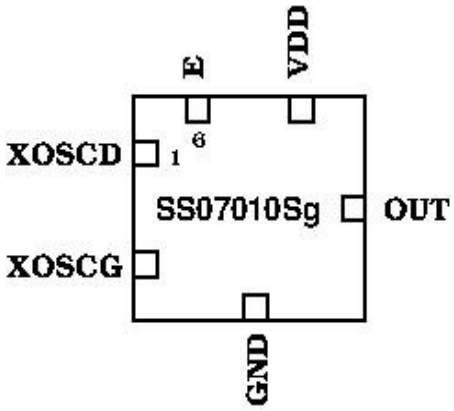
SS0710Sg
32.768kHz Crystal Oscillator

PRODUCT CODE(S): SS0710Sg

TECHNOLOGY: SMIC 180nm

KEY FEATURES

-large supply voltage range: 0.9 – 2V
-ultra low-power
-output frequency 32.768 kHz
-internal bias resistor
-internal AGC (ultra low-power and high frequency precision)
-internal shunt capacitors (optional)



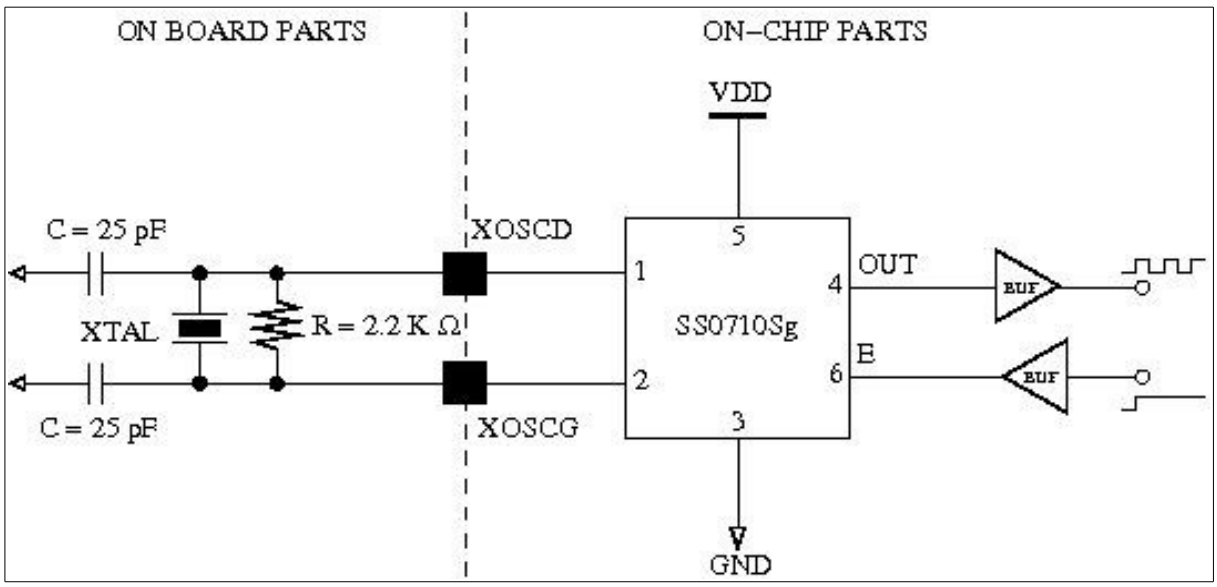
SHORT DESCRIPTION

SS0710 is a pierce oscillator for 32.768kHz crystals. The oscillator is specifically designed for ultra low-power applications. The large supply voltage range makes SS0110 the optimal choice for ASICs powered by a low-capacity battery (e.g. paper battery) or a supercapacitor.
The internal AGC guarantees the minimum power consumption over process, temperature and supply corner space, whichever 32kHz crystal is selected. Furthermore, AGC limit signal distortion and avoids quartz stress, thus providing high frequency precision and low aging.

APPLICATIONS

RTC, timers; battery or supercap supply.

TYPICAL APPLICATIONS



PIN FUNCTIONS

#	NAME	DESCRIPTION	NOTE
1	XOSCD	Crystal	
2	XOSCG	Crystal	
3	GND	Ground	
4	OUT	Output Frequency	
5	VDD	Power Supply	
6	E	Enable	

RECCOMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
VDD	Supply voltage	1	2	V
T	Storage temperature	-40	85	°C
ESD	ESD protection level, HBM		2	kV

RECOMMENDED CRYSTAL SPECIFICATION (32 kHz)

Symbol	Parameter	Min	Max	
ESR	Effective Series Resistance		80	kΩ
CL	Load Capacitance	8	12.5	pF

ELECTRICAL CHARACTERISTICS

Conditions: VDD from 1 to 2V, T from -40 to +85°C, E=VDD, unless otherwise stated.

Parameter		Condition	Min	Typ	Max	Unit	Note
Current Consumption	IDD				750	nA	
Stand-by Current	IDDZ	E=0			6	nA	
Start-Up from Enable	tstart1			230		ms	
Start-Up from VDD	tstart1	Note 1			1.5	s	
Output frequency	fout	Note 2		32		KHz	
High-level output voltage	VOH			VDD		V	
Low-level output voltage	VOL			0			
Rise and fall time	tr/tf	Evaluated at 20% - 80% levels		2.5		ns	
Output duty cycle	DUC			55%			
Peak-to-peak voltage across crystal	Vppxtal			250		mV	

note 1	VDD ramp-up from 0 to final value. Typical VDD rise time: 10 uS
note 2	Frequency nominal value and accuracy depends on the external quartz

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