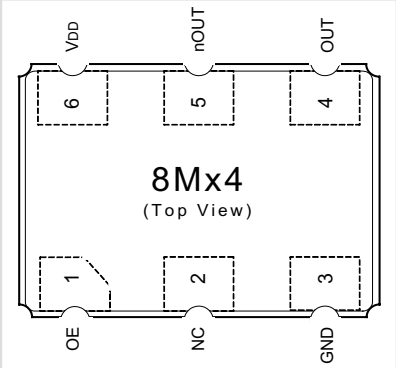
Product Discontinuance Notice – Last Time Buy Expires on (10/24/2013) **DATA SHEET**

IDT Replacement Part Number: 8N4S270EC-1088CDI, 8N4S270EC-1088CDI8
Fox Replacement Part Number: 771-156.25-74

ICS8MG4-156.250

Low Jitter, High Frequency XTAL Oscillator

- Stable, ultra low jitter, LVDS clock generation
- For Gigabit Ethernet, Fibre Channel, PCI-Express™, other applications
- Clock output frequency: 156.25MHz
- One differential LVDS clock output
- Output Enable (OE) pin (high impedance – when low)
- Small 6-pin 5mm x 7mm x 1.5mm SMT ceramic package
- Low profile package allows back-side PCB mounting
- Pb-free RoHS compliant (by default; no additional code required)
- 3.3V device power supply options
- Commercial (0 to +70 °C) temperature
- Frequency stability of ±50ppm
  (including initial accuracy, operating temperature variation, supply voltage variation, load variation, reflow drift, and aging for 10 years)
- Low phase jitter 1ps rms (typical) @ 3.3V (12kHz to 20MHz)



6-pin CERHERMETIC 5mm x 7mm x 1.5mm SMT

Electrical Specifications

Unless stated otherwise, V_{DD} = 3.3V ± 5%, T_A = 0°C to +70°C (commercial)

Item		Symbol	Specifications Min.	Typ.	Max.	Units	Test Conditions
DC Characteristics							
Power Supply (V_{DD}, GND pins)	Power Supply Voltage	V_{DD}	3.135	3.3	3.465	V	3.3V operation
	Power Supply Current	I_{DD}			114	mA	OE = V_{DD}, 3.3V operation
	Current w/Output Disabled	I_{OED}			0.5	mA	OE = GND
	Input Capacitance	C_{IN}		4		pF	
Output Enable (OE pin) LVCMOS/LVTTL	Input High Voltage	V_{IH}	0.7 * V_{DD}			V	
	Input Low Voltage	V_{IL}			0.3 * V_{DD}	V	
	Input High Current	I_{IH}			5	µA	V_{DD} = V_{IN} = 3.465V
	Input Low Current	I_{IL}	-150			µA	V_{DD} = 3.465V, V_{IN} = 0V
	Internal Pullup Resistor	R_{PULLUP}		51		kΩ	
Clock Output Level (OUT, nOUT) LVDS	Differential Output Voltage	V_{OD}	250		500	mV	100Ω termination between OUT and nOUT. See Parameter Measurement Information.
	V_{OD} Magnitude Change	ΔV_{OD}			50	mV	
	Offset Voltage	V_{OS}	0.96		1.41	V	
	V_{OS} Magnitude Change	ΔV_{OS}			150	mV	
AC Characteristics							
Output (OUT, nOUT)	Output Frequency Range			156.25		MHz	All conditions
	Frequency Stability Error	$\Delta f/f_O$			±50	ppm p-p	Includes frequency set, V_{DD}, T_A and load variation, reflow drift, 10 yr. aging
	Output Duty Cycle	odc	48		52	%	See Output Duty Cycle Diagram and Rise/Fall Time Diagram in Parameter Measurement Information
	Output Rise/Fall Time	t_R / t_F	200		700	ps	20% to 80% of V_{OD}
	Oscillator Start-up Time	t_{OSC}			10	ms	Time at Min. V_{DD} (3.135V) to be 0s
	RMS Phase Jitter, Random[1]	*t*jit (Ø)		1.0		ps rms	3.3V operation
	Jitter	t_{DS}[2]			1.5	ps	Deterministic
		t_{RS}[2]			12	ps	Random, σ of random jitter
		t_{acc}[2]			8	ps	3.3V operation; Accumulated Jitter, n = 2 cycles to 50,000 cycles

NOTE 1: Measured using an Aeroflex PN9500 with a 12kHz to 20MHz integration range. NOTE 2: Measured using a Wavecrest SIA-3000.

