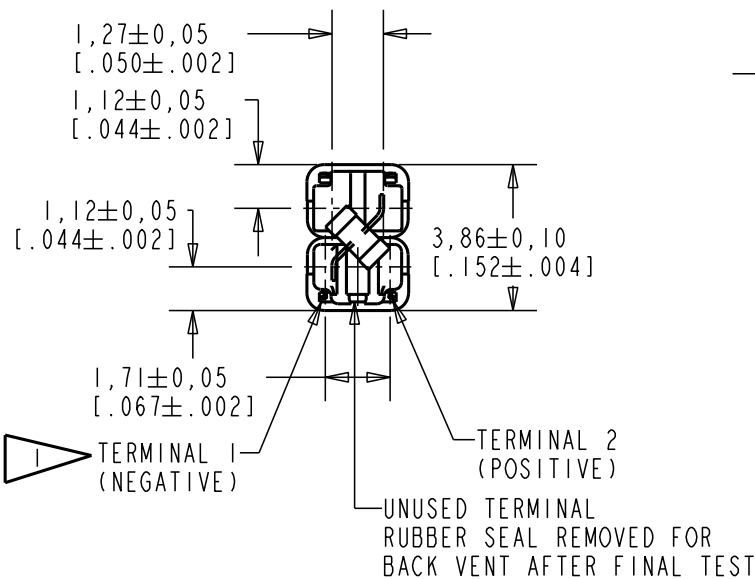
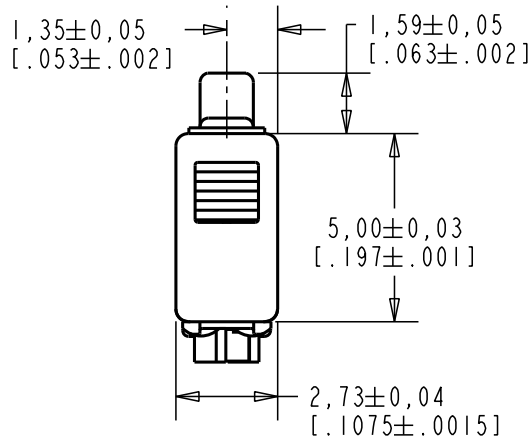


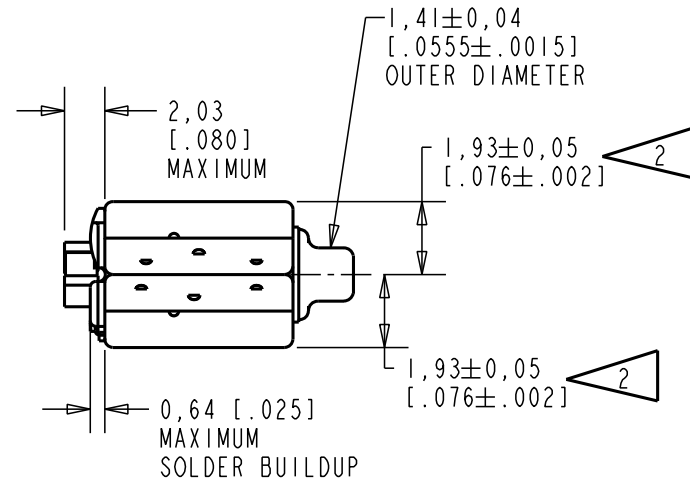
TWFK-31684-000

SHT 1.1



NOTES:

- 1 A POSITIVE GOING VOLTAGE AT TERMINAL 2, RELATIVE TO TERMINAL 1, CAUSES A DECREASE IN PRESSURE AT THE SOUND OUTLET.
- 2 LOCATED FROM TWO SURFACES FOR CUSTOMER CONVENIENCE. ONLY APPLICABLE FROM ONE SURFACE, NOT TO BE USED TOGETHER.



SCALE 2:1  
NOMINAL WEIGHT  
.20 GRAMS

DIMENSIONS IN MILLIMETERS [INCHES]

**KNOWLES CORPORATION**

| Revision             | C.O. #    | Implementation Date | RELEASE LEVEL | REVISION |
|----------------------|-----------|---------------------|---------------|----------|
| B                    | PI0000378 | 1-26-16             | Active        | B        |
| A                    | PI0000175 | 10-27-15            |               |          |
| SCALE: 5:1           |           |                     | DR. BY        | DATE     |
| DO NOT SCALE DRAWING |           |                     | NANC          | 10-27-15 |
| TITLE: RECEIVER      |           |                     | CK. BY        | DATE     |
| OUTLINE DRAWING      |           |                     | GJP           | 10-27-15 |
| TWFK-31684-000       |           |                     | APP. BY       | DATE     |
| SHT 1.1              |           |                     | GJP           | 10-27-15 |

