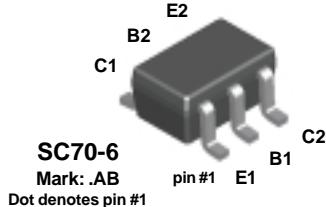
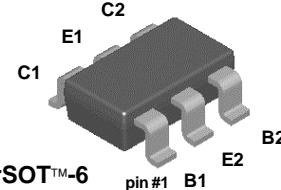


**FFB3946**

TRANSISTOR TYPE		
C1	B1	E1
C2	B2	E2

FMB3946**NPN & PNP General Purpose Amplifier**

This complementary device is designed for use as a general purpose amplifier and switch. The useful dynamic range extends to 100 mA as a switch and 100 MHz as an amplifier. Sourced from Process 23 and 66. See FFB3904 (NPN) and FFB3906 (PNP) for characteristics.

Absolute Maximum Ratings*

T_A = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	40	V
V _{CBO}	Collector-Base Voltage	40	V
V _{EBO}	Emitter-Base Voltage	5.0	V
I _C	Collector Current - Continuous	200	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- 3) All voltages (V) and currents (A) are negative polarity for PNP transistors.

Thermal Characteristics

T_A = 25°C unless otherwise noted

Symbol	Characteristic	Max		Units
		FFB3946	FMB3946	
P _D	Total Device Dissipation Derate above 25°C	300 2.4	700 5.6	mW mW/°C
R _{θJA}	Thermal Resistance, Junction to Ambient	415	180	°C/W

NPN & PNP General Purpose Amplifier

(continued)

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}, I_B = 0$	40			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \mu\text{A}, I_E = 0$	40			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	5.0			V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 30 \text{ V}, I_E = 0$			50	nA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 4.0 \text{ V}, I_C = 0$			50	nA
ON CHARACTERISTICS						
h_{FE}	DC Current Gain	$I_C = 100 \mu\text{A}, V_{CE} = 1.0 \text{ V}$ $I_C = 1.0 \text{ mA}, V_{CE} = 1.0 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 1.0 \text{ V}$ $I_C = 50 \text{ mA}, V_{CE} = 1.0 \text{ V}$ $I_C = 100 \text{ mA}, V_{CE} = 1.0 \text{ V}$	40 70 100 60 30		300	
$V_{CE(\text{sat})}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$			0.25	V
$V_{BE(\text{sat})}$	Base-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$			0.9	V
SMALL SIGNAL CHARACTERISTICS						
f_T	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}, V_{CE} = 20 \text{ V}, f = 100 \text{ MHz}$		200		MHz
C_{obo}	Output Capacitance	$V_{CB} = 5.0 \text{ V}, f = 100 \text{ kHz}$		4.5		pF
C_{ibo}	Input Capacitance	$V_{CB} = 5.0 \text{ V}, f = 100 \text{ kHz}$		10		pF

NOTE: All voltages (V) and currents (A) are negative polarity for PNP transistors.

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E ² CMOS™	MICROWIRE™	SILENT SWITCHER®	
EnSigna™	OPTOLOGIC™	SMART START™	
FACT™	OPTOPLANAR™	SuperSOT™-3	
FACT Quiet Series™	PACMAN™	SuperSOT™-6	
FAST®	POP™	SuperSOT™-8	

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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.
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order 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.

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