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March 2013

FSA2467 0.4Ω Low-Voltage Dual DPDT Analog Switch

Features

- Typical 0.4Ω On Resistance (R_{ON}) for +2.7V Supply
- Features Less then12µA IccT Current when Sn Input is Lower than V_{CC}
- 0.25Ω Maximum R_{ON} Flatness for +2.7V Supply
- 3 x 3mm 16-Lead MLP Package
- 1.8x2.6mm 16-Lead UMLP Package
- Broad V_{CC} Operating Range
- Low THD (0.02% Typical for 32Ω Load)

Applications

- Cell Phone
- PDA
- Portable Media Player

Description

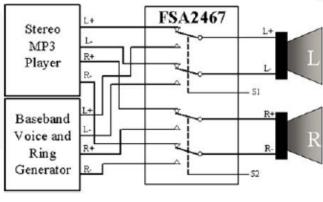
The FSA2467 is a dual Double-Pole, Double-Throw (DPDT) analog switch. The FSA2467 operates from a single 1.65V to 4.3V supply. The FSA2467 features an ultra-low on resistance of 0.4Ω at a +2.7V supply and 25°C. This device is fabricated with sub-micron CMOS technology to achieve fast switching speeds and is designed for break-before-make operation.

FSA2467 features very low quiescent current even when the control voltage is lower than the V_{CC} supply. This feature allows mobile handset applications direct interface with baseband processor general-purpose I/Os.

Ordering Information

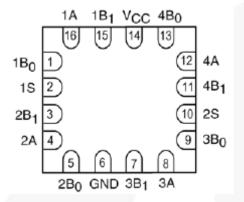
Part Number	Top Mark	Package Description
FSA2467MPX	FSA 2467	16-lead Molded Leadless Package (MLP), JEDEC MO-220, 3 x 3mm Square
FSA2467UMX	GC	16-lead Ultrathin Molded Leadless Package (UMLP), 1.8 x 2.6mm

Application Diagram





Pin Assignments





Truth Table

Control Inputs	Function
LOW	nB ₀ Connected to nA
HIGH	nB ₁ Connected to nA

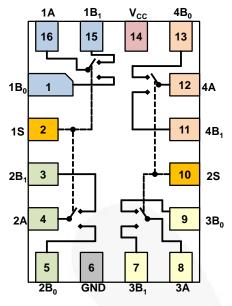
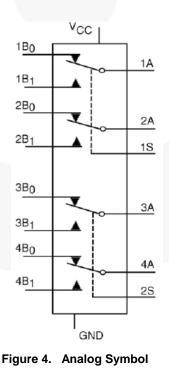


Figure 3. UMLP (Top View)

Pin Descriptions

Name	Function
nA , nB_0 , nB_1	Data Ports
nS	Control Input

Analog Symbol



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		-0.5	5.0	V
Vs	Switch Voltage		-0.5	V _{CC} +0.3	V
V _{IN}	Input Voltage		-0.5	5.0	V
I _{IK}	Input Diode Current		-50		mA
I _{SW}	Switch Current			350	mA
I _{SWPEAK}	Peak Switch Current (Pulsed at 1ms duration	on, <10% Duty Cycle)		500	mA
T _{STG}	Storage Temperature Range		-65	+150	°C
TJ	Junction Temperature		1	+150	°C
TL	Lead Temperature, Soldering 10 Seconds			+260	٥C
ESD	Electrostatic Lischarde (anability	man Body Model, SD22-A114		5.5	kV

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	Min.	Max.	Unit
V _{CC}	Supply Voltage	1.65	4.30	V
V _{IN}	Control Input Voltage ⁽¹⁾	0	V _{cc}	V
Vs	Switch Input Voltage	0	V _{cc}	V
T _A	Operating Temperature	-40	+85	°C

Note:

1. Unused inputs must be held HIGH or LOW. They may not float.

FSA2467 — 0.4Ω Low-Voltage Dual DPDT Analog Switch

DC Electrical Characteristics

Typical values are at 25°C unless otherwise specified.

