

PLL frequency synthesizer for tuners

BU2611A/BU2611AF/BU2611AFS

BU2611 PLL frequency synthesizers work up through the FM band. They feature built-in RF amps with low power consumption and high sensitivity.

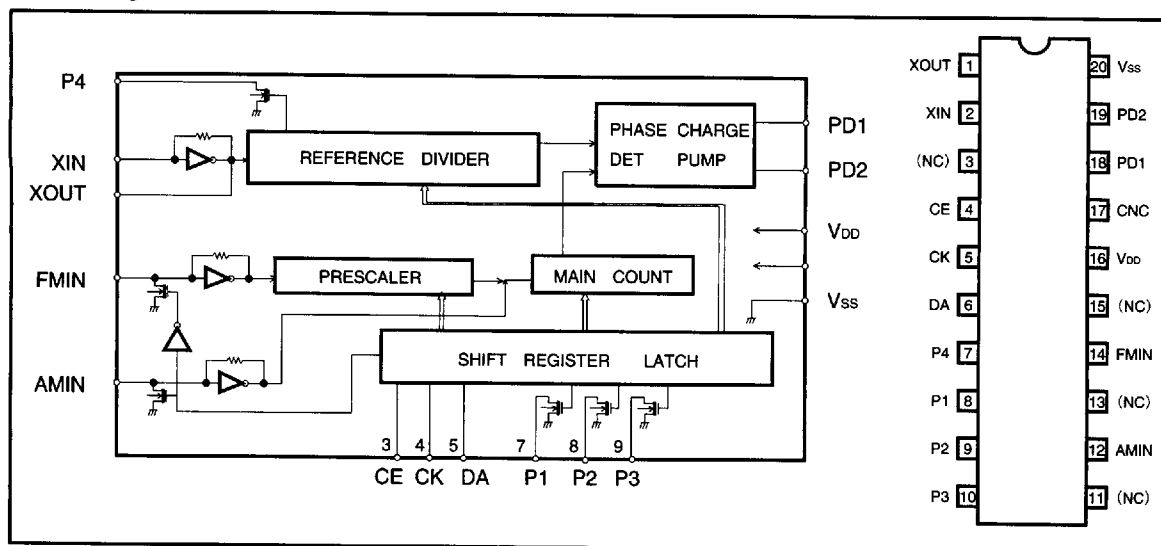
●Applications

Tuners (Mini components, radio cassette players, radio equipment, etc.)

●Features

- 1) Built-in high-speed prescaler can divide 130 MHzVCO.
- 2) In addition to the standard FM and AM, also offers the following 7 frequencies : 100kHz, 50kHz, 25kHz, 10kHz, 9kHz, 5kHz, and 1kHz.
- 3) 3-bit output port (open drain)
- 4) Clock output (400kHz)
- 5) Time base output (8Hz)
- 6) Serial data input (CE.CK.DA)

●Block diagram



PLL frequency synthesizers

High-frequency signal processors

●Pin description

Terminal name	Function
P4	Controller clock (400 kHz) output
XIN, XOUT	Xtal oscillation (7.2 MHz)
FMIN, AMIN	Local oscillation signal input
CE, CK, DA	Data input
P1, P2, P3	Output port
V	Power supply
PD1, PD2	Phase comparison charge pump output

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit	Conditions
Supply voltage		V _{DD}	-0.3~+7.0	V	
Maximum input voltage		V _{IN}	-0.3~V _{DD} +0.3	V	CE, CK, CA, XIN, FMIN, AMIN
Maximum output voltage 1		V _{OUT1}	-0.3~10.0	V	P1, P2, P3, P4
Maximum output voltage 2		V _{OUT2}	-0.3~V _{DD} +0.3	V	PD1, PD2
Maximum output current		I _{OUT}	0~4.0	mA	P1, P2, P3, P4
Power dissipation	BU2611A	P _D	1000 *1	mW	
	BU2611AF/BU2611AFS		500 *2		
Operating temperature		T _{opr}	-25~75	°C	
Storage temperature		T _{stg}	-55~125	°C	

* 1 Reduced by 10mW for each increase in Ta of 1°C over 25°C.

* 2 Reduced by 5mW for each increase in Ta of 1°C over 25°C.