Pin Descriptions

Number	Name	Type		Description
1	OE	Input	Pullup	Output enable pin. High Impedance when LOW. LVCMOS/LVTTL interface levels.
2	nc	Unused		No connect.
3	GND	Power		Power supply ground.
4, 5	OUT, nOUT	Output		Differential clock outputs. LVDS interface levels.
6	V_{DD}	Power		Power supply pin.

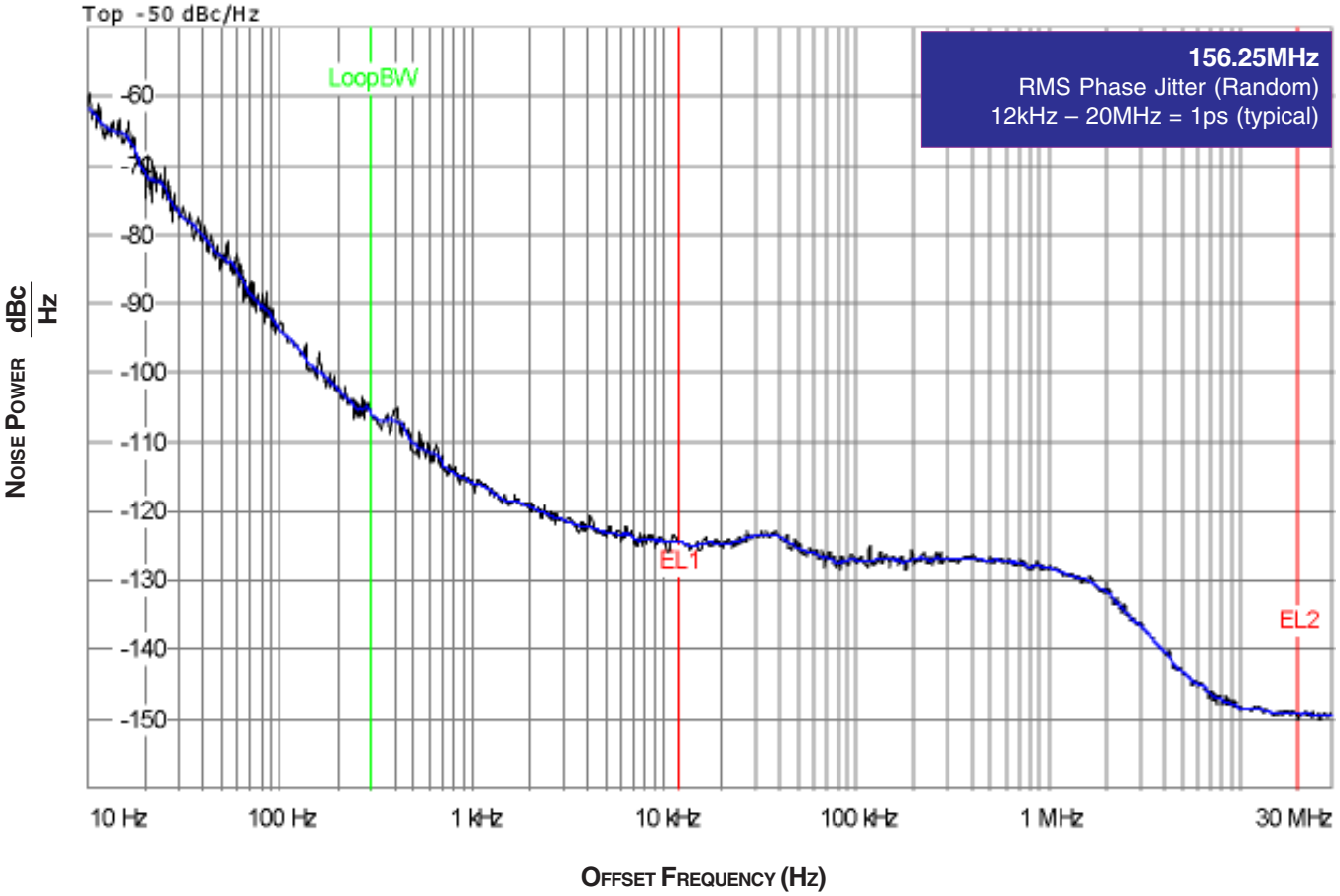
For typical value of internal Pullup resistor, see DC Characteristics.

