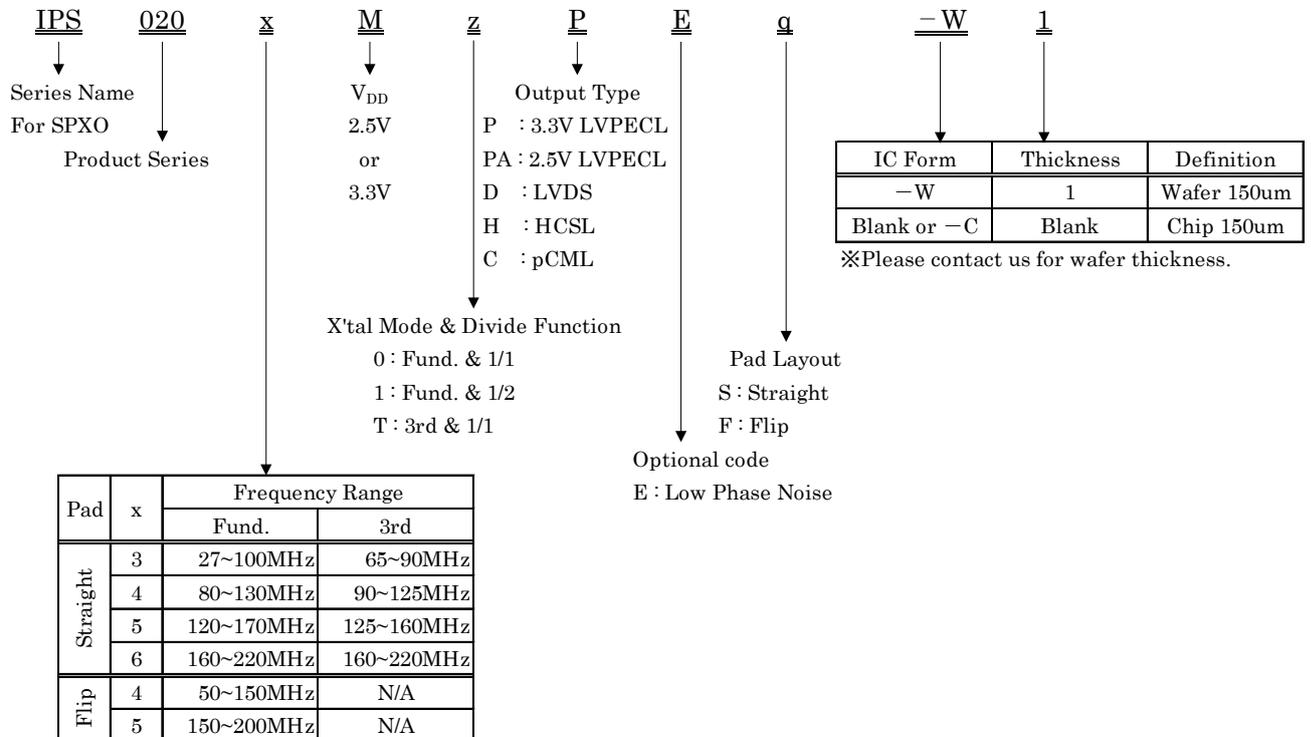## ■ Description

IPS020*E is the IC for differential output SPXO whose Phase Noise is quite low. This IC suites for telecommunication applications. This IC also supports pCML (Pseudo CML) output.

We also offer models with the best pad layout for flip chip bonding.

■ Features

- Operation temperature ： -40℃~125℃
- Power supply voltage ： 2.375V~3.63V (LVDS & HCSL)
  2.375V~2.625V (2.5V LVPECL)
  2.97V~3.63V (3.3V LVPECL & pCML)
- Standby function ： Oscillation stop
- Crystal frequency ： 220MHz maximum
- Output ： LVPECL / LVDS / HCSL / Pseudo CML (HDLVDS : High Drive LVDS)
- Crystal mode ： Fundamental & 3rd overtone
- Small chip size ： 0.65mm × 0.75mm
- Pad layout ： Straight type & Flip type
- Duty cycle ： Within 50%±5%
- Phase jitter ： ~57fsec (12kHz to 20MHz at 156.25MHz)

1. Part number rule

IPS   020   x   M   z   P   E   q   －W   1

Series Name
For SPXO

Product Series

V_{DD}
2.5V
or
3.3V

Output Type
P ： 3.3V LVPECL
PA ： 2.5V LVPECL
D ： LVDS
H ： HCSL
C ： pCML

X'tal Mode & Divide Function
0 ： Fund. & 1/1
1 ： Fund. & 1/2
T ： 3rd & 1/1

Pad Layout
S ： Straight
F ： Flip

Optional code
E ： Low Phase Noise

IC Form	Thickness	Definition
－W	1	Wafer 150um
Blank or －C	Blank	Chip 150um

※Please contact us for wafer thickness.

Pad	x	Frequency Range	
		Fund.	3rd
Straight	3	27~100MHz	65~90MHz
	4	80~130MHz	90~125MHz
	5	120~170MHz	125~160MHz
	6	160~220MHz	160~220MHz
Flip	4	50~150MHz	N/A
	5	150~200MHz	N/A

The contents of this sheet are subject to change without notice.

