

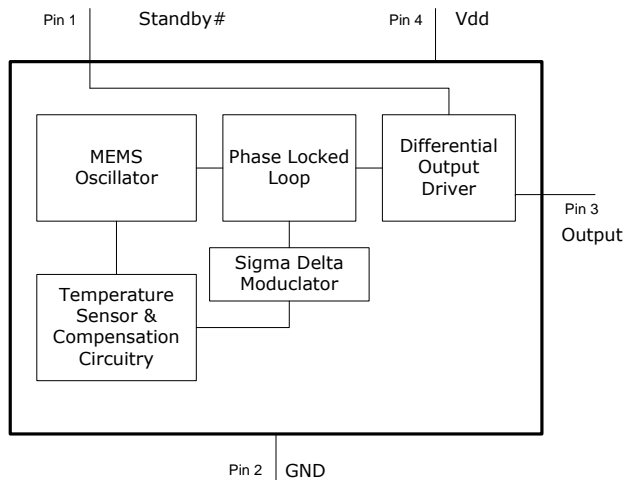


General Description

The DSC8101 is a field programmable silicon MEMS based CMOS oscillator offering excellent jitter and stability performance over a wide range of supply voltages and temperatures. Using the TIMEFLASH programmer, the end user can program the DSC8101 from 10 to 170MHz in increments of 100Hz (up to four decimal point resolution). The nominal operational supply voltages span from 2.5V to 3.3V and the device is offered in temperature grades from Commercial (0°C to 70°C) to Automotive (-55°C to 125°C).

Available in industry standard 7X5mm, 5X3.2 and 3.2X2.5mm packages, the DSC8101 is a "drop-in" replacement for a standard 4 pin quartz oscillator. The DSC8101 is electrically identical to the DSC1101.

Block Diagram



Enable Function

Standby# (pin 1)	Output (pin 3)
Hi Level	Outputs Active
Open (no connect)	Outputs Active
Low Level	Pulled Weakly Low (50kΩ)

Features

- Frequency Range: 10 to 170MHz
- Low Integrated Phase Noise Jitter
 - <4 ps rms: 12kHz to 20MHz
 - <1.5 ps rms: 100kHz to 20MHz
 - <1.0 ps rms: 200kHz to 20MHz
- Current: <30ma
- Standby/Powerdown Function
- Operating voltage
 - 2.25 to 3.60V (absolute max)
- Exceptional Stability over Temperature
 - ±20 PPM, ±25 PPM ±50 PPM
- Operating Temperature Range
 - Automotive -55°C to 125°C
 - Ext. Industrial -40°C to 105°C
 - Industrial -40°C to 85°C
 - Ext. Commercial -20°C to 70°C
 - Commercial 0°C to 70°C
- Ultra Miniature Footprint
 - 3.2 x 2.5 x 0.85 mm
 - 5.0 x 3.2 x 0.85 mm
 - 7.0 x 5.0 x 0.85 mm
- Lead Free, RoHS & Reach SVHC Compliant
- IBIS Models will be available

Benefits

- Pin for pin "drop in" replacement for industry standard 4 pin oscillators
- Frequency Resolution to 4 decimals
- Small Plastic package
- Cost Effective Solution
- Excellent Immunity to Mechanical Shock and Vibration
- Semiconductor level reliability, significantly better than quartz

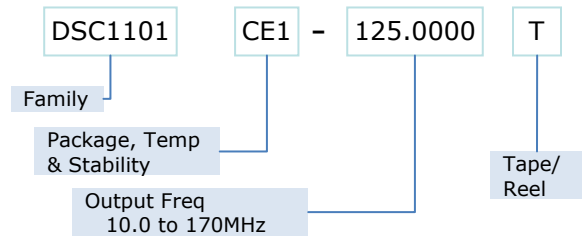
Applications

- 1G Ethernet
- Storage Area Networks
- GEAPON
- Server & Storage Platforms
- HD Video
- SAS / Fibre Channel

Absolute Maximum Ratings

Item	Min.	Max	Unit	Condition
Supply Voltage	-0.3	+4.0	V	
Input Voltage	-0.3	VDD+0.3	V	
Junction Temp	-	+150	°C	
Storage Temp	-55	+150	°C	
Soldering Temp	-	+260	°C	40 sec max.
ESD	-		V	
HBM		2000		
MM		200		
CDM		500		

