



FODM3062/FODM3063/FODM3082/FODM3083

4-Pin Full Pitch Mini-Flat Package Zero-Cross Triac Driver Output Optocouplers

Features

- dv/dt of 600V/ μ s guaranteed
- Compact 4-pin surface mount package (2.4mm maximum standoff height)
- Zero voltage crossing
- Peak blocking voltage: 600V (FODM306X)
800V (FODM308X)
- Available in tape and reel quantities of 500 and 2500.
- C-UL, UL and VDE certifications pending

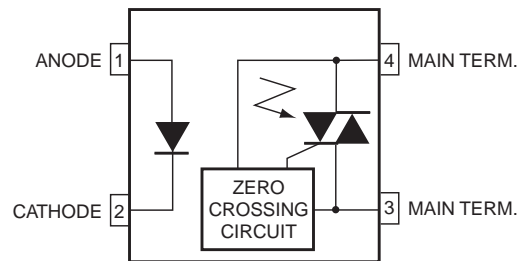
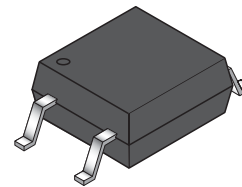
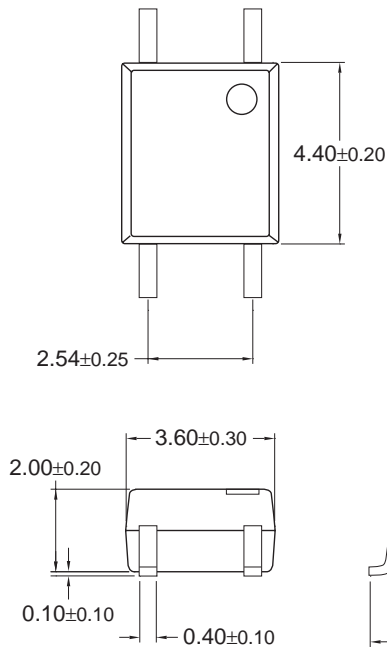
Description

The FODM306X and FODM308X series consist of an infrared emitting diode optically coupled to a monolithic silicon detector performing the function of a zero voltage crossing bilateral triac driver, and is housed in a compact 4-pin mini-flat package. The lead pitch is 2.54mm. They are designed for use with a triac in the interface of logic systems to equipment powered from 115/240 VAC lines, such as solid state relays, industrial controls, motors, solenoids and consumer appliances.

Applications

- Solenoid/valve controls
- Lighting controls
- Static power switches
- AC motor drives
- Temperature controls
- E.M. contactors
- AC motor starters
- Solid state relays

Package Dimensions



Note:
All dimensions are in millimeters.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Rating	Units
TOTAL PACKAGE			
T_{STG}	Storage Temperature	-55 to +150	$^\circ\text{C}$
T_{OPR}	Operating Temperature	-40 to +100	$^\circ\text{C}$
EMITTER			
I_F (avg)	Continuous Forward Current	60	mA
I_F (pk)	Peak Forward Current (1 μs pulse, 300pps.)	1	A
V_R	Reverse Input Voltage	6	V
P_D	Power Dissipation (No derating required over operating temp. range)	100	mW
DETECTOR			
$I_{T(RMS)}$	On-State RMS Current	70	mA (RMS)
V_{DRM}	Off-State Output Terminal Voltage	FODM3062/FODM3063	600
		FODM3082/FODM3083	800
P_D	Power Dissipation (No derating required over operating temp. range)	300	mW

Electrical Characteristics (T_A = 25°C)

Individual Component Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.*	Max.	Units
EMITTER						
V _F	Input Forward Voltage	I _F = 30mA			1.5	V
I _R	Reverse Leakage Current	V _R = 6V			100	μA
DETECTOR						
I _{DRM1}	Peak Blocking Current, Either Direction	Rated V _{DRM} , I _F = 0 ⁽¹⁾			500	nA
dV/dt	Critical Rate of Rise of Off-State Voltage	I _F = 0 (Figure 1) ⁽²⁾	600			V/μs

Transfer Characteristics

Symbol	DC Characteristics	Test Conditions	Device	Min.	Typ.*	Max.	Units
I _{FT}	LED Trigger Current	Main Terminal Voltage = 3V ⁽³⁾	FODM3062			10	mA
			FODM3082				
			FODM3063			5	
			FODM3083				
I _H	Holding Current, Either Direction		All		300		μA
V _{TM}	Peak On-State Voltage, Either Direction	I _F = Rated I _{FT} , I _{TM} = 100mA peak	All			3	V

