



**THE DATASHEET OF
23Z104SMNL**



COMMON MODE CHOKE CATALOG

Suited for LAN and Telecom Applications



Pulse
A TECHNITROL COMPANY

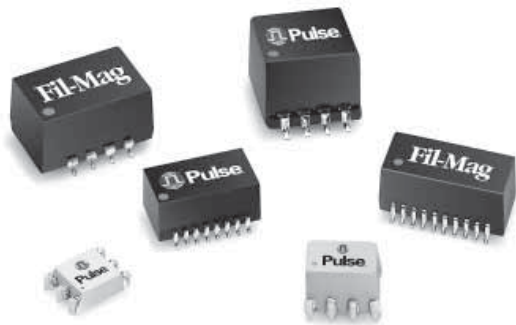
TABLE of CONTENTS





Common Mode Chokes for Datacom Applications

| | |
|----------------------------------------|------|
| Surface Mount Common Mode Chokes | 2-6 |
| Through Hole Common Mode Chokes | 7-12 |

SURFACE MOUNT COMMON MODE CHOKES

Suited for LAN and Telecom Applications



-  Reduces radiated EMI emissions
-  Filters common mode noise for EMI reduction
-  Common mode attenuation from 100 kHz to 1 GHz
-  Tape & Reel packaging available for surface mount parts*

Electrical Specifications @ 25°C

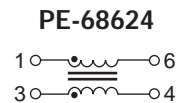
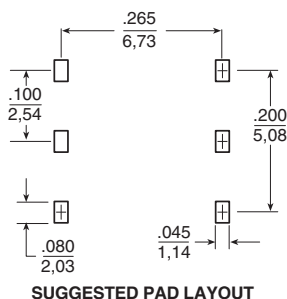
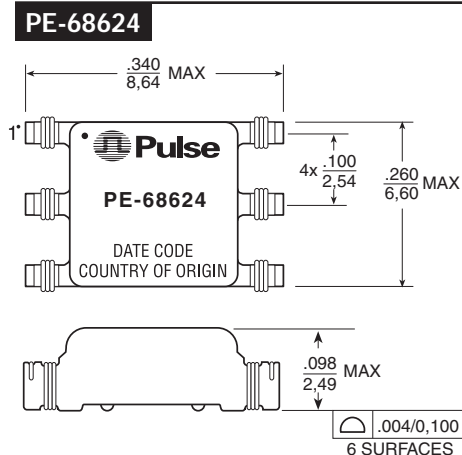
| Part Number | No. of Ports | Primary Inductance OCL (μH MIN) | Common Mode Attenuation (db TYP) | | | | | | | | | DCR (Ω MAX) | Page Number Mech & Schem |
|-------------|--------------|---------------------------------|----------------------------------|-------|--------|--------|--------|---------|---------|---------|-------|-------------|--------------------------|
| | | | 100 KHz | 1 MHz | 10 MHz | 30 MHz | 50 MHz | 100 MHz | 300 MHz | 500 MHz | 1 GHz | | |
| PE-68624 | 2 | 47 | 11 | 27 | 40 | 44 | 42 | 36 | 26 | 17 | — | 0.40 | 2 |
| PE-65855 | 2 | 4700 | 41 | 43 | 49 | 39 | 34 | 26 | 20 | 20 | 12 | 1.0 | 4 |
| B2013 | 2 | 6300 | 46 | 47 | 43 | 32 | 25 | 29 | 21 | 14 | 16 | 1.0 | 3 |
| B4003 | 2 | 4700 | 42 | 41 | 48 | 38 | 33 | 21 | 22 | 23 | 17 | 1.0 | 6 |
| 23Z87SM | 3 | 69 | 9 | 24 | 31 | 30 | 29 | 27 | 21 | 16 | — | 0.20 | 4 |
| PE-65857 | 4 | 22.5 | 7 | 20 | 30 | 37 | 38 | 34 | 24 | 13 | — | 0.22 | 4 |
| PE-68627 | 4 | 24 | 8 | 21 | 32 | 36 | 37 | 36 | 30 | 20 | — | 0.25 | 4 |
| T8003 | 4 | 33 | 9 | 13 | 32 | 32 | 30 | 27 | 16 | 17 | 13 | 0.20 | 6 |
| 23Z4000SMD | 4 | 36 | 7 | 23 | 35 | 38 | 38 | 36 | 29 | 24 | — | 0.50 | 5 |
| PE-65854 | 4 | 47 | 3 | 19 | 32 | 36 | 35 | 29 | 12 | 6 | — | 0.40 | 3 |
| 23Z104SM | 4 | 68 | 8 | 22 | 28 | 28 | 27 | 25 | 20 | 15 | — | 0.20 | 5 |
| PE-67540 | 4 | 100 | 14 | 33 | 44 | 48 | 49 | 44 | 34 | 29 | 20 | 0.60 | 4 |
| PE-65853 | 4 | 4700 | 40 | 51 | 38 | 30 | 25 | 20 | 14 | 13 | — | 1.20 | 3 |
| 23Z106SM | 6 | 68 | 8 | 22 | 29 | 30 | 30 | 29 | 24 | 19 | — | 0.20 | 5 |
| PE-69011 | 8 | 36 | 8 | 24 | 36 | 39 | 35 | 29 | 18 | 11 | — | 0.35 | 3 |
| 23Z105SM | 8 | 68 | 8 | 24 | 30 | 29 | 27 | 24 | 16 | 11 | — | 0.20 | 5 |
| 23Z109SM | 10 | 7.5 | 4 | 9 | 20 | 25 | 26 | 24 | 16 | 11 | — | 0.20 | 5 |
| T8008 | 16 | 47 | 7 | 27 | 40 | 44 | 42 | 36 | 26 | — | — | 0.40 | 6 |

