



**THE DATASHEET OF
74F269SPC**



74F269

8-Bit Bidirectional Binary Counter

Features

- Synchronous counting and loading
- Built-in lookahead carry capability
- Count frequency 100MHz
- Supply current 113mA typ.
- 300mil slimline package

General Description

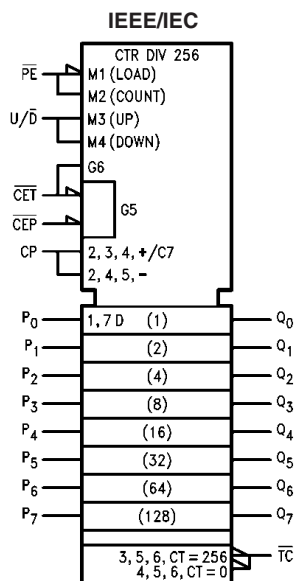
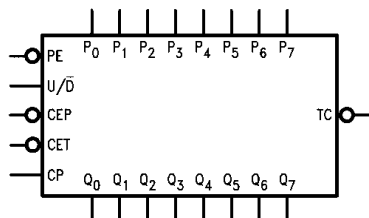
The 74F269 is a fully synchronous 8-stage up/down counter featuring a preset capability for programmable operation, carry lookahead for easy cascading and a U/\bar{D} input to control the direction of counting. All state changes, whether in counting or parallel loading, are initiated by the rising edge of the clock.

Ordering Information

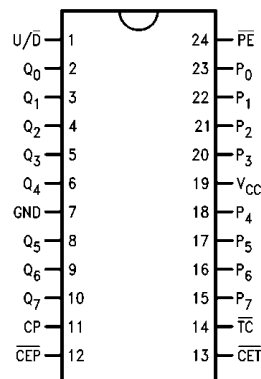
Order Number	Package Number	Package Description
74F269SC	M24B	24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide
74F269SPC	N24C	24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide

Device also available in Tape and Reel. Specify by appending suffix letter "X" to the ordering number.

Logic Symbols



Connection Diagram



Function Table

\overline{PE}	\overline{CEP}	\overline{CET}	U/\bar{D}	CP	Function
L	X	X	X	\nearrow	Parallel Load All Flip-Flops
H	H	X	X	\nearrow	Hold
H	X	H	X	\nearrow	Hold (\overline{TC} Held High)
H	L	L	H	\nearrow	Count Up
H	L	L	L	\nearrow	Count Down

H = HIGH Voltage Level

L = LOW Voltage Level

X = Immaterial

\nearrow = Transition LOW-to-HIGH

Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH / LOW	Input I_{IH} / I_{IL} Output I_{OH} / I_{OL}
P_0 – P_7	Parallel Data Inputs	1.0 / 1.0	20 μ A / -0.6 mA
\overline{PE}	Parallel Enable Input (Active LOW)	1.0 / 1.0	20 μ A / -0.6mA
\overline{UD}	Up-Down Count Control Input	1.0 / 1.0	20 μ A / -0.6mA
\overline{CEP}	Count Enable Parallel Input (Active LOW)	1.0 / 1.0	20 μ A / -0.6mA
\overline{CET}	Count Enable Trickle Input (Active LOW)	1.0 / 1.0	20 μ A / -0.6mA
CP	Clock Input	1.0 / 1.0	20 μ A / -0.6 mA
\overline{TC}	Terminal Count Output (Active LOW)	50 / 33.3	-1mA / 20mA
Q_0 – Q_7	Flip-Flop Outputs	50 / 33.3	-1mA / 20mA

