excluding losses due to matching Including losses in matching test circuit shown below | - - | 2.3 2.5 | - 3.2 | dB dB |
| Amplitude Ripple 925 - 960 MHz | - | 0.2 | 1.6 | dB p-p |
| Absolute Attenuation 0 - 880 MHz 880 - 905 MHz 905 - 915 MHz 980 - 1050 MHz 1050 - 6000 MHz | 50 30 20 23 50 | 65 38 22 28 65 | - - - - - | dB dB dB dB dB |
| Input VSWR 925 - 960 MHz | - | 1.8 | 2.4 | dB |
| Output VSWR 925 - 960 MHz | - | 1.7 | 2.3 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 925 - 960 MHz | 175 | 180 | 185 | degree |
| Output Amplitude Balance (S_{31}/S_{21}) 925 - 960 MHz | -0.5 | 0 | 0.5 | dB |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 225 48nH | - | 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:



Data Sheet

Electrical Specifications ⁽¹⁾

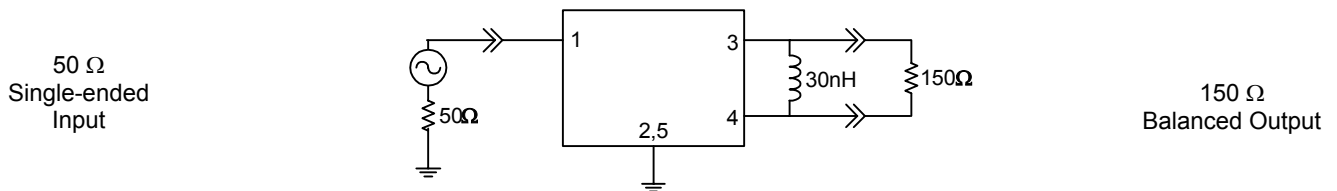
Operating Temperature Range: ⁽²⁾ -10 to +80 °C

| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---|----------------------------|----------------------------|-----------------------|----------------------------|
| Center Frequency | - | 942.5 | - | MHz |
| Maximum Insertion Loss 925 - 960 MHz Excluding losses due to matching Including losses in matching test circuit shown below | - - | 2.5 2.7 | - 3.5 | dB dB |
| Amplitude Ripple 925 - 960 MHz | - | 0.9 | 1.9 | dB p-p |
| Absolute Attenuation 0 - 880 MHz 880 - 905 MHz 905 - 915 MHz 980 - 1050 MHz 1050 - 6000 MHz | 50 30 18 23 50 | 65 38 22 27 65 | - - - - - | dB dB dB dB dB |
| Input VSWR 925 - 960 MHz | - | 2.1 | 2.4 | dB |
| Output VSWR 925 - 960 MHz | - | 2.1 | 2.3 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 925 - 960 MHz | 175 | 180 | 185 | degree |
| Output Amplitude Balance (S_{31}/S_{21}) 925 - 960 MHz | -0.5 | 0 | 0.5 | dB |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 225 48nH | - | 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:



Data Sheet

Electrical Specifications ⁽¹⁾

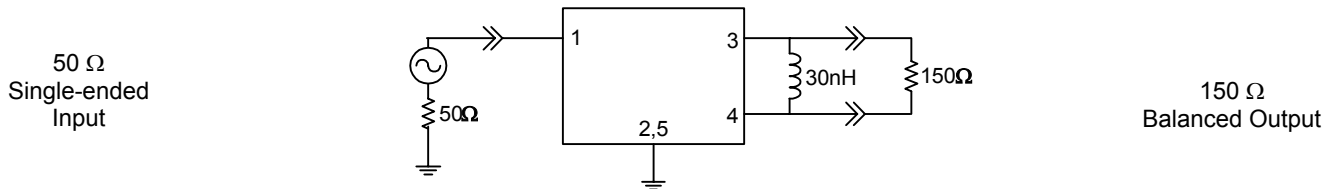
Operating Temperature Range: ⁽²⁾ -20 to +80 °C

| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---|----------------------------|----------------------------|-----------------------|----------------------------|
| Center Frequency | - | 942.5 | - | MHz |
| Maximum Insertion Loss 925 - 960 MHz Excluding losses due to matching Including losses in matching test circuit shown below | - - | 2.6 2.7 | - 3.7 | dB dB |
| Amplitude Ripple 925 - 960 MHz | - | 0.7 | 2.1 | dB p-p |
| Absolute Attenuation 0 - 880 MHz 880 - 905 MHz 905 - 915 MHz 980 - 1050 MHz 1050 - 6000 MHz | 50 30 18 22 50 | 65 38 22 27 65 | - - - - - | dB dB dB dB dB |
| Input VSWR 925 - 960 MHz | - | 1.8 | 2.4 | dB |
| Output VSWR 925 - 960 MHz | - | 1.8 | 2.3 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 925 - 960 MHz | 175 | 180 | 185 | degree |
| Output Amplitude Balance (S_{31}/S_{21}) 925 - 960 MHz | -0.5 | 0 | 0.5 | dB |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 225 48nH | - | 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:



Data Sheet

Electrical Specifications ⁽¹⁾

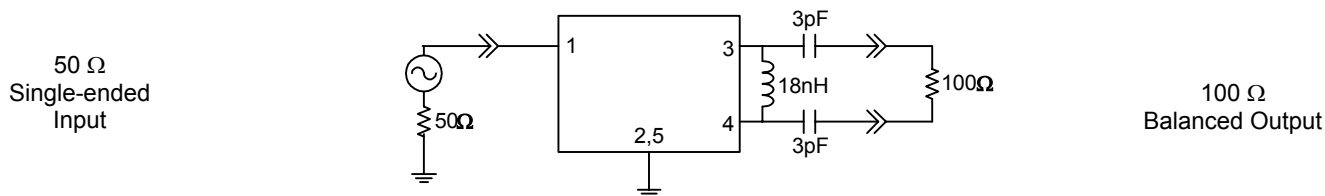
Operating Temperature Range: ⁽²⁾ -20 to +80 °C

| Parameter ⁽³⁾ | Minimum | Typical | Maximum | Unit |
|---|---------|-------------|---------|----------|
| Center Frequency | - | 942.5 | - | MHz |
| Maximum Insertion Loss 925 - 960 MHz Excluding losses due to matching | - | 2.6 | - | dB |
| Including losses in matching test circuit shown below | - | 2.9 | 3.9 | dB |
| Amplitude Ripple 925 - 960 MHz | - | 0.7 | 2.1 | dB p-p |
| Absolute Attenuation 0 - 880 MHz | 50 | 65 | - | dB |
| 880 - 905 MHz | 30 | 38 | - | dB |
| 905 - 915 MHz | 18 | 22 | - | dB |
| 980 - 1050 MHz | 22 | 27 | - | dB |
| 1050 - 6000 MHz | 50 | 65 | - | dB |
| Input VSWR 925 - 960 MHz | - | 1.8 | 2.4 | dB |
| Output VSWR 925 - 960 MHz | - | 1.8 | 2.3 | dB |
| Output Phase Balance $\phi(S_{31}) - \phi(S_{21})$ 925 - 960 MHz | 175 | 180 | 185 | degree |
| Output Amplitude Balance (S_{31}/S_{21}) 925 - 960 MHz | -0.5 | 0 | 0.5 | dB |
| Optimal Source Impedance ⁽⁴⁾ | - | 50 | - | Ω |
| Optimal Load Impedance ⁽⁴⁾ | - | 225 48nH | - | 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