* When ordering Tape & Reel packaging, add a "T" at the end of the part number (i.e. PE-65738T or 23Z106SMT).

NOTE: Additional common mode chokes are available. Please contact Applications Engineering.

Mechanical

Schematic



Weight 0.17 grams
Tape & Reel 1500/reel
Tube 85/tube

SURFACE MOUNT COMMON MODE CHOKES

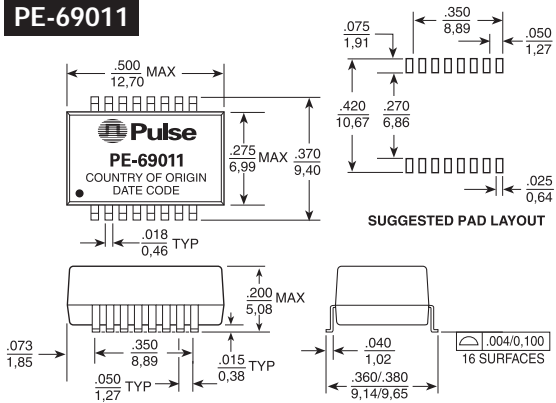
Suited for LAN and Telecom Applications



Mechanical

Schematic

PE-69011



Dimensions: $\frac{\text{Inches}}{\text{mm}}$

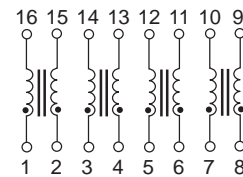
Unless otherwise specified,
all tolerances are $\pm .010$
0,25

Weight 0.83 grams

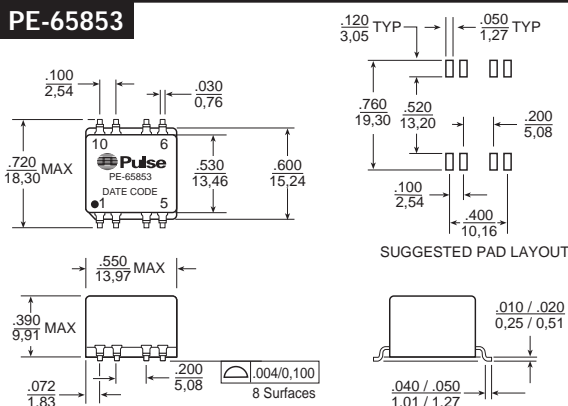
Tape & Reel 900/reel

Tube 40/tube

PE-69011



PE-65853



Dimensions: $\frac{\text{Inches}}{\text{mm}}$

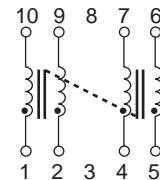
Unless otherwise specified,
all tolerances are $\pm .010$
0,25