Ordering Code



* See Ordering Information for details

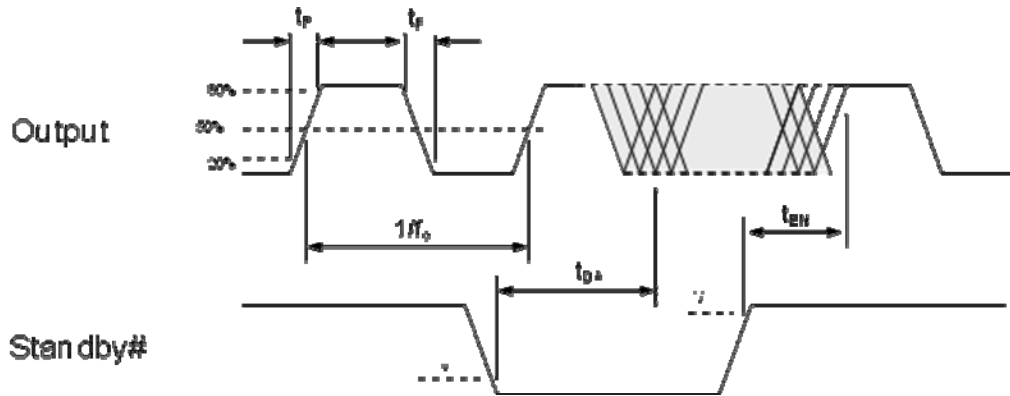
Specifications

Parameter	Symb ol	Condition	Min.	Typ.	Max.	Unit
Supply Voltage ¹	V _{DD}		2.25		3.6	V
Supply Current	I _{DD}	T=25°C		20	30	mA
Supply Current, Standby	I _{DD}	T=25°C			100	uA
Frequency	f ₀	Single Frequency	10		170	MHz
Frequency Tolerance Automotive Industrial Extended Commercial Commercial	Δf	-55°C to +125°C -40°C to +85°C -20°C to +70°C 0°C to +70°C			±20, ±25, ±50 ±20, ±25, ±50 ±20, ±25, ±50 ±20, ±25, ±50	ppm
Output Logic Levels Output logic high Output logic low	V _{OH} V _{OL}	I _L = +/- 8ma	0.9*V _{DD} -		- 0.1*V _{DD}	Volts
Output Transition time ² Rise Time Fall Time	t _R t _F	T=25°C 20%/80% C _L = 15pf		2		ns
Startup Time ³	t _{SU}	T=25°C			10	ms
Output Duty Cycle	SYM		45		55	%
Input Logic Levels Input logic high Input logic low	V _{IH} V _{IL}		0.75*V _{DD} -		- 0.25* V _{DD}	Volts
Output Disable Time	t _{DA}			100		ns
Output Enable Time	t _{EN}			5		us
Enable Pull-Up Resistor ⁴				33		kΩ
Period Jitter				4		ps _{RMS}
Integrated Phase Noise	J _{CC}	12kHz – 20MHz Band 100kHz – 20MHz Band 200kHz – 20MHz Band			<4 <1.5 <1.0	ps _{RMS}

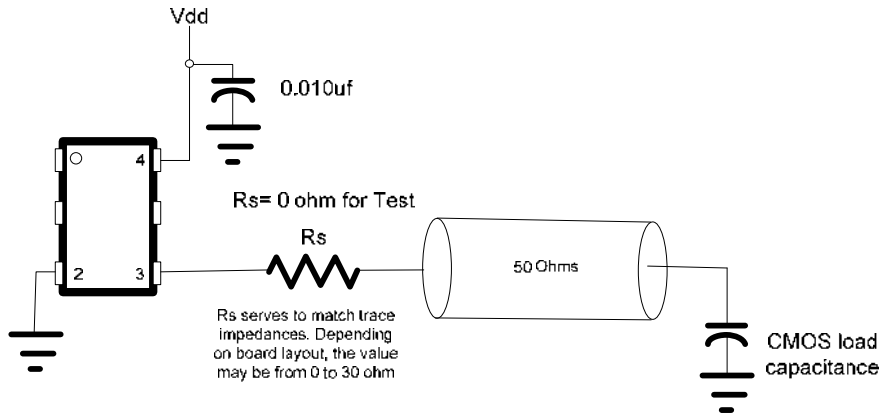
Notes:

- Pin 4 (V_{DD}) should filtered with 0.01uF capacitor
- Output Waveform and Test Circuit figures below define these parameters
- Output frequency to within 100ppm of final stable output frequency.
- Device is enabled if pad is floated or connected to V_{DD}

Output Waveform



Typical Termination Scheme



Test Circuit