INTERCHIP CORPORATION

2. Series

Part Number	Output	Crystal Frequency f (MHz)			Divide	Output Frequency F0 (MHz)		Remarks
		Mode	Min.	Max.		Min.	Max.	
IPS020 3 M 0 P E S			27	100		27	100	
IPS020 4 M 0 P E S			80	130		80	130	
IPS020 5 M 0 P E S		Fund.	120	170	1/1	120	170	
IPS020 6 M 0 P E S			160	220		160	220	
IPS020 3 M 1 P E S	LVPECL (V_{DD}= 3.3V ±10%)		27	100	1/2	13.5	50	Straight type
IPS020 3 M T P E S			65	90		65	90	
IPS020 4 M T P E S		3rd	90	125	1/1	90	125	
IPS020 5 M T P E S			125	160		125	160	
IPS020 6 M T P E S			160	220		160	220	
IPS020 4 M 0 P E F		Fund.	50	150	1/1	50	150	Flip type
IPS020 5 M 0 P E F			100	200		100	200	
IPS020 3 M 0 P A E S			27	100		27	100	
IPS020 4 M 0 P A E S			80	130		80	130	
IPS020 5 M 0 P A E S		Fund.	120	170	1/1	120	170	
IPS020 6 M 0 P A E S			160	220		160	220	
IPS020 3 M 1 P A E S	LVPECL (V_{DD}= 2.5V ±5%)		27	100	1/2	13.5	50	Straight type
IPS020 3 M T P A E S			65	90		65	90	
IPS020 4 M T P A E S		3rd	90	125	1/1	90	125	
IPS020 5 M T P A E S			125	160		125	160	
IPS020 6 M T P A E S			160	220		160	220	
IPS020 4 M 0 P A E F		Fund.	50	150	1/1	50	150	Flip type
IPS020 5 M 0 P A E F			100	200		100	200	
IPS020 3 M 0 D E S			27	100		27	100	
IPS020 4 M 0 D E S			80	130		80	130	
IPS020 5 M 0 D E S		Fund.	120	170	1/1	120	170	
IPS020 6 M 0 D E S			160	220		160	220	
IPS020 3 M 1 D E S	LVDS		27	100	1/2	13.5	50	Straight type
IPS020 3 M T D E S			65	90		65	90	
IPS020 4 M T D E S		3rd	90	125	1/1	90	125	
IPS020 5 M T D E S			125	160		125	160	
IPS020 6 M T D E S			160	220		160	220	
IPS020 4 M 0 D E F		Fund.	50	150	1/1	50	150	Flip type
IPS020 5 M 0 D E F			100	200		100	200	

INTERCHIP CORPORATION

Part Number	Output	Crystal Frequency f (MHz)			Divide	Output Frequency F0 (MHz)		Remarks
		Mode	Min.	Max.		Min.	Max.	
IPS020　3　M　0　H　　E　S	HCSL	Fund.	27	100	1/1	27	100	Straight type
IPS020　4　M　0　H　　E　S			80	130		80	130	
IPS020　5　M　0　H　　E　S			120	170		120	170	
IPS020　6　M　0　H　　E　S			160	220		160	220	
IPS020　3　M　1　H　　E　S			27	100	1/2	13.5	50	
IPS020　3　M　T　H　　E　S		3rd	65	90	1/1	65	90	
IPS020　4　M　T　H　　E　S			90	125		90	125	
IPS020　5　M　T　H　　E　S			125	160		125	160	
IPS020　6　M　T　H　　E　S			160	220		160	220	
IPS020　4　M　0　H　　E　F		Fund.	80	130	1/1	80	130	Flip type
IPS020　5　M　0　H　　E　F			120	170		120	170	
IPS020　5　M　0　C　　E　F	pCML	Fund.	100	200	1/1	100	200	Flip type
IPS020　4　M　T　C　　E　S		3rd	90	125	1/1	90	125	Straight type
IPS020　5　M　T　C　　E　S			125	160		125	160	

3.　Absolute Maximum Ratings

V_{SS}=0V, Ta=25℃± 2℃

Parameter	Symbol	Condition	Ratings		
			Min	Max	Unit
Supply Voltage	V_{DD}		V_{SS}-0.5	5.0	V
Input Voltage	V_{IN}	All Input Pin	V_{SS}-0.5	V_{DD}+0.5	V
Output Voltage	V_{OUT}		V_{SS}-0.5	V_{DD}+0.5	V
Output Current	I_{OUT}			25	mA
Junction Temperature	Tj		-55	150	℃
Storage Temperature	Tstg		-55	125	℃

4. Recommended Operating Condition

V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Voltage	V_{DD}	2.5V LVPECL	2.375	2.50	2.625	V	V_{DD}
		LVDS, HCSL	2.375	3.30	3.63		
		3.3V LVPECL, pCML	2.97	3.30	3.63		
"H" Input Voltage	V_{IH}		$V_{DD}×0.7$			V	CE
"L" Input Voltage	V_{IL}				$V_{DD}×0.3$	V	CE
Input Voltage	V_{IN}		V_{SS}		V_{DD}	V	CE
Output Load Resistance	RL	LVPECL ※1	49.5	50.0	50.5	Ω	OUT
		LVDS ※2	99	100	101		
		HCSL ※3	49.5	50.0	50.5		
		pCML ※4	80	100	120		
Ambient Temperature	Topt		-40		125	℃	

This IC has enough immunity against ESD and Latch-up, but handle with care.

※1 Terminate to V_{DD}-2.0V
※2 Between OUT and OUTN
※3 To GND and Rs=33Ω or 0Ω
※4 Refer to Fig.4-1
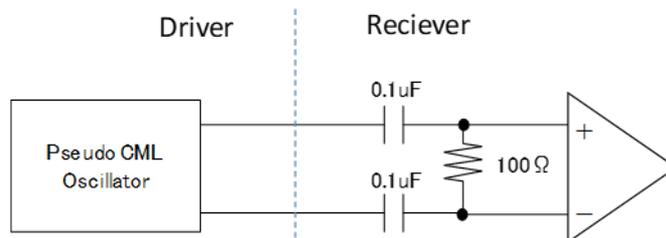
Fig. 4-1 pCML RL condition

5. Electrical Specification

5-1 LVPECL Output (V_{DD}=3.3V Operation)