Weight 4.0 grams

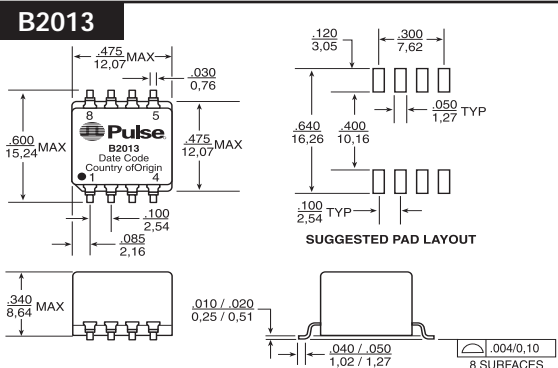
Tape & Reel 150/reel

Tube 35/tube

PE-65853



B2013



Dimensions: $\frac{\text{Inches}}{\text{mm}}$

Unless otherwise specified,
all tolerances are $\pm .010$
0,25

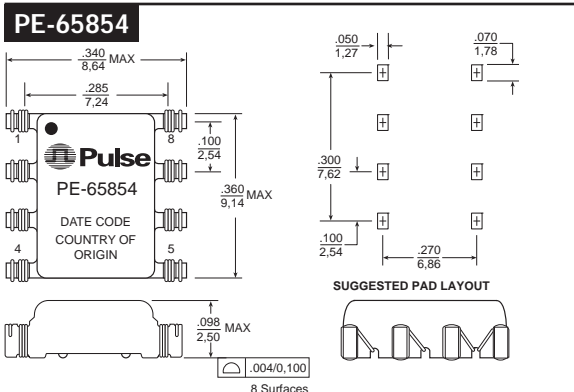
Weight 9.5 grams

Tray 30/tray

B2013



PE-65854



Dimensions: $\frac{\text{Inches}}{\text{mm}}$

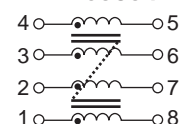
Unless otherwise specified,
all tolerances are $\pm .010$
0,25

Weight 0.3 grams

Tape & Reel 1500/reel

Tube 60/tube

PE-65854



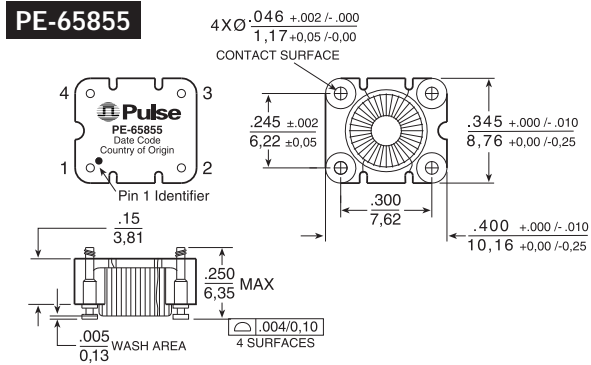
SURFACE MOUNT COMMON MODE CHOKES

Suited for LAN and Telecom Applications



Mechanical

Schematic



Dimensions: Inches
mm
Unless otherwise specified,
all tolerances are ± .010
0,25
Weight 0.69 grams
Tape & Reel 800/reel
Tube 40 /tube

PE-65855



Dimensions: Inches
mm
Unless otherwise specified,
all tolerances are ± .010
0,25
Weight 2.0 grams
Tape & Reel 250/reel
Tube 40/tube

PE-65857

PE-67540



Dimensions: Inches
mm
Unless otherwise specified,
all tolerances are ± .010
0,25
Weight 0.3 grams
Tape & Reel 1500/reel
Tube 55/tube

