

Variable Capacitance Diode

Description

The 1T413 is a variable capacitance diode designed for the digital cellular phone VCO using a super-small-miniature flat package (SSVC).

Features

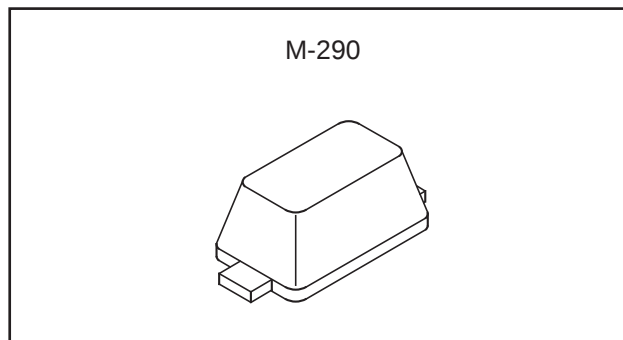
- Super-small-miniature flat package
- Low series resistance: 0.40 Ω Max. (f=470 MHz)
- Large capacitance ratio: 2.90 Typ. (C_1/C_4)
- Small leakage current: 10 nA Max. ($V_R=15$ V)

Applications

Digital cellular phone VCO

Structure

Silicon epitaxial planar type diode



Absolute Maximum Ratings (Ta=25 °C)

• Reverse voltage	V_R	15	V
• Operating temperature	T_{opr}	−20 to +75	°C
• Storage temperature	T_{stg}	−65 to +150	°C

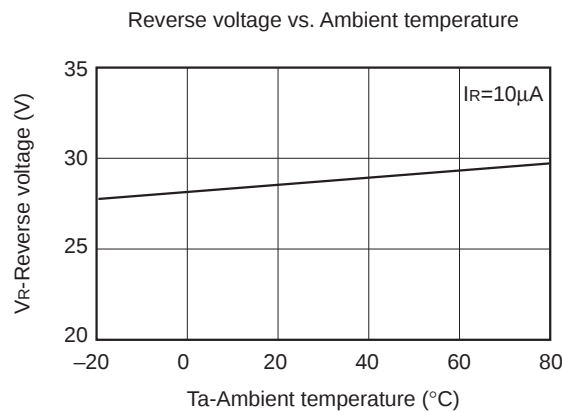
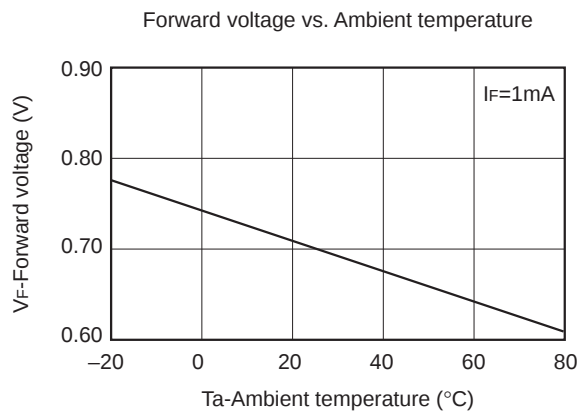
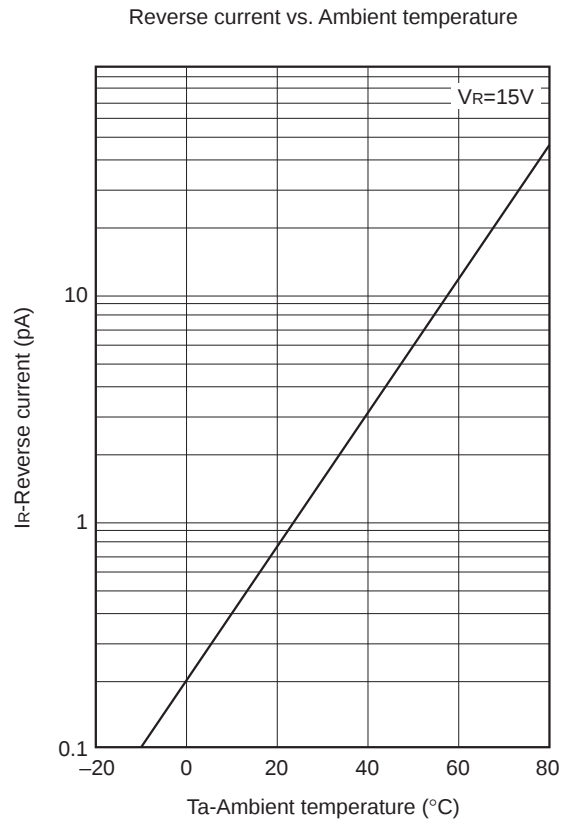
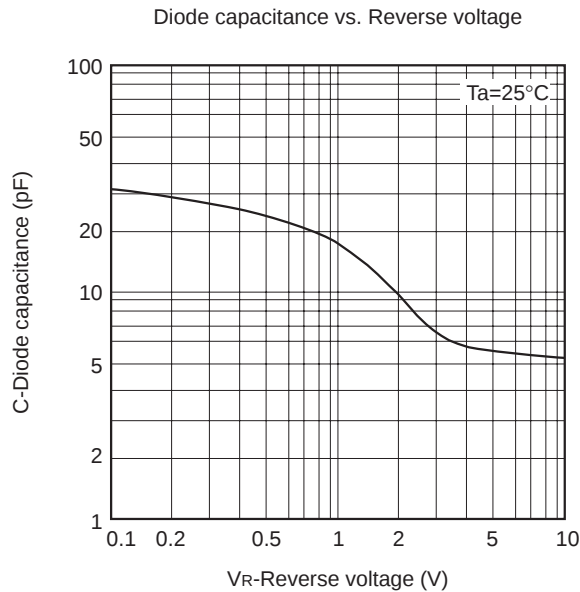
Electrical Characteristics

