



ZTX310 (BSV23)
 ZTX311 (BSV24)
 ZTX312 (BSV25)
 ZTX313 (BSV26)
 ZTX314 (BSV27)

NPN Silicon Planar High Speed Switching Transistors

358-034

DESCRIPTION

These are plastic encapsulated transistors specifically designed for high speed switching applications and are also useful where very short storage times and low capacitance are required.

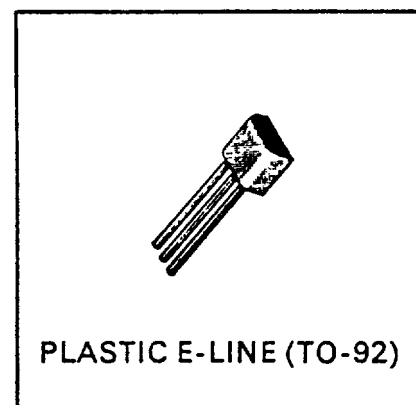
The E-line package is formed by injection moulding a SILICONE plastic specially selected to provide a rugged one-piece encapsulation resistant to severe environments and allow the high junction temperature operation normally associated with metal can devices.

E-line encapsulated devices are approved for use in military, industrial and professional equipments.

Alternative lead configurations are available as plug-in replacements of TO-5/39 and TO-18 metal can types, and for flat mounting.

The ZTX310 series transistors have been approved for use in military equipment and are identified by the following numbers:

BS 9365 F040 to F044 – Category P.



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	ZTX310	ZTX311	ZTX312	ZTX313	ZTX314	Unit
Collector-Base Voltage	V_{CBO}	25	20	30	40	40	Volts
Collector-Emitter Voltage	V_{CEO}	12	15	12	15	15	Volts
Emitter-Base Voltage	V_{EBO}	3	5	5	5	5	Volts
Continuous Collector Current	I_C	500	500	500	500	500	mA
Base Current	I_B	100	100	100	100	100	mA
Power Dissipation (at $T_{amb} = 25^\circ\text{C}$)	P_{tot}	300	300	300	300	300	mW
Operating and Storage Temp. Range		-55 to +175					$^\circ\text{C}$

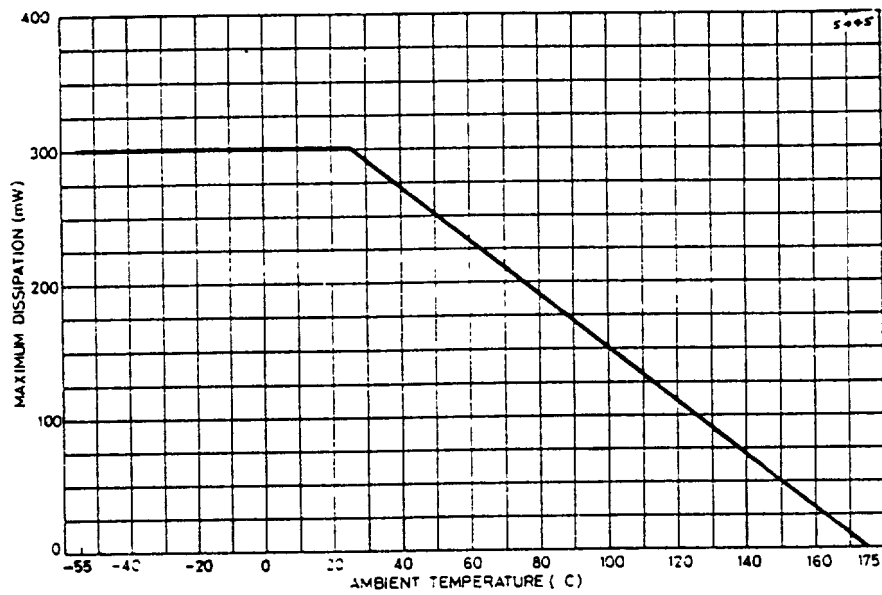
ZTX310 Series

CHARACTERISTICS (at 25°C ambient temperature unless otherwise stated).