PE-68627



Dimensions: Inches
mm
Unless otherwise specified,
all tolerances are ± .005
0,13
Weight 0.5 grams
Tape & Reel 750/reel
Tube 100/tube

23Z87SM



SURFACE MOUNT COMMON MODE CHOKES

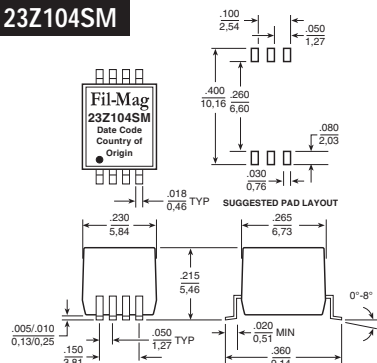
Suited for LAN and Telecom Applications



Mechanical

Schematic

23Z104SM

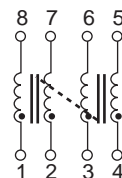


Dimensions: Inches
mm

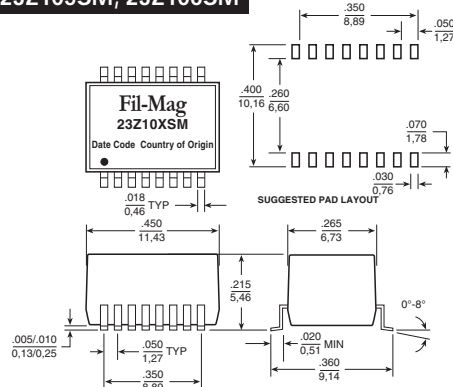
Unless otherwise specified,
all tolerances are $\pm .005$
0,13

Weight 0.5 grams
Tape & Reel 750/reel
Tube 100/tube

23Z104SM



23Z105SM, 23Z106SM

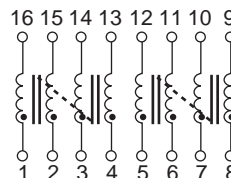


Dimensions: Inches
mm

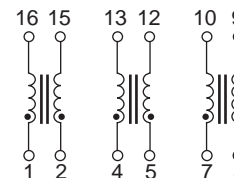
Unless otherwise specified,
all tolerances are $\pm .005$
0,13

23Z105SM 23Z106SM
Weight 0.8 grams 1.0 grams
Tape & Reel 750/reel 750/reel
Tube 50/tube 50/tube

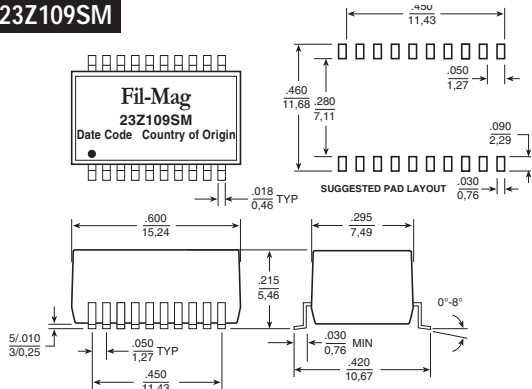
23Z105SM



23Z106SM



23Z109SM

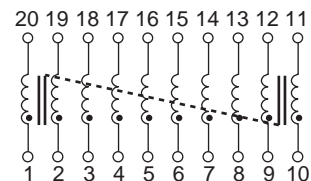


Dimensions: Inches
mm

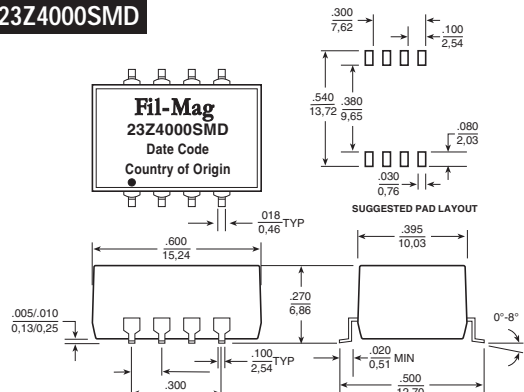
Unless otherwise specified,
all tolerances are $\pm .005$
0,13