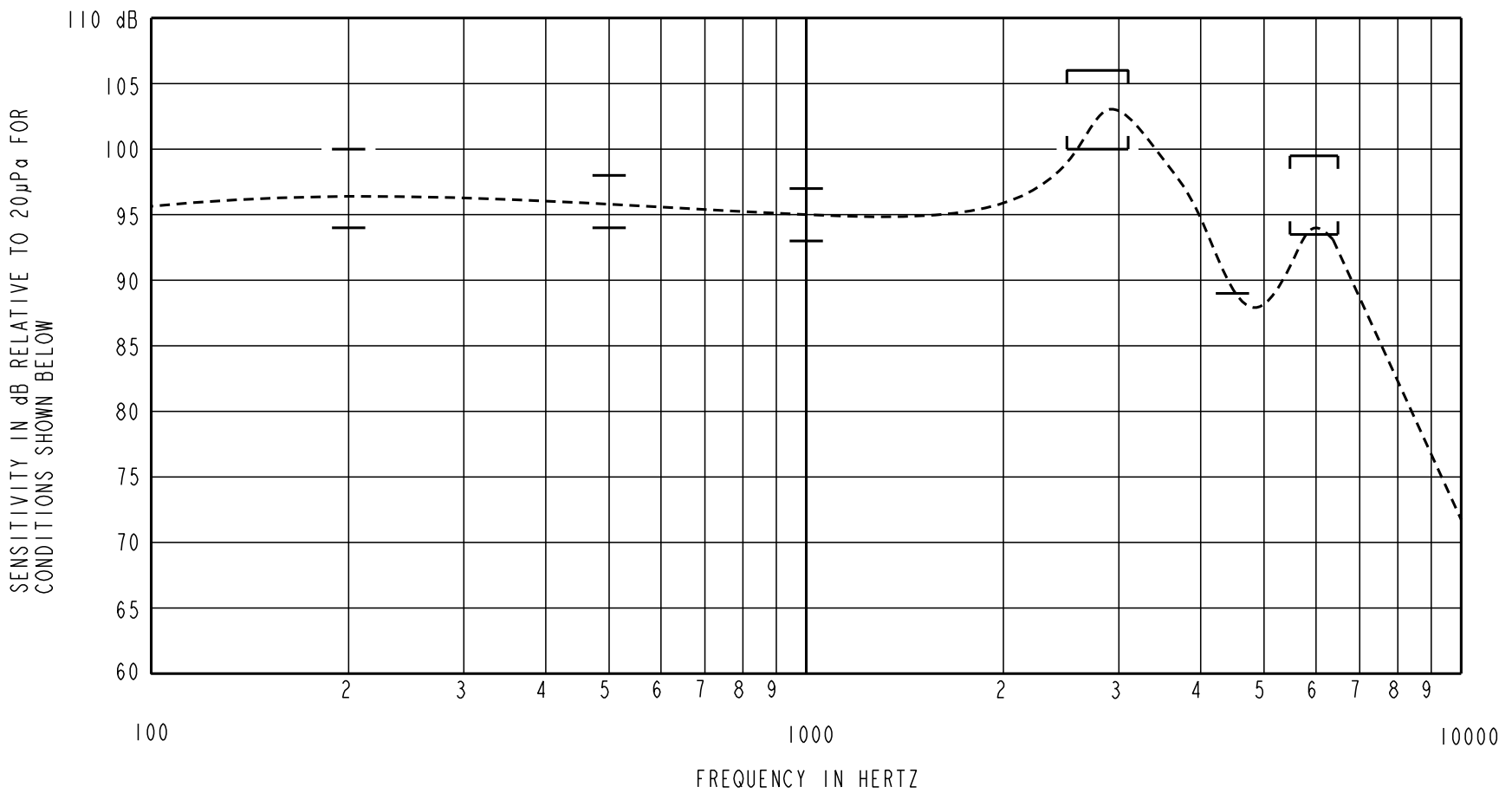
UNDAMPED MAGNETIC BALANCED ARMATURE RECEIVERS INTENDED FOR USE AS THE HIGH AND LOW FREQUENCY DRIVERS IN A Hi Fi SYSTEM. THE TWFK IS A WIDEBAND FK AND FK RECEIVER PAIR WITH AN EXTENDED HIGH FREQUENCY RESPONSE, SHOCK PROTECTION AND WITH 0.68  $\mu$ F TANTAL CAPACITOR. FK RECEIVER VENTED THROUGH UNUSED TERMINAL.

