

ICs for use with Crystal Oscillators

■ GENERAL DESCRIPTION

The XC2141 series are a group of high frequency, CMOS low power crystal oscillators with on-chip divider circuitry that operate from a supply voltage of 3.5V.

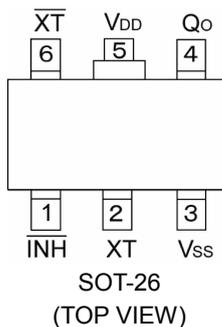
■ APPLICATIONS

- Crystal oscillator modules
- Communication equipment
- Microcomputers
- Clock units in motor control
- System clocks on boards
- Timers
- Palmtops

■ FEATURES

- Oscillation Frequency** : 20MHz ~ 58MHz
- Divider Ratio** : f0/1
- Output** : 3-State
- Operating Voltage Range** : 3.5V \pm 10%
- Small Quiescent Current** : 10mA (Fosc=53MHz)
- Stand-By Function**
- CMOS** : Low Power Consumption
- Ultra Small Package** : SOT-26 (150mW)

■ PIN CONFIGURATION



■ PIN ASSIGNMENT

PIN NUMBER	PIN NAME	FUNCTION
1	/INH	Control *
2	XT	Oscillator Connection (Input)
3	Vss	GND
4	Q0	Output
5	VDD	Power Supply
6	/XT	Oscillator Connection (Output)

* Control pin has pull-up resistor built-in.

■ INH, Q0 PIN FUNCTION

/INH	Q0
"H"	Output
open	Output
"L"	High Impedance (oscillation stopped)

"H" = High level

"L" = Low level

■ PRODUCT CLASSIFICATION

● Ordering Information

XC21①②③④⑤⑥⑦⑧

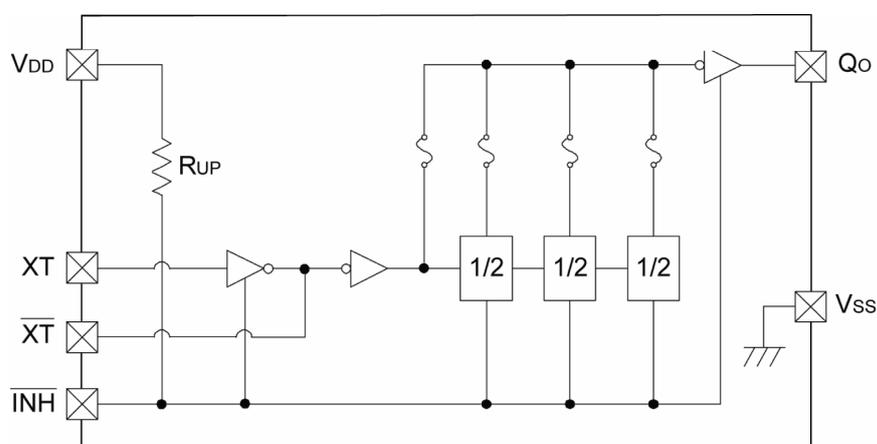
DESIGNATOR	DESCRIPTION	SYMBOL	DESCRIPTION
①	Supply Voltage	4	: 3.5V
②	Product Series	1	: Large output capability, fundamental & overtone
③	Duty Level	C	: CMOS ($V_{DD}/2$)
④	Fixed Number	2	: Fixed
⑤	Divider Ratio	1	: $f_0/1$
⑥	Fundamental / Overtone Rf, Cg, Dc	A	: No Rf, Cg, Cd = 2pF
⑦	Package	M	: SOT-26
⑧	Device Orientation	R	: Embossed tape, standard feed
		L	: Embossed tape, reverse feed

■ STANDARD PARTS

PART NUMBER	DUTY LEVEL	DIVIDER	Rf	Cg & Cd
XC2141C21A	CMOS ($V_{DD}/2$)	$f_0/1$	External	External

Cg & Cd: Add a 2pF capacitor between V_{DD} & XT and/or V_{DD} & XT/. As the parasitic capacitance, Cg and Cd's capacitance is equivalent of 2pF.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	CONDITIONS	UNITS
Supply Voltage	V _{DD}	V _{SS} - 0.3 ~ V _{SS} + 7.0	V
Input Voltage	V _{IN}	V _{SS} - 0.3 ~ V _{DD} + 0.3	V
Power Dissipation	P _d	150	mW
Operating Temperature Range	T _{opr}	-30 ~ +75	°C
Storage Temperature Range	T _{stg}	-55 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