Weight 1.3 grams
Tape & Reel 500/reel
Tube 38/tube

23Z109SM



23Z4000SMD

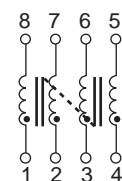


Dimensions: Inches
mm

Unless otherwise specified,
all tolerances are $\pm .005$
0,13

Weight 2.1 grams
Tape & Reel 350/reel
Tube 38/tube

23Z4000SMD



SURFACE MOUNT COMMON MODE CHOKES

Suited for LAN and Telecom Applications



Mechanical

Schematic

T8003



Dimensions: Inches
mm

Unless otherwise specified,
all tolerances are $\pm .005$ -
0,13

Weight 0.84 grams
Tape & Reel 750/reel
Tube 100/tube

T8003



T8055



Dimensions: Inches
mm

Unless otherwise specified,
all tolerances are $\pm .010$ -
0,25

Weight 0.2 grams
Tape & Reel 1750/reel
Tube 80/tube

T8055



B4003



Dimensions: Inches
mm

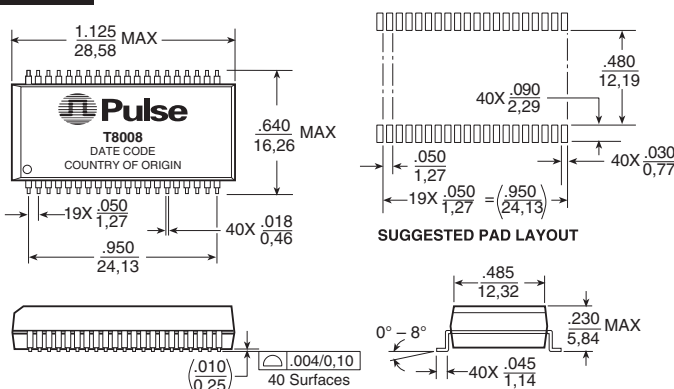
Unless otherwise specified,
all tolerances are $\pm .010$ -
0,25

Weight 1.0 grams
Tape & Reel 425/reel
Tube 50/tube

B4003



T8008

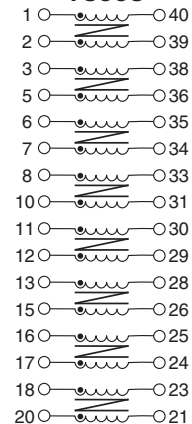


Dimensions: Inches
mm

Unless otherwise specified,
all tolerances are $\pm .010$ -
0,25

Weight 4.0 grams
Tape & Reel 250/reel
Tube 15/tube

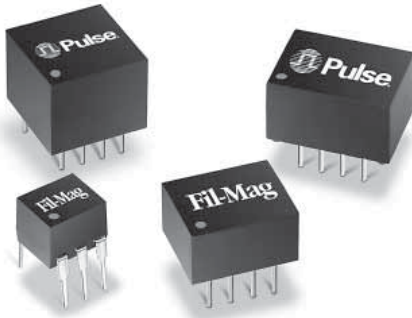
T8008







NOTE: The common mode test circuit for surface mount is the same as for through hole and is on the back page.

THROUGH HOLE COMMON MODE CHOKES

Suited for LAN and Telecom Applications



-  Reduces radiated EMI emissions
-  Filters common mode noise for EMI reduction
-  Common mode attenuation from 100 kHz to 1 GHz
-  Tube packaging available for through hole parts

