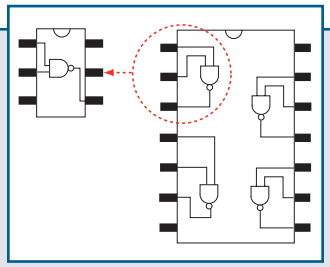
FAIRCHILD
SEMICONDUCTOR®

TinyLogic®

Fairchild's Offering

Fairchild's TinyLogic® family consists of a broad spectrum of high speed, low power, CMOS single and dual gate logic functions in a choice of six space saving packages: SOT23-5, SC70 6-lead, US8 8-lead, and MicroPak 6 and 8 terminal leadless packages.

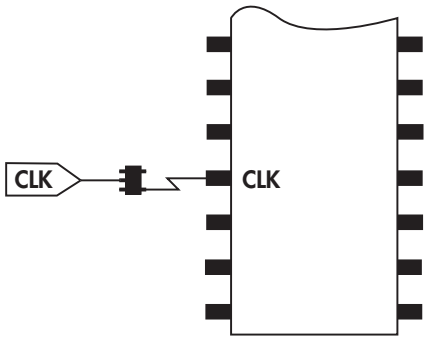
TinyLogic can facilitate efficient system designs in any application. Placement of single and dual logic functions exactly where needed simplifies signal routing while minimizing propagation delays and noise generation.



Benefits

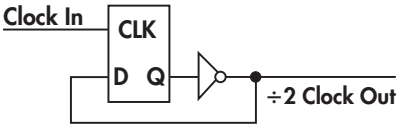
- Reduces routing complexity
- Allows shorter metal traces to minimize EMI generation
- Prevents unnecessary power consumption from unused gates
- HS and HST family intended for 5V or very low speed applications
- UHS family ideal for high speed, low voltage operation
- ULP family ideal for extremely high speed low voltage operation
- ULPA family ideal for low power consumption, low voltage operation

Single Gate for Added Clock Frequency and Buffering



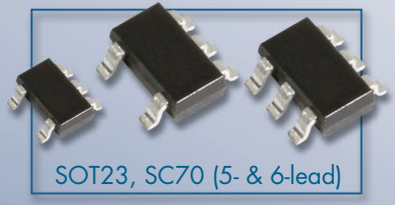
Use a single-gate inverter, such as NC7SZ04M5 or NC7SZ14M5, to clean clock signals traveling lengthy distances across a board or when signals are compromised by layout conditions. Buffering a clock signal near its destination ensures signal integrity.

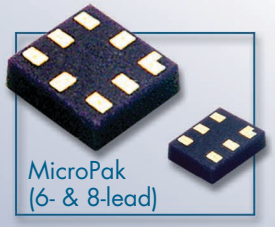
Utilizing Fairchild's TinyLogic parts NC7SZ374 and NC7SZ04 enables the additional clock.



Family Comparison

Family	Standard Logic Family Equivalent	I_{cc} (µA)	V_{cc} (V)	Drive (mA @ V)	Speed (ns @ V)
HS	HC	10	2–6	±1.1 @ 3.0; ±2.0 @ 4.5	25 @ 4.5
HST	HCT	10	4.5–5.5	±2.0 @ 4.5	20 @ 2.0
UHS	LCX/LVC	20	1.8–5.5	±4.0 @ 1.65; ±24.0 @ 3.3	4.7 @ 3.3
ULP		0.9	0.9–3.6	±1.0 @ 1.5; ±2.6 @ 3.0	16 @ 1.5; 7.0 @ 3.3
ULP-A	VCX	0.9	0.9–3.6	±4.0 @ 1.5; 24.0 @ 3.3	7.2 @ 1.5


SOT23, SC70 (5- & 6-lead)


MicroPak
(6- & 8-lead)


US8

Note: package photos are not to scale.

