Is Now Part of

ON Semiconductor®

To learn more about ON Semiconductor, please visit our website at
www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

FAIRCHILD SEMICONDUCTOR®

May 2011

FSA2866
Dual-Host / Dual-SIM Card Crosspoint Analog Switch

Features

Switch Type	2x2 Crosspoint Switch
Input Type	Data
Input Signal Range	0 to V_{CC}
V_{CC}	1.65V to 4.30V
R_{ON}	Data 2Ω (Typical) VSIM 2Ω (Typical)
R_{FLAT}	0.6Ω (Typical)
ESD	IEC 61000-4-2 System Air 15kV, Contact 8kV
C_{ON}	28pF (Typical)
C_{OFF}	12pF (Typical)
Package	20-Lead UMLP, 3 x 3 x 0.55mm, 0.40mm Pitch with Exposed DAP
Ordering Information	FSA2866UMX

Description

The FSA2866 is a dual-host, dual-SIM card analog switch designed specifically for cell phones that support two specific carrier services (for example, CDMA and GSM/3G).

Related Resources

- *For samples and questions, please contact: Analog.Switch@fairchildsemi.com.*
- *FSA2866 Evaluation Board*

Applications

- MP3 Portable Media Players
- Cellular Phones, Smart Phones

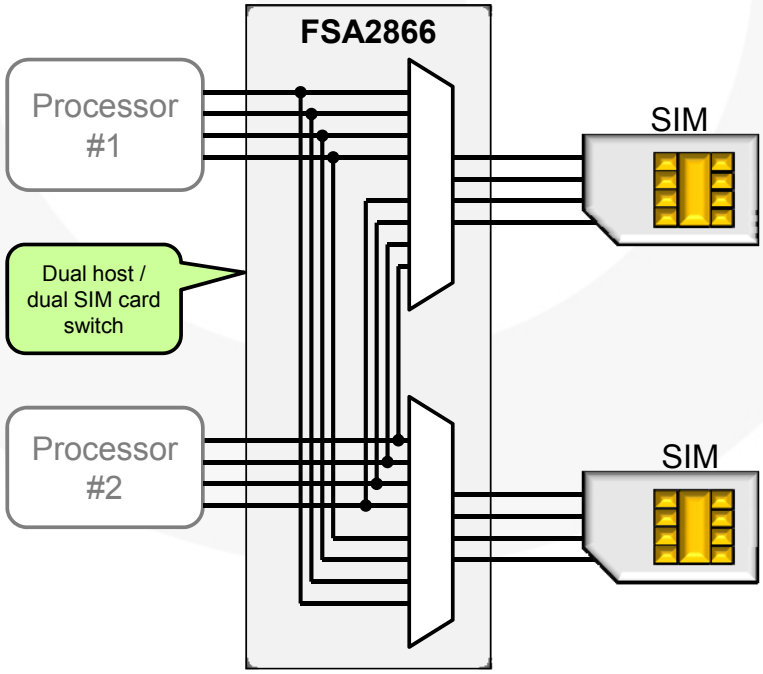


Figure 1. Typical Mobile Phone Application

Pin Descriptions