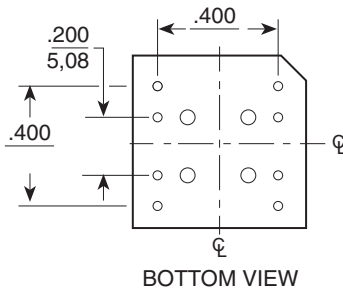
Electrical Specifications @ 25°C

| Part Number | No. of Lines | Primary Inductance OCL (μH MIN) | Common Mode Attenuation (dB TYP) | | | | | | | | DCR (Ω MAX) | Page Number Mech & Schem | |
|-------------|--------------|---------------------------------|----------------------------------|-------|--------|--------|--------|---------|---------|---------|-------------|--------------------------|-------|
| | | | 100 kHz | 1 MHz | 10 MHz | 30 MHz | 50 MHz | 100 MHz | 300 MHz | 500 MHz | | | 1 GHz |
| PE-65944 | 2 | 24 | 1 | 14 | 28 | 32 | 33 | 28 | 13 | 5 | — | 0.30 | 8 |
| PE-67531 | 2 | 140 | 14 | 34 | 45 | 49 | 50 | 47 | 38 | 32 | 25 | 0.60 | 9 |
| B2005 | 2 | 9000 | 47 | 47 | 41 | 30 | 22 | 33 | 21 | 15 | 15 | 1.0 | 10 |
| PE-65554 | 4 | 24 | — | 21 | 32 | 38 | 39 | 34 | 24 | 13 | — | 0.30 | 8 |
| PE-68002 | 4 | 68 | 7 | 24 | 37 | 41 | 42 | 40 | 31 | 27 | — | 0.35 | 9 |
| 23Z104 | 4 | 85 | 8 | 23 | 29 | 29 | 28 | 25 | 17 | 11 | — | 0.20 | 10 |
| PE-67539 | 4 | 140 | 14 | 33 | 44 | 48 | 48 | 43 | 33 | 28 | 19 | 0.60 | 9 |
| PE-65542 | 4 | 1000 | 28 | 41 | 42 | 32 | 22 | — | — | — | — | 0.70 | 8 |
| PT5039 | 4 | 3600 | 42 | 43 | 42 | 32 | 27 | 17 | 15 | 9 | 13 | 0.50 | 8 |
| J0010D11 | 4 | — | 9 | 13 | 32 | 35 | 35 | 29 | 13 | 24 | 19 | 0.50 | 10 |
| PE-65950 | 4 | 4700±30% | 40 | 51 | 37 | 28 | 23 | 20 | — | — | — | 1.00 | 8 |
| PE-65541 | 4 | 6000 | 44 | 54 | 33 | 32 | 29 | — | — | — | — | 1.40 | 8 |
| PE-68613 | 4 | 3290 | 40 | 51 | 37 | 28 | 23 | 20 | — | — | — | 1.00 | 10 |

Mechanical

Schematic

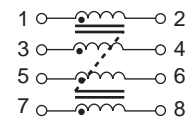
PE-65541, PE-65542, PE-65950



Dimensions: Inches _____
mm _____
Unless otherwise specified,
all tolerances are ± .010
0,25

Weight 0.38 grams
Tube 35/tube

PE-65541
PE-65542
PE-65950



THROUGH HOLE COMMON MODE CHOKES

Suited for LAN and Telecom Applications



Mechanical

Schematic

PE-65554



Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.010}{0,25}$

Weight 2.5 grams
Tube 35/tube

PE-65554



PT5039



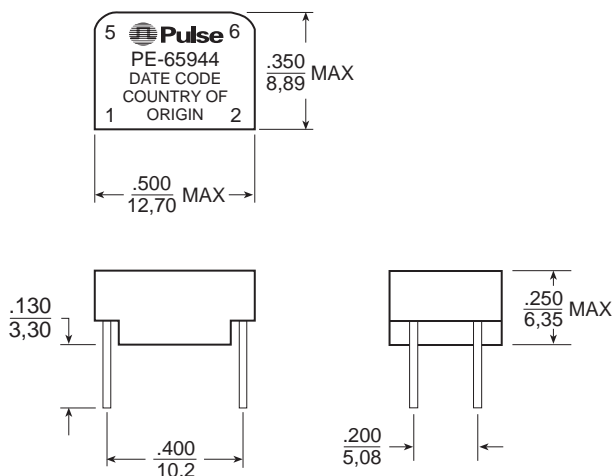
Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.010}{0,25}$