XC2141C21AMR (Overtone) f_{0/1}

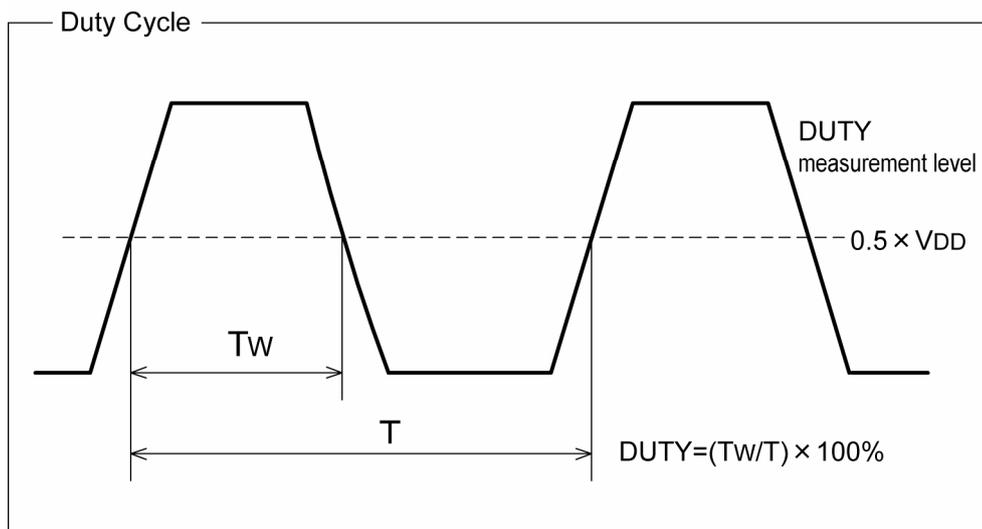
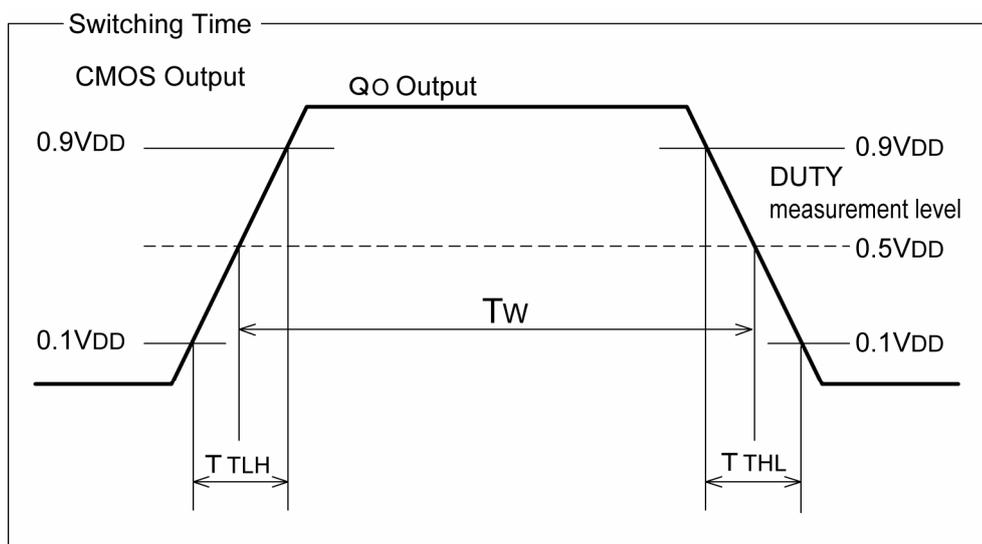
V_{DD}=3.5V, F_{osc}=53MHz, R_f=7.5kΩ, No Load, T_a = 25°C

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Operating Supply Voltage	V _{DD}		3.15	3.50	3.85	V
Oscillation Start-Up Time	T _{ST}		—	5.00	—	ms
Input Voltage 'High'	V _{IH}		2.4	—	—	V
Input Voltage 'Low'	V _{IL}		—	—	0.4	V
Output Current 'High'	I _{OH}	V _{OH} = 3.15V	—	- 8	—	mA
Output Current 'Low'	I _{OL}	V _{OL} = 0.35V	—	12	—	mA
Supply Current 1	I _{DD1}	/ INH = OPEN, Q0 = OPEN	—	—	10	mA
Supply Current 2	I _{DD2}	/ INH = "L"	—	—	520	μA
Input Pull-Up Resistance	R _{UP}	/ INH = 3.15V	50	—	200	kΩ
Output Disable Leak Current	I _{OZ}	/ INH = "L"	—	—	10	μA

SWITCHING CHARACTERISTICS

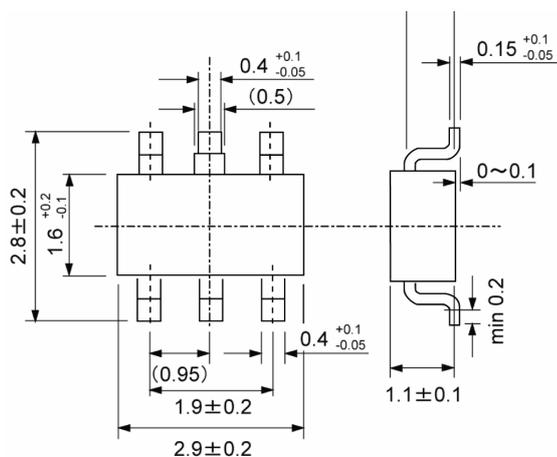
CMOS Duty, $V_{DD}=3.5V$, Load = 15pF, $T_a = 25^\circ C$

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Output Rise Time	T_{TLH}	$0.1V_{DD} \rightarrow 0.9V_{DD}$	-	-	9	ns
Output Fall Time	T_{THL}	$0.9V_{DD} \rightarrow 0.1V_{DD}$	-	-	8	ns
Duty Cycle 1	DUTY 1	at $V_{DD}/2$, $f_0/1$ Output	40	-	60	%

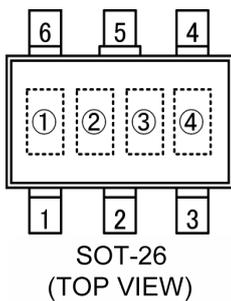


PACKAGING INFORMATION

● SOT-26



MARKING RULE



① Represents divider ratio

MARK	RATIO
E	f0/1

② Represents duty level

MARK	DUTY LEVEL
2	CMOS ($V_{DD}/2$)

③ Represents 'A' which equals 'No Rf, Cg, Cd = 2pF'

④ Represents assembly lot number
(based on internal standards)

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