

Specification Status: Released

BENEFITS

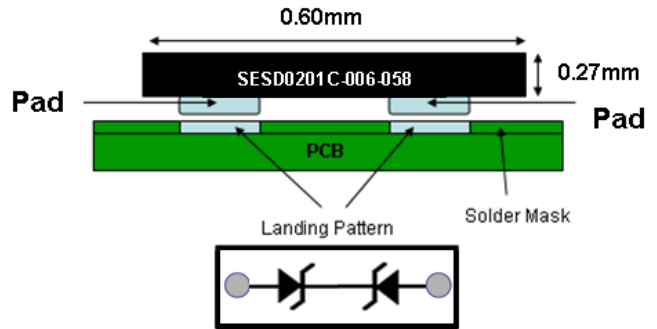
- Small-size bi-directional ESD protection diodes
- Appropriate for ESD protection in space-constrained portable electronics and mobile handsets
- Bi-directional operation allows placement on PCB without orientation constraint
- Helps protect electronic circuits against damage from Electrostatic Discharge (ESD) events
- Assist equipment to pass IEC61000-4-2, level 4 testing
- RoHS compliant and Halogen Free

FEATURES

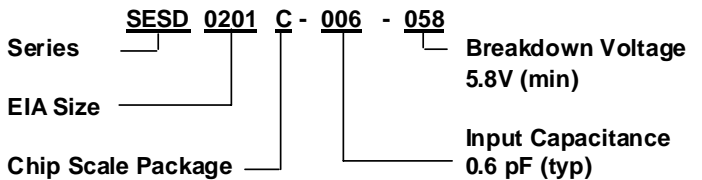
- Ultra-low Input capacitance – 0.6pF (typ)
- Low leakage current – 1.0µA (max)
- Low breakdown voltage – 5.8V (min)
- ESD maximum rating per IEC61000-4-2 standard
 - ± 8kV contact discharge
 - ± 15kV air discharge
- Capable of withstanding numerous ESD strikes
- Small package size: 0.60mm x 0.30mm
- Low package height: 0.27mm

APPLICATIONS

- Cellular phones and portable electronics
- High speed data lines and low voltage antenna ports
- USB 2.0/3.0, HDMI 1.3/1.4, and DisplayPort
 - Less than 0.8dB insertion loss up to 5.0GHz
- Applications requiring ESD performance in an ultra-small package



PART NUMBERING



MATERIALS INFORMATION

RoHS Compliant
ELV Compliant
Halogen Free *

Directive 2000/53/EC Compliant
Directive 2002/95/EC Compliant
HF

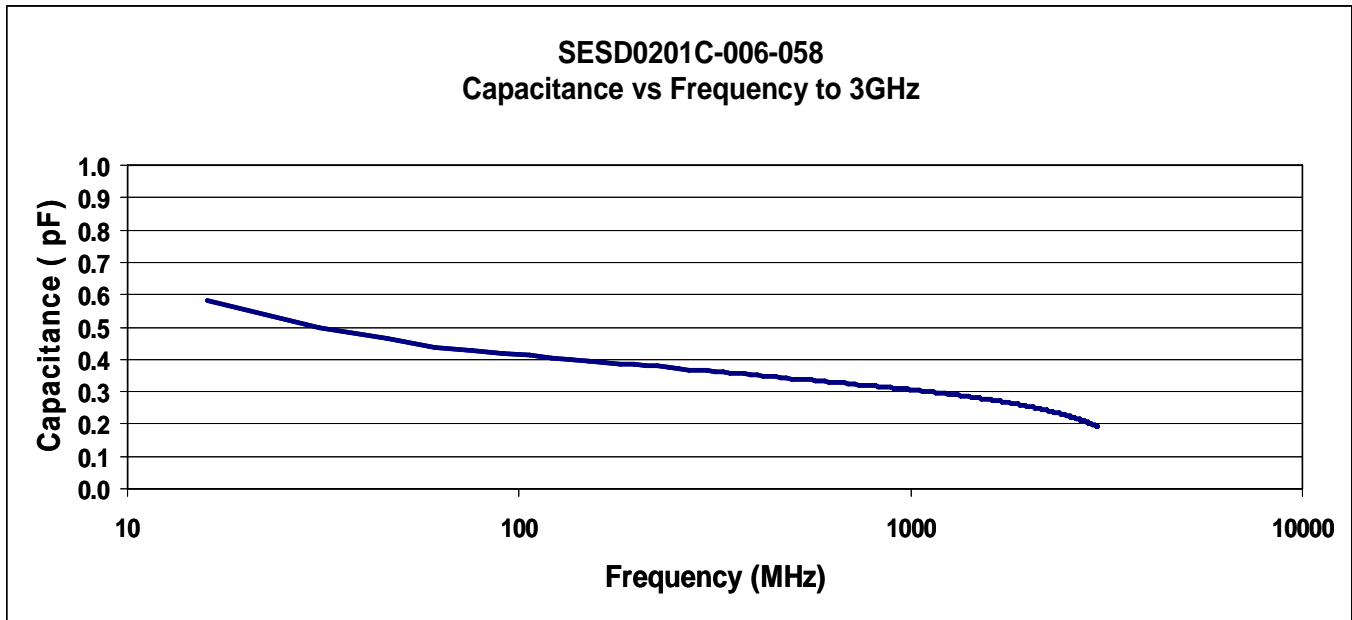
* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+Cl≤1500ppm

