

**SONY**

**1T408**

**Variable Capacitance Diode**

**Description**

The 1T408 is a variable capacitance diode designed for electronic tuning of wide-band CATV tuners using a super-small-miniature flat package (SSVC).

**Features**

- Super-small-miniature flat package
- Small series resistance 0.75Ω Max. (f = 470MHz)
- Large capacitance ratio 11.7 Typ. (C<sub>2</sub>/C<sub>25</sub>)  
18.0 Typ. (C<sub>1</sub>/C<sub>28</sub>)
- Small leakage current 10nA Max. (V<sub>R</sub> = 28V)
- Capacitance deviation in a matching group: within 2%

**Applications**

Electronic tuning of wide-band CATV tuners

**Structure**

Silicon epitaxial planar-type diode

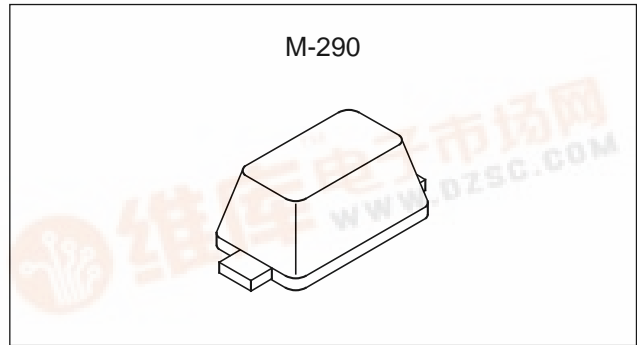
**Absolute Maximum Ratings** (Ta = 25°C)

- Reverse voltage V<sub>R</sub> 34 V
- Operating temperature Topr -20 to +75 °C
- Storage temperature Tstg -65 to +150 °C

**Electrical Characteristics**

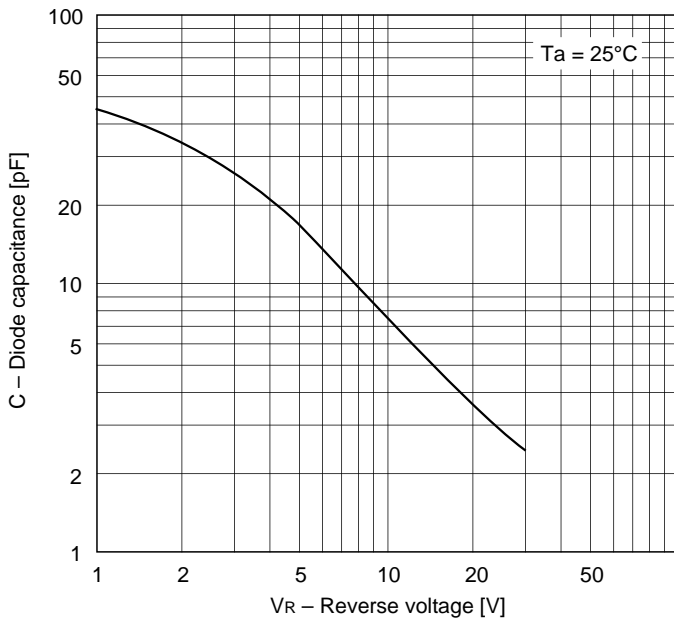
(Ta = 25°C)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse current	I <sub>R</sub>	V <sub>R</sub> = 28V			10	nA
Diode capacitance	C <sub>2</sub>	V <sub>R</sub> = 2V, f = 1MHz	29.46		35.46	pF
	C <sub>25</sub>	V <sub>R</sub> = 25V, f = 1MHz	2.49		2.89	pF
Capacitance ratio	C <sub>2</sub> /C <sub>25</sub>		11.0	11.7		
	C <sub>25</sub> /C <sub>28</sub>		1.03			
Series resistance	r <sub>s</sub>	C <sub>D</sub> = 14pF, f = 470MHz			0.75	Ω
Capacitance deviation in a matching group	ΔC	V <sub>R</sub> = 2 to 25V, f = 1MHz			2	%