Weight 2.5 grams
Tube 35/tube

PT5039



PE-65944



Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.010}{0,25}$

Weight 1.07 grams
Tube 30/tube

PE-65944



THROUGH HOLE COMMON MODE CHOKES

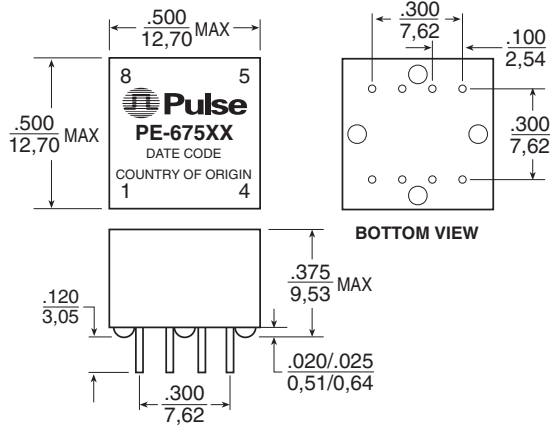
Suited for LAN and Telecom Applications



Mechanical

Schematic

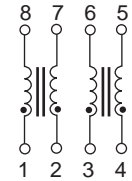
PE-67539



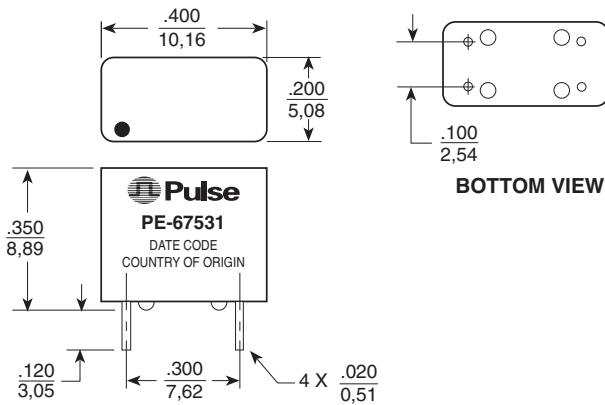
Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.010}{0,25}$

Weight 2.4 grams
Tube 40/tube

PE-67539



PE-67531



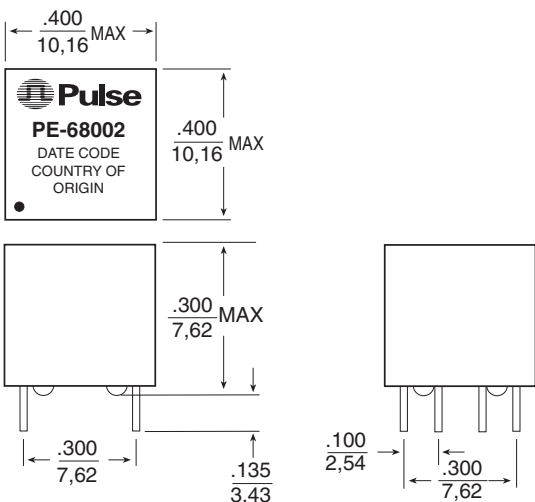
Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.010}{0,25}$

Weight 0.76 grams
Tube 40/tube

PE-67531



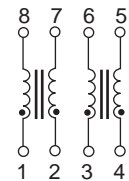
PE-68002



Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.010}{0,25}$

Weight 1.4 grams
Tube 50/tube

PE-68002



THROUGH HOLE COMMON MODE CHOKES

Suited for LAN and Telecom Applications



Mechanical

Schematic

B2005



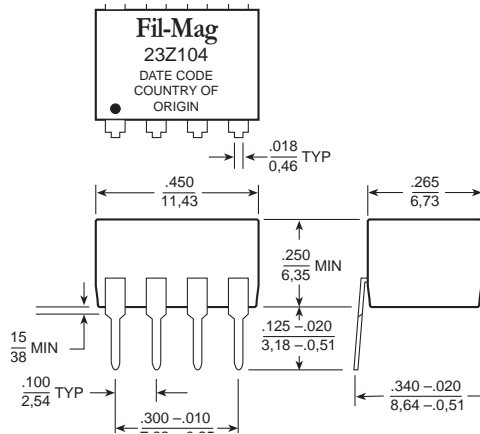
Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.005}{0,13}$