Logic Diagram

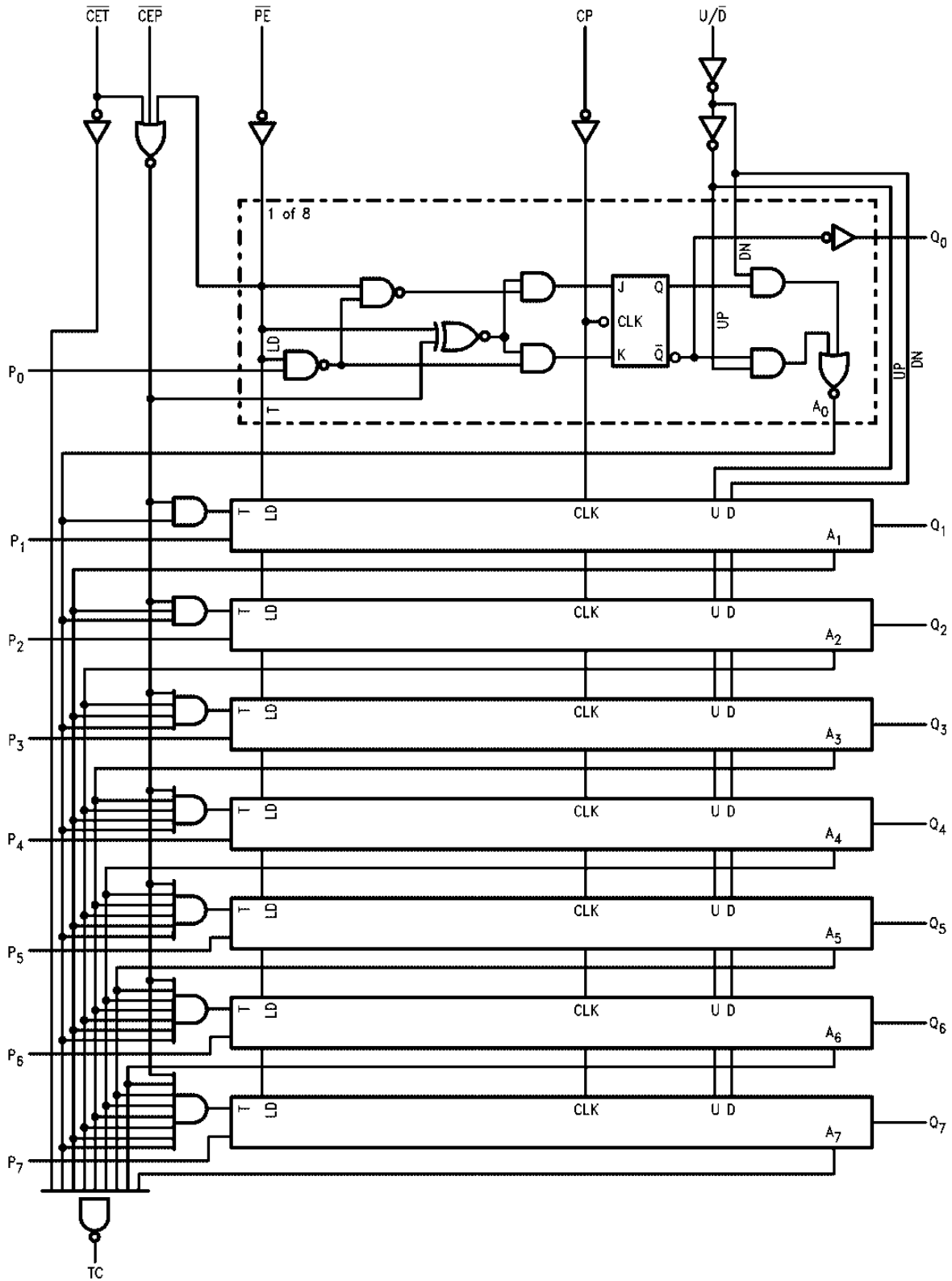


Figure 1.

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating
T_{STG}	Storage Temperature	-65°C to +150°C
T_A	Ambient Temperature Under Bias	-55°C to +125°C
T_J	Junction Temperature Under Bias	-55°C to +150°C
V_{CC}	V_{CC} Pin Potential to Ground Pin	-0.5V to +7.0V
V_{IN}	Input Voltage ⁽¹⁾	-0.5V to +7.0V
I_{IN}	Input Current ⁽¹⁾	-30mA to +5.0mA
V_O	Voltage Applied to Output in HIGH State (with $V_{CC} = 0V$)	
	Standard Output	-0.5V to V_{CC}
	3-STATE Output	-0.5V to +5.5V
	Current Applied to Output in LOW State (Max.)	twice the rated I_{OL} (mA)

Note:

1. Either voltage limit or current limit is sufficient to protect inputs.

Recommended Operating Conditions

The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance to the datasheet specifications. Fairchild does not recommend exceeding them or designing to absolute maximum ratings.