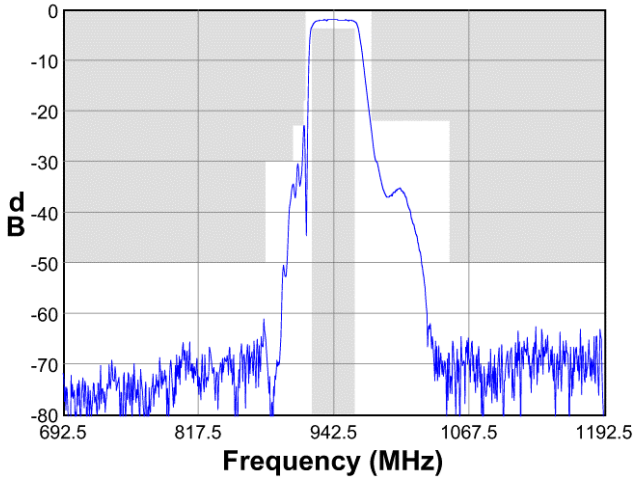
Test Circuit:



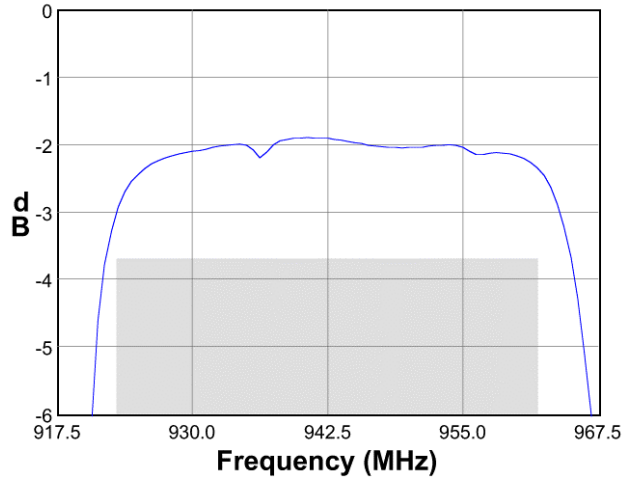
Data Sheet

Typical Performance (at +25°C)