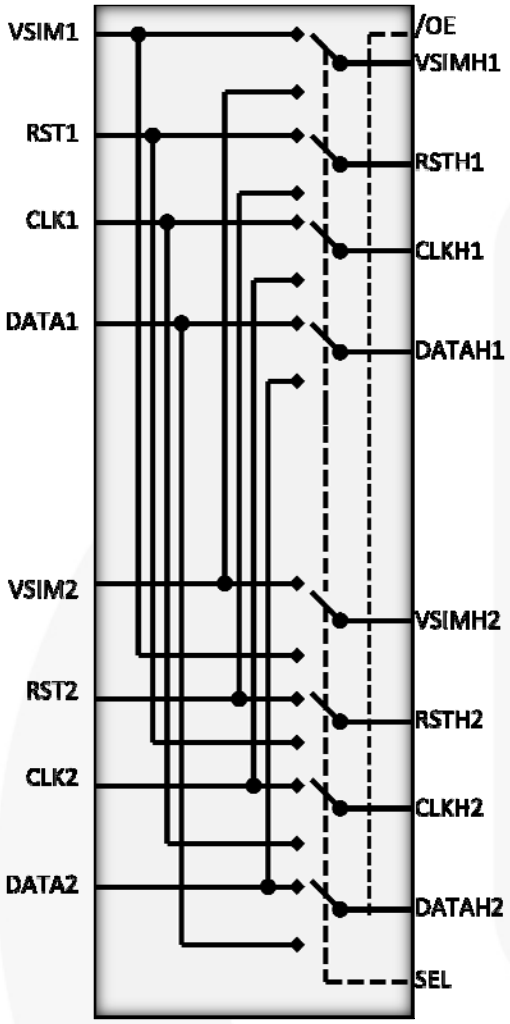


Figure 2. Functional Diagram

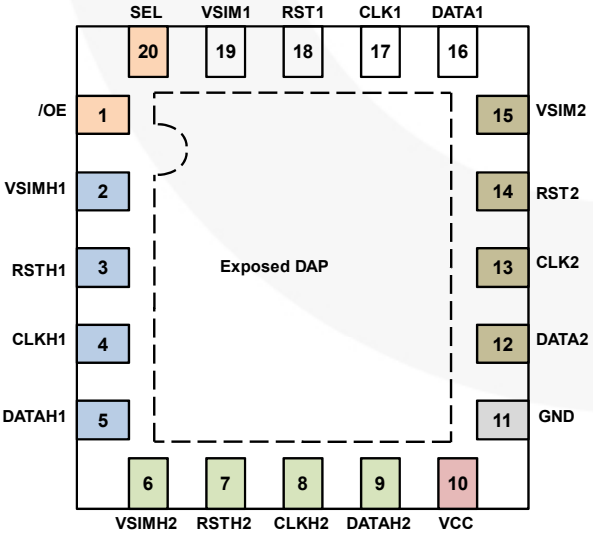


Figure 3. Pin Assignments (Top Through View)

Pin #	Name	Type	Description		
1	/OE	Input	Output Enable	0	Active
				1	Switch Disabled
2	VSIMH1	I / O	Common Ports for Host #1		
3	RSTH1	I / O			
4	CLKH1	I / O			
5	DATAH1	I / O			
6	VSIMH2	I / O	Common Ports for Host #2		
7	RSTH2	I / O			
8	CLKH2	I / O			
9	DATAH2	I / O			
10	VCC	Supply	Power		
11	GND	Ground	Ground		
12	DATA2	I / O	SIM Card Ports for Card #2		
13	CLK2	I / O			
14	RST2	I / O			
15	VSIM2	I / O			
16	DATA1	I / O	SIM Card Ports for Card #1		
17	CLK1	I / O			
18	RST1	I / O			
19	VSIM1	I / O			
20	SEL	Input	Control Pin	SEL=0	Host #1 connected to Card #1 [VSIMH1=VSIM1; DATAH1=DATA1; CLKH1=CLK1; RSTH1=RST1] Host #2 connected to Card #2 [VSIMH2=VSIM2; DATAH2=DATA2; CLKH2=CLK2; RSTH2=RST2]
				SEL=1	Host #1 connected to Card #2 [VSIMH1=VSIM2; DATAH1=DATA2; CLKH1=CLK1; RSTH1=RST1] Host #2 connected to Card #1 [VSIMH2=VSIM1; DATAH2=DATA1; CLKH2=CLK1; RSTH2=RST1]
DAP	DAP	N/C	Exposed die attach paddle (DAP) not electrically connected to any pin.		