5-1-1 DC Characteristics

Unless otherwise stated, V_{DD}=2.97V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Min	Typ	Max	Unit
					Specification		
Output leak current	I_Z	CE=0.3V				10	µA
"L" input current	I_{IL}	V_{IN}=V_{SS}			-10		µA
"H" output voltage	V_{OH}	RL=50Ω(Terminated to V_{DD}-2.0V) CE=Open, OUT/OUTN		V_{DD}-1.025	V_{DD}-0.950	V_{DD}-0.880	V
"L" output voltage	V_{OL}			V_{DD}-1.810	V_{DD}-1.700	V_{DD}-1.620	V
Current consumption※	I_{DD}	IPS0203M0PES, f=100MHz			34.0	51.0	mA
		IPS0204M0PEq, f=122.88MHz			36.0	54.0	
		IPS0205M0PEq, f=170MHz			38.0	57.0	
		IPS0206M0PES, f=212.5MHz			38.0	57.0	
		IPS0203MTPES, f=90MHz			35.0	52.0	
		IPS0204MTPES, f=125MHz			37.0	55.0	
		IPS0205MTPES, f=156.25MHz			38.0	57.0	
		IPS0206MTPES, f=200MHz			40.0	60.0	
Current consumption at oscillation stop	I_{DDD}	CE=GND	Straight type			10	uA
			Flip type		60	300	

※Condition：V_{DD}=3.3V, CE=Open, RL=50Ω (Terminated to V_{DD}-2.0V)

5-1-2 Switching Characteristics

Unless otherwise stated, V_{DD}=2.97V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Min	Typ	Max	Unit
					Specification		
Oscillation start up time	Tstart	IPS020xM0				2.0	ms
		IPS020xMT				10.0	
Output Disable Time	Tplz					200	ns
Output Enable Time	Tpzl	IPS020xM0				2.0	ms
		IPS020xMT				10.0	
Rise time / Fall time	Tr / Tf	20%~80% Vopp			0.25	0.40	ns
Output Duty Ratio	Duty	1/2Vopp point		45		55	%
		Only IPS0206MT 1/2Vopp point	Ta=-40℃~85℃	45		55	
			Ta=85℃~125℃	40		60	
Output Swing	Vopp			0.4			V
Freq. V_{DD} deviation	Fvst	V_{DD}=3.3V±10%				±2.0	ppm

5-2 LVPECL Output (V$_{DD}$=2.5V Operation)

5-2-1 DC Characteristics

Unless otherwise stated, V$_{DD}$=2.375V~2.625V, V$_{SS}$=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Specification			Unit
				Min	Typ	Max	
Output leak current	I$_Z$	CE=0.3V				10	μA
"L" input current	I$_{IL}$	V$_{IN}$=V$_{SS}$			-10		μA
"H" output voltage	V$_{OH}$	RL=50Ω(Terminated to V$_{DD}$-2.0V) CE=Open, OUT/OUTN		V$_{DD}$-1.105	V$_{DD}$-0.950	V$_{DD}$-0.880	V
"L" output voltage	V$_{OL}$			V$_{DD}$-1.810	V$_{DD}$-1.700	V$_{DD}$-1.620	V
Current consumption※	I$_{DD}$	IPS0203M0PAES, f=100MHz			31	46	mA
		IPS0204M0PAEq, f=122.88MHz			33	50	
		IPS0205M0PAEq, f=170MHz			33	50	
		IPS0206M0PAES, f=212.5MHz			33	50	
		IPS0203MTPAES, f=90MHz			32	48	
		IPS0204MTPAES, f=125MHz			34	51	
		IPS0205MTPAES, f=156.25MHz			35	53	
		IPS0206MTPAES, f=200MHz			37	56	
Current consumption at oscillation stop	I$_{DDD}$	CE=GND	Straight type			10	uA
			Flip type		60	300	

※Condition：V$_{DD}$=2.5V, CE=Open, RL=50Ω (Terminated to V$_{DD}$-2.0V)

5-2-2 Switching Characteristics

Unless otherwise stated, V$_{DD}$=2.375V~2.625V, V$_{SS}$=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Specification			Unit
				Min	Typ	Max	
Oscillation start up time	Tstart	IPS020xM0				2.0	ms
		IPS020xMT				10	
Output Disable Time	Tplz					200	ns
Output Enable Time	Tpzl	IPS020xM0				2.0	ms
		IPS020xMT				10	
Rise time / Fall time	Tr / Tf	20%~80% Vopp			0.25	0.40	ns
Output Duty Ratio	Duty	1/2Vopp point		45		55	%
		Only IPS0206MT 1/2Vopp point	Ta=-40℃~85℃	45		55	
			Ta=85℃~125℃	40		60	
Output Swing	Vopp			0.4			V
Freq. V$_{DD}$ deviation	Fvst	V$_{DD}$=2.5V±5%				±2.0	ppm

I N T E R C H I P   C O R P O R A T I O N

5-3 LVDS Output
  5-3-1 DC Characteristics

Unless otherwise stated, V_{DD}=2.375V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Specification			Unit
				Min	Typ	Max	
Output leak current	I_Z	CE=0.3V				10	μA
"L" input current	I_{IL}	$V_{IN}=V_{SS}$			-10		μA
"H" output voltage	V_{OH}	RL=100Ω(Between OUT & OUTN) CE=Open, OUT/OUTN			1.43	1.60	V
"L" output voltage	V_{OL}			0.90	1.10		V
Differential voltage	V_{OD}			247	330	454	mV
Differential voltage deviation	⧸V_{OD}					50	mV
Offset voltage	V_{OS}			1.125	1.250	1.375	V
Offset voltage deviation	⧸V_{OS}					50	mV
Current consumption※	I_{DD}	IPS0203M0DES, f=100MHz			8.5	17.0	mA
		IPS0204M0DES, f=122.88MHz			10.5	21.0	
		IPS0205M0DES, f=170MHz			12.5	25.0	
		IPS0206M0DES, f=212.5MHz			12.5	25.0	
		IPS0203MTDES, f=90MHz			10.5	21.0	
		IPS0204MTDES, f=125MHz			14.0	28.0	
		IPS0205MTDES, f=156.25MHz			15.0	30.0	
		IPS0206MTDES, f=200MHz			17.0	34.0	
		IPS0204M0DEF, f=122.88MHz			12.0	24.0	
		IPS0205M0DEF, f=170MHz			13.0	26.0	
Current consumption at oscillation stop	I_{DDD}	CE=GND	Straight type			10	uA
			Flip type		60	300	