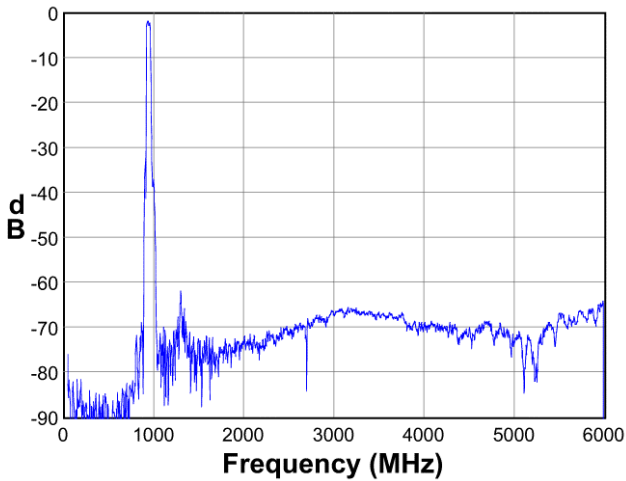
Frequency Response



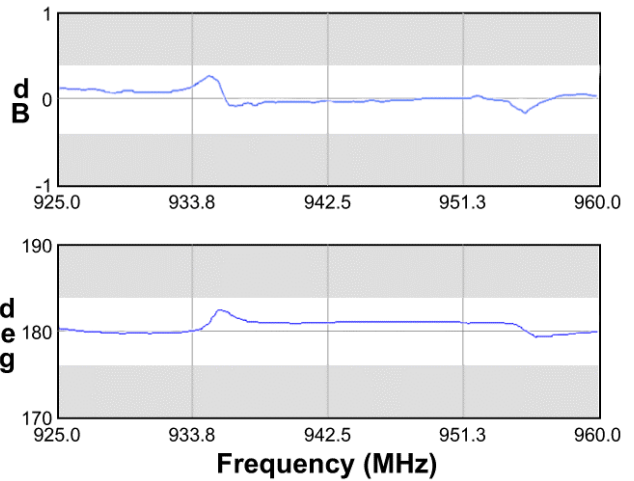
Passband Response



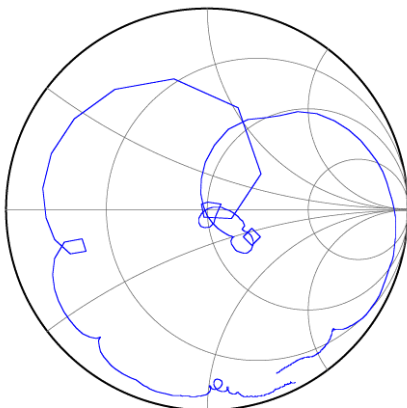
Wideband Response



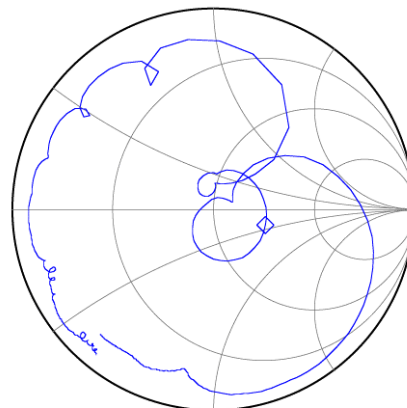
Amplitude/Phase Balance



Input Smith Chart



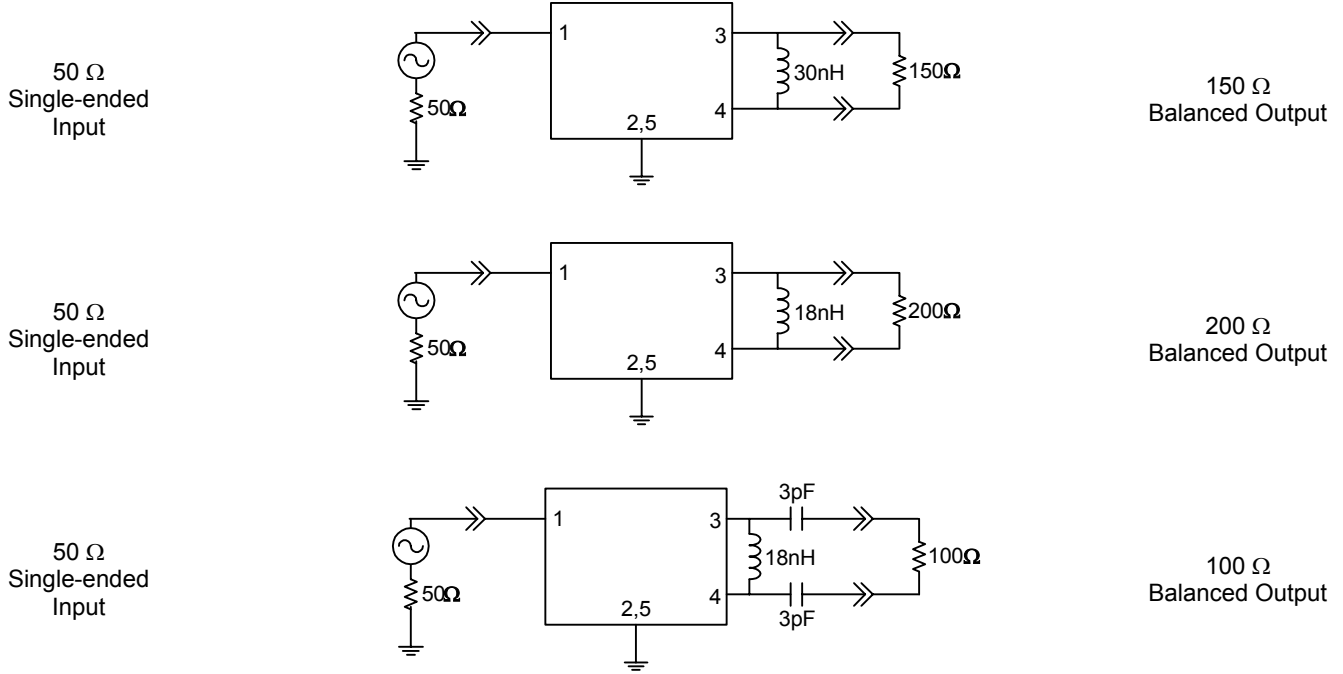
Output Smith Chart



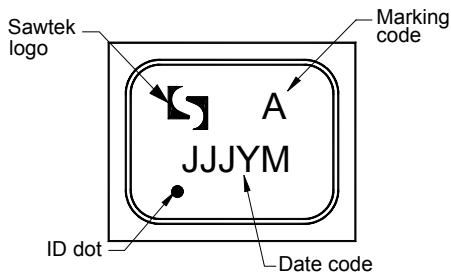
Data Sheet

Matching Schematics

Actual matching values may vary due to PCB layout and parasitics

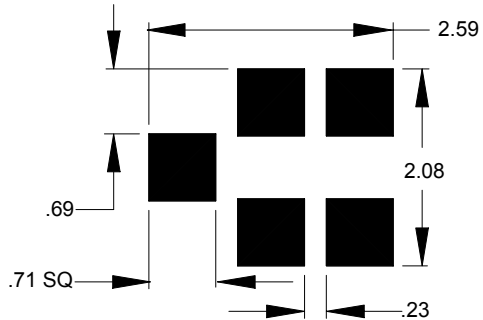


Marking



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

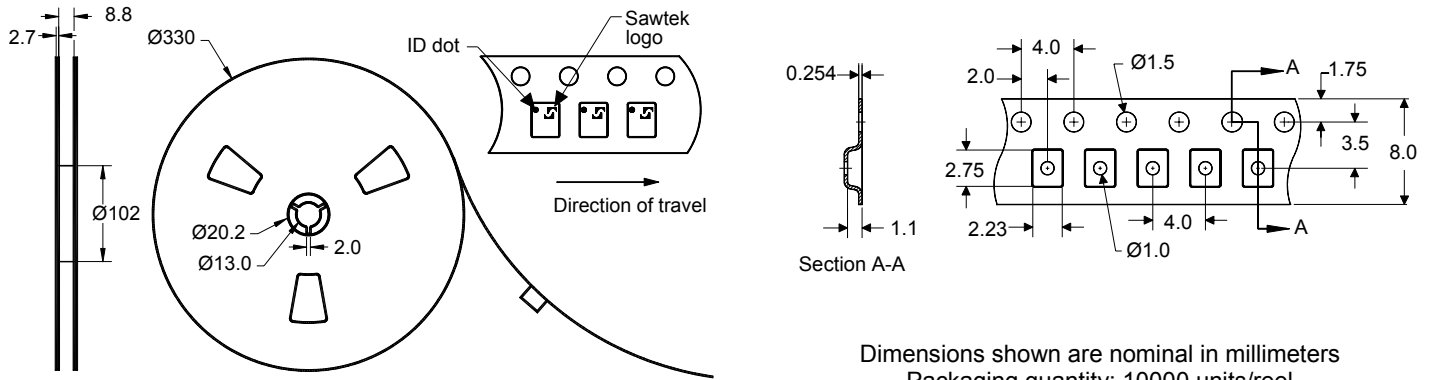
PCB Footprint



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

Data Sheet

Tape and Reel




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

Maximum Ratings

| Parameter | Symbol | Minimum | Maximum | Unit |
|-----------------------------|------------------|---------|---------|------|
| Operating Temperature Range | T | -20 | +80 | °C |
| Storage Temperature Range | T _{stg} | -40 | +85 | °C |

Warnings

- Electrostatic Sensitive Device (ESD) 
- Avoid ultrasonic exposure

Links to Additional Technical Information

[PCB Layout Tips](#)

[Qualification Flowchart](#)

[Soldering Profile](#)

[S-Parameters](#)

[Other Technical Information](#)

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[Representatives or distributors](#)