Symbol	Parameter	Condition	V _{cc} (V)	T _A = +25⁰C			T _A = -40 to +85°C		Unit
					Тур.	Max.	Min	Max.	•
			4.3				1.4		
VIH	Input Voltage High		2.7 to 3.6				1.3		V
VIH	input voltage riigh		2.3 to 2.7				1.1		v
			1.65 to 1.95				0.9		
			4.3					0.7	
	Length Maller and Length		2.7 to 3.6	-				0.5	
V _{IL}	Input Voltage Low		2.3 to 2.7					0.4	V
			1.65 to 1.95		1			0.4	
I _{IN}	Control Input Leakage	V_{IN} =0V to V_{CC}	1.65 to 4.30				-0.5	0.5	μA
I _{NO(OFF)}	Off Leakage Current of	nA=0.3V, V _{CC} -0.3V							
$I_{NC(OFF)}$ Port nB ₀ and nB ₁		$nB_0 \text{ or } nB_1=0.3V, V_{CC}-0.3V \text{ or floating}$	1.95 to 4.30	-10		10	-50	50	nA
. On Leakage Current of	On Leakage Current of	nA=0.3V,V _{cc} -0.3V	1.95 to 4.30	-10		10	50	50	- 0
I _{A(ON)}	Port A	$nB_0 \text{ or } nB_1=0.3V, V_{CC}-0.3V \text{ or Floating}$	1.95 to 4.30			10	-50		nA
		I _{OUT} =100mA	4.3		0.4			0.6	
	Switch On	nB ₀ or nB ₁ =0V,0.8V, 1.8V,2.7V	2.7		0.4			0.6	
R _{on}	Resistance ⁽²⁾	I_{OUT} =100mA, nB ₀ or nB ₁ =0V,0.7V, 1.2V, 2.3V	2.3	0.55				0.95	Ω
		I_{OUT} =100mA, nB ₀ or nB ₁ =1.0V	1.8	0.8				2.0	
۸P	On Resistance	I_{OUT} =100mA, nB ₀ or nB ₁ =0.8V	2.7	0.04				0.10	Ω
ΔR_{ON}	Matching Between Channels ⁽³⁾	I_{OUT} =100mA, nB ₀ or nB ₁ =0.7V	2.3 0.03					0.10	52
R _{FLAT(ON)}	On Resistance	I_{OUT} =100mA, B ₀ or	2.7					0.25	Ω
• •FLAT(ON)	Flatness ⁽⁴⁾	nB ₁ =0V to V _{CC}	2.3					0.3	32
I _{CC}	Quiescent Supply Current	V_{IN} =0V to V_{CC} I _{OUT} =0V	4.3	-100		100	-500	500	nA
I _{CCT}	Increase in Icc Current	V _{IN} =1.8V	4.3		7	12		15	μA
·001	per Control Voltage	V _{IN} =2.6V	4.3		3	6		7	μ, ,

Notes:

2. On resistance is determined by the voltage drop between A and B pins at the indicated current through the switch.

3.

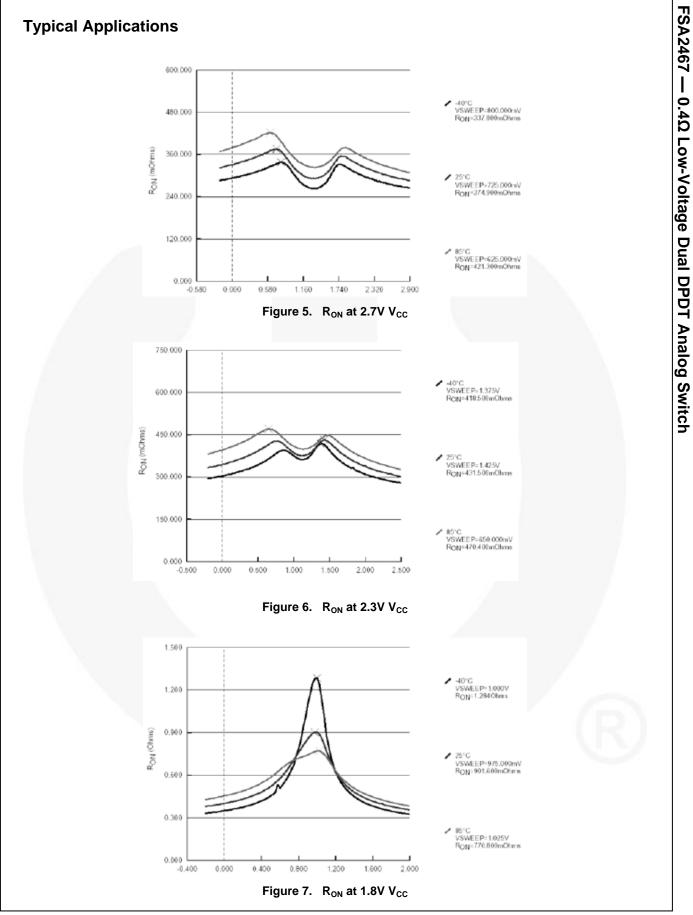
 $\Delta R_{ON} = R_{ON max} - R_{ON min}$ measured at identical V_{CC}, temperature and voltage. Flatness is defined as the difference between the maximum and minimum value of on resistance over the 4. specified range of conditions.