Device Characteristics @ T = 25°C	Min	Typ	Max	Unit
Input Capacitance @ $V_r = 0V, f = 1MHz$	--	0.6	0.9	pF
Working Reverse Voltage (peak) - V_{wrv}	--	--	5.0	V
Breakdown Voltage - V_{br} @ $I_t = 1mA^{(1)}$	5.8	--	--	V
Leakage current @ $V_{wrv} = 5.0V$	--	--	1.0	µA
Total Power Dissipation - Pd (on 30mm x 30mm FR-4)	--	--	250	mW
ESD contact discharge per IEC61000-4-2 standard	--	--	±8	kV
ESD air discharge per IEC61000-4-2 standard	--	--	±15	kV
Operating ($T_{junction}$) and Storage Temperature Range	-40 to +125			°C

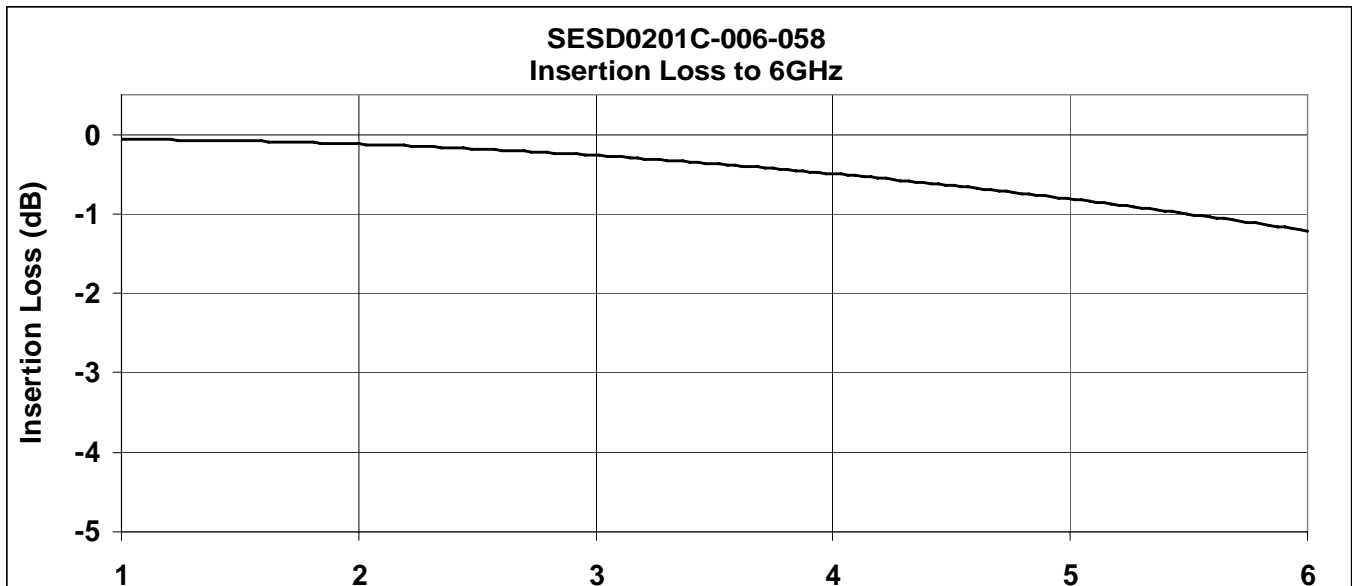
⁽¹⁾ V_{br} is measured at test current I_t