the power franchise™

FAIRCHILD SEMICONDUCTOR®

TinyLogic®

Functional Description (S Single-Bit Logic, W Dual-Bit Logic, N Triple-Bit Logic)	Device Type	Family				Packages					
		HS (NC7)	HST (NC7xT)	UHS (NC7xZ)	ULP/ ULP-A (NC7xP/ NC7xV)	SOT23 5-lead	SC70 5-lead	SC70 6-lead	US8 8-lead	MicroPak 6-lead	MicroPak 8-lead
NAND Gate	00	S	S	S W	S W	S	S		W	S	W
NOR Gate	02	S	S	S W	S W	S	S		W	S	W
Inverter	04	S	S	S W N	S W N	S	S	W	N	S W	N
Unbuffered Inverter	U04	S		S W N	S	S	S	W	N	S W	N
Inverter w/ Open Drain Output	05			S	S	S	S			S	
Buffer w/ Open Drain Output	07			W	W			W		W	
AND Gate	08	S	S	S W	S W	S	S		W	S	W
3-Input NAND Gate	10			S				S		S	
3-Input AND Gate	11			S	S			S		S	
Inverter w/ Schmitt Trigger Input	14	S		S W N	S W N	S	S	W	N	S W	N
Dual Buffer	16			W				W		W	
Buffer w/ Schmitt Trigger Input	17			W N	S W		S	W	N	S W	N
1 of 2 Demux w/ 3-STATE Output	18			S				S		S	
1 of 2 Decoder/Demultiplexer	19				S			S		S	
3-Input NOR Gate	27			S				S		S	
OR Gate	32	S	S	S W	S W		S		W	S	W
Buffer	34			N	S N		S		N	S	N
NAND Gate w/ Open Drain Output	38			S W	S W		S	S	W	S	W
Universal Configurable 2-Input Gate	57			S	S			S		S	
Universal Configurable 2-Input Gate	58			S	S					S	
D Flip-Flop w/ Pre-Set and Clear	74			S	S				S		S
XOR Gate	86	S	S	S W	S W	S	S		W	S	W
Buffer w/ Low-Enabled 3-STATE Output	125			S W	S W	S	S		W	S	W
Buffer w/ High-Enabled 3-STATE Output	126			S W	S W	S	S		W	S	W
NAND Gate w/ Schmitt Trigger Input	132			W	W				W		W
2-Input Non-Inverting Multiplexer	157			S	S			S		S	
2-Input Inverting Multiplexer	158				S			S		S	
D Flip-Flop w/ Asynchronous Clear	175			S				S		S	
Inverting Buffer w/ 3-STATE Output	240			W	W				W		W
Inverting Buffer w/ High-/ Low-Enabled 3-STATE Output	241			W	W				W		W
3-Input OR Gate	332			S				S		S	
D Latch w/ 3-STATE Output	373			S				S		S	
D Flip-Flop w/ 3-STATE Output	374			S				S		S	
3-Input XOR Gate	386			S				S		S	

Note: x is a variable (either S, W, or N).

FAIRCHILD SEMICONDUCTOR®

TinyLogic®

Ordering Guide

NC7 XX X XX XX X

TinyLogic

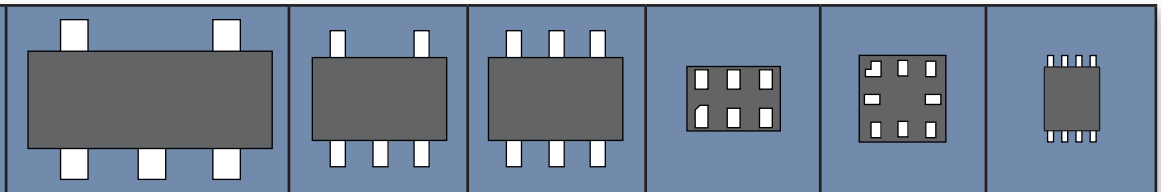
Guide	
S = Single-Bit	**"blank"** = HS
W = Dual-Bit	**T** = HST
N = Triple-Bit	**Z** = UHS
	P = ULP
	V = ULP-A