Zero Crossing Characteristics

Symbol	Characteristics	Test Conditions	Device	Min.	Typ.*	Max.	Units
V _{IH}	Inhibit Voltage, MT1-MT2 Voltage above which device will not trigger	I _F = Rated I _{FT}	All			20	V
IDRM2	Leakage in Inhibit State	I _F = Rated I _{FT} , Rated V _{DRM} , Off-State	All			500	μA

Isolation Characteristics

Characteristics	Test Conditions	Symbol	Device	Min.	Typ.*	Max.	Units
Steady State Isolation Voltage ⁽⁴⁾	(1 Minute) R.H. = 40% to 60%	V _{ISO}	All	3750			VRMS

Notes:

* All typicals at 25°C.

- Test voltage must be applied within dv/dt rating.
- This is static dv/dt. See Figure 1 for test circuit. Commutating dv/dt is function of the load-driving thyristor(s) only.
- All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT}. Therefore, recommended operating I_F lies between max I_{FT} (10mA for FODM3062/82, 5mA for FODM3063/83) and absolute max I_F (60 mA).
- Steady state isolation voltage, V_{ISO}, is an internal device dielectric breakdown rating. For this test, pins 1 & 2 are common, and pins 3 & 4 are common.

Typical Performance Curves

Fig. 1 LED Forward Voltage vs. Forward Current

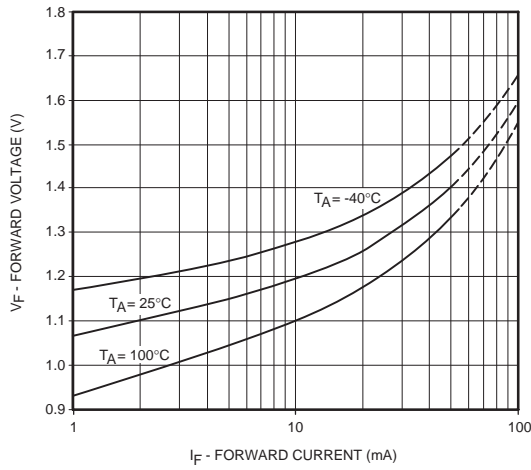


Fig. 2 Leakage Current vs. Ambient Temperature

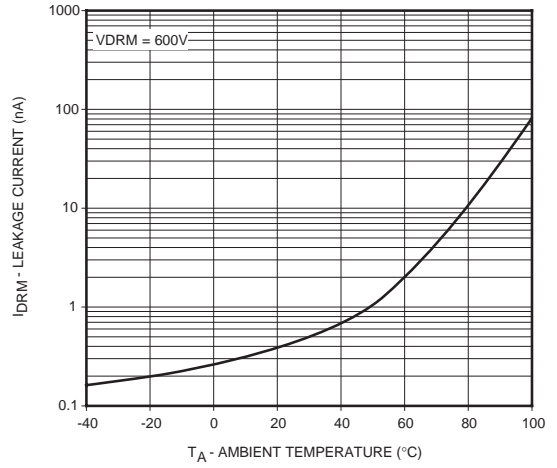


Fig. 3 Holding Current vs. Ambient Temperature

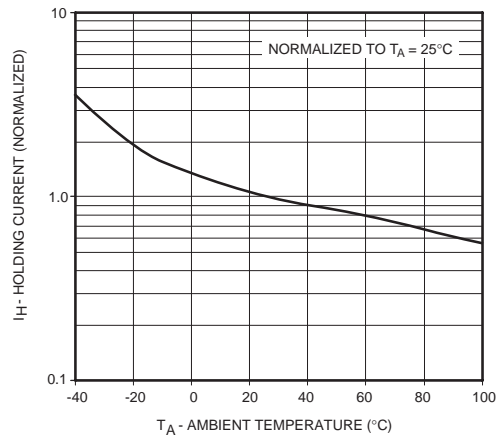
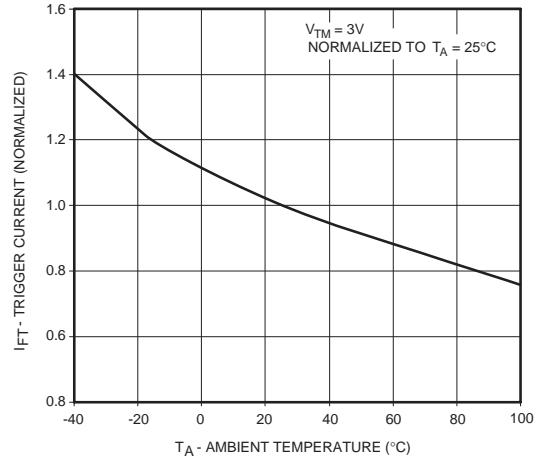