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		Min.	Max.	Unit
V_{CC}	Supply Voltage		-0.50	+5.5	V
V_{CNTRL}	DC Input Voltage (SEL,/OE)		-0.5	V_{CC}	V
V_{SW}	DC Switch I/O Voltage - DATAHn, CLKHn, CLKn, RSTHn, RSTn		-0.5	V_{CC} + 0.3	V
I_{IK}	DC Input Diode Current		-50		mA
I_{SIM}	DC Output Current – VSIMHn, VSIMn			100	mA
I_{OUT}	DC Output Current – DATAHn, CLKHn, CLKn, RSTHn, RSTn			35	mA
T_{STG}	Storage Temperature		-65	+150	°C
ESD	Human Body Model, JEDEC: JESD22-A114	All Pins	8		kV
		I/O to GND, Card Side Pins	16		
		Power to GND	9		
	Charged Device Model, JEDEC: JESD22-C101		2		
	IEC 61000-4-2 System-Level	Contact	8		
		Air Gap	15		

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 these ratings or designing to Absolute Maximum Ratings.

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Supply Voltage	1.65		4.3	V
V_{CNTRL}	Control Input Voltage (SEL, /OE)	0		V_{CC}	V
V_{SW}	Switch I/O Voltage - DATAHn, CLKHn, CLKn, RSTHn, RSTn	0		V_{CC}	V
I_{SIM}	DC Output Current – VSIMHn, VSIMn			30	mA
I_{OUT}	DC Output Current – DATAHn, CLKHn, CLKn, RSTHn, RSTn			10	mA
T_A	Operating Temperature	-40		+85	°C

DC Electrical Characteristics

T_A=25°C and V_{CC}=3.0V unless otherwise noted.

Symbol	Parameter	Conditions	V_{CC} (V)	T_A=- 40ºC to +85ºC			Unit
				Min.	Ty p.	Max.	
V_{IK}	Clamp Diode Voltage	I_{IN}=-18mA	2.7			-1.2	V
V_{IH}	Input Voltage High		1.65 to 2.30	1.1			V
			2.7 to 3.6	1.3			
			4.3	1.7			
V_{IL}	Input Voltage Low		1.65 to 2.30			0.4	V
			2.7 to 3.6			0.5	
			4.3			0.7	
I_{IN}	Control Input Leakage (SEL,/OE)	V_{SW}=0 to V_{CC}	4.3	-1		1	µA
$I_{NO(OFF)}$ $I_{NC(OFF)}$	Off Leakage Current of Ports RSTn, DATAn, CLKn, VSIMn	VSIMHn=DATAHn=CLKHn=RSTHn=0.3 V, V_{CC}-0.3V; RSTn, CLKn, DATAn, or VSIMn=V_{CC}-0.3V, 0.3V, or Floating	4.3	-100		100	nA
$I_{A(ON)}$	On Leakage Current of Common Ports – RSTHn, DATAHn, CLKHn, VSIMHn	Common=0.3V, V_{CC}-0.3V; VSIMHn=DATAHn=CLKHn=RSTHn= V_{CC}-0.3V, 0.3V, or Floating	4.3	-100		100	nA
I_{OFF}	Power-Off Leakage Current	VSIMHn or DATAHn or CLKHn or RSTHn V_{IN}=0V to 4.3V, V_{CC}=0V	0	-2		2	µA
I_{OZ}	Off-State Leakage	VSIMHn or DATAHn or CLKHn or RSTHn V_{IN}=0.3V to 4.3V, /OE=V_{CC}	4.3	-5		5	µA
R_{ON_DATA}	Switch On Resistance for Data Paths	I_{ON}=-20mA; /OE=0V; SEL=V_{CC} or 0V; RSTn, CLKn, DATAn, or VSIMn=0 or 2.7V	2.7		2.0	3.5	Ω
R_{ON_VSIM}	Switch On Resistance for VSIM Paths	I_{ON}=- 50mA; /OE=0V; SEL=V_{CC} or 0V; RSTn, CLKn, DATAn, or VSIMn=0 or 2.7V	2.7		2.0	3.5	Ω
ΔR_{ON_DATA}	On Resistance Matching Between Data Channels	I_{ON}=-20mA; /OE=0V; SEL=V_{CC} or 0V; RSTn, CLKn, or DATAn=0V	2.7		0.10	0.25	Ω
R_{ON_FLAT}	On Resistance Flatness Data Path Signals	I_{ON}=-20mA, /OE=0V,SEL=V_{CC} or 0V, RSTn, CLKn or DATAn=0 to V_{CC}	2.7		0.6	0.8	Ω
I_{CC}	Quiescent Supply Current	V_{IN}=0 or V_{CC}, I_{OUT}=0	4.3			1	µA
I_{CCT}	Increase in I_{CC} Current Per Control Voltage and V_{CC}	V_{IN}=1.65V, V_{CC}=4.3V	4.3		7	9.5	µA

