SONY

1T413

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)

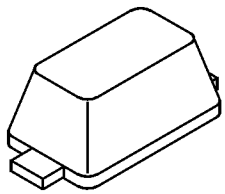
Applications

Digital cellular phone VCO

Structure

Silicon epitaxial planar type diode

M-290



Absolute Maximum Ratings (Ta=25 °C)

• Reverse voltage	V_R	15	V
• Operating temperature	Topr	–20 to +75	°C
• Storage temperature	Tstg	–65 to +150	°C

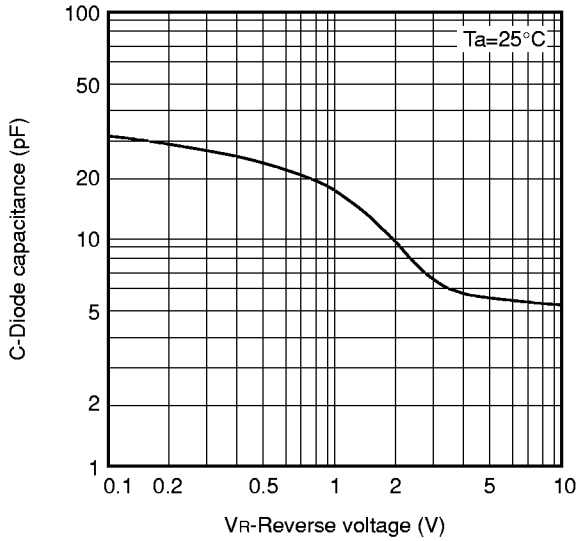
Electrical Characteristics (Ta=25 °C)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse current	I_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	rs	V_R=1 V, f=470 MHz			0.40	Ω

