PRELIMINARY

MX8300

RAMBUS CLOCK GENERATOR

FEATURES

- Clock generator for Rambus™ Channel
- Provide frequency select pin
- Provide a Rambus interface level output frequency which is 14 or 17 times of input frequency
- Provide a TTL interface level output frequency which is input frequency divided by 4
- 3.3 V power supply
- Package
  8-pin SOP (150mil)

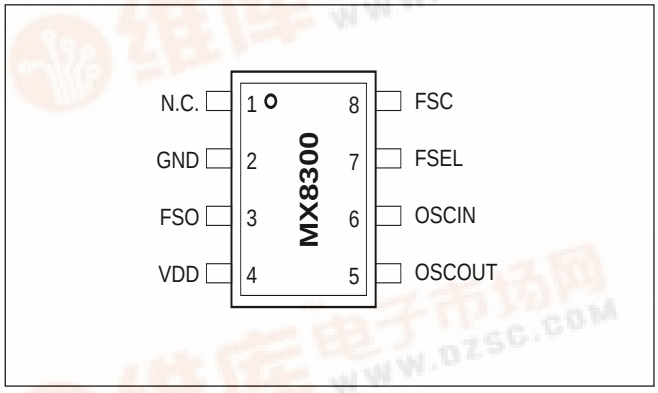
GENERAL DESCRIPTION

The product is a clock synthesizer chip for Rambus Channel. It uses advanced Phase lock loop technology to generate desired clock. The reference clock is supplied by external crystal. The FSO clock is 14 or 17 times of reference clock and its interface level is Rambus interface compatible. Beside FSO clock, crystal frequency divided by four clock output (FSC) is also provided for testing purpose. The FSC clock output is TTL compatible.

The product is 3.3 V operation, and the package type is 8-pin SOP.

PIN CONFIGURATIONS

8-PIN SOP

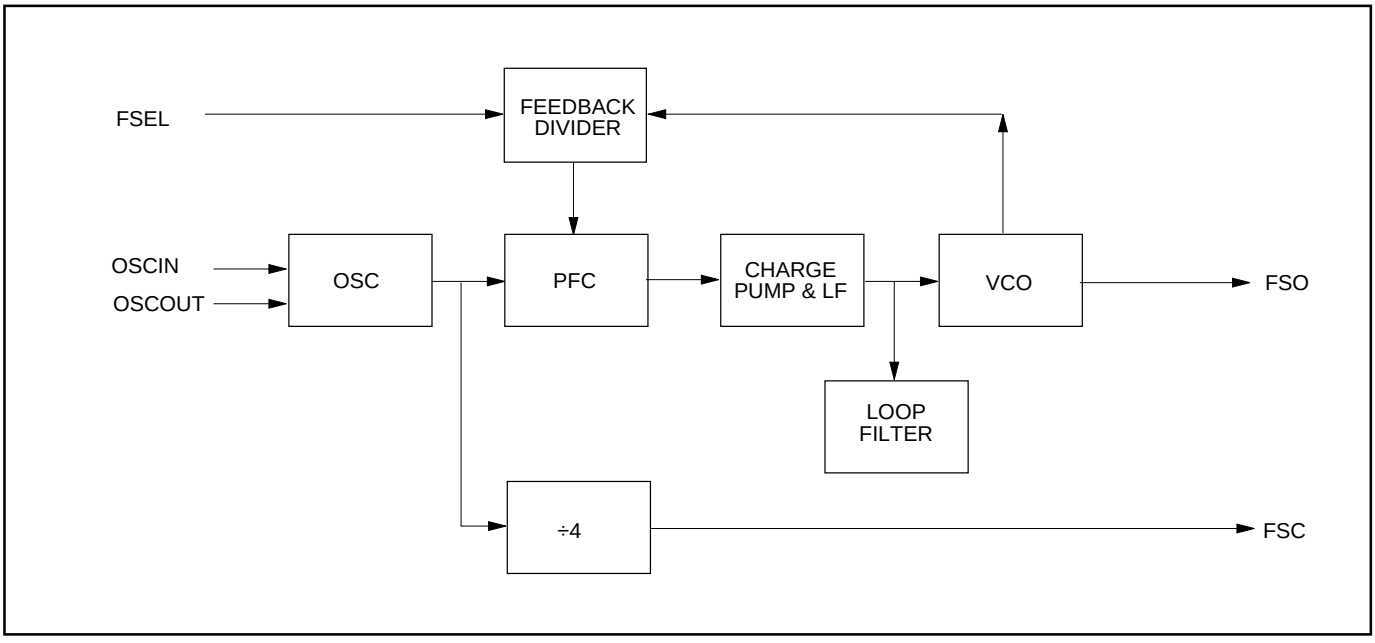


Rambus and are trademarks of Rambus Inc.

PIN DESCRIPTION

SYMBOL	PIN TYPE	PIN NUMBER	DESCRIPTION
N.C.	O	1	No connection.
GND		2	Ground
FSO	O	3	Rambus clock output. Rambus interface level.
VDD		4	Power supply
OSCOUT	O	5	Crystal pin
OSCIN	I	6	Crystal pin
FSEL	I	7	Frequency select pin(High:FSO=17*4*FSC, Low:FSO=14*4*FSC). Toggling of FSEL will reset the counter in the FEEDBACK DIVIDER.
FSC	O	8	Clock output. Crystal frequency divided by 4.

BLOCK DIAGRAM



FUNCTIONAL DESCRIPTION

The Rambus clock generator is an integrated circuit of phase locked loop frequency synthesizer.It provides two clock output frequencies. The first output frequency (FSC) is the crystal frequency divided by 4 clock. The second output frequency (FSO) is 14 or 17 times of crystal frequency. The FSO output frequency can be selected by FSEL Pin. When FSEL pin is high, FSO is 17 times of crystal frequency. When FSEL is low, FSO is 14 times of crystal frequency. FSO is Rambus interface level output.