Notes:

1. Guaranteed by characterization; not production tested.
2. On resistance is determined by the voltage drop between the D+/D- and D+/R, D-/L pins at the indicated current through the switch.
3. $\Delta R_{ON}=R_{ON\_max} – R_{ON\_min}$ measured at identical V_{CC}, temperature, and voltage.

AC Electrical Characteristics

T_A=25°C and V_{CC}=3.0V unless otherwise noted.

Symbol	Parameter	Conditions	V_{CC} (V)	T_A=- 40ºC to +85ºC			Unit
				Min.	Typ.	Max.	
t_{ON}	Turn-On Time, /OE to Output	R_L=50Ω, C_L=30pF, V_{SW}=0.8V Figure 4	2.8 to 4.3		55	75	ns
			1.8			110	
t_{OFF}	Turn-Off Time, /OE to Output	R_L=50Ω, C_L=30pF, V_{SW}=0.8V Figure 4	2.8 to 4.3		24	75	ns
			1.8			110	
t_{BBM}	Break-Before-Make Time	R_L=50Ω, C_L=30pF, V_{SW}=0.8V Figure 5		2	35		ns
O_{IRR}	Off Isolation	R_L=50Ω, f=100KHz, /OE=V_{CC}, V_{SW}=13dBm ($3V_{pp}$) Figure 6	1.8 to 4.3		90		dB
X_{TALK}	Crosstalk	R_L=50Ω, f=100KHz, V_{SW}=13dBm ($3V_{pp}$) Figure 6	1.8 to 4.3		85		dB
BW	-3db Bandwidth	R_L=50Ω, C_L=0pF, Figure 8	3.0		210		MHz
		R_L=50Ω, C_L=5pF, Figure 8			198		
		R_L=50Ω, C_L=30pF, Figure 8			120		
		R_L=50Ω, C_L=50pF, Figure 8			78		

Note:

4. Guaranteed by characterization; not production tested.

Capacitance

T_A=25°C unless otherwise noted.

Symbol	Parameter	Conditions	T_A=- 40ºC to +85ºC			Unit
			Min.	Typ.	Max.	
C_{IN}	Control Pin Input Capacitance	V_{CC}=0V, f=1MHz		2		pF
C_{ON}	On Capacitance	V_{CC}=3.3V, /OE=0V, f=1MHz, Figure 7		28		pF
C_{OFF}	Off Capacitance	V_{CC} and /OE=3.3V, f=1MHz, Figure 7		12		pF

