

# Variable Capacitance Diode for VHF Tuner

## FEATURES

- Low matching error. ( $\Delta C/C = 2.0\% \max$ )
- High capacitance ratio. ( $n = 17.0 \min$ )
- Low series resistance. ( $r_s = 1.1 \Omega \max$ )
- Ultra small Resin Package (URP) is suitable for surface mount design.

## HVU300B



## DEVICEMARKING

HVU300B = A1

## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

| Item                 | Symbol        | Value        | Unit             |
|----------------------|---------------|--------------|------------------|
| Peak reverse voltage | $V_{Rm}^{*1}$ | 35           | V                |
| Reverse voltage      | $V_R$         | 34           | V                |
| Junction temperature | $T_j$         | 125          | $^\circ\text{C}$ |
| Storage temperature  | $T_{stg}$     | - 55 to +125 | $^\circ\text{C}$ |

Note 1.  $R_L = 10k\Omega$

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

| Item              | Symbol            | Min  | Typ | Max  | Unit     | Test Condition                               |
|-------------------|-------------------|------|-----|------|----------|--|
| Reverse current   | $I_{R1}$          | -    | -   | 10   | nA       | $V_R = 32V$                                  |
|                   | $I_{R2}$          | -    | -   | 100  |          | $V_R = 32V, T_A = 60^\circ\text{C}$          |
| Capacitance       | $C_2$             | 47.0 | -   | 53.0 | pF       | $V_R = 2V, f = 1 \text{ MHz}$                |
|                   | $C_{25}$          | 2.65 | -   | 3.0  |          | $V_R = 25V, f = 1 \text{ MHz}$               |
| Capacitance ratio | $n$               | 17.0 | -   | -    | -        | $C_2 / C_{25}$                               |
| Series resistance | $r_s$             | -    | -   | 1.1  | $\Omega$ | $V_R = 5V, f = 470 \text{ MHz}$              |
| Matching error    | $\Delta C/C^{*1}$ | -    | -   | 2.0  | %        | $V_R = 2 \text{ to } 25V, f = 1 \text{ MHz}$ |

Note: \*1. C.C system (Continuous Connected taping system) enable to make any 10 pcs of  $\Delta C/C$  continuous in a reel, expect extension to another group.

Calculate Matching Error,

$$\Delta C/C = \frac{(C_{\max} - C_{\min})}{C_{\min}} \times 100 (\%)$$

HVU300B

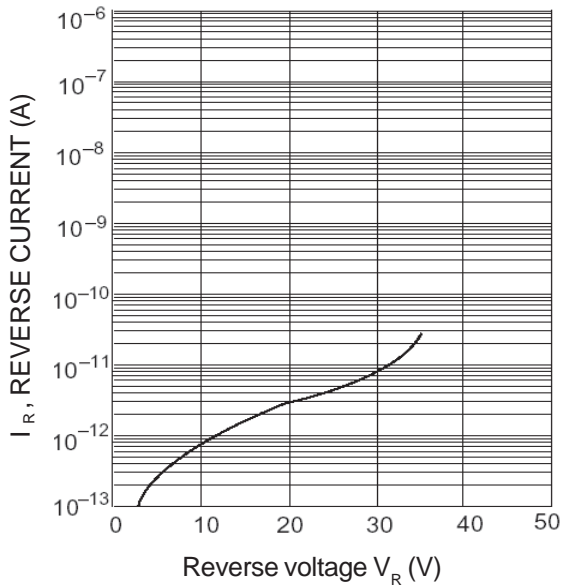


Fig.1 Reverse current Vs. Reverse voltage

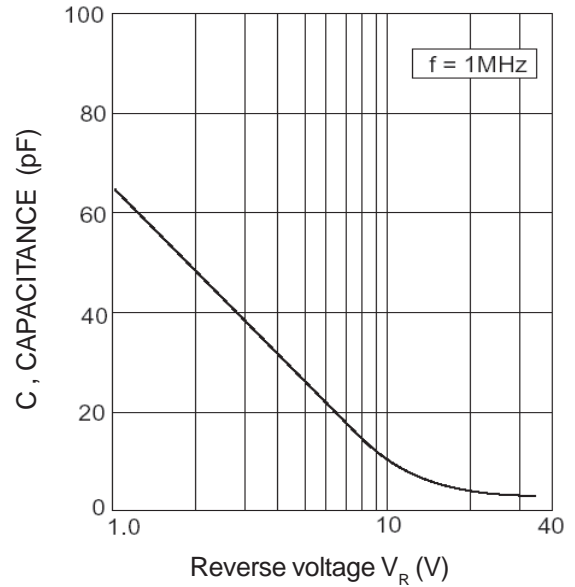


Fig.2 Capacitance Vs. Reverse voltage

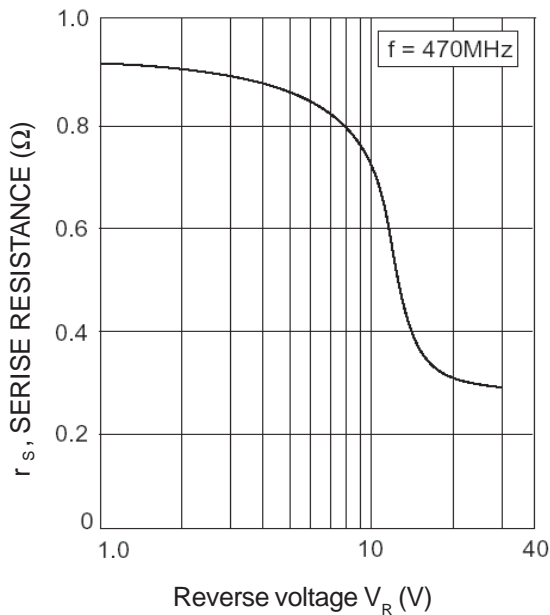


Fig.3 Series resistance Vs. Reverse voltage

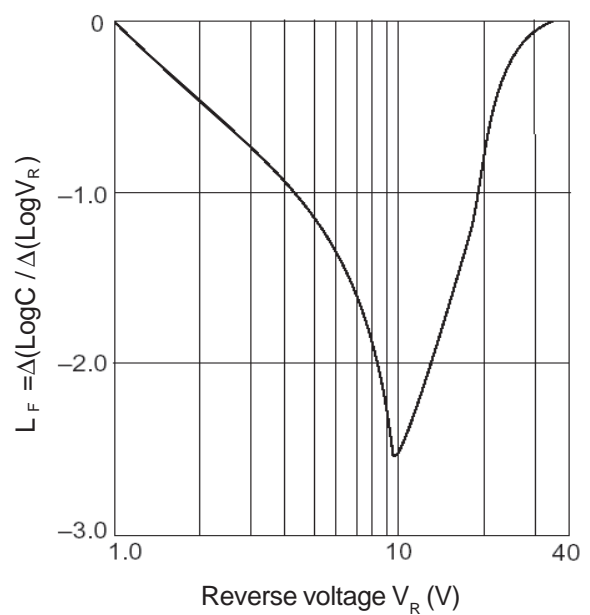


Fig.4 Linearity factor Vs. Reverse voltage