Absolute Maximum Ratings

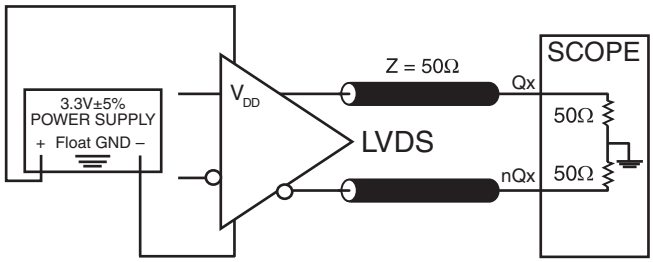
Item	Symbol	Condition	Unit
Input Voltage	V_I	-0.5 to V_{DD} +0.5	V
Output Voltage	V_O	-0.5 to V_{DD} +0.5	V
Positive Supply Voltage	V_{DD}	4.6	V
Package Thermal Impedence		43	°C/W (0lfpm)
Storage Temperature	T_S	-40 to +100	°C

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress specifications only. Functional operation of product at these conditions or any conditions beyond those listed in DC Characteristics or AC Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect product reliability.

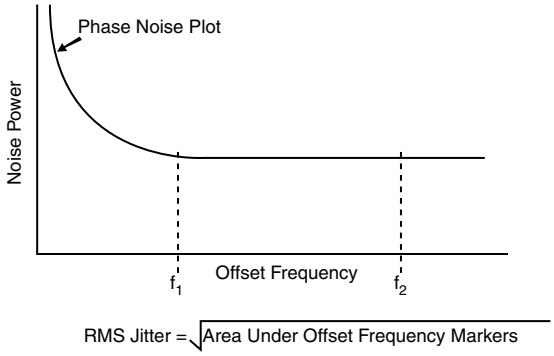
Typical Phase Noise at 156.25MHz @ 3.3V



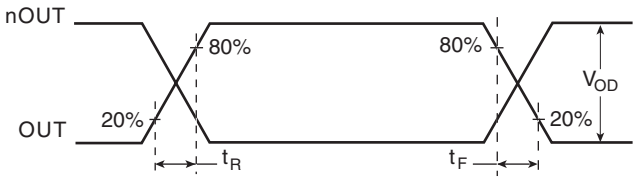
Parameter Measurement Information



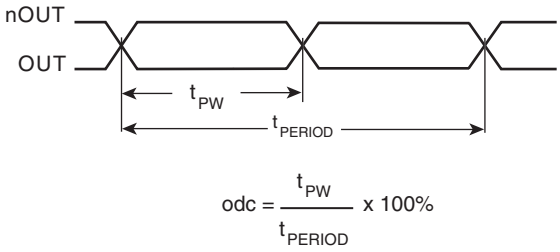
3.3V Output Load AC Test Circuit



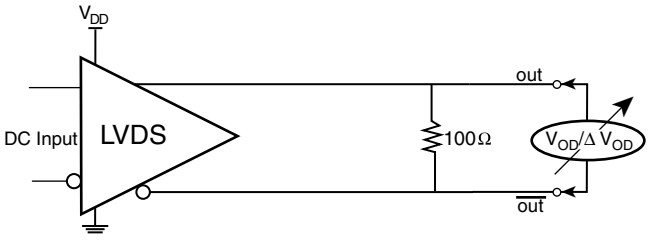