Weight 3.7 grams
Tube 40/tube

B2005



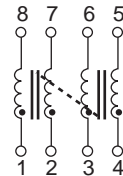
23Z104



Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.005}{0,13}$

Weight 1.0 grams
Tube 50/tube

23Z104



PE-68613



Dimensions: $\frac{\text{Inches}}{\text{mm}}$
Unless otherwise specified,
all tolerances are $\pm \frac{.005}{0,127}$

Weight 3.5 grams
Tube 40/tube

PE-68613



THROUGH HOLE COMMON MODE CHOKES

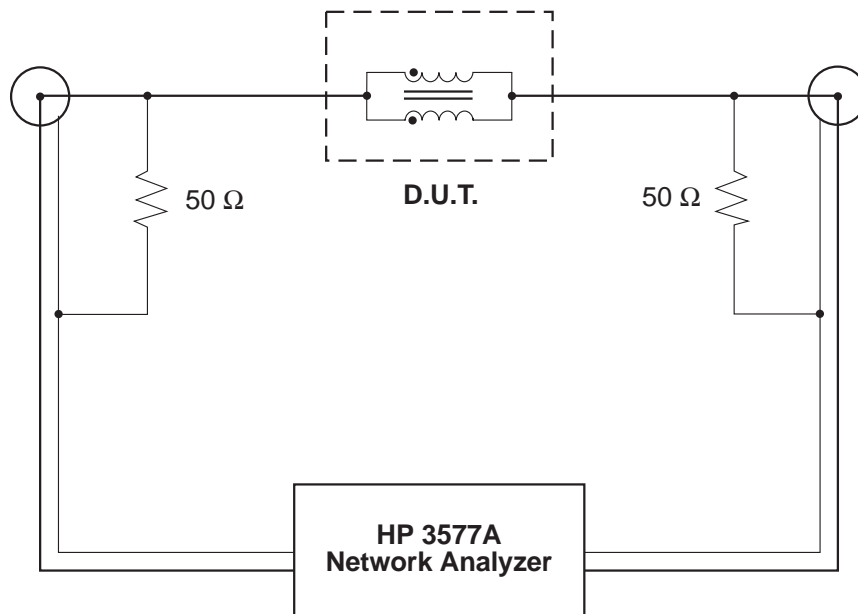
Suited for LAN and Telecom Applications



J0010D11 - Filtered Connector



Common Mode Test Circuit for Surface Mount and Through Hole



Test Notes:

1. Network analyzer calibrated to compensate for 50 Ω resistors.
2. All windings on a core are connected in parallel for the test.
3. For multi-core chokes, test data is for one core only. The windings on the other core(s) are left unconnected (i.e. open).

For More Information:

| Pulse Worldwide Headquarters | Pulse Europe | Pulse China Headquarters | Pulse North China | Pulse South Asia | Pulse North Asia |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 12220 World Trade Dr. San Diego, CA 92128 U.S.A. | Einsteinstrasse 1 D-71083 Herrenberg Germany | B402, Shenzhen Academy of Aerospace Technology Bldg. 10th Kejinan Rd. High-Tech Zone Nanshan District Shenzhen, PR China 518057 | Room 1503 XinYin Building No. 888 YiShan Rd. Shanghai 200233 China | 135 Joo Seng Rd. #03-02 PM Industrial Bldg. Singapore 368363 | No. 26, Kao Ching Rd. Yang Mei Chen Taoyuan Hsien Taiwan R. O. C. |
| www.pulseeng.com Tel: 858 674 8100 Fax: 858 674 8262 | Tel: 49 7032 7806 0 Fax: 49 7032 7806 135 | TEL: 86 755 33966678 FAX: 86 755 33966700 | Tel: 86 21 54643211/2 Fax: 86 21 54643210 | TEL: 65 6287 8998 FAX: 65 6280 0080 | Tel: 886 3 4643715 Fax: 886 3 4641911 |


Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners.

© Copyright, 2009. Pulse Engineering, Inc. All rights reserved.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View 23Z104SMNL on WIN SOURCE](#)

 [Pulse Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management