Typical values are at 25°C unless otherwise specified.

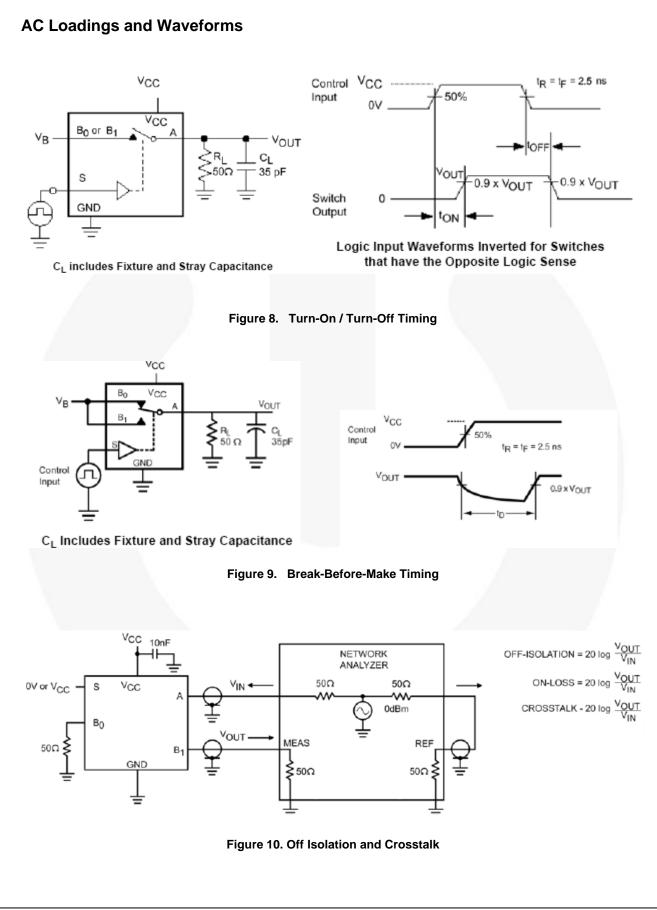
Symbol Parameter	Parameter	Condition	V _{cc}	T _A = +25°C			T _A = -40 to +85°C		Unit	Figure
			Min.	Тур.	Max.	Min.	Max.		_	
		nB0 or nB1=1.5V	3.6 to 4.3			50		60		
t _{ON}	Turn-On Time	R_L =50 Ω , C_L =35pF	2.7 to 3.6			65		75	ns	Figure 8
			2.3 to 2.7			80		90		
		nB0 or nB1=1.5V	3.6 to 4.3			32		40		
t _{OFF}	Turn-Off Time	R_L =50 Ω , C_L =35pF	2.7 to 3.6			42		50	ns	Figure 8
			2.3 to 2.7			52		60		
		nB0 or nB1=1.5V	3.6 to 4.3		12					
t _{BBM}	Break-Before- Make Time	R_L =50 Ω , C_L =35pF	2.7 to 3.6		15				ns Figure	Figure 9
			2.3 to 2.7		20					
		C _L =100pF, V _{GEN} =0V, R _{GEN} =0Ω	3.6 to 4.3		15				pC Figure 11	
Q	Q Charge Injection	C_L =100pF, V _{GEN} =0V, R _{GEN} =0Ω	2.7 to 3.6		10					Figure 11
		C_L =100pF, V _{GEN} =0V, R _{GEN} =0Ω	2.3 to 2.7		8					
			3.6 to 4.3		-75					
OIRR	Off Isolation	f=100KHz, R _L =50Ω,C _L =5pF	2.7 to 3.6		-75				dB	Figure 10
			2.3 to 2.7		-75					
			3.6 to 4.3		-75					
Xtalk	Crosstalk	f=100KHz, R _L =50Ω, C _L =5pF	2.7 to 3.6		-75				dB	Figure 10
			2.3 to 2.7		-75					
BW	-3dB Bandwidth	R _L =50Ω	2.3 to 4.3	1	85				MHZ	Figure 13
		$\begin{array}{l} R_{L}\text{=}32\Omega, \ V_{IN}\text{=}2V_{PP}, \\ f\text{=}20 \text{ to } 20kHZ \end{array}$	3.6 to 4.3		0.02				%	
THD	Total Harmonic Distortion	R_L =32Ω, V_{IN} =2 V_{PP} , f=20 to 20kHZ	2.7 to 3.6		0.02					Figure 14
		R_L =32 Ω , V_{IN} =2 V_{PP} , f=20 to 20kHZ	2.3. to 2.7		0.02					