(Ta=25 °C)

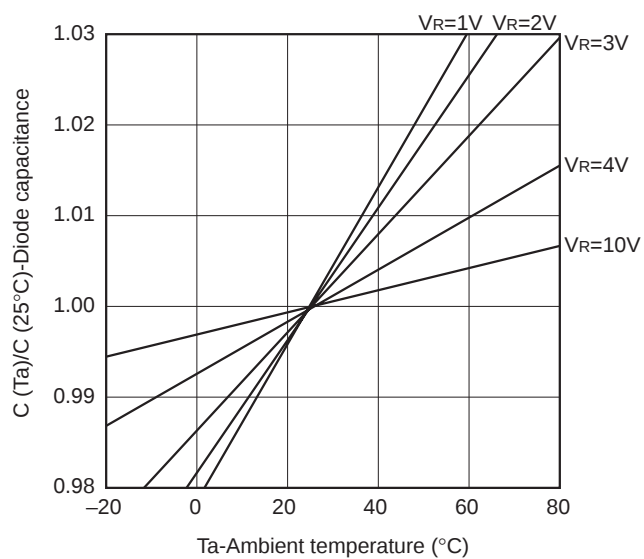
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse current	I_R	$V_R=15$ V			10.0	nA
Diode capacitance	C_1	$V_R=1$ V, f=1 MHz	15.0		17.5	pF
	C_4	$V_R=4$ V, f=1 MHz	5.1		6.1	pF
Capacitance ratio	C_1/C_4		2.5	2.9		
Series resistance	r_S	$V_R=1$ V, f=470 MHz			0.40	Ω

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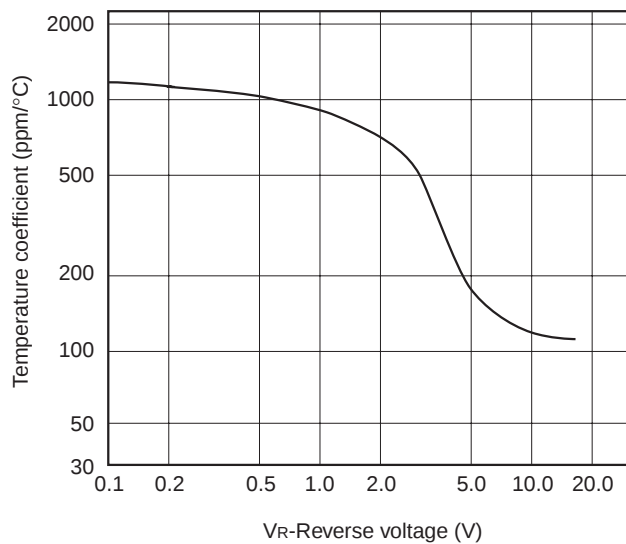
Example of Representative Characteristics