Fig. 4 Trigger Current vs. Ambient Temperature



Typical Performance Curves

Fig. 5 LED Current Required to Trigger vs. LED Pulse Width

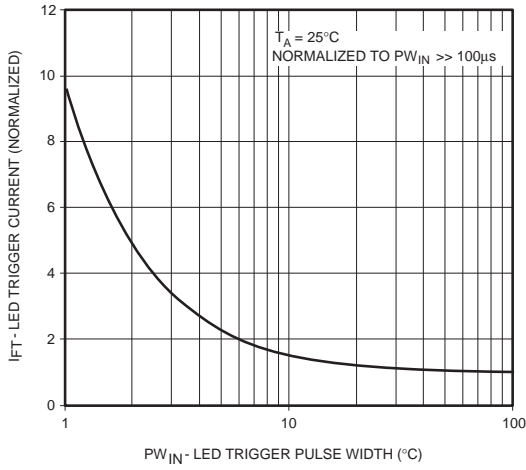


Fig. 6 Off-State Output Terminal Voltage vs. Ambient Temperature

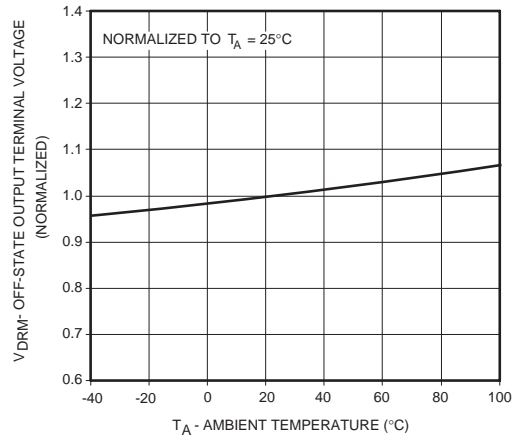
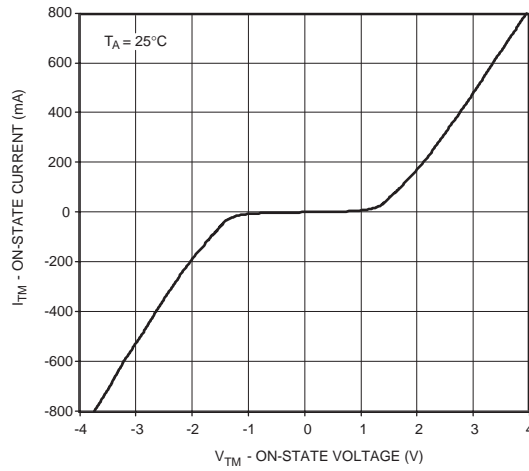