Symbol	Parameter	Rating
T_A	Free Air Ambient Temperature	0°C to +70°C
V_{CC}	Supply Voltage	+4.5V to +5.5V

DC Electrical Characteristics

Symbol	Parameter	V _{CC}	Conditions	Min.	Typ.	Max.	Units
V _{IH}	Input HIGH Voltage		Recognized as a HIGH Signal	2.0			V
V _{IL}	Input LOW Voltage		Recognized as a LOW Signal			0.8	V
V _{CD}	Input Clamp Diode Voltage	Min.	I _{IN} = -18mA			-1.2	V
V _{OH}	Output HIGH Voltage 10% V _{CC} 5% V _{CC}	Min.	I _{OH} = -1mA	2.5			V
				2.7			
V _{OL}	Output LOW Voltage 10% V _{CC}	Min.	I _{OL} = 20mA			0.5	V
I _{IH}	Input HIGH Current	Max.	V _{IN} = 2.7V			5.0	μA
I _{BVI}	Input HIGH Current Breakdown Test	Max.	V _{IN} = 7.0V			7.0	μA
I _{CEX}	Output HIGH Leakage Current	Max.	V _{OUT} = V _{CC}			50	μA
V _{ID}	Input Leakage Test	0.0	I _{ID} = 1.9μA, All Other Pins Grounded	4.75			V
I _{OD}	Output Leakage Circuit Current	0.0	V _{IOD} = 150mV, All Other Pins Grounded			3.75	μA
I _{IL}	Input LOW Current	Max.	V _{IN} = 0.5V			-0.6	mA
I _{OS}	Output Short-Circuit Current	Max.	V _{OUT} = 0.0V	-60		-150	mA
I _{CCH}	Power Supply Current	Max.	V _O = HIGH		104	125	mA
I _{CCL}	Power Supply Current	Max.	V _O = LOW		113	135	mA

AC Electrical Characteristics

Symbol	Parameter	$T_A = +25^\circ\text{C}$, $V_{CC} = +5.0\text{V}$, $C_L = 50\text{pF}$			$T_A = 0^\circ\text{C to } 70^\circ\text{C}$, $V_{CC} = +5.0\text{V}$, $C_L = 50\text{pF}$		Units
		Min.	Typ.	Max.	Min.	Max.	
f_{MAX}	Maximum Count Frequency		100				MHz
t_{PLH}	Propagation Delay, CP to Q_n (Count-Up)	3.5		8.0	3.5	7.0	ns
t_{PHL}		4.5		10.5	4.5	11.0	
t_{PLH}	Propagation Delay, U/\bar{D} to \bar{TC}	3.5		7.5	3.5	10.0	ns
t_{PHL}		4.5		7.5	4.5	11.0	
t_{PLH}	Propagation Delay, \overline{CET} to \bar{TC}	3.5		7.0	3.5	10.5	ns
t_{PHL}		3.0		10.5	3.0	11.5	
t_{PLH}	Propagation Delay, CP to \bar{TC}	4.5		10.0	4.5	10.5	ns
t_{PHL}		5.0		10.0	4.5	10.5	
t_{PLH}	Propagation Delay, CP to Q_n (Count-Down)	3.5		10.5	3.5	11.0	ns
t_{PHL}		4.5		10.5	4.5	11.0	
t_{PLH}	Propagation Delay, CP to Q_n (Load)	3.5		7.0	3.5	10.0	ns
t_{PHL}		4.0		7.0	4.0	7.0	

AC Operating Requirements

Symbol	Parameter	$T_A = +25^\circ\text{C}$, $V_{CC} = +5.0\text{V}$		$T_A = 0^\circ\text{C to } 70^\circ\text{C}$, $V_{CC} = +5.0\text{V}$		Units
		Min.	Max.	Min.	Max.	
$t_{\text{S}}(\text{H})$	Setup Time, HIGH or LOW, Data to CP	3.5		4.0		ns
$t_{\text{S}}(\text{L})$		3.0		3.0		
$t_{\text{H}}(\text{H})$	Hold Time, HIGH or LOW, Data to CP	1.0		2.0		ns
$t_{\text{H}}(\text{L})$		1.0		1.0		
$t_{\text{S}}(\text{H})$	Setup Time, HIGH or LOW, \overline{PE} to CP	5.5		6.5		ns
$t_{\text{S}}(\text{L})$		5.5		6.5		
$t_{\text{H}}(\text{H})$	Hold Time, HIGH or LOW, \overline{PE} to CP	0		0		ns
$t_{\text{H}}(\text{L})$		0		0		
$t_{\text{S}}(\text{H})$	Setup Time, HIGH or LOW, \overline{CET} or \overline{CEP} to CP	6.0		6.5		ns
$t_{\text{S}}(\text{L})$		8.0		9.0		
$t_{\text{H}}(\text{H})$	Hold Time, HIGH or LOW, \overline{CET} or \overline{CEP} to CP	0		0		ns
$t_{\text{H}}(\text{L})$		0		0		
$t_{\text{W}}(\text{H})$	Clock Pulse Width, HIGH or LOW	3.5		3.5		ns
$t_{\text{W}}(\text{L})$		3.5		4.0		
$t_{\text{S}}(\text{H})$	Setup Time, HIGH or LOW, U/\bar{D} to CP	8.0		9.5		ns
$t_{\text{S}}(\text{L})$		6.0		7.0		
$t_{\text{H}}(\text{H})$	Hold Time, HIGH or LOW, U/\bar{D} to CP	0.0		0.0		ns
$t_{\text{H}}(\text{L})$		0.0		0.0		