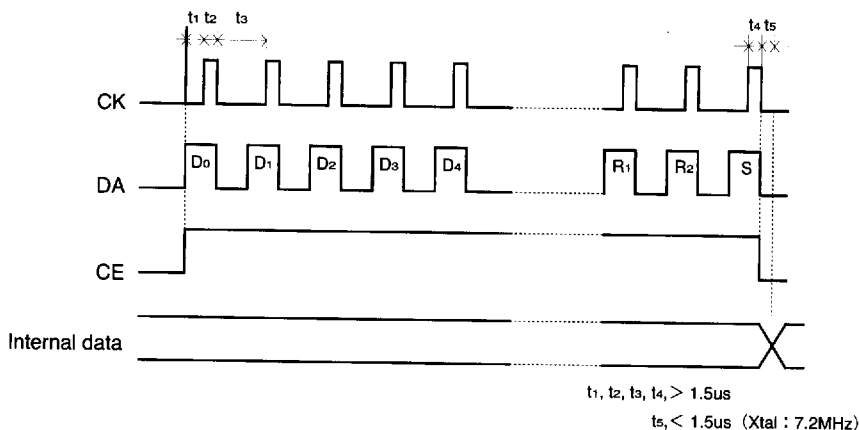
●Recommended operating conditions

Parameter	Symbol	Limits	Unit
Supply voltage	V _{DD}	4.0~6.0	V

●Electrical characteristics (unless other specified, $T_a = 25^\circ\text{C}$, $V_{DD} = 5.0\text{V}$)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Power supply voltage	I_{DD1}		4.8		mA	$F_{IN}=130\text{MHz}$, 100mVrms
Circuit current w/o signal	I_{DD2}		300		μA	No input, PLL = OFF
"H" level input voltage	V_{IH}	3.5			V	CE, CK, DA terminals
"L" level input voltage	V_{IL}			1.5	V	CE, CK, DA terminals
"L" level output voltage 1	V_{OL1}		0.4		V	P1, P2, P3, P4 $I_{OUT}=2.0\text{mA}$
"OFF" level leakage current 1	I_{OFF1}			1.0	μA	P1, P2, P3, P4 $V_{OUT}=10\text{V}$
"H" level output voltage	V_{OH}		0.25		V	PD1, PD2 $I_{OUT}=-1.0\text{mA}$
"L" level output voltage 2	V_{OL2}		0.15		V	PD1, PD2 $I_{OUT}=1.0\text{mA}$
"OFF" level leakage current 2	I_{OFF2}			100	nA	PD1, PD2 $V_{OUT}=V_{DD}$
"OFF" level leakage current 3	I_{OFF3}	-100			nA	PD1, PD2 $V_{OUT}=V_{SS}$
Input frequency 1	F_{IN1}		7.2		MHz	XIN, sine wave, C coupling
Input frequency 2	F_{IN2}	10		130	MHz	FMIN, sine wave, C coupling $V_{IN} = 80\text{ mVRMS}$
Input frequency 3	F_{IN3}	0.5		20	MHz	AMIN, sine wave, C coupling $V_{IN} = 80\text{ mVRMS}$
Input amplitude	$F_{INMax.}$	0.08		1.5	Vrms	XIN, FMIN, AMIN, sine wave, C coupling

●Data format



D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃
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← Input done from D₀.

T ₀	T ₁	P ₀	P ₁	P ₂	T _B	R ₀	R ₁	R ₂	S
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(1) Division data : For D₀ through D₁₃ (For AMN, use D₄ through D₁₃.)

D ₀	D ₁	D ₂	D ₃	D ₄	D ₅	D ₆	D ₇	D ₈	D ₉	D ₁₀	D ₁₁	D ₁₂	D ₁₃
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1 1 0 0 1 0 1 0 0 0 1 0 0 0 → FMIN frequency = 1107

X X X X 0 1 1 1 1 0 0 1 1 1 → AMIN frequency = 926

(2) Test data : T₀ through T₁ are taken as (0, 0).

7828999 0019006 962

ROHM

●Data format

(3) P₀, P₁, P₂, P₃, TB : port output, time base output

Data				Port output		
P ₀	P ₁	P ₂	TB	P ₁	P ₂	P ₃
0	0	0	0	※	※	※
0	0	1	0	0	0	1
0	1	0	0	0	1	0
0	1	1	0	0	1	1
1	0	0	0	1	0	0
1	0	1	0	1	0	1
1	1	0	0	1	1	0
1	1	1	0	1	1	1
0	0	0	1	TB	※	※
X	1	0	1	TB	1	0
X	0	1	1	TB	0	1
X	1	1	1	TB	1	1
1	0	0	1	TB	0	0

※ : Determined on the basis of R₀ - R₂.

X : don't care

TB: 8 Hz

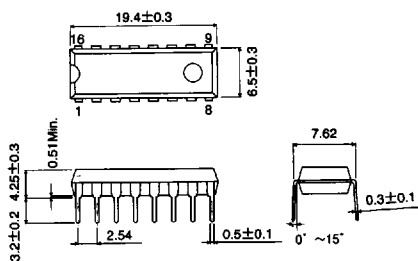
(4) R₀, R₁, R₂, standard frequency data

Data				Port output		
R ₀	R ₁	R ₂	Standard frequency	P ₁	P ₂	P ₃
0	0	0	100kHz	1	1	0
0	0	1	50	1	1	0
0	1	0	25	1	1	0
0	1	1	5	0	0	1
1	0	0	10	1	0	1
1	0	1	9	1	0	1
1	1	0	1	0	1	1
1	1	1	5	0	0	1

(5) S : input selection data 1 : FMIN 0 : AMIN

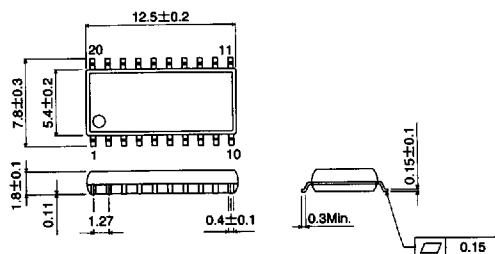
●External dimensions (Unit: mm)

BU2611A



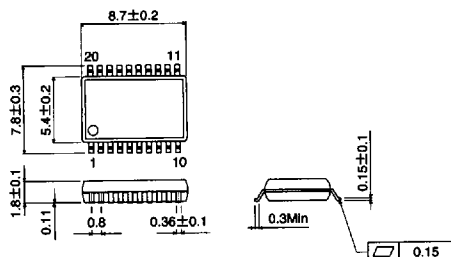
DIP16

BU2611AF



SOP20

BU2611AFS



SSOP-A20

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