

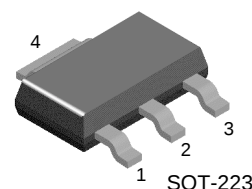


FZT3019

NPN General Purpose Amplifier

Features

- This device is designed for general purpose medium power amplifiers and switches requiring collector currents to 500 mA and collector voltages up to 80 V.
- Sourced from process 12.



1. Base 2. Collector 3. Emitter

Absolute Maximum Ratings * $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	80	V
V_{CBO}	Collector-Base Voltage	140	V
V_{EBO}	Emitter-Base Voltage	7.0	V
I_C	Collector current - Continuous	1.0	A
T_J, T_{stg}	Junction and Storage Temperature	-55 ~ +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.

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

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Sustaining Voltage *	$I_C = 30 \text{ mA}, I_B = 0$	80		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}, I_E = 0$	140		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \mu\text{A}, I_C = 0$	7.0		Vn
I_{CBO}	Collector Cutoff Current	$V_{CB} = 90 \text{ V}, I_E = 0$ $V_{CB} = 90 \text{ V}, I_E = 0, T_a = 150^\circ\text{C}$		10 10	nA μA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 5 \text{ V},$		10	nA
On Characteristics					
h_{FE}	DC Current Gain	$I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 1.0 \text{ A}, V_{CE} = 10 \text{ V}$	50 90 100 50 15	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$		0.2 0.5	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$		1.1	V
Small Signal Characteristics					
f_T	Current Gain - Bandwidth Product	$I_C = 50 \text{ mA}, V_{CE} = 10 \text{ V}, f = 20 \text{ MHz}$	100		MHz
C_{cob}	Collector-Base Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$		12	pF
C_{ibo}	Input Capacitance	$V_{BE} = 0.5 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$		60	pF
h_{fe}	Small Signal current Gain	$I_C = 50 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 20 \text{ MHz}$	80	400	
$rb'Cc$	Collector Base Time Constant	$I_C = 10 \text{ mA}, V_{CB} = 10 \text{ V}, f = 4.0 \text{ MHz}$		400	pS
NF	Noise Figure	$I_C = 100 \text{ mA}, V_{CE} = 10 \text{ V},$ $R_S = 1.0\text{k}\Omega, f = 1.0\text{KHz}$		4.0	dB

* Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$

Thermal Characteristics $T_a=25^{\circ}\text{C}$ unless otherwise noted

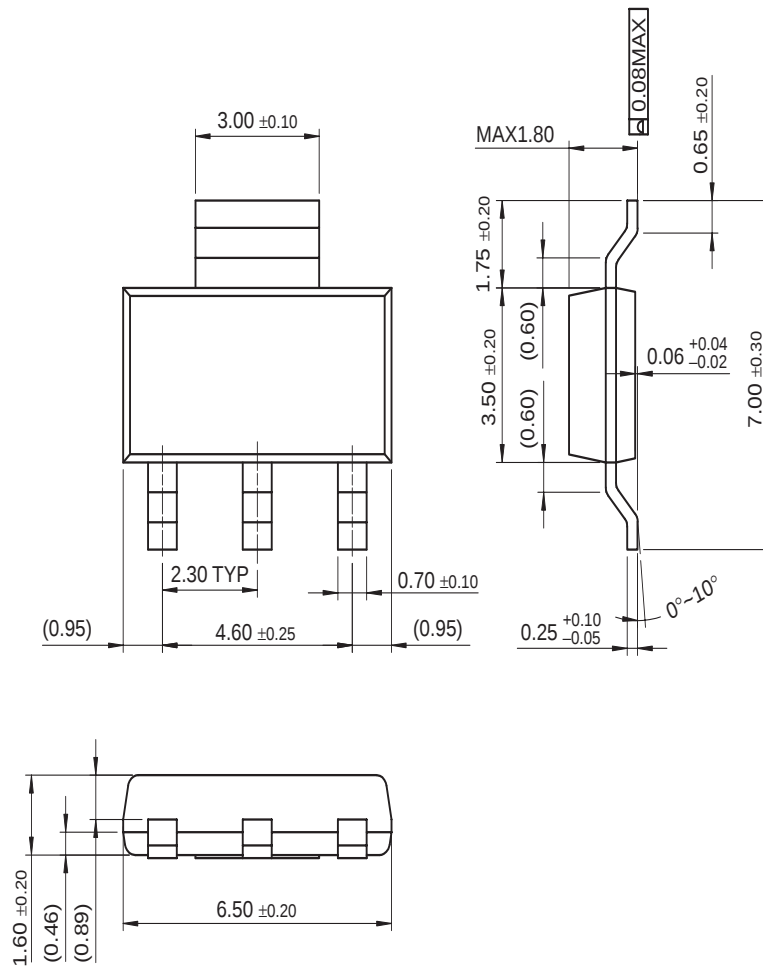
Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	1.0 8.0	W $\text{mW}/^{\circ}\text{C}$
$R_{\theta JA}^*$	Thermal Resistance, Junction to Ambient	125	$^{\circ}\text{C}/\text{W}$

NOTES :

* Device mounted on FR-4 PCB $36\text{mm} \times 18\text{mm} \times 1.5\text{mm}$, Mounting Pad for the collector lead is 600mm^2

Package Dimensions

SOT-223



Dimensions in Millimeters

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.

ACE [™]	FAST [®]	ISOPLANAR [™]	PowerEdge [™]	SuperFET [™]
ActiveArray [™]	FAST [™]	LittleFET [™]	PowerSaver [™]	SuperSOT [™] -3
Bottomless [™]	FPS [™]	MICROCOUPLER [™]	PowerTrench [®]	SuperSOT [™] -6
Build it Now [™]	FRFET [™]	MicroFET [™]	QFET [®]	SuperSOT [™] -8
CoolFET [™]	GlobalOptoisolator [™]	MicroPak [™]	QS [™]	SyncFET [™]
CROSSVOLT [™]	GTO [™]	MICROWIRE [™]	QT Optoelectronics [™]	TCM [™]
DOME [™]	HiSeC [™]	MSX [™]	Quiet Series [™]	TinyLogic [®]
EcoSPARK [™]	I ² C [™]	MSXPro [™]	RapidConfigure [™]	TINYOPTO [™]
E ² CMOS [™]	i-Lo [™]	OCX [™]	RapidConnect [™]	TruTranslation [™]
EnSigna [™]	ImpliedDisconnect [™]	OCXPro [™]	μSerDes [™]	UHC [™]
FACT [™]	IntelliMAX [™]	OPTOLOGIC [®]	ScalarPump [™]	UltraFET [®]
FACT Quiet Series [™]		OPTOPLANAR [™]	SILENT SWITCHER [®]	UniFET [™]
Across the board. Around the world. [™]		PACMAN [™]	SMART START [™]	VCX [™]
The Power Franchise [®]		POP [™]	SPM [™]	Wire [™]
Programmable Active Droop [™]		Power247 [™]	Stealth [™]	

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, or (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 significant injury to the user.
2. A critical component is 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, 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.
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. I19