Physical Dimensions

Dimensions are in inches (millimeters) unless otherwise noted.

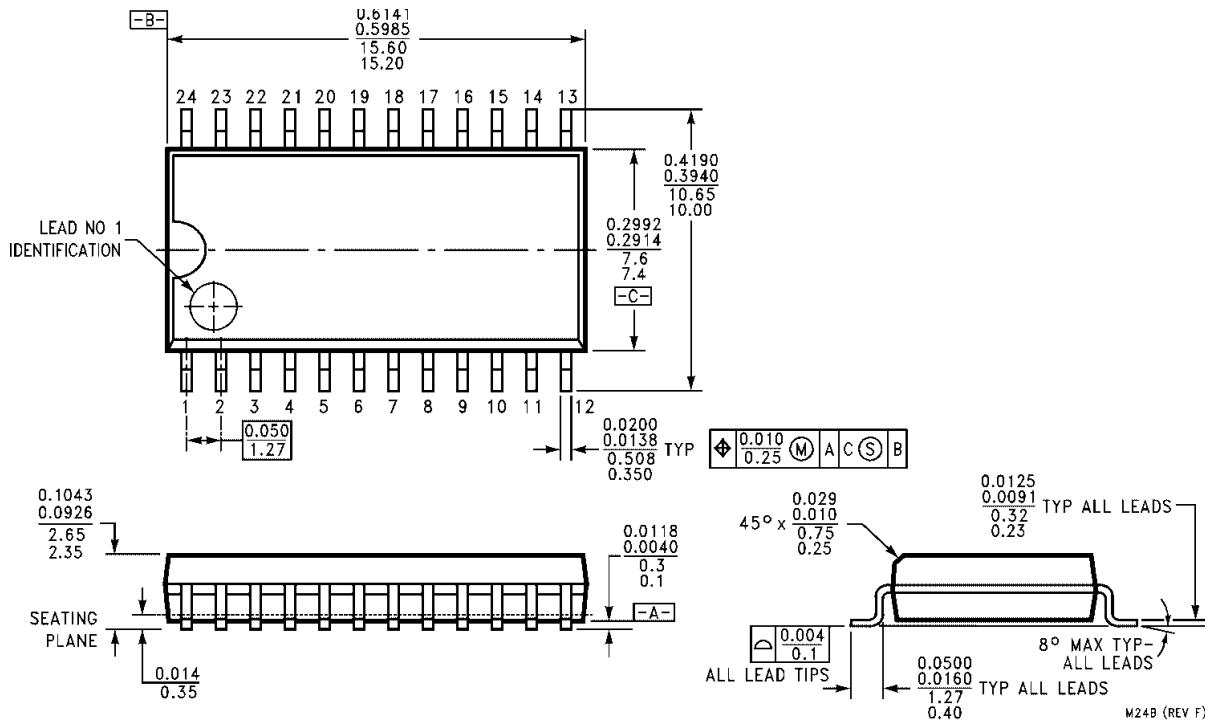
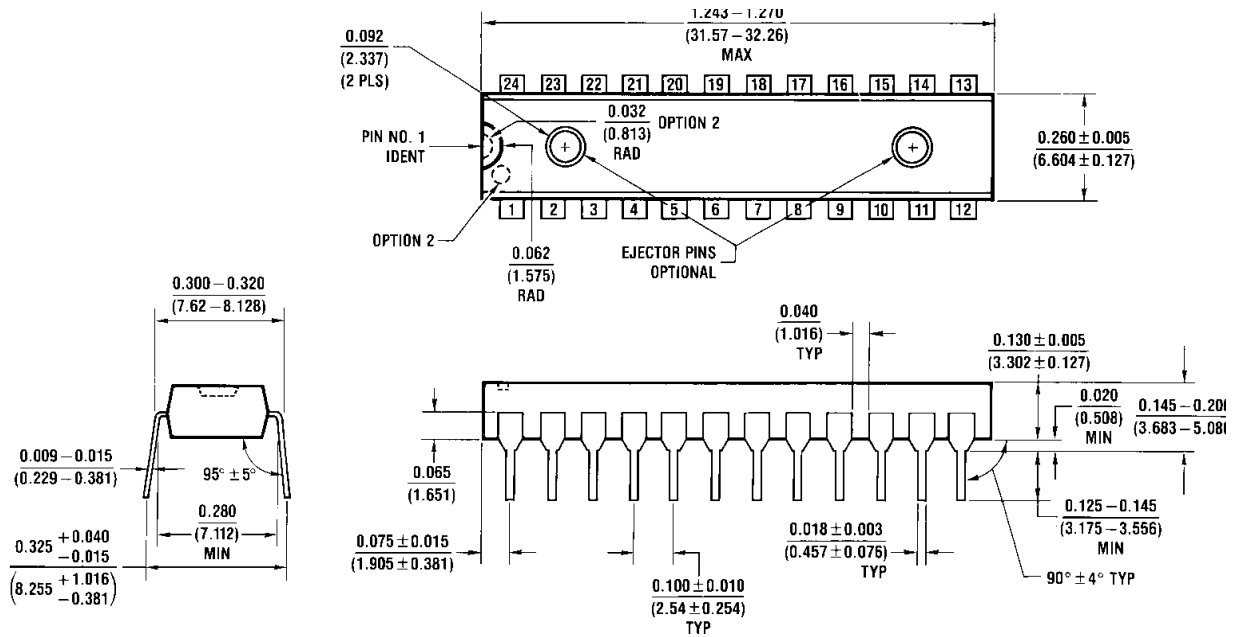


