

Silicon Variable Capacitance Diode

Description

The 1T33C is designed for CATV tuner, these diodes easily cope with the trend for miniaturization. They combine low serial resist with large capacitance variation ratio and small capacitance variation rate n^* .

$$\bullet \left[n = -\frac{V_{DC}}{C_{dV}} \right]$$

Features

- Compact package
- Low serial resistance 0.65 Ω Typ. ($f = 470$ MHz)
- Large capacitance ratio 15 Typ. (C_1/C_{28})
- Small leakage current 10 nA Max. ($V_R = 28$ V)
- 1T33C-T7, 1T33C-T8 is for taping.

Structure

Silicon epitaxial planar type diode

Application

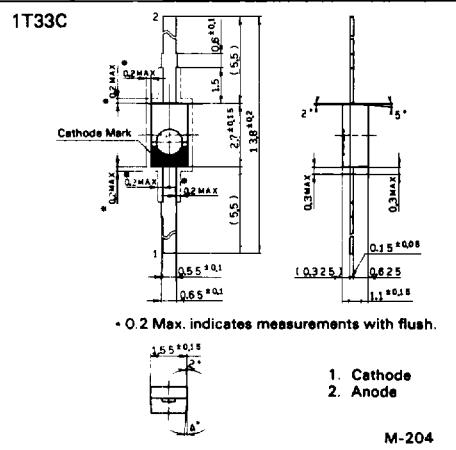
Electronic tuning for TV or CATV tuner

Absolute Maximum Ratings ($T_a = 25^\circ C$)

• Reverse voltage	V_R	30	V
• Peak reverse voltage	V_{RM}	35	V
		($R_L \geq 10 k\Omega$)	
• Operating temperature	T_{opr}	85	°C
• Storage temperature	T_{stg}	-55 to +150	°C

Electrical Characteristics

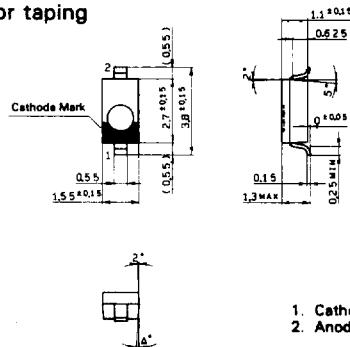
Package Outline



Unit: mm

M-204

For taping



Measurements with resin flush: 0.2 max.