RMS Phase Jitter



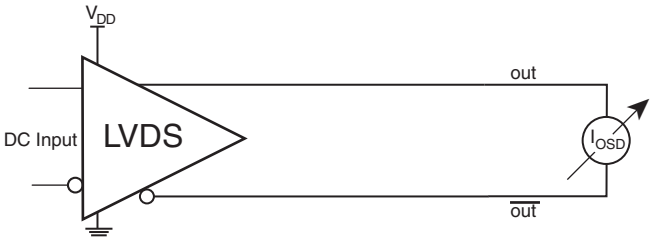
Output Rise/Fall Time



Output Duty Cycle/Pulse Width/Period

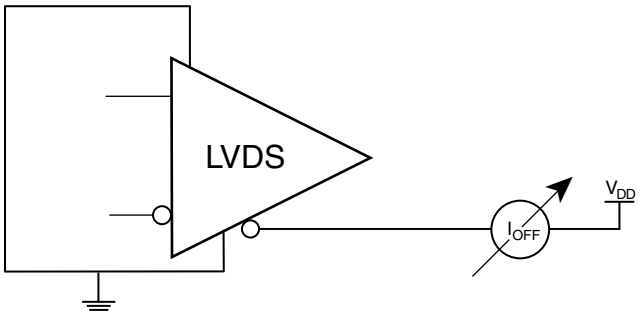


Differential Output Voltage Setup

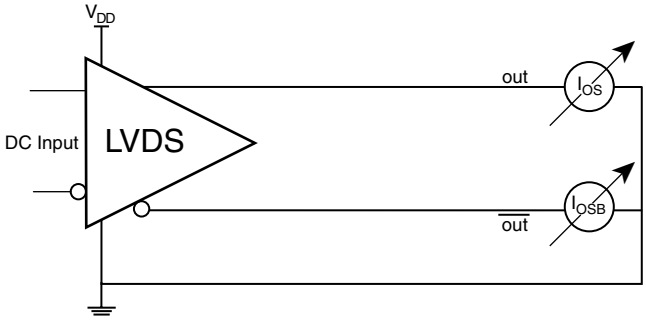


Differential Output Short Circuit Setup

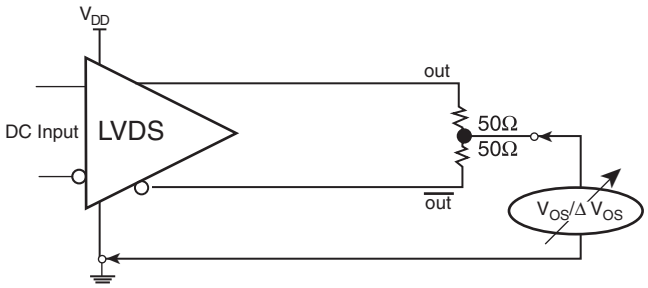
Parameter Measurement Information, continued



Power Off Leakage Setup



Output Short Circuit Current Setup



Offset Voltage Setup

Application Information

3.3V LVDS Driver Termination

A general LVDS interface is shown in *Figure 1.* In a 100Ω differential transmission line environment, LVDS drivers require a matched load termination of 100Ω across near the receiver input. For a multiple LVDS outputs buffer, if only partial outputs are used, it is recommended to terminate the unused outputs.

