

# NPN SILICON PLANAR HIGH SPEED SWITCHING TRANSISTORS

**ZTX320 ZTX321  
ZTX322 ZTX323**

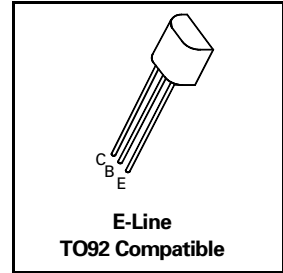
**ISSUE 3 – APRIL 94**

## FEATURES

- \* 15 Volt  $V_{CEO}$
- \*  $f_T=600$  MHz

## APPLICATIONS

- \* VHF/UHF operation



## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	30	V
Collector-Emitter Voltage	$V_{CEO}$	15	V
Emitter-Base Voltage	$V_{EBO}$	3	V
Base Current	$I_B$	100	mA
Continuous Collector Current	$I_C$	500	mA
Power Dissipation at $T_{amb}=25^\circ\text{C}$	$P_{tot}$	300	mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +175	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ ).

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	30		V	$I_C=10\mu\text{A}, I_E=0$
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	15		V	$I_C=10\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	3		V	$I_E=10\mu\text{A}, I_C=0$
Collector Cut-Off Current	$I_{CBO}$		0.01	$\mu\text{A}$	$V_{CB}=15\text{V}, I_E=0$
Emitter Cut-Off Current	$I_{EBO}$		0.2	$\mu\text{A}$	$V_{EB}=2\text{V}, I_C=0$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.4	V	$I_C=10\text{mA}, I_B=1\text{mA}$
ZTX320, ZTX322			0.4	V	$I_C=10\text{mA}, I_B=1\text{mA}$
ZTX323			0.4	V	$I_C=3\text{mA}, I_B=0.3\text{mA}$
ZTX321					
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		1.0	V	$I_C=10\text{mA}, I_B=1\text{mA}$
ZTX320, ZTX322			1.0	V	$I_C=10\text{mA}, I_B=1\text{mA}$
ZTX323			1.0	V	$I_C=3\text{mA}, I_B=0.3\text{mA}$
ZTX321					
Static Forward Current Transfer Ratio	$h_{FE}$	20	300		$I_C=3\text{mA}, V_{CE}=1\text{V}$
ZTX320, ZTX321		20	150		$I_C=3\text{mA}, V_{CE}=1\text{V}$
ZTX322		20	150		$I_C=3\text{mA}, V_{CE}=1\text{V}$
ZTX323		100	300		$I_C=3\text{mA}, V_{CE}=1\text{V}$
Output Capacitance	$C_{obo}$		1.7	pF	$V_{CB}=10\text{V}, f=1\text{MHz}$
Input Capacitance	$C_{ibo}$		1.6	pF	$V_{EB}=0.5\text{V}, f=1\text{MHz}$
Transition Frequency at $f=100\text{MHz}$	$f_T$	600	400	MHz	$I_C=4\text{mA}, V_{CE}=10\text{V}$
				MHz	$I_C=30\text{mA}, V_{CE}=10\text{V}$
Noise Figure	N		6	dB	$I_E=1\text{mA}, V_{CE}=6\text{V}$ $R_S=400\Omega, f=60\text{MHz}$
Power Gain	$g_{pe}$		typical 15	dB	$I_C=6\text{mA}, V_{CB}=12\text{V}$ $f=200\text{MHz}$

**ZTX320 ZTX321**  
**ZTX322 ZTX323**

**TYPICAL CHARACTERISTICS**