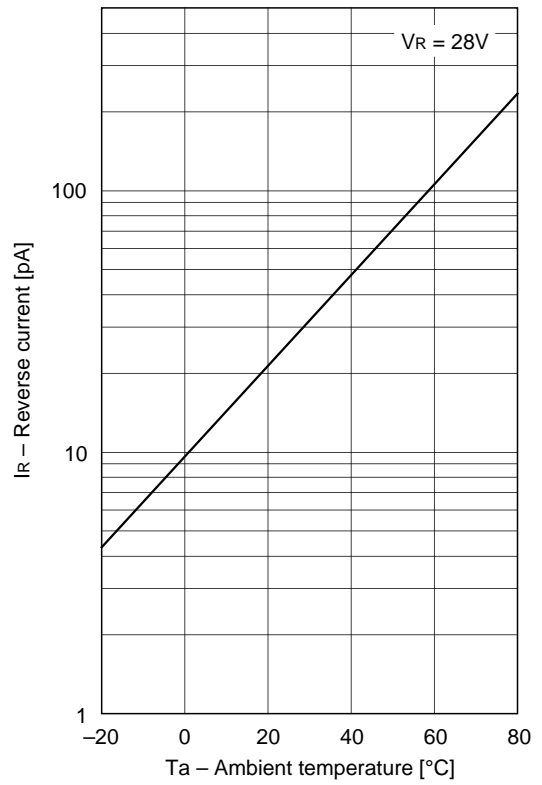


Example of Representative Characteristics

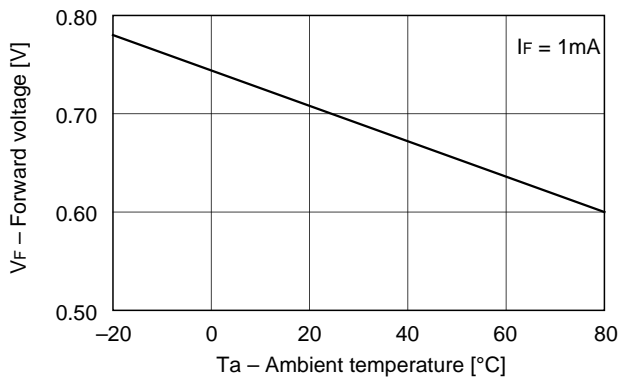
Diode capacitance vs. Reverse voltage



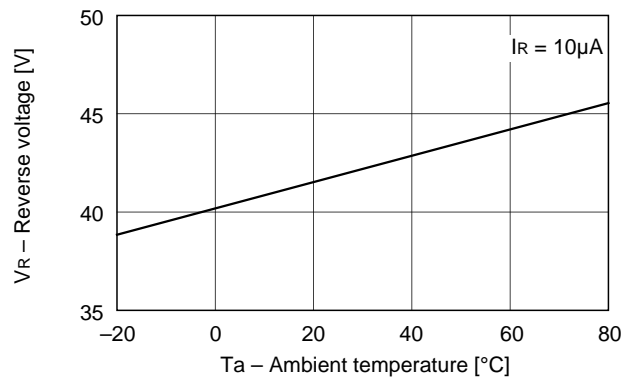
Reverse current vs. Ambient temperature



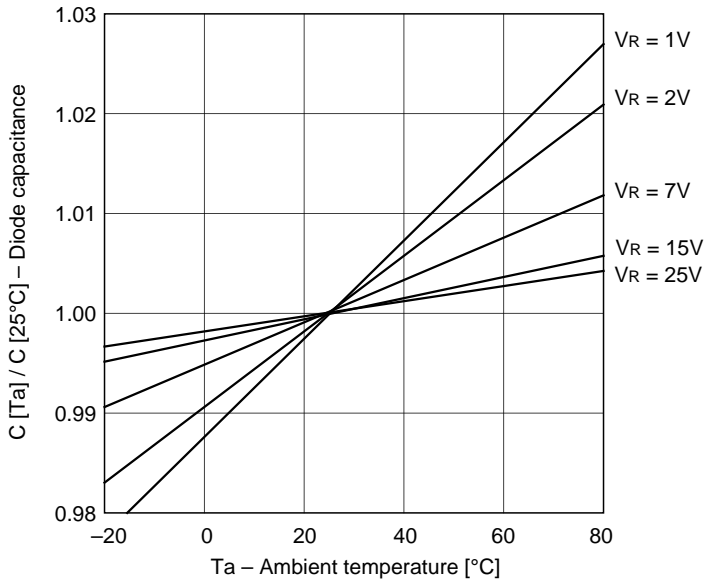
Forward voltage vs. Ambient temperature



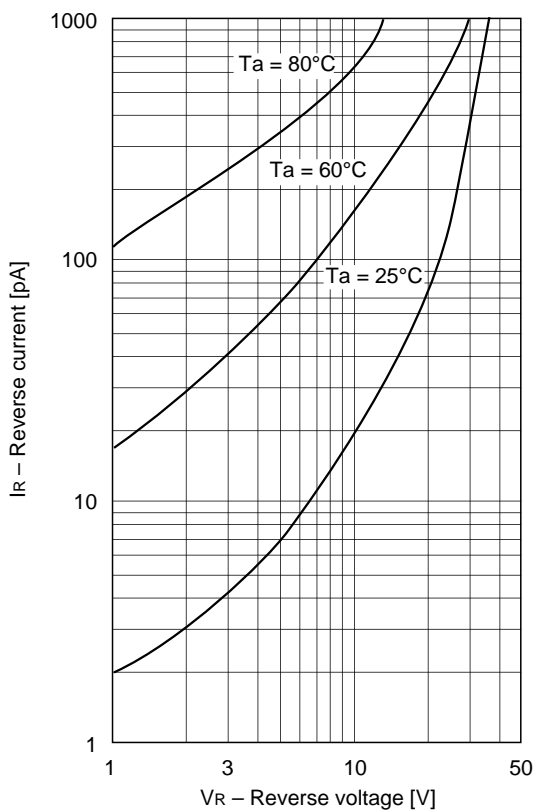
Reverse voltage vs. Ambient temperature



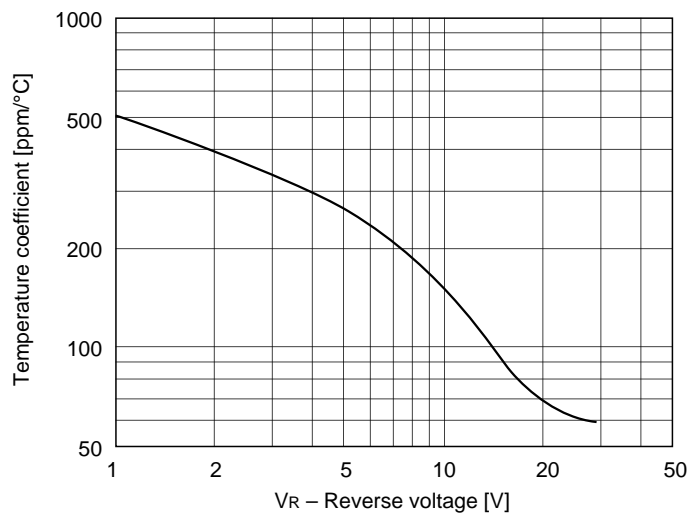
Diode capacitance vs. Ambient temperature



Reverse current vs. Reverse voltage