Fig. 7 On-State Characteristics



Typical Performance Curves

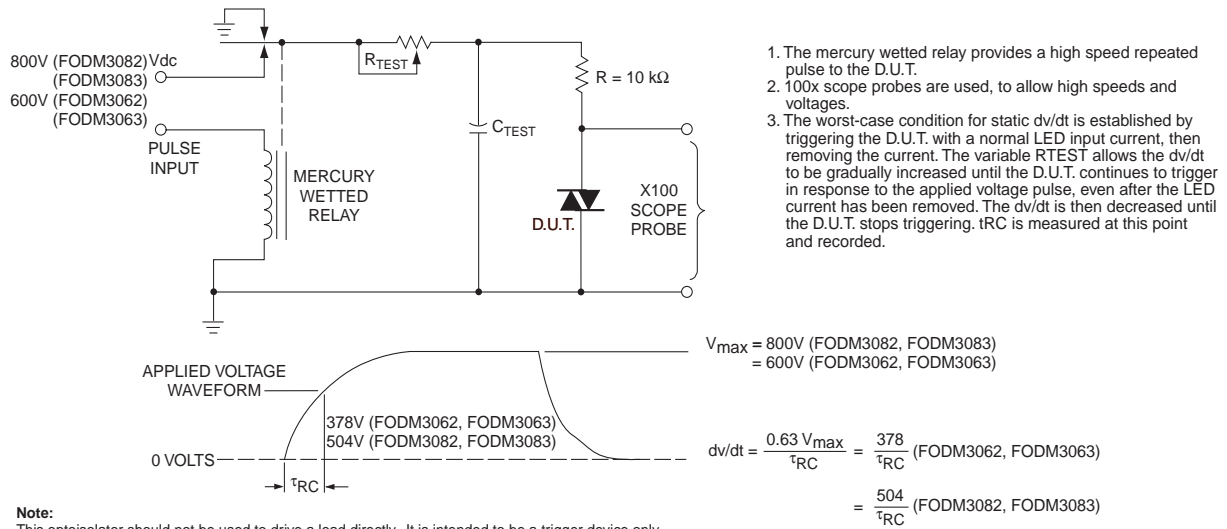


Figure 8. Static dv/dt Test Circuit

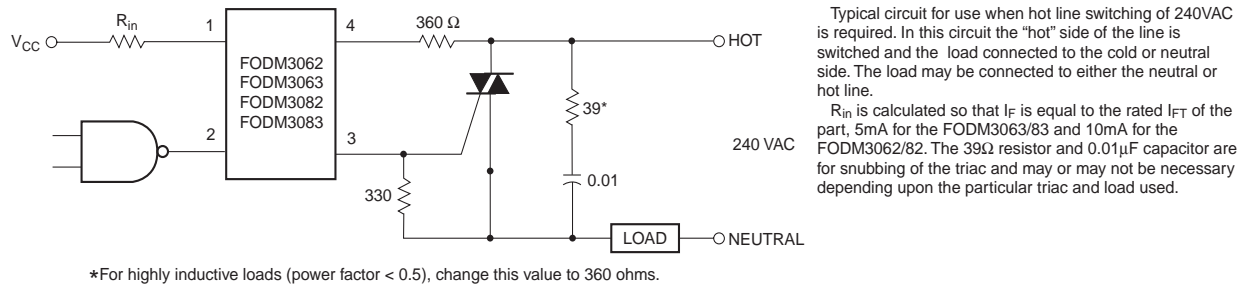


Figure 9. Hot-Line Switching Application Circuit

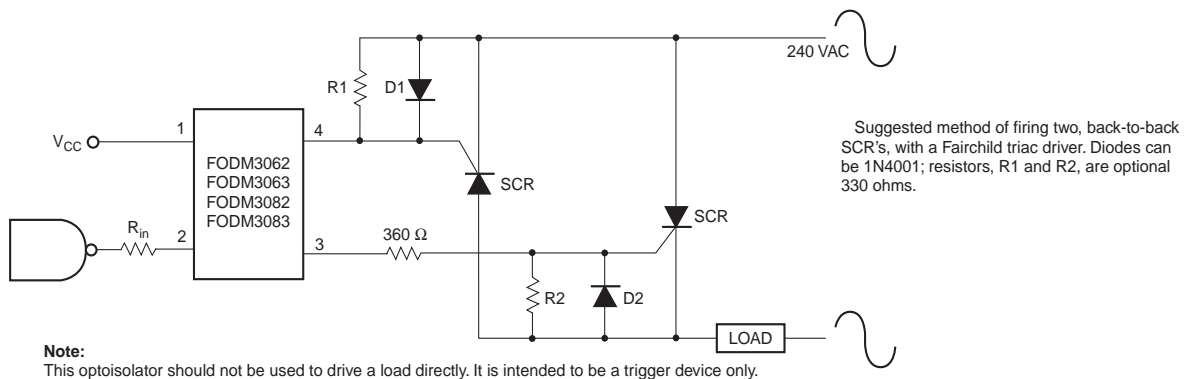
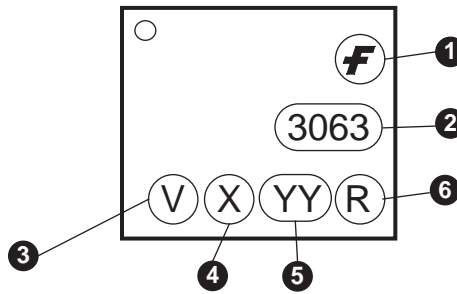


Figure 10. Inverse-Parallel SCR Driver Circuit (240VAC)