Function Description
D = Diode
U = Unbuffered

Device Type

Package Code
M5 = 5-lead SOT23-5
P5 = 5-lead SC70
P6 = 6-lead SC70
I6 = 6-terminal MicroPak
I8 = 8-terminal MicroPak
K8 = 8-lead US8

Special Variations
X = tape and reel in quantities of 3000 and 5000
"blank" = tape and reel in quantities of 250



Measurements (mm)	SOT23-5	SC70-5	SC70-6	MicroPak-6	MicroPak-8	US8-8
Mounted Width	3.00	2.10	2.10	1.00	1.60	3.10
Body Width	1.70	1.25	1.25	1.00	1.60	2.30
Length	3.00	2.00	2.00	1.45	1.60	2.00
Height	1.40	0.90	0.90	0.55	0.55	0.70
Pin Pitch	0.95	0.65	0.65	0.50	0.50	0.50

the power franchise™

FAIRCHILD SEMICONDUCTOR®

TinyLogic®

FOR A COMPLETE LISTING OF SALES REPRESENTATIVES AND SALES OFFICES, VISIT:
www.fairchildsemi.com/cf/sales_contacts

TO RECEIVE INFORMATION ON FAIRCHILD PRODUCTS, TRADESHOWS, ONLINE SEMINARS AND OTHER ITEMS, REGISTER HERE FOR UPDATES:
www.fairchildsemi.com/my_fairchild

Amplifiers & Comparators
Comparators
High Performance Amplifiers (>15MHz)
Operational Amplifiers
RF Power Amplifiers

Diodes & Rectifiers
Bridge Rectifiers
Rectifiers
Operational Amplifiers
Schottky Diodes & Rectifiers
Small Signal Diodes
Transient Voltage Suppressors
Zener Diodes

Interface
LVDS
- Drivers
- Receiver

Serializer/Deserializer
- µSerDes™

USB Transceiver

Logic
Logic by Family
Logic by Function
Translator

Signal Conversion
Voltage to Frequency Converters

Timing Circuits
Timers

Power Modules
Smart Power Modules (SPM™)
IGBT Module

Optoelectronics
Infrared Light Emitting Diodes
Optical Interrupt Switches
Optically Coupled Solid State Relays
Optocouplers
Photosensors
Reflective Object Sensors

Switches
Analog Switches
Audio Switches
Bus Switches
USB Switches
Video Switches
Full Function Load Switches (IntelliMAX™)
Load Switches

Power Controllers
ACPI Controllers
Ground Fault Interrupt Controllers
Off-Line Conversion (FPS™)
- Green (FPS™)

Power Factor Correction Controllers
PWM & PM Controllers
PWM Controllers
SMPS Controllers

Power Driver
LED Drivers
High Voltage Gate Drivers (HVIC)

Transistors
BJTs
IGBT
- IGBT Discrete
- IGBT Module
- Smart Power Modules (SPM™)

JFETs
MOSFETs
MOSFET/Schottky Combos
Load Switches
Full Function Load Switches (IntelliMAX™)
Small Signal Transistors

Voltage Reference, Supervisory, and Other
Voltage Detectors
Voltage Stabilizers
Voltage Supervisory–Microprocessor

TRIACs
TRIACs

Filters
Video Filter Drivers
Video Switch Matrix

Temperature Management
Temperature Sensors

Voltage Regulators
Charge Pump Regulators
Integrated Switching Regulators
LDOs
Shunt Regulators
Standard Regulators

Application-based Products
Audio
- Audio Power Amplifiers
- Audio Switches

Lighting and Display
- CCFL Controllers
- Ballast Controllers
- Landing Correction IC
- Vertical Output IC

Motor Drivers
- Low Voltage (DC, Actuator)
- Smart Power Modules (SPM™)

RF Power Amplifiers
USB
- USB Transceivers
- USB Switches

Video
- Triple Video DACs
- Video Filter Drivers

Video Switch Matrix
- Video Switches
- High Performance Video Multiplexer

For datasheets, application notes, samples and more, please visit: **www.fairchildsemi.com**

Lit. No. 580192-006