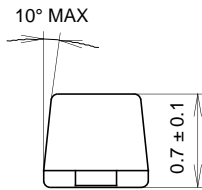
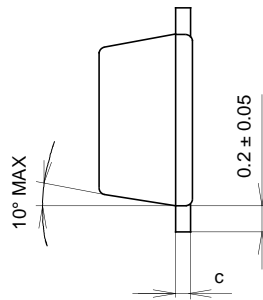
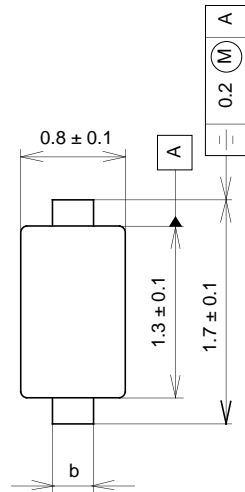
Temperature coefficient of diode capacitance



Package Outline

Unit: mm

M-290



	BASE METAL	WITH PLATING
c	0.11 ± 0.005	0.11 $\begin{smallmatrix} +0.05 \\ -0.01 \end{smallmatrix}$
b	0.3 ± 0.025	0.3 $\begin{smallmatrix} +0.05 \\ -0.02 \end{smallmatrix}$

SONY CODE	M-290
EIAJ CODE	_____
JEDEC CODE	_____

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER
PACKAGE WEIGHT	0.002g