Ordering Information

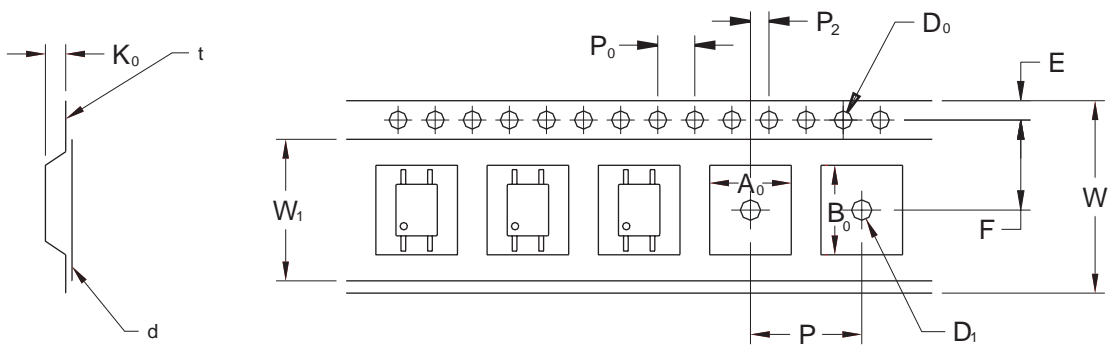
Option	Description
No option	Bulk (100 units/tube)
V	VDE Approved
R1	Tape and Reel (500 units)
R2	Tape and Reel (2500 units)
R1V	Tape and Reel (500 units) and VDE Approved
R2V	Tape and Reel (2500 units) and VDE Approved

Marking Information



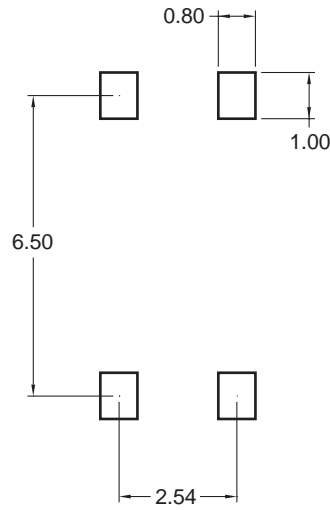
Definitions	
1	Fairchild logo
2	Device number
3	VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table)
4	One digit year code
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

Tape and Reel Information



		2.54 Pitch
Description	Symbol	Dimensions
Tape Width	W	12.00±0.3
Tape Thickness	t	0.30±0.05
Sprocket Hole Pitch	P ₀	4.00±0.1
Sprocket Hole Dia.	D ₀	1.50±0.1
Sprocket Hole Location	E	1.75±0.1
Pocket Location	F	5.50±0.1
	P ₂	2.00±0.1
Pocket Pitch	P	8.00±0.1
Pocket Dimension	A ₀	3.90±0.1
	B ₀	7.45±0.1
	K ₀	2.45±0.1
Pocket Hole Dia.	D ₁	1.50±0.1
Cover Tape Width	W ₁	9.30±0.1
Cover Tape Thickness	d	0.062±0.02
Max. Component Rotation or Tilt		20° max
Devices Per Reel	R1	500
	R2	2500
Reel Diameter	R1	178 mm (7")
	R2	330 mm (13")

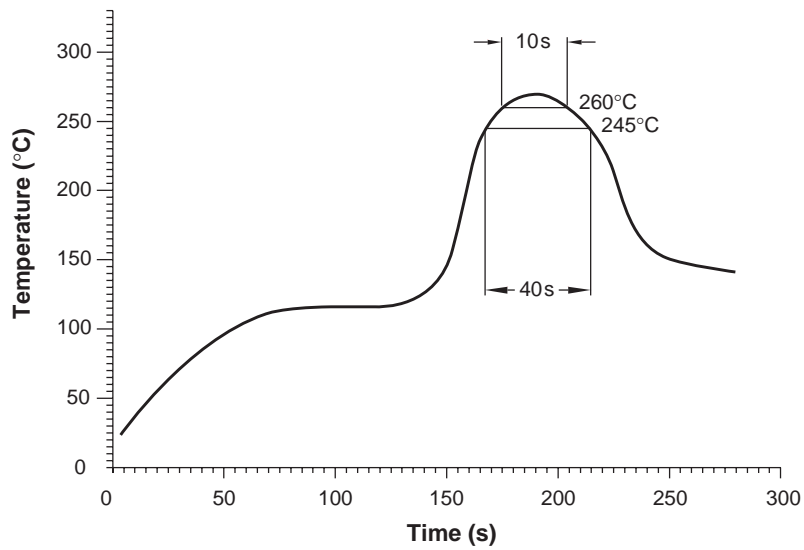
Footprint Drawing for PCB Layout



Note:
All dimensions are in mm.

Recommended Infrared Reflow Soldering Profile


- Peak reflow temperature: 260°C (package surface temperature)
- Time of temperature higher than 245°C: 40 seconds or less
- Number of reflows: 3





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 [™]	
FAST _r [™]	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