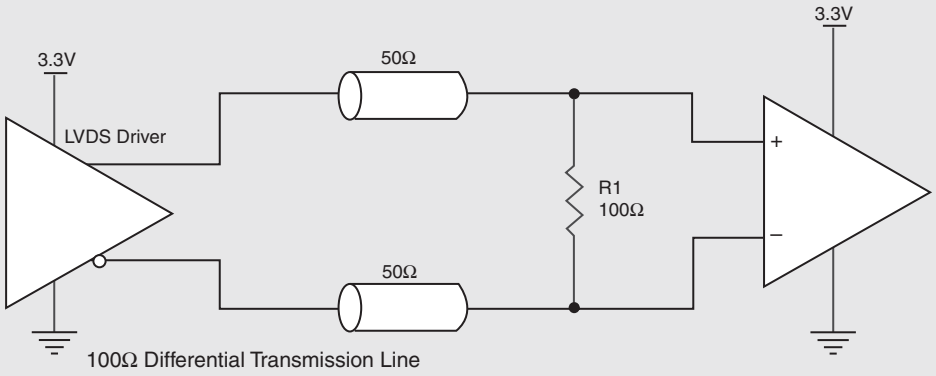
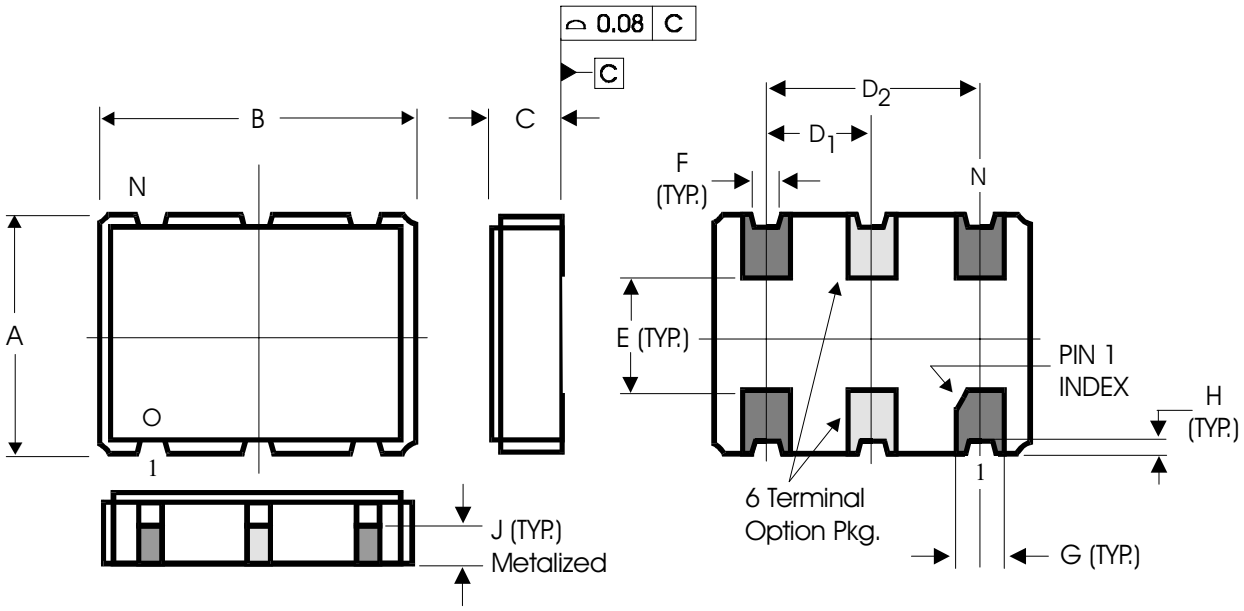


Figure 1. Typical LVDS Driver Termination

Package Outline - J Suffix for 6 Lead SMT CERHERMETIC, 5mm x 7mm x 1.5mm



DIMENSIONS IN MILLIMETERS		
SYMBOL	Nominal	Tolerance
A	5	±0.15
B	7	±0.15
C	1.5	±0.15
D_1	2.54	±0.13
D_2	5.08	±0.13
E	2.6	±0.13
F	0.6	±0.13
G	1.4	±0.13
H	0.15 Ref.	-
J	0.65 Ref.	-

ORDERING INFORMATION - 0°C TO + 70°C (COMMERCIAL)

Part/Order Number*	Marking*	Package	Shipping Packaging	Temperature
8MG4-156.250AJ	ICS8MG4 156.250	6 lead CERHERMETIC	Tube	0°C to 70°C
8MG4-156.250AJT	ICS8MG4 156.250	6 lead CERHERMETIC	1000 Tape & Reel	0°C to 70°C

PART/ORDER NUMBER INFORMATION

Part/Order Number: ICS8M x 4 - fff.fff r p t u

Device

Supply Voltage & Frequency Accuracy
G = 3.3V ±50 ppm
H = 3.3V ±100 ppm
J = 2.5/3.3V ±50 ppm
K = 2.5/3.3V ±100 ppm

Output Type
4 = LVDS

Output Frequency (MHz)
Leading zeroes dropped. Fourth decimal place added if necessary. Consult ICS for other frequencies.

Revision of Product
A = Initial Release

Package Type (individual devices)
J = 5x7mm ceramic SMT

Ambient Temperature Range
none = commercial = 0°C to +70°C
I = industrial = -40°C to +85°C

Bulk Packaging option
none = tube
T = tape and reel (1000 devices)

Note: Lead-free by default (no addition "LF" code needed). (Pb-free and RoHS complaint)

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