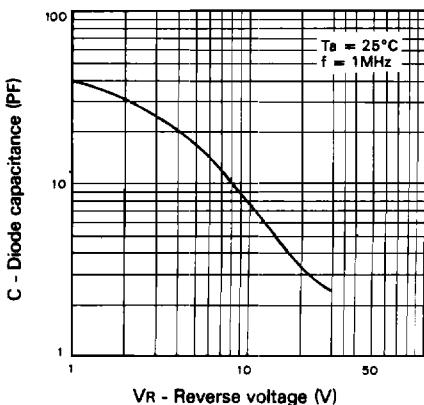
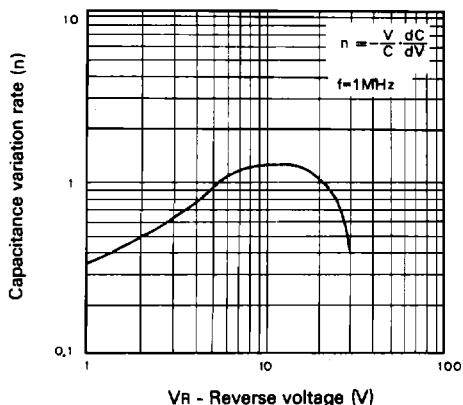
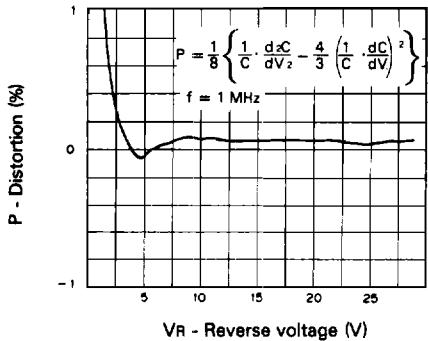
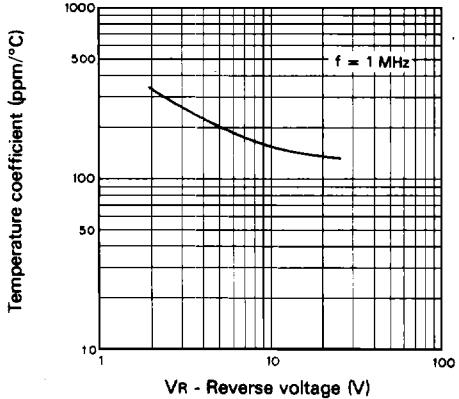
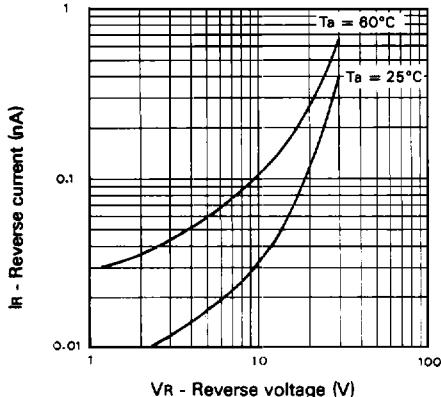
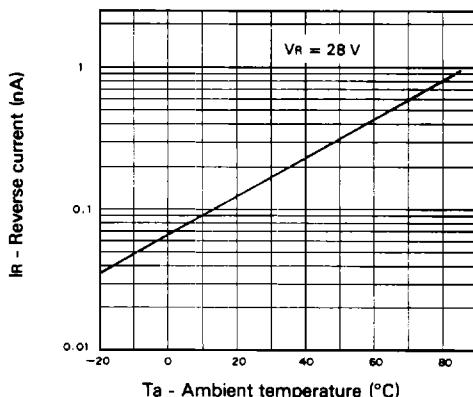
M-205

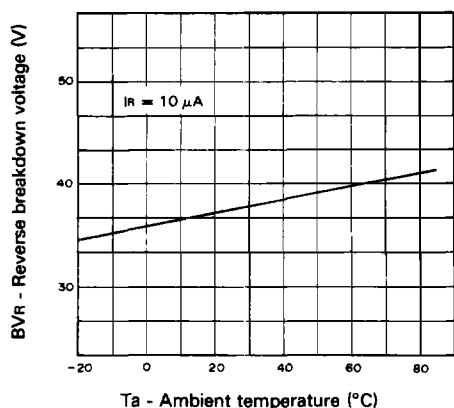
$T_a = 25^\circ C$

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse current	I_R	$V_R = 28V$			10	nA
Diode capacitance	C_1	$V_R = 1V, f = 1MHz$	34.65	38.0	42.35	pF
	C_{28}	$V_R = 28V, f = 1MHz$	2.361	2.515	2.754	pF
Capacitance ratio	C_1/C_{28}	$f = 1MHz$	13.5	15		
Serial resistance	r_s	$C_0 = 14 pF, f = 470MHz$		0.65	0.8	Ω
Maximum-capacitance deviation in the Same ranking	ΔC	$V_R = 1V to 28V, f = 1MHz$			2	%

*Note) Applied only for tuning.

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Diode capacitance vs. Reverse voltage**Capacitance variation rate vs. Reverse voltage****Distortion vs. Reverse voltage****Temperature coefficient vs. Reverse voltage****Reverse current vs. Reverse voltage****Reverse current vs. Ambient temperature**

Reverse breakdown voltage vs. Ambient temperature**Diode capacitance vs. Ambient temperature**