※Condition：V_{DD}=3.3V, CE=Open, RL=100Ω（Between OUT & OUTN）

5-3-2 Switching Characteristics

Unless otherwise stated, V_{DD}=2.375V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Specification			Unit
				Min	Typ	Max	
Oscillation start up time	Tstart	IPS020xM0, IPS0203M1				2.0	ms
		IPS020xMT				10	
Output Disable Time	Tplz					200	ns
Output Enable Time	Tpzl	IPS020xM0, IPS0203M1				2.0	ms
		IPS020xMT				10	
Rise time / Fall time	Tr / Tf	20%~80% Vopp				0.40	ns
Output Duty Ratio	Duty	1/2Vopp point		45		55	%
		Only IPS0206MT 1/2Vopp point	Ta=-40℃~85℃	45		55	
			Ta=85℃~125℃	40		60	
Output Swing	Vopp			0.25			V
Freq. V_{DD} deviation	Fvst	V_{DD}=3.3V±10%				±2.0	ppm
		V_{DD}=2.5V±5%				±2.0	

5-4 HCSL Output
5-4-1 DC Characteristics

Unless otherwise stated, V_{DD}=2.375V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition	Specification			Unit
			Min	Typ	Max	
Output leak current	Iz	CE=0.3V			10	μA
"L" input current	IIL	V_{IN}=V_{SS}		-10		μA
"H" output voltage	VOH	RL=50Ω(To GND), Rs=0Ω	550		900	mV
"L" output voltage	VOL	CE=Open, OUT/OUTN	-150		150	mV
Current consumption※	IDD	IPS0203M0HES, f=100MHz		20.0	30.0	mA
		IPS0204M0HEq, f=122.88MHz		22.0	33.0	
		IPS0205M0HEq, f=170MHz		23.0	35.0	
		IPS0206M0HES, f=212.5MHz		23.0	35.0	
		IPS0203MTHES, f=90MHz		22.0	33.0	
		IPS0204MTHES, f=125MHz		24.0	36.0	
		IPS0205MTHES, f=156.25MHz		24.0	36.0	
		IPS0206MTHES, f=200MHz		27.0	38.0	
Current consumption at oscillation stop	IDDD	CE=GND			10	uA

※Condition：V_{DD}=3.3V, CE=Open, RL=50Ω(To GND), Rs=0Ω

5-4-2 Switching Characteristics

Unless otherwise stated, V_{DD}=2.375V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition		Specification			Unit
				Min	Typ	Max	
Oscillation start up time	Tstart	IPS020xM0				2.0	ms
		IPS020xMT				10	
Output Disable Time	Tplz					200	ns
Output Enable Time	Tpzl	IPS020xM0				2.0	ms
		IPS020xMT				10	
Rise time / Fall time	Tr / Tf	20%~80% Vopp, Rs=0Ω			0.30	0.50	ns
Output Duty Ratio	Duty	1/2Vopp point		45		55	%
		Only IPS0206MT 1/2Vopp point	Ta=-40℃~85℃	45		55	
			Ta=85℃~125℃	40		60	
Output Swing	Vopp	Rs=0Ω		0.55			V
Freq. V_{DD} deviation	Fvst	V_{DD}=3.3V±10%				±2.0	ppm
		V_{DD}=2.5V±5%				±2.0	

5-5 pCML Output

5-5-1 DC Characteristics

Unless otherwise stated, V_{DD}=2.97V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition	Specification			Unit
			Min	Typ	Max	
Output leak current	Iz	CE=0.3V			10	μA
"L" input current	IIL	V_{IN}=V_{SS}		-10		μA
Current consumption※	IDD	IPS0205M0CEF, f=170MHz		16.5	33.0	mA
		IPS0204MTCES, f=125MHz		17.5	35.0	
		IPS0205MTCES, f=156.25MHz		18.0	36.0	
Current consumption at oscillation stop	IDDD	CE=GND		60	300	uA

※Condition：V_{DD}=3.3V, CE=Open, RL=100Ω(AC coupling)