As shown in the block diagram, a Phase locked loop consists of feedback divider, phase frequency comparator(PFC), Charge pump, voltage controlled osillator(VCO), and loop filter. All components for PLL are integrated inside the chip.

Note:The counter in the FEEDBACK DIVIDER can be reset by toggling the FSEL after VDD exceed 3.0V. It takes 5ms for FSO to be stable after FSEL's toggling.

ABSOLUTE MAXIMUM RATINGS

RATING	VALUE
Storage Temperature	-85°C to 150°C
Applied Input Voltage	-0.5V to VDD + 0.5V
Applied Output Voltage	-0.5V to VDD + 0.5V
Supply Voltage	-0.5V to 5V
Operating Temperature	0 to 80°C
Power Dissipation	0.5Watts

NOTICE:
Stresses greater than those listed under ABSOLUTE MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended period may affect reliability.

NOTICE:
Specifications contained within the following tables are subject to change.

DC CHARACTERISTICS TA = 0°C to 80°C, VDD = 3.15V to 3.6V

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT	CONDITIONS
VIL	Input Low Voltage			0.8	V	
VIH	Input High Voltage	2.4			V	
IIL	Input Low Current			-5	uA	
IIH	Input High Current			5	uA	
IVDD	VDD Current	20	30	40	mA	
CI	Input Capacitance			10	pF	
RL	Line Impedence	20	50	75	Ohm	Rambus Level, see note 1
VLT	Line Termination Voltage	2.2		2.7	V	Rambus Level, see note 1
IOH	Output High Current	-10		10	uA	FSO output
IOL	Output Low Current	40	50	75	mA	VOL=0.4V, FSO output
Ro	Output Resistance	5.3	8	10	Ohm	FSO output
Ro (PMOS)	Output Resistance	175	350	525	Ohm	IOH=-600uA, FSC output
Ro (NMOS)	Output Resistance	85	175	260	Ohm	IOL=600uA, FSC output

AC CHARACTERISTICS TA = 0°C to 80°C, VDD = 3.15V to 3.6V

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Dt_1	Duty Cycle	45		55	%	FSO, FSC
J	Jitter,short term			150	ps	
Tr/Tf	Rise/Fall Time	0.3		0.7	ns	Rambus level, FSO output
Tup	Power up Time		1	5	ms	1. After power is stable
						2. Frequency from 0 to 250MHz

Note1: Defined by customer's system implementation

ORDERING INFORMATION

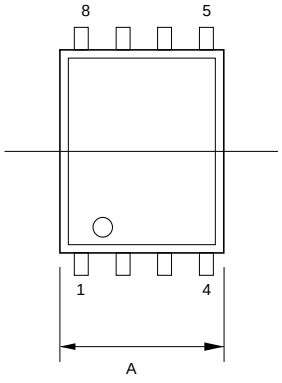
PART NO.	PACKAGE
MX8300MC	8-PIN SOP

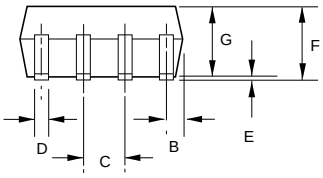
PACKAGE INFORMATION

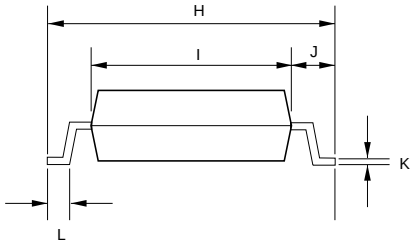
8-PIN PLASTIC SOP (150 mil)

ITEM	MILLIMETER	INCHES
A	4.90 ± .05	.193 ± .002
B	.60 ± .10	.024 ± .004
C	1.27 [TP]	.050 [TP]
D	.41 ± .10	.016 ± .004
E	.13 ± .03	.005 ± .001
F	1.60 ± .13	.063 ± .005
G	1.45 ± .13	.057 ± .005
H	5.99 ± .3	.236 ± .012
I	3.91 ± .13	.154 ± .005
J	1.02 ± .13	.040 ± .005
K	.20	.008
L	.60 ± .10	.024 ± .004

NOTE: Each lead centerline is located within .25 mm[.01 inch] of its true position [TP] at maximum material condition.







MACRONIX INTERNATIONAL CO., LTD.

HEADQUARTERS:
No. 3, Creation Road III, Science-Based Industrial Park, Hsin Chu, Taiwan, R.O.C.
TEL : +886-3-578-8888
FAX: +886-3-578-8887

TAIPEI OFFICE:
12F, No. 4, Min-Chuan E. Rd., Sec. 3, Taipei, Taiwan, R.O.C.
TEL : +886-2-509-3300
FAX: +886-2-509-2200

EUROPE OFFICE:
Grote Winkellaan 95, Bus 1 1853 Strombeek, Belgium
TEL : +32-2-267-7050
FAX: +32-2-267-9700

SINGAPORE OFFICE:
5 Jalan Masjid Kembangan Court #01-12 Singapore 418924
TEL : +65-747-2309
FAX: +65-748-4090

MACRONIX AMERICA, INC.
1338 Ridder Park Drive, San Jose, CA95131 U.S.A.
TEL : +1-408-453-8088
FAX: +1-408-453-8488

JAPAN OFFICE:
NFK Kawasaki Building, 8F, 1-2 Higashida-cho, Kawasaki-ku
Kawasaki-shi, Kawasaki-ken 210, Japan
TEL : +81-44-246-9100
FAX: +81-44-246-9105