NO DAMPING

TWFK-31684-000

2.1

NOTE: SPECIFICATIONS FOLLOWED BY AN ASTERISK (\*) ARE 100% TESTED.  
CONSTANT VOLTAGE DRIVE CONDITIONS (WITH VENT BLOCKED).



ACOUSTICAL

SENSITIVITY\*  
DEVICE WILL PRODUCE THE SPL LISTED BELOW UNDER TEST CONDITION IN TABLE 3.  
NOMINAL SENSITIVITY AT 1kHz IS dB RELATIVE TO 20  $\mu$ Pa. ALL OTHER VALUES IN dB RELATIVE TO THE SENSITIVITY AT 1kHz.

| FREQUENCY (Hz) | MINIMUM | NOMINAL | MAXIMUM |
|----------------|---------|---------|---------|
| 200            | -1.0    | +2.0    | +5.0    |
| 500            | -1.0    | +1.0    | +3.0    |
| 1000           | -2.0    | 95.0    | +2.0    |
| 2500-3100      | +5.0    | +8.0    | +11.0   |
| 4500           | -6.0    | ---     | ---     |
| 5500-6500      | -1.5    | -1.5    | +4.5    |

TABLE 1

TOTAL HARMONIC DISTORTION\*  
DEVICE WILL NOT EXCEED TOTAL HARMONIC DISTORTION LEVELS LISTED BELOW.

| FREQUENCY (Hz) | AC DRIVE (V rms) | DC BIAS (mA) | LIMIT (%) |
|----------------|------------------|--------------|-----------|
| 930            | .085             | 0            | 5         |
| 1400           | .085             | 0            | 5         |
| 500            | .240             | 0            | 10        |

TABLE 2

TEST CONDITIONS

|                        |   |
|------------------------|---|
| NOMINAL SOURCE VOLTAGE | .085 V rms, 0 V DC BIAS   |
| SOURCE IMPEDANCE       | <1 Ohm  |
| TUBING                 | 10mm [.394"] LONG, 1mm [.039"] I.D.                             |
| COUPLER CAVITY         | 2 CM <sup>3</sup> , SIMULATED ANSI S3.7 TYPE HA-3 (IEC-60318-5) |

TABLE 3

ELECTRICAL

|                    |   |
|--------------------|---|
| DC RESISTANCE      | 25 Ohms $\pm$ 10%*<br>25 Ohms FK / 12.5 Ohms WBFK |
| IMPEDANCE @ 500 Hz | 31.3 Ohms $\pm$ 15%*                              |
| IMPEDANCE @ 1kHz   | 45.2 Ohms $\pm$ 15%*                              |

TABLE 4

ISOLATION: CASE WILL BE ELECTRICALLY ISOLATED FROM THE COIL CIRCUIT.

MECHANICAL

PORT LOCATION: 12S  
SOLDER TYPE: SAC305

TEMPERATURE:

OPERATING: SENSITIVITY AT 500HZ WILL NOT VARY BY MORE THAN  $\pm$ 3 dB FROM 0°C TO 63°C.  
STORAGE: -40°C TO 63°C.

LISTENING TEST CONDUCTED BETWEEN 50HZ AND 5KHZ TO DETECT BUZZ  
INPUT VOLTAGE DRIVE SIGNAL, 10IVrms.

| Revision | C.O. #    | Implementation Date | RELEASE LEVEL | REVISION |
|----------|-----------|---------------------|---------------|----------|
| B        | PI0000378 | 1-26-16             | Active        | B        |
| A        | PI0000175 | 10-27-15            |               |          |

KNOWLES CORPORATION

WHEN TEST LIMITS ARE USED TO ESTABLISH INCOMING INSPECTION ACCEPTANCE/REJECTION CRITERIA, CORRELATION OF TEST EQUIPMENT WITH KNOWLES IS ALSO REQUIRED FOR ELIMINATION OF EQUIPMENT AND TEST METHOD VARIATION

TITLE: RECEIVER  
PERFORMANCE SPECIFICATION

TWFK-31684-000  
2.1

|         |          |
|---------|----------|
| DR. BY  | DATE     |
| NANC    | 10-27-15 |
| CK. BY  | DATE     |
| GJP     | 10-27-15 |
| APP. BY | DATE     |
| GJP     | 10-27-15 |