Capacitance

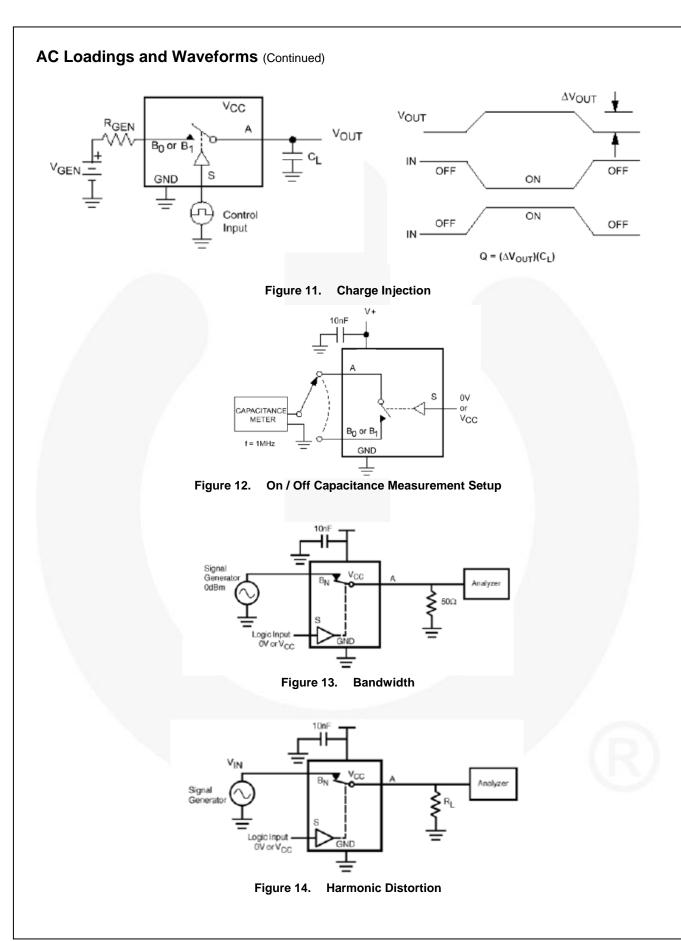
Symbol	Parameter	Condition	V _{cc}	T _A = +25⁰C Typical	Unit	Figure
C _{IN}	Control Pin Input Capacitance	f=1MHZ	0	1.5	pF	Figure 8
C _{OFF}	B Port Off Capacitance	f=1MHZ	3.3	32	pF	Figure 8
C _{ON}	A Port On Capacitance	f=1MHZ	3.3	118	рF	Figure 8

