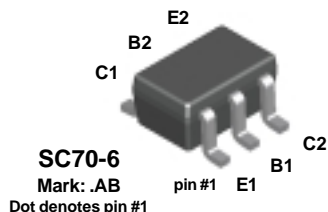
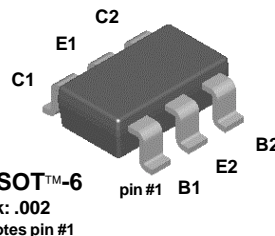


FFB3946



FMB3946

TRANSISTOR TYPE			
C1	B1	E1	NPN
C2	B2	E2	PNP



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*

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

Symbol	Parameter	Value	Units
V_{CE0}	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	$^\circ\text{C}$

*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

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

Symbol	Characteristic	Max		Units
		FFB3946	FMB3946	
P_D	Total Device Dissipation	300	700	mW
	Derate above 25°C	2.4	5.6	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	415	180	$^\circ\text{C}/\text{W}$

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
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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		300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10\text{ mA}, I_B = 1.0\text{ mA}$			0.25	V
$V_{BE(sat)}$	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.

FFB3946 / FMB3946

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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.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order 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 in order to improve design.
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