AC Loadings and Waveforms

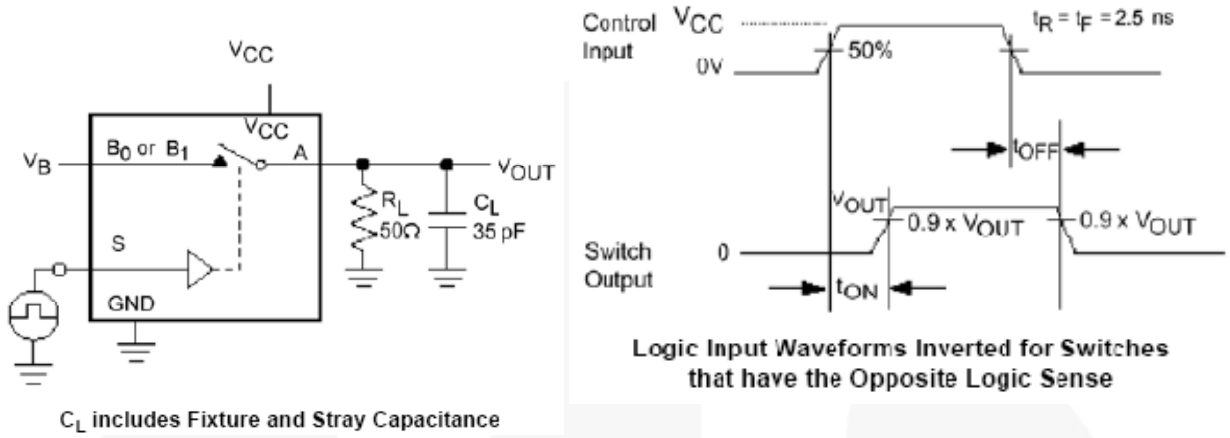


Figure 4. Turn-On / Turn-Off Timing

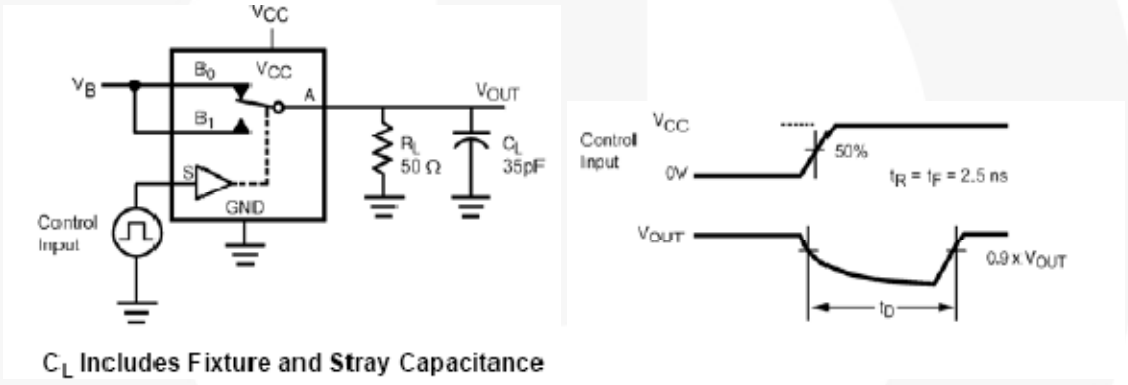


Figure 5. Break-Before-Make Timing

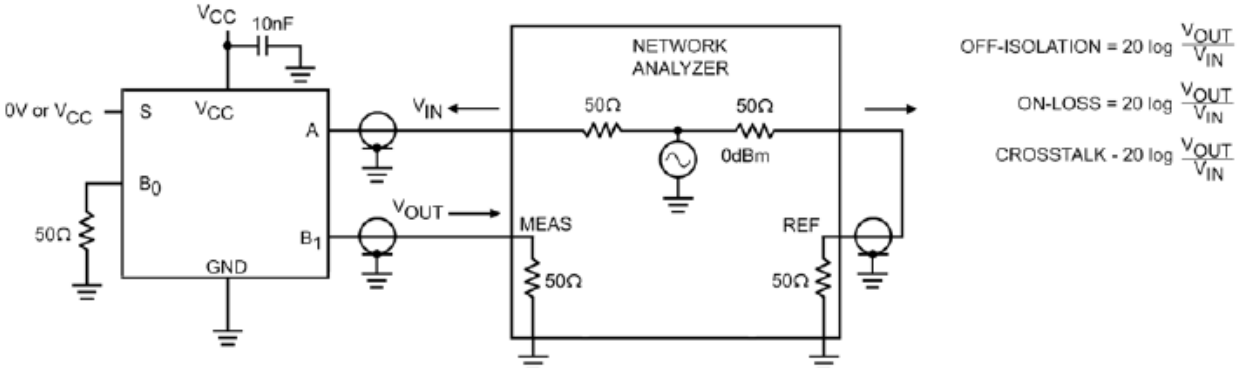


Figure 6. Off Isolation and Crosstalk

AC Loadings and Waveforms (Continued)