5-5-2 Switching Characteristics

Unless otherwise stated, V_{DD}=2.97V~3.63V, V_{SS}=0V, Ta=-40℃~125℃

Parameter	Symbol	Condition	Specification			Unit
			Min	Typ	Max	
Oscillation start up time	Tstart	IPS020xM0			2.0	ms
		IPS020xMT			10	
Output Disable Time	Tplz				200	ns
Output Enable Time	Tpzl	IPS020xM0			2.0	ms
		IPS020xMT			10	
Rise time / Fall time	Tr / Tf	20%~80% Vopp, Rs=0Ω		0.25	0.35	ns
Output Duty Ratio	Duty	1/2Vopp point	45		55	%
Output Swing	Vopp		0.6			V
Freq. V_{DD} deviation	Fvst	V_{DD}=3.3V±10%			±2.0	ppm
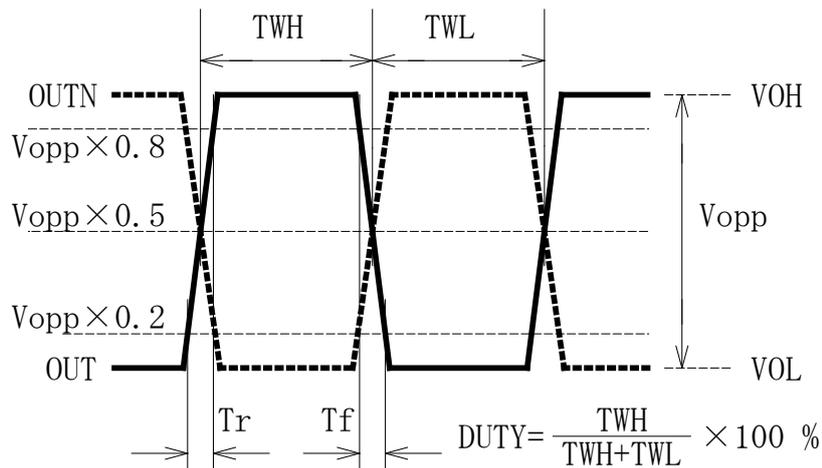
Fig. 5-1   Output Wave Form (Duty, Tr, Tf, V_{OH}, V_{OL}, Vopp) of LVPECL & HCSL
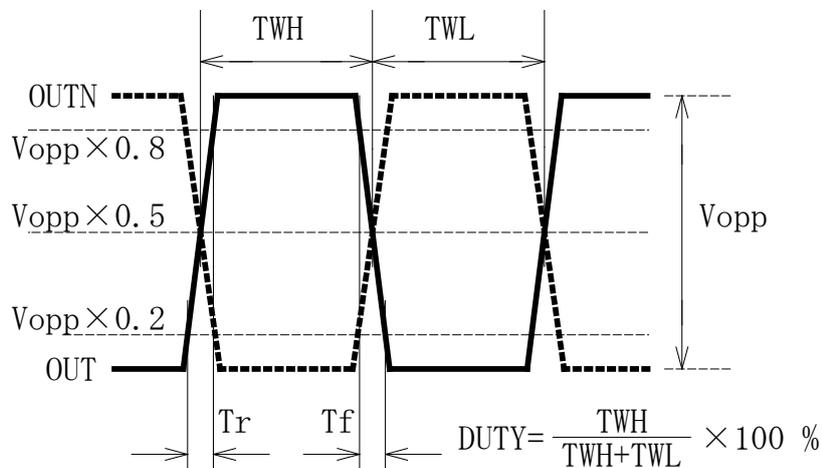
Fig. 5-2   Output Wave Form (Duty, Tr, Tf, Vopp) of pCML