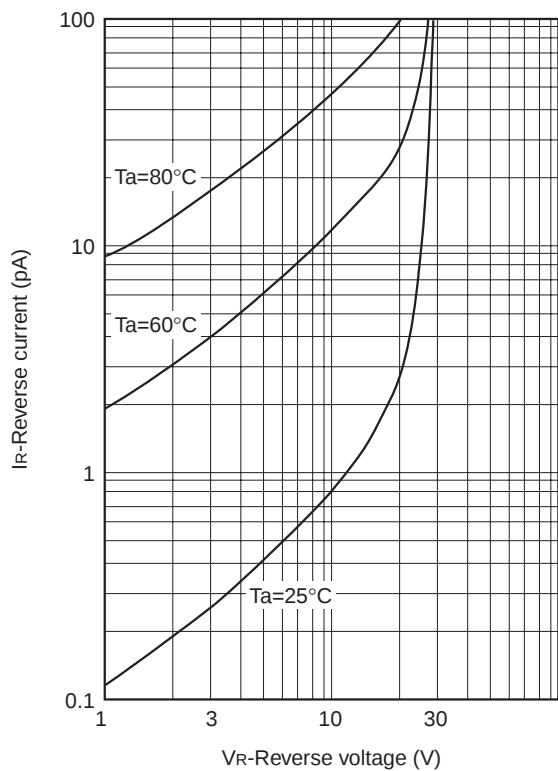
Diode capacitance vs. Ambient temperature



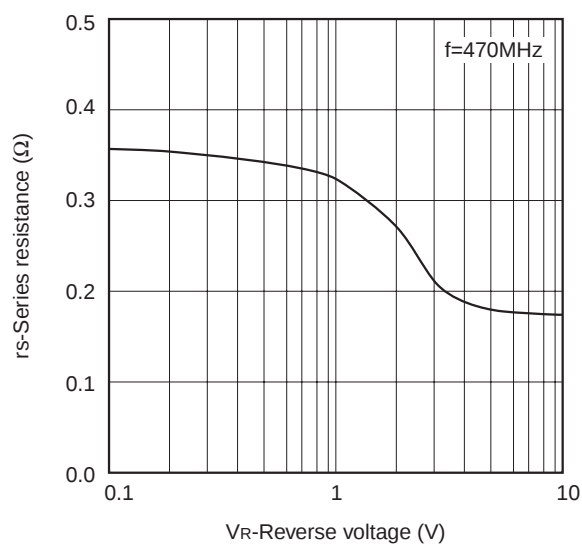
Temperature coefficient of diode capacitance



Reverse current vs. Reverse voltage

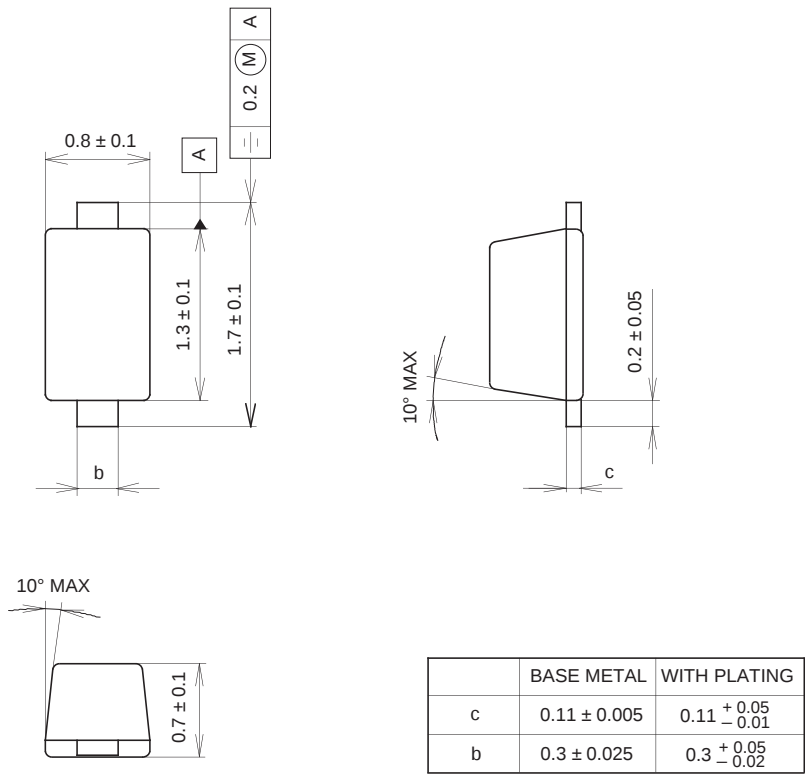


Series resistance vs. Reverse voltage



Package Outline Unit : mm

M-290



SONY CODE	M-290
EIAJ CODE	_____
JEDEC CODE	_____

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

Mark



- 1 FCathode
- 2 FAnode