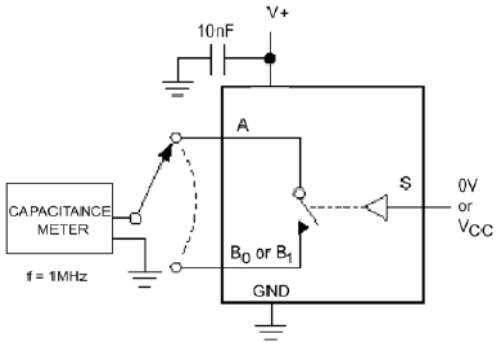


Figure 7. On / Off Capacitance Measurement Setup

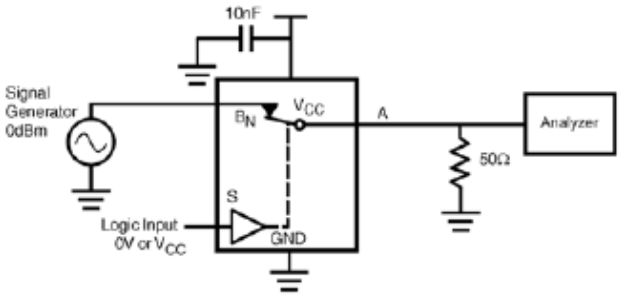
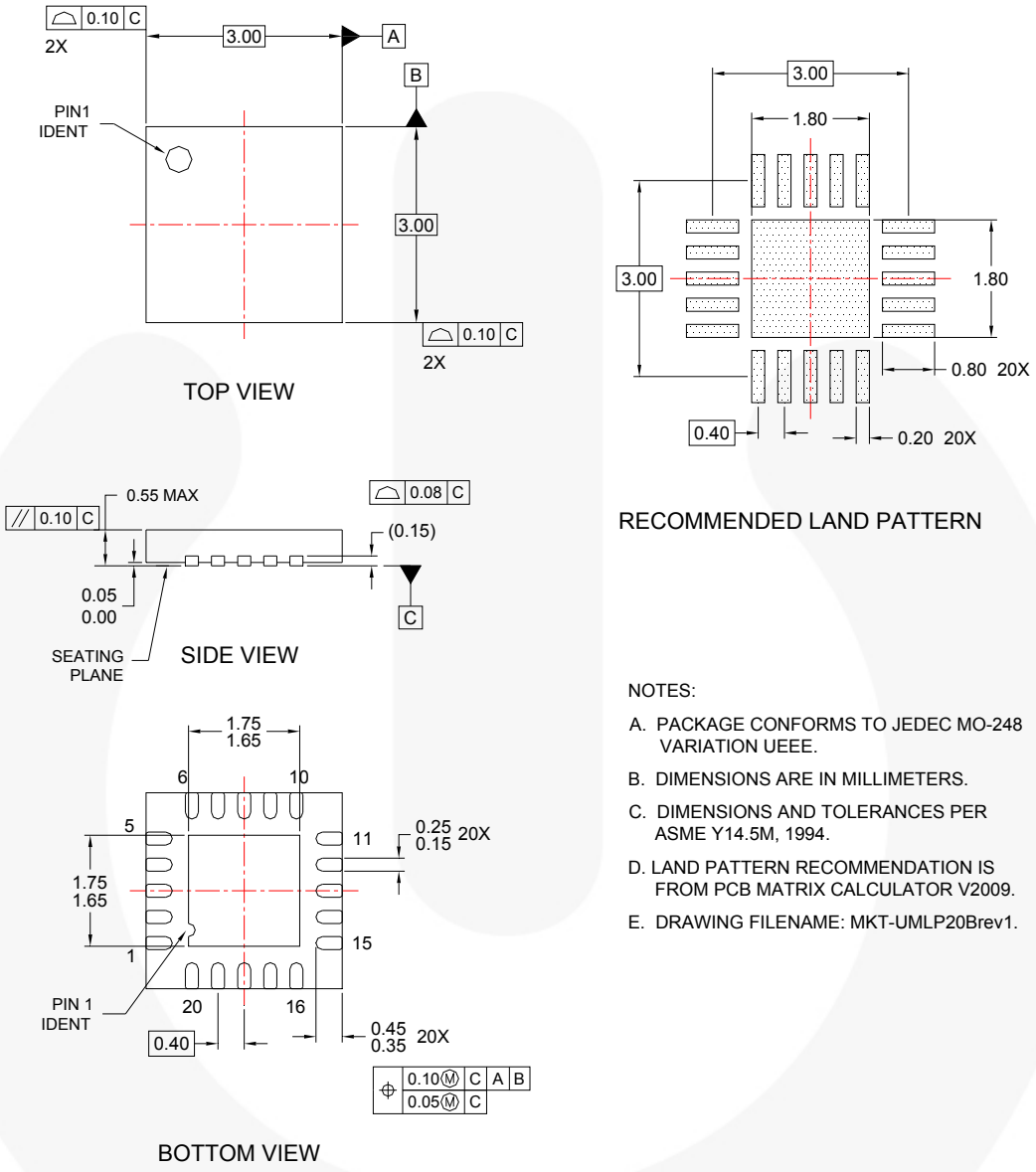