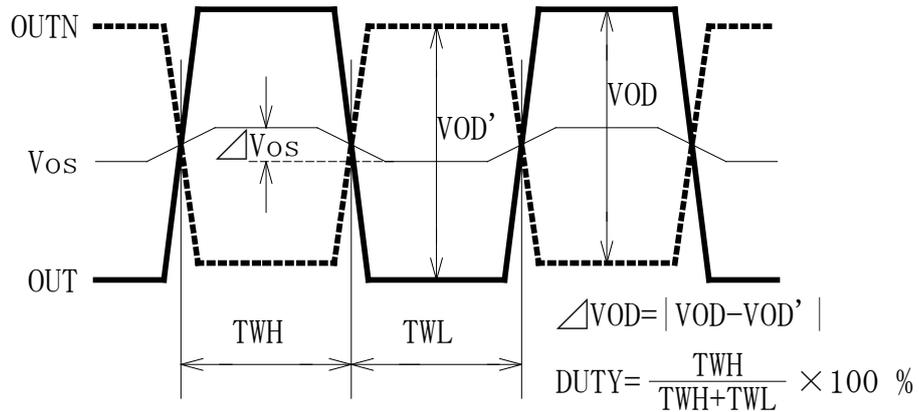$$\triangle VOD = |VOD - VOD'|$$

$$DUTY = \frac{TWH}{TWH + TWL} \times 100 \ \%$$
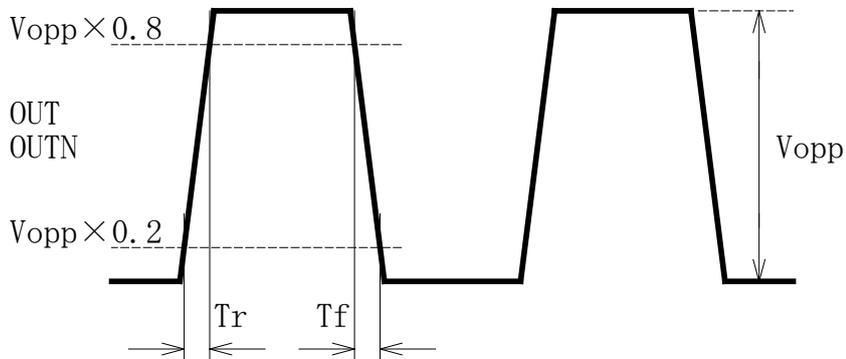
Fig. 5-3   Output Wave Form (Duty, Tr, Tf, V_{OH}, V_{OL}, V_{OD}, V_{OS}, Vopp) of LVDS
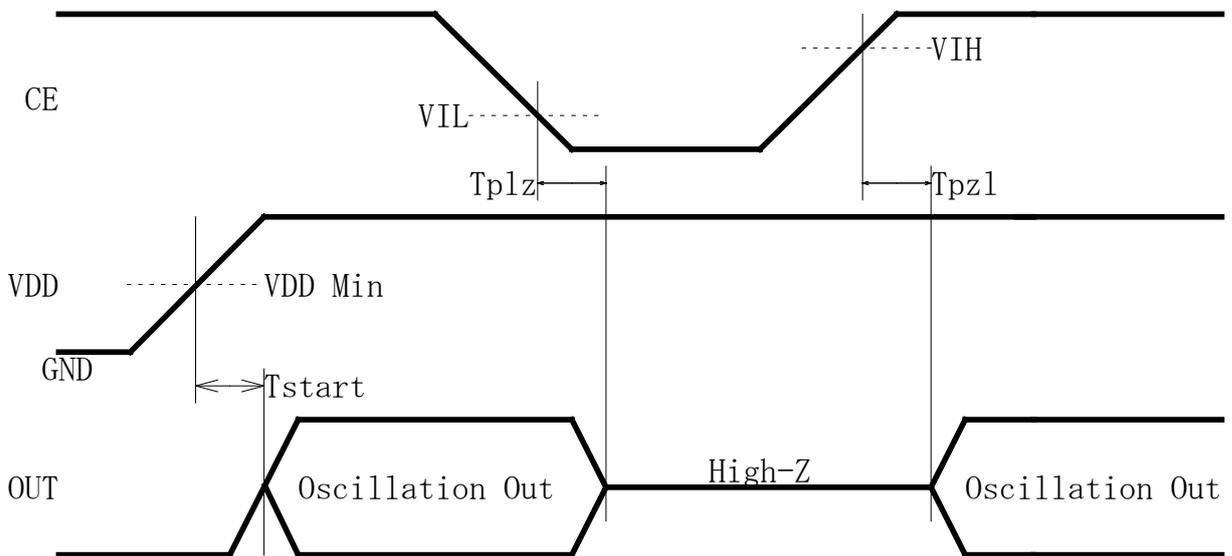
V_{IH} : Threshold voltage for Oscillation Start
V_{IL} : Threshold voltage for Oscillation Stop

Fig. 5-4   Input output signal timing

6. Circuit Parameters of Oscillator (Reference Data for Circuit Design)

6-1 Feedback Resister

Ta=25℃

Parameter	Symbol	Condition	Min	Typ	Max	Unit
IPS020xM0, IPS0203M1	Rf			200		kΩ
IPS0203MT				4.00		
IPS0204MT				3.00		
IPS0205MT		Only pCML		2.00		
		Others		1.75		
IPS0206MT				0.75		

*The above values are the design values and are not guaranteed by test.

6-2 Driving Resister

Ta=25℃

Parameter	Symbol	Condition	Min	Typ	Max	Unit
IPS0203M0, IPS0203M1	Rd			1000		Ω
IPS0204M0		Flip type		757		
		Straight type		800		
IPS0205M0		Flip type		400		
		Straight type		500		
IPS0206M0				300		
IPS0203MT				500		
IPS0204MT		Only pCML		600		
		Others		400		
IPS0205MT		Only pCML		400		
		Others		200		
IPS0206MT				200		

*The above values are the design values and are not guaranteed by test.

INTERCHIP CORPORATION

6-3 Oscillation Capacitor

Ta=25℃

Parameter	Symbol	Condition	Min	Typ	Max	Unit
IPS0203M0 IPS0203M1	Cg			6.0		pF
	Cd			9.0		
IPS0204M0	Cg	Flip type		10.0		
		Straight type		5.0		
	Cd	Flip type		10.0		
		Straight type		8.0		
IPS0205M0	Cg	Flip type		10.0		
		Straight type		5.0		
	Cd	Flip type		10.0		
		Straight type		7.0		
IPS0206M0	Cg			4.0		
	Cd			6.0		
IPS0203MT	Cg			7.0		
	Cd			9.0		
IPS0204MT	Cg	Only pCML		8.0		
		Others		6.0		
	Cd	Only pCML		10.0		
		Others		8.0		
IPS0205MT	Cg	Only pCML		8.0		
		Others		6.0		
	Cd	Only pCML		10.0		
		Others		8.0		
IPS0206MT	Cg			3.0		
	Cd			8.0		