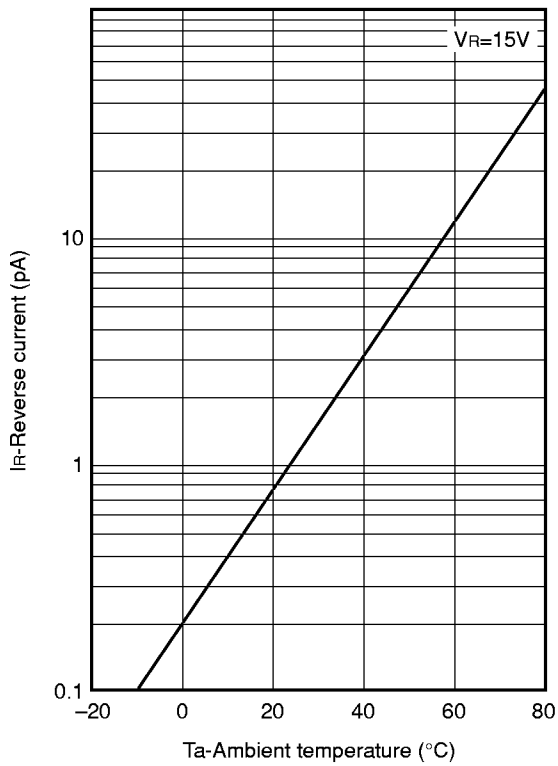
E99220-TE

Example of Representative Characteristics

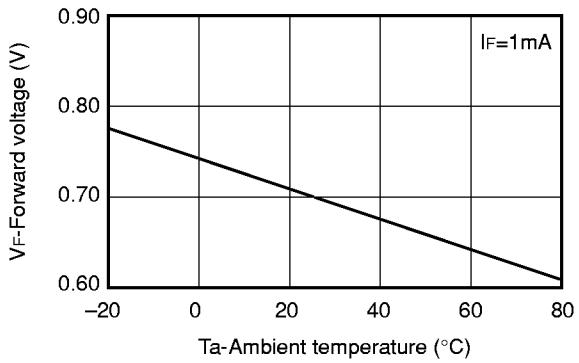
Diode capacitance vs. Reverse voltage



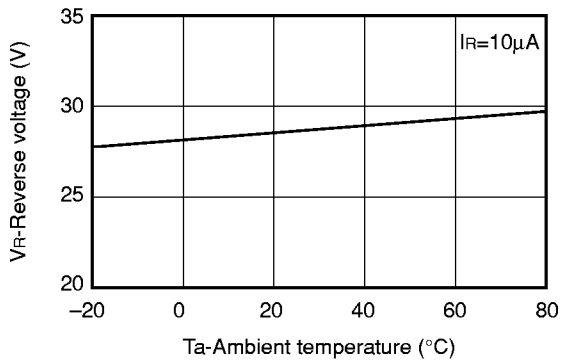
Reverse current vs. Ambient temperature



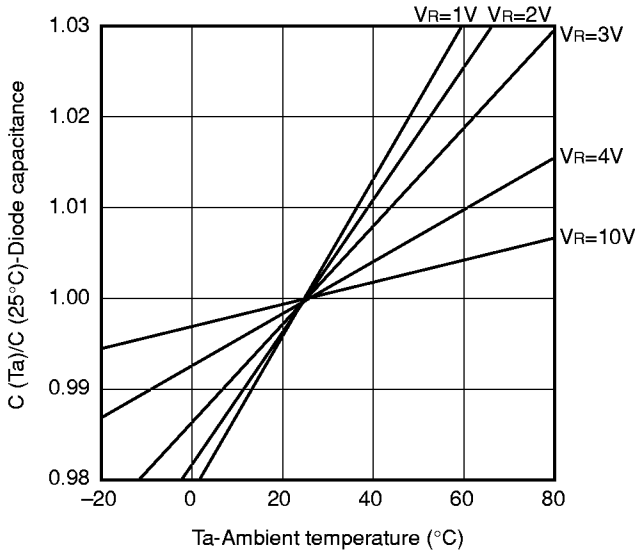
Forward voltage vs. Ambient temperature



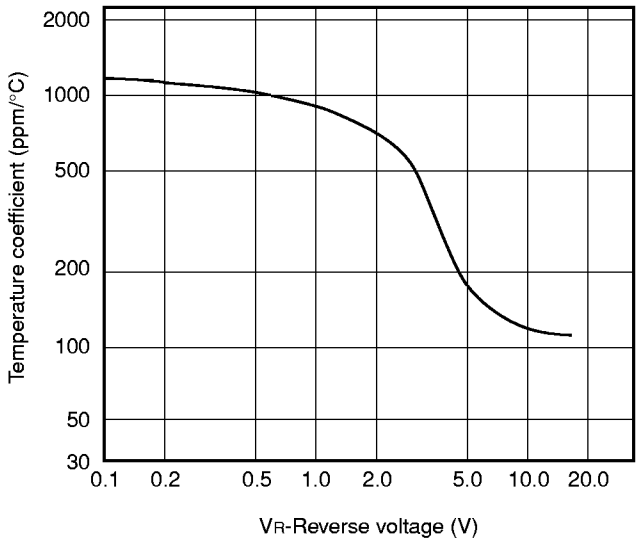
Reverse voltage vs. Ambient temperature



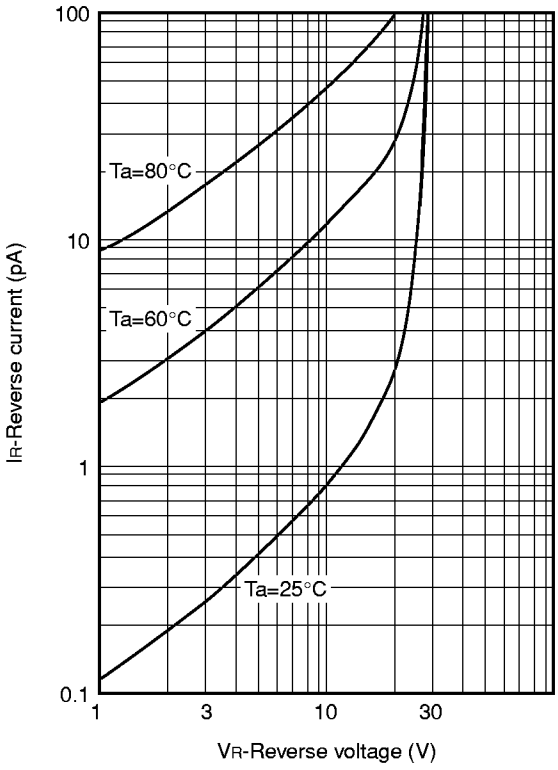
Diode capacitance vs. Ambient temperature