Figure 8. Bandwidth

Physical Dimensions



NOTES:

A. PACKAGE CONFORMS TO JEDEC MO-248 VARIATION UEEE.

B. DIMENSIONS ARE IN MILLIMETERS.

C. DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.

D. LAND PATTERN RECOMMENDATION IS FROM PCB MATRIX CALCULATOR V2009.

E. DRAWING FILENAME: MKT-UMLP20Brev1.

Figure 9. 20-Pin Ultrathin Molded Leadless Package (UMLP)

Order Number	Operating Temperature Range	Package Description	Packing Method
FSA2866UMX	-40 to 85°C	20-Lead Ultrathin Molded Leadless Package (UMLP)	Tape & Reel

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

Always visit Fairchild Semiconductor's online packaging area for the most recent package drawings: http://www.fairchildsemi.com/packaging/.

FAIRCHILD SEMICONDUCTOR®

TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

AccuPower™
Auto-SPM™
AX-CAP™*
BitSiC®
Build it Now™
CorePLUS™
CorePOWER™
CROSSVOLT™
CTL™
Current Transfer Logic™
DEUXPEED®
Dual Cool™
EcoSPARK®
EfficientMax™
ESBC™
Fairchild®
Fairchild Semiconductor®
FACT Quiet Series™
FACT®
FAST®
FastvCore™
FETBench™
FlashWriter®*
FPS™
F-PFS™
FRFET®
Global Power Resource℠
Green FPS™
Green FPS™ e-Series™
Gmax™
GTO™
IntelliMAX™
ISOPLANAR™
MegaBuck™
MICROCOUPLER™
MicroFET™
MicroPak™
MicroPak2™
MillerDrive™
MotionMax™
Motion-SPM™
mWSaver™
OptoHiT™
OPTOLOGIC®
OPTOPLANAR®
PDP SPM™
Power-SPM™
PowerTrench®
PowerXS™
Programmable Active Droop™
QFET®
QS™
Quiet Series™
RapidConfigure™
Saving our world, 1mW/W/kW at a time™
SignalWise™
SmartMax™
SMART START™
SPM®
STEALTH™
SuperFET®
SuperSOT™-3
SuperSOT™-6
SuperSOT™-8
SupreMOS®
SyncFET™
Sync-Lock™
SYSTEM GENERAL®*
The Power Franchise®
The Right Technology for Your Success™
the power franchise
TinyBoost™
TinyBuck™
TinyCalc™
TinyLogic®
TINYOPTO™
TinyPower™
TinyPWM™
TinyWire™
TranSiC®
TriFault Detect™
TRUECURRENT®*
μSerDes™
SerDes
UHC®
Ultra FRFET™
UniFET™
VCX™
VisualMax™
XS™

* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

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.

ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, www.fairchildsemi.com, under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	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	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. I54

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5817−1050

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

ON Semiconductor:

FSA2866UMX

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

FORSTAR®

Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А