Figure 2. 24-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide
Package Number M24B

Physical Dimensions (Continued)

Dimensions are in millimeters unless otherwise noted.




N24C (REV F)

Figure 3. 24-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide Package Number N24C



TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx [®]	HiSeC [™]	Programmable Active Droop [™]	TinyLogic [®]
Across the board. Around the world. [™]	<i>i-Lo</i> [™]	QFET [®]	TINYOPTO [™]
ActiveArray [™]	ImpliedDisconnect [™]	QS [™]	TinyPower [™]
Bottomless [™]	IntelliMAX [™]	QT Optoelectronics [™]	TinyWire [™]
Build it Now [™]	ISOPLANAR [™]	Quiet Series [™]	TruTranslation [™]
CoolFET [™]	MICROCOUPLER [™]	RapidConfigure [™]	μSerDes [™]
CROSSVOLT [™]	MicroPak [™]	RapidConnect [™]	UHC [®]
CTL [™]	MICROWIRE [™]	ScalarPump [™]	UniFET [™]
Current Transfer Logic [™]	MSX [™]	SMART START [™]	VCX [™]
DOME [™]	MSXPro [™]	SPM [®]	Wire [™]
E ² CMOS [™]	OCX [™]	STEALTH [™]	
EcoSPARK [®]	OCXPro [™]	SuperFET [™]	
EnSigna [™]	OPTOLOGIC [®]	SuperSOT [™] -3	
FACT Quiet Series [™]	OPTOPLANAR [®]	SuperSOT [™] -6	
FACT [®]	PACMAN [™]	SuperSOT [™] -8	
FAST [®]	POP [™]	SyncFET [™]	
FASTr [™]	Power220 [®]	TCM [™]	
FPS [™]	Power247 [®]	The Power Franchise [®]	
FRFET [®]	PowerEdge [™]	 ™	
GlobalOptoisolator [™]	PowerSaver [™]	TinyBoost [™]	
GTO [™]	PowerTrench [®]	TinyBuck [™]	

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild Semiconductor. The datasheet is printed for reference information only.

Rev. I24

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View 74F269SPC on WIN SOURCE](#)
-  [Fairchild/ON Semiconductor Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management