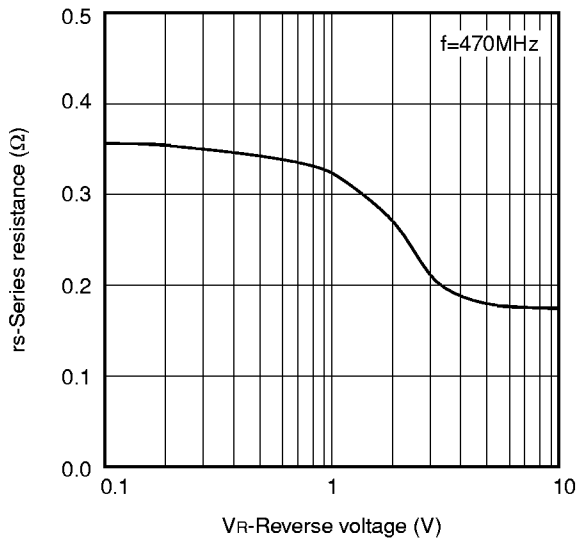
Temperature coefficient of diode capacitance



Reverse current vs. Reverse voltage

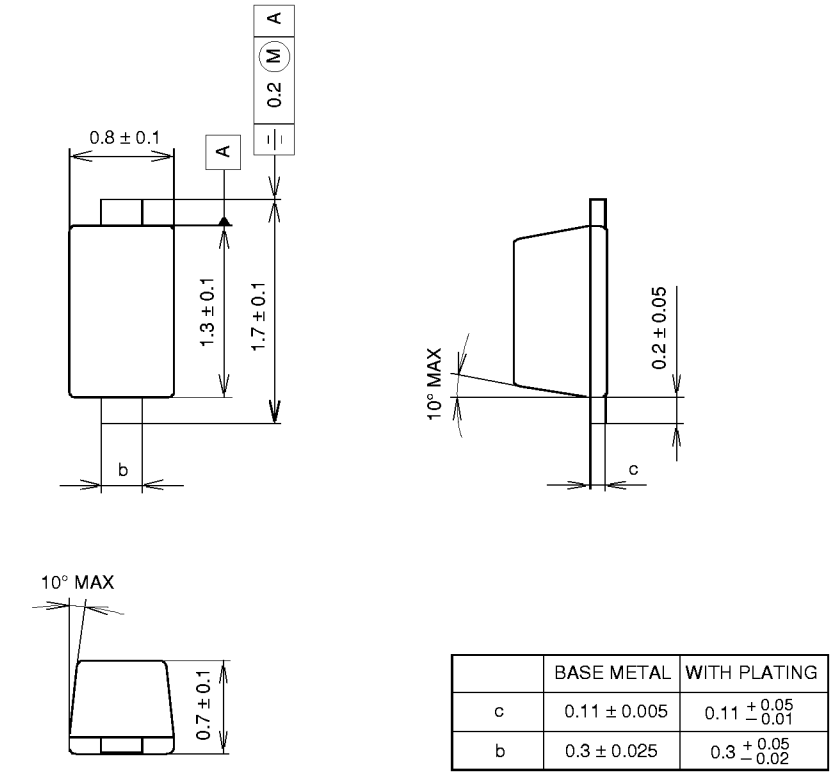


Series resistance vs. Reverse voltage



Package Outline Unit : mm

M-290

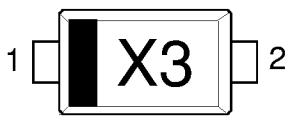


	BASE METAL	WITH PLATING
c	0.11 ± 0.005	$0.11^{+0.05}_{-0.01}$
b	0.3 ± 0.025	$0.3^{+0.05}_{-0.02}$

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 Cathode
2 Anode