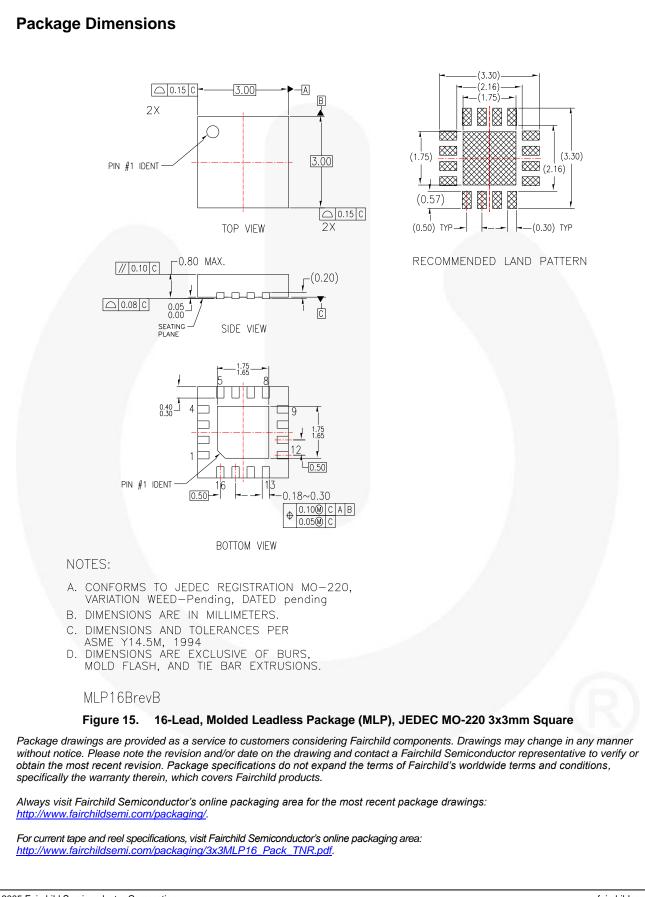


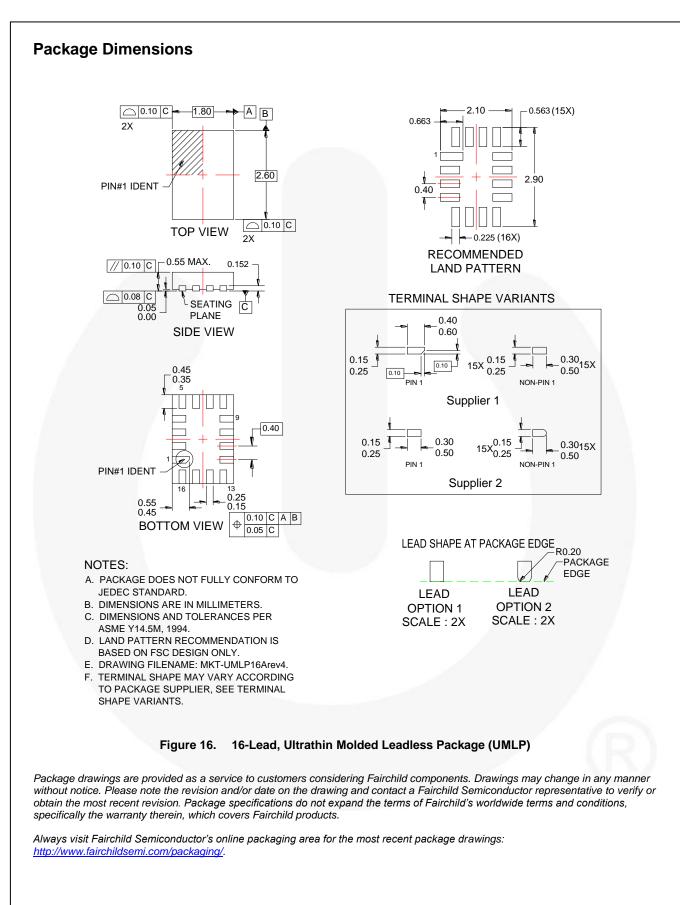
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