SUPERSEDED
NOT the LATEST
REVISION

LINE CAPACITANCE vs FREQUENCY



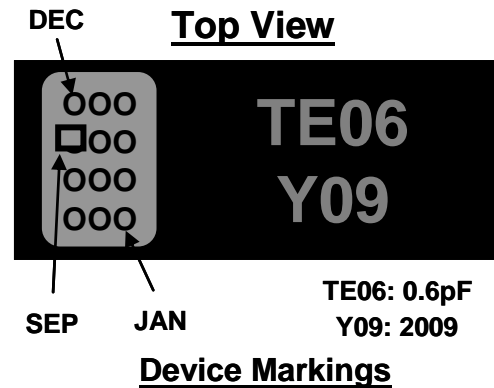
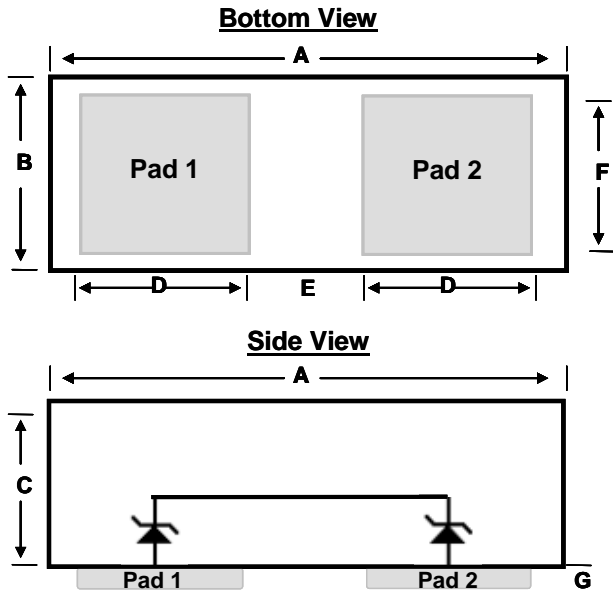
INSERTION LOSS



Applications	Ins. Loss (dB)	@ Freq (GHz)
HDMI 1.3 (1080p)	-0.205	2.25
HDMI 1.3 (max spec)	-0.354	3.40
DisplayPort	-0.235	2.70
USB 3.0	-0.791	5.00

Frequency in GHz

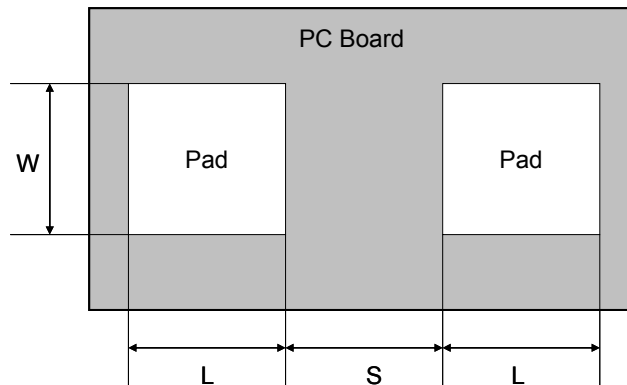
DEVICE DIMENSIONS



Drawings Not To Scale

	A	B	C	D	E	F	G
mm	0.60 ± 0.03	0.30 ± 0.03	0.27 ± 0.03	0.15 ± 0.03	0.25 ± 0.03	0.25 ± 0.03	0.005 (max)
mils*	23.62 ± 1.20	11.81 ± 1.20	10.63 ± 1.20	5.91 ± 1.20	9.84 ± 1.20	9.84 ± 1.20	0.197 (max)

RECOMMENDED LANDING PATTERN:



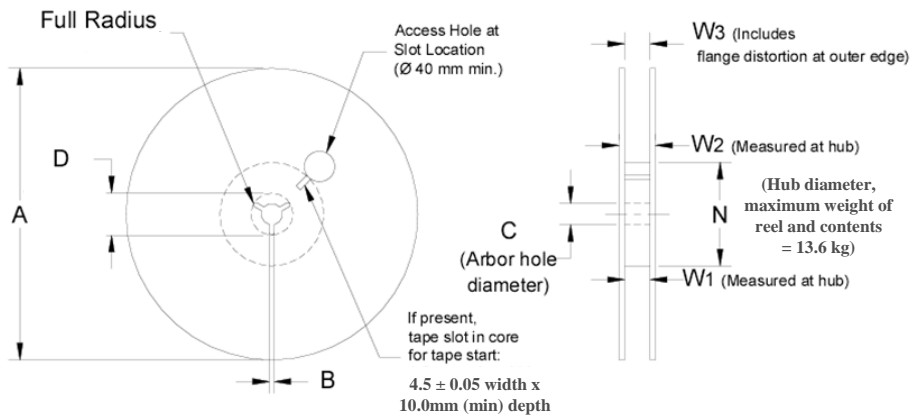
	L	S	W
mm	0.28 ± 0.01	0.19 ± 0.01	0.30 ± 0.01
mils*	11.0 ± 0.4	7.5 ± 0.4	11.8 ± 0.4

* Round off approximation

Packaging

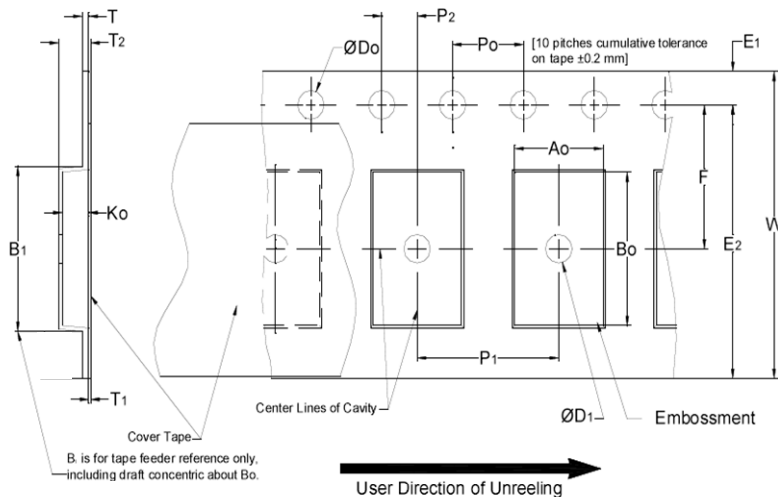
Device Packaging	Tape & Reel Quantity	Standard Box (MOQ)	Standard Box (POQ)
0201 CSP	5,000	10,000 (2 reels)	50,000 (10 reels)

Reel Dimensions



EIA Size	A	B	C	D	N	W ₁	W ₂	W ₃
mm	178 (max)	1.60 (min)	13.0 ± 0.2	20.2 (min)	50.0 (min)	9.15 ± 0.75	14.4 (max)	10.9 (max)

Embossed Carrier Tape Dimensions



- **Leader & Trailer:**
 - Leader tape: 400mm (min)
 - Trailer tape: 160mm (min)

Tape Dim	A ₀	B ₀	D ₀	D ₁	E ₁	E ₂	F	P ₀	P ₁	P ₂	W
mm	0.37 ± 0.03	0.67 ± 0.03	1.60 (max)	1.00 (min)	1.75 ± 0.10	5.85 (min)	3.50 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	2.00 ± 0.10	8.00 ± 0.30

Thickness	B ₁	K ₀	T	T ₁	T ₂
mm	0.67 ± 0.03	0.35 ± 0.03	0.60 (max)	0.10 (min)	1.05 ± 0.03

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of each product for their applications. Tyco Electronics reserves the right to change or update, without notice, any information contained in this publication; to change, without notice, the design, construction, processing, or specification of any product; and to discontinue or limit production or distribution of any product. This publication supersedes and replaces all information previously supplied. Without expressed or written consent by an officer of Tyco Electronics, Tyco Electronics does not authorize the use of any of its products as components in nuclear facility applications, aerospace, or in critical life support devices or systems. Tyco Electronics' only obligations are those in the Tyco Electronics Standard Terms and Conditions of Sale and in no case will Tyco Electronics be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of its products.

DisplayPort is a trademark of VESA

USB is a trademark of USB.org

HDMI is a trademark of HDMI Licensing LLC

TE (logo) and Tyco Electronics are trademarks of the Tyco Electronics group of companies and its licensors.

© 2009 Tyco Electronics Corporation. All rights reserved.