

DOUBLESHIELD PAD

DATA SHEET

Rev 1, 2020-12-09



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Introduction

In automotive electronic devices, grounding and shielding products should ensure electrical performance without breaking under mechanical or environmental stress throughout the lifetime of the product.

Features and Benefits

The flexible and easily compressible SMT Pad can take up tolerances and close the gap between a PCB and another component, in addition to providing a reliable grounding contact.

- Large conformable contact area vs metal spring
- Full chemical bonding between gasket and metal which gives an advantage to not fall out of placement
- Low electrical resistance
- Good elasticity & low compression force
- Replaces most Metal Finger & Fabric Gasket
- No scratching of PCB
- No risk for whisker growth. The DoubleShield Pad is a bottom-only termination component where the full plated surface is wetted, (ref. JESD201)

Applications

The DoubleShield Pad is used as a grounding contact on printed circuit boards commonly used in the electronics industry and anywhere high electrical conductivity is needed in a compressible, resilient form, e.g. (mobile phones, base-stations, power amplifiers, laptop computers, PDAs, cameras & radar systems, infotainment systems, etc.).

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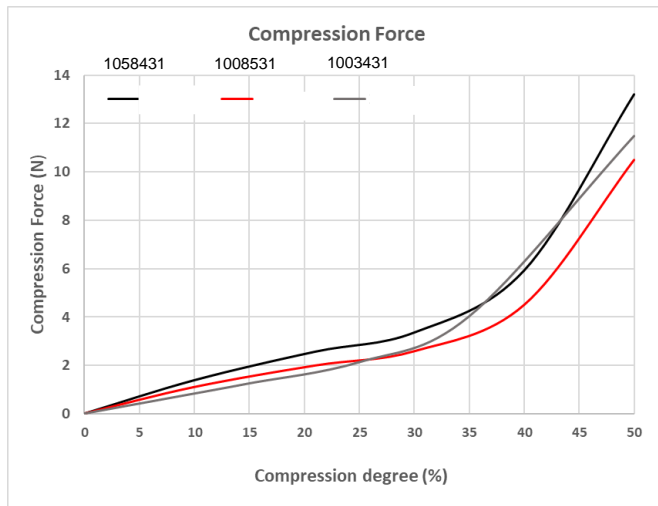
Product Properties

The DoubleShield Pad has a hollow profile with a core of soft silicone rubber and a shell of electrically conductive silicone rubber.

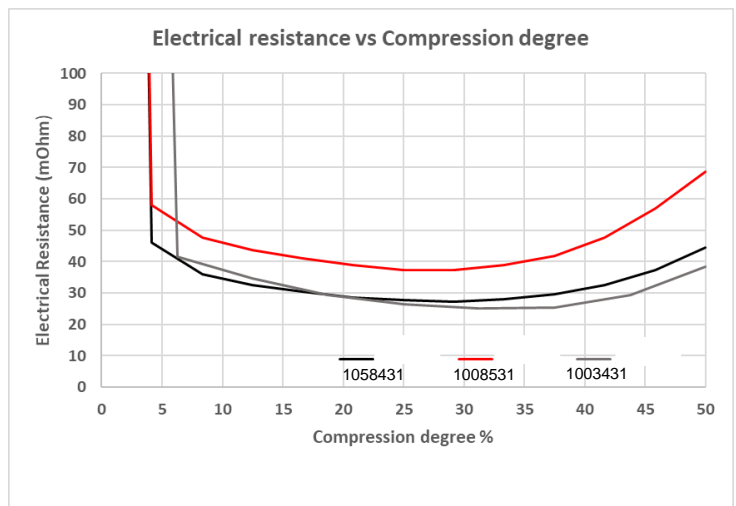
The recommended operating temperature is between -40°C and +125°C. To ensure a safe and repeatable compression, Schlegel recommends the use of mechanical compression stops allowing a compression degree of 15-25%. Minimum 15% and maximum 35% compression is recommended.

Property	Test Standard	Unit	SEM1058431	SEM1008531	SEM1003431
Recommended compression stop		mm	1.9	1.9	1.2
Force to compress to RCS*		N	2.6	2.0	2.1
Electrical resistance at RCS*	SEM R9 / R10	Ohm	0.03	0.04	0.04
Compression set, @ 22h/125 °C	ISO 815	%	10	13	11

*RCS – Recommended compression stop



Compression force versus compression degree



Electrical resistance versus compression degree

The DoubleShield Pad fulfills the requirements set by the Directive 2011/65/EU and its amendments (RoHS).

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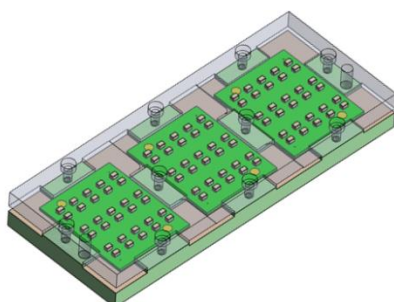


Accelerated Life Testing

The Doubleshield Pad performance has been evaluated after accelerated life testing. The tests were performed at different conditions (see table below):

The performance was tested on 90 Pads after accelerated aging test in a test fixture simulating a grounding application.