*The above values are the design values and are not guaranteed by test.
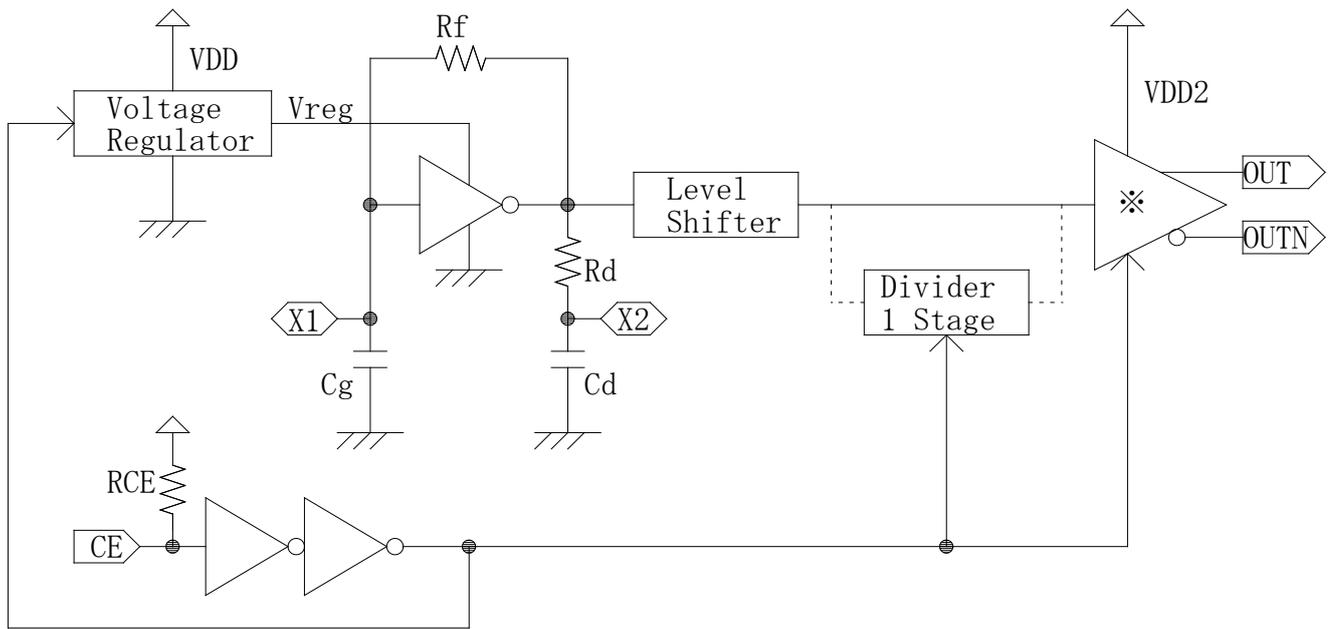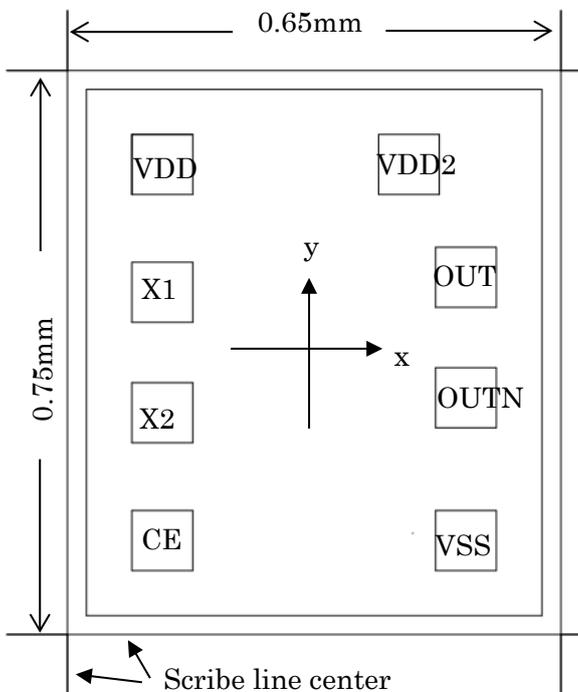
※ Output buffer according to each output waveform format

Fig. 6-1　Block Diagram

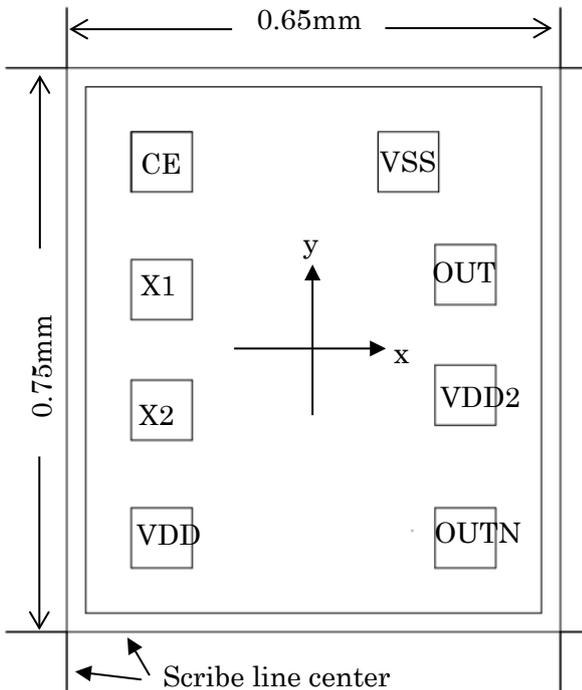## 7.　Pad Layout
7-1 Straight Type

・Die Size：0.65mm × 0.75mm

・Pad Size：80um □

・Thickness：150um±20um

・IC Backside：Gnd or Open

・Swapping of OUT/OUTN with wire bond is acceptable

Pad Name	Function	Location (μm)	
		x	y
VDD	(＋) Power Supply	-206	256
X1	Crystal Feedback	-206	83
X2	Crystal Drive	-206	-83
CE	Oscillation stop "L": High-Impedance	-206	-256
VSS	(－) Ground	206	-256
OUTN	OUT(Complementary)	206	-65
OUT	OUT(True)	206	108
VDD2	NC is acceptable	113	256
Chip Center		0	0