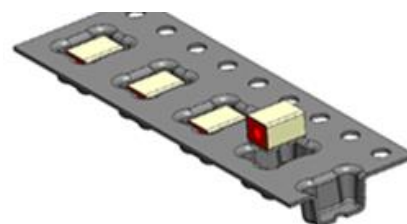
Property	Test Conditions
Cold	-65°C / 96 hr
Thermal cycling	-40 to +125°C (30 min. dwell time & 10K/min.) 1000 cycles
Dry heat	125 °C 2000 hours
Damp Heat Steady State	85 °C/ 85% RH duration 1000 hours



Accelerated Life test fixture

Packaging

The Doubleshield Pad is delivered in a standard tape-and-reel format for automated placement in standard SMT process. The packaging complies with the EIA-481 standard.



Storage conditions

The Doubleshield Pad is MSL-1 classified with unlimited storage time.

This assumes that the component is in Tape-and-Reel and protected from rain, direct sunshine or other pollution in the environment that could affect its properties.

Solderability testing by customer after one year of storage is recommended.

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Product Dimensions

The recommended solder paste pattern for the DoubleShield Pad should be either evenly distributed circles (Fig 1) or a rectangle (Fig 2). Either pattern allows for a sufficient volume of solder without flooding the ground trace with excess solder.

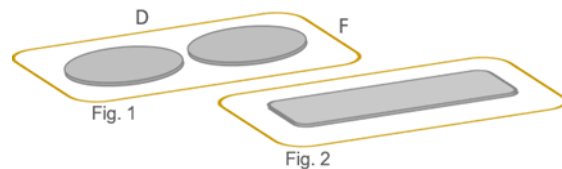
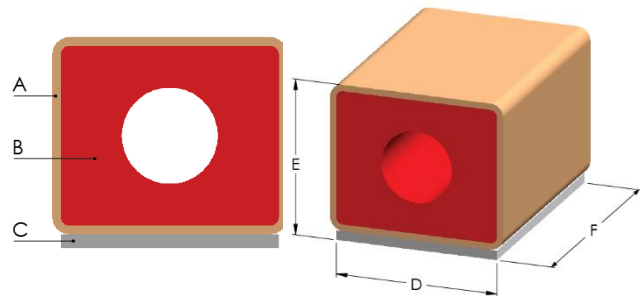
The nominell solder paste coverage should be 55% ±5% for 2.50 x 3.60 package and ~90% for the 1.60 x 3.60 size.

This recommendation minimizes rotation or lateral movements of the gasket during reflow.

The recommended screen stencil solder paste pattern is based on trials using a stencil thickness of ~0.127 mm and with SAC305 solder paste.

Performing additional evaluation if using a solder paste thickness that is less or greater than ~0.127 mm is recommended.

Material	SEM1008531	SEM1058431	SEM1003431
A	8610	8610	8610
B	1445	1540	1445
C	Sn/Ni/Cu	Sn/Ni/Cu	Sn/Ni/Cu
Dimension (mm)			
D	2.50	2.50	1.60
E	2.40	2.40	1.60
F	3.60	3.60	3.60
Recommended PCB solder mask opening (mm)			
D	2.75	2.75	1.85
F	3.75	3.75	3.75
Recommended solder paste pattern (mm)			
Fig. 1	Ø 1.78 x 2 ±5%	Ø 1.78 x 2 ±5%	-
Fig. 2	1,50 x 3,30 ±5%	1,50 x 3,30 ±5%	1,46 x 3,55



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DEFINING EMI SOLUTIONS SINCE 1987
www.schlegelemi.com

NORTH AMERICA

Schlegel Electronic Materials, Inc.

1600 Lexington Ave
Suite 236A Rochester NY 14606
Tel No: +1 585-643 2000
Fax No: +1 585-427 7216
Email: schlegelemi.na@schlegelemi.com

EUROPE

Schlegel Electronic Materials, bv

Schatting 73
BE-8210 Zedelgem
Belgium
Tel No: +32 59 560 270
Fax No: +32 59 560 271
Email: schlegelbe@schlegelemi.com

ASIA

Schlegel Electronic Materials Asia Limited

Unit 3, 3/F., Block A, New Trade Plaza,
6 On Ping Street, Shatin, N.T., Hong Kong
Tel No: +852-2686 9872
Fax No: +852-2686 9728
Email: schlegelemi@emeigroup.com

Schlegel (Dongguan) Electronics Limited

No. 8 Qiaoxin Road, Qiaotou, Dongguan,
Guangdong, China
Postal Code: 523525
Tel No: +86-769-8356 5686
Fax No: +86-769-8334 5656
Email: schlegelemi@emeigroup.com

Schlegel (Shanghai) Electronics Limited

4/F., 79 Parts, 111 Meisheng Road,
F.T.Z., Pudong, Shanghai, China
Postal Code: 200131
Tel No: +86-21-5868 3383
Fax No: +86-21-5868 3386
Email: schlegelemi@emeigroup.com

Taiwan Schlegel Electronics Limited

No. 99, Alley 3, Lane 182, Section 2 Wenhua Road,
Banqiao District
Postal Code: 22044
Tel No: +886-2-8258 5148
Fax No: +886-2-8258 5149
Email: schlegelemi@emeigroup.com