INTERCHIP CORPORATION

7-2 Flip Type

0.65mm

0.75mm

CE   VSS

X1   OUT

X2   VDD2

VDD   OUTN

y

x

Scribe line center

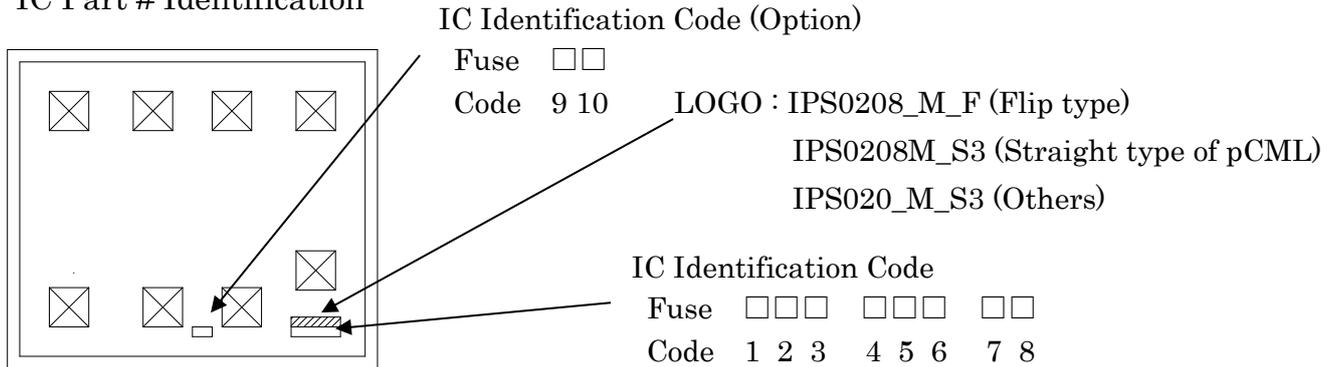・Die Size：0.65mm × 0.75mm

・Pad Size：80um □

・Thickness：150um±20um

・IC Backside：Gnd or Open

・Swapping of OUT/OUTN with wire bond is acceptable

Pad Name	Function	Location (μm)	
		x	y
CE	Oscillation stop "L": High-Impedance	-206	256
X1	Crystal Feedback	-206	83
X2	Crystal Drive	-206	-83
VDD	（＋) Power Supply	-206	-256
OUTN	OUT(Complementary)	206	-256
VDD2	NC is acceptable	206	-65
OUT	OUT(True)	206	108
VSS	（－) Ground	113	256
Chip Center		0	0

Package

A 1
   2
B 3
   4

IC

CE

VSS

6

5

CE   VSS

Rex
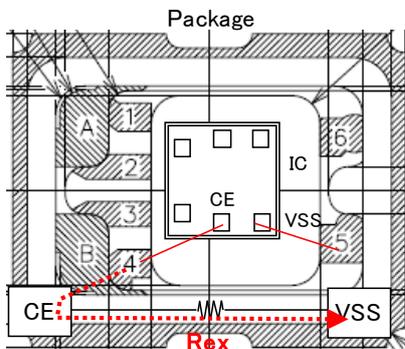
IMPORTANT Notice for CE function

※ Oscillation will not be activated when CE=Open after CE=Low if Rex is not large.

※ Reference value of Rex is over 10MΩ with CE=Open usage.

※ There is no such issue with CE=VDD usage.

Rex： Resistance value between CE and VSS of package

INTERCHIP CORPORATION

8. IC Part # Identification

IC Identification Code (Option)

Fuse □□
Code 9 10

LOGO : IPS0208_M_F (Flip type)
IPS0208M_S3 (Straight type of pCML)
IPS020_M_S3 (Others)

IC Identification Code

Fuse □□□ □□□ □□
Code 1 2 3 4 5 6 7 8

□ : Fuse no cut ■ : Fuse cut

Part #	Code 1~8	Code 9, 10
IPS0203M0PEq	□■■ □□□ □□	□□
IPS0204M0PEq	■□□ □□□ □□	□□
IPS0205M0PEq	■□■ □□□ □□	□□
IPS0206M0PEq	■■□ □□□ □□	□□
IPS0203M1PEq	□■■ □□■ □□	□□
IPS0203MTPEq	□■■ ■□□ □□	□□
IPS0204MTPEq	■□□ ■□□ □□	□□
IPS0205MTPEq	■□■ ■□□ □□	□□
IPS0206MTPEq	■■□ ■□□ □□	□□
IPS0203M0PAEq	□■■ □□□ □□	□■
IPS0204M0PAEq	■□□ □□□ □□	□■
IPS0205M0PAEq	■□■ □□□ □□	□■
IPS0206M0PAEq	■■□ □□□ □□	□■
IPS0203M1PAEq	□■■ □□■ □□	□■
IPS0203MTPAEq	□■■ ■□□ □□	□■
IPS0204MTPAEq	■□□ ■□□ □□	□■
IPS0205MTPAEq	■□■ ■□□ □□	□■
IPS0206MTPAEq	■■□ ■□□ □□	□■

Part #	Code 1~8	Code 9, 10
IPS0203M0DEq	□■■ □□□ □■	□□
IPS0204M0DEq	■□□ □□□ □■	□□
IPS0205M0DEq	■□■ □□□ □■	□□
IPS0206M0DEq	■■□ □□□ □■	□□
IPS0203M1DEq	□■■ □□■ □■	□□
IPS0203MTDEq	□■■ ■□□ □■	□□
IPS0204MTDEq	■□□ ■□□ □■	□□
IPS0205MTDEq	■□■ ■□□ □■	□□
IPS0206MTDEq	■■□ ■□□ □■	□□
IPS0203M0HEq	□■■ □□□ ■□	□□
IPS0204M0HEq	■□□ □□□ ■□	□□
IPS0205M0HEq	■□■ □□□ ■□	□□
IPS0206M0HEq	■■□ □□□ ■□	□□
IPS0203M1HEq	□■■ □□■ ■□	□□
IPS0203MTHEq	□■■ ■□□ ■□	□□
IPS0204MTHEq	■□□ ■□□ ■□	□□
IPS0205MTHEq	■□■ ■□□ ■□	□□
IPS0206MTHEq	■■□ ■□□ ■□	□□

Part #	Code 1~8	Code 9, 10
IPS0205M0CEq	■□■ □□□ ■■	□□
IPS0204MTCEq	■□□ ■□□ ■■	□□
IPS0205MTCEq	■□■ ■□□ ■■	□□

INTERCHIP CORPORATION

9. Revision History

Revision No.	Revision Date	Revised items	Contents	
			Before Revision	After Revision
SD-2.3	2025/11/04	Wafer thickness 100um	Listed	As requested
		IPS0203M1PES	Under Development	Listed
		IPS0204M0HEF	Unlisted	Listed
		IPS0205M0HEF	Unlisted	Listed
		IPS0203M1HES	Under Development	Listed
		I_{DDD} Condition	CE≦0.3V	CE=GND
SD-2.4	2026/02/24	I_{DDD} Specification	Typ 100uA	Typ 60uA