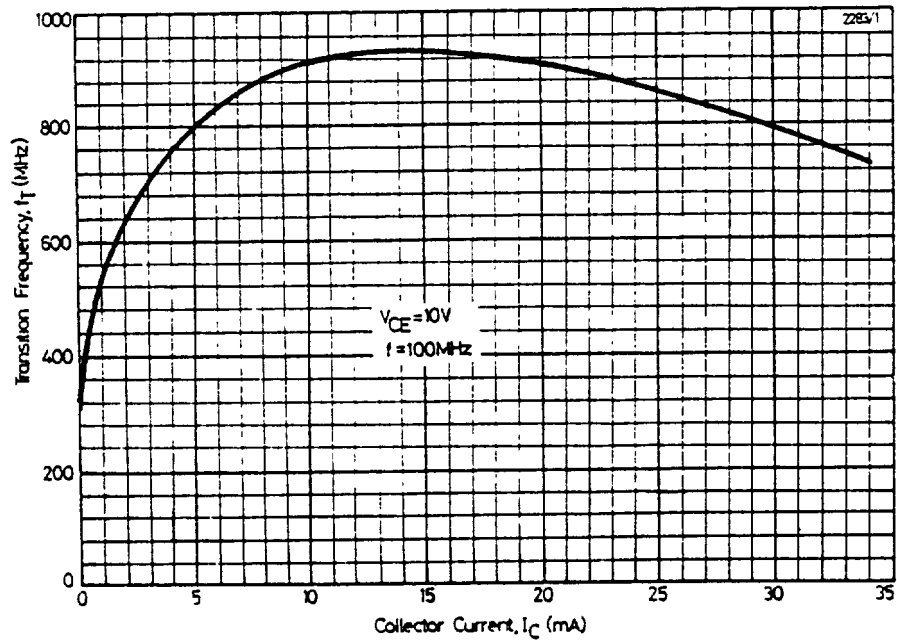
Parameter	Symbol	ZTX310 (BSV23)	ZTX311 (BSV24)	ZTX312 (BSV25)	ZTX313 (BSV26)	ZTX314 (BSV27)	Unit	Conditions
Max. Collector-base cut off current at $T_{amb} = 25^{\circ}\text{C}$	I_{CBO}	200	200	200	200	200	nA	$V_{CB} = 15\text{V}$ (ZTX310, 311)
at $T_{amb} = 100^{\circ}\text{C}$		30	30	30	30	30	μA	$V_{CB} = 20\text{V}$ (ZTX312, 313 and 314)
Min. Collector-base breakdown voltage	$V_{(BR)CBO}$	25	20	30	40	40	V	$I_C = 10\text{ }\mu\text{A}$
Min. Collector-emitter sustaining voltage	$V_{CEO(sus)}$	12	15	12	15	15	V	$I_C = 10\text{ mA}^*$
Max. Collector-emitter saturation voltage	$V_{CE(sat)}$	0.6	—	0.24	0.24	0.2	V	$I_C = 10\text{ mA}$ $I_B = 1\text{ mA}^*$
		—	—	—	—	0.5	V	$I_C = 100\text{ mA}$ $I_B = 10\text{ mA}^*$
Base-emitter saturation voltage	$V_{BE(sat)}$	0.75	0.7	0.7	0.7	0.7	V	$I_C = 10\text{ mA}$ $I_B = 1\text{ mA}^*$
Min.		0.9	0.9	0.85	0.85	0.85	V	$I_C = 100\text{ mA}$ $I_B = 10\text{ mA}^*$
Max.		—	—	—	—	1.6	V	
Static forward current transfer ratio :	h_{FE}	20	—	40	40	40		$I_C = 10\text{ mA}$ $V_{CE} = 1\text{V}^*$
Min.		—	—	—	120	120		$I_C = 10\text{ mA}$ $V_{CE} = 0.35\text{V}^*$
Max.		—	50	—	—	40		$I_C = 30\text{ mA}$ $V_{CE} = 1\text{V}^*$
Min.		—	200	—	—	120		$I_C = 100\text{ mA}$ $V_{CE} = 1\text{V}^*$
Max.		—	—	35	—	30		$I_C = 10\text{ mA}$ $V_{CE} = 0.35\text{V}^*$
Min.		—	—	—	15	20		
at $T_{amb} = -55^{\circ}\text{C}$		—	—	20	—	—		
Min. Transition frequency	f_T	200	200	400	500	500	MHz	$I_C = 10\text{ mA}$ $V_{CE} = 10\text{V}$ $f = 100\text{ MHz}$
Max. Output capacitance	C_{obe}	6	6	4	4	4	pF	$V_{CB} = 5\text{V}$ $f = 1\text{ MHz}$
Max. Storage time	t_{stg}	60	25	13	13	13	ns	$I_C = I_{B1} = I_{B2}$ $= 10\text{ mA}$
Max. Turn-on time	t_{on}	—	—	15	12	12	ns	$I_C = 10\text{ mA}$ $I_{B1} = 3\text{ mA}$
Max. Turn-off time	t_{off}	—	—	20	18	18	ns	$I_C = 10\text{ mA}$ $I_{B1} = 3\text{ mA}$ $I_{B2} = 1.5\text{ mA}$

*Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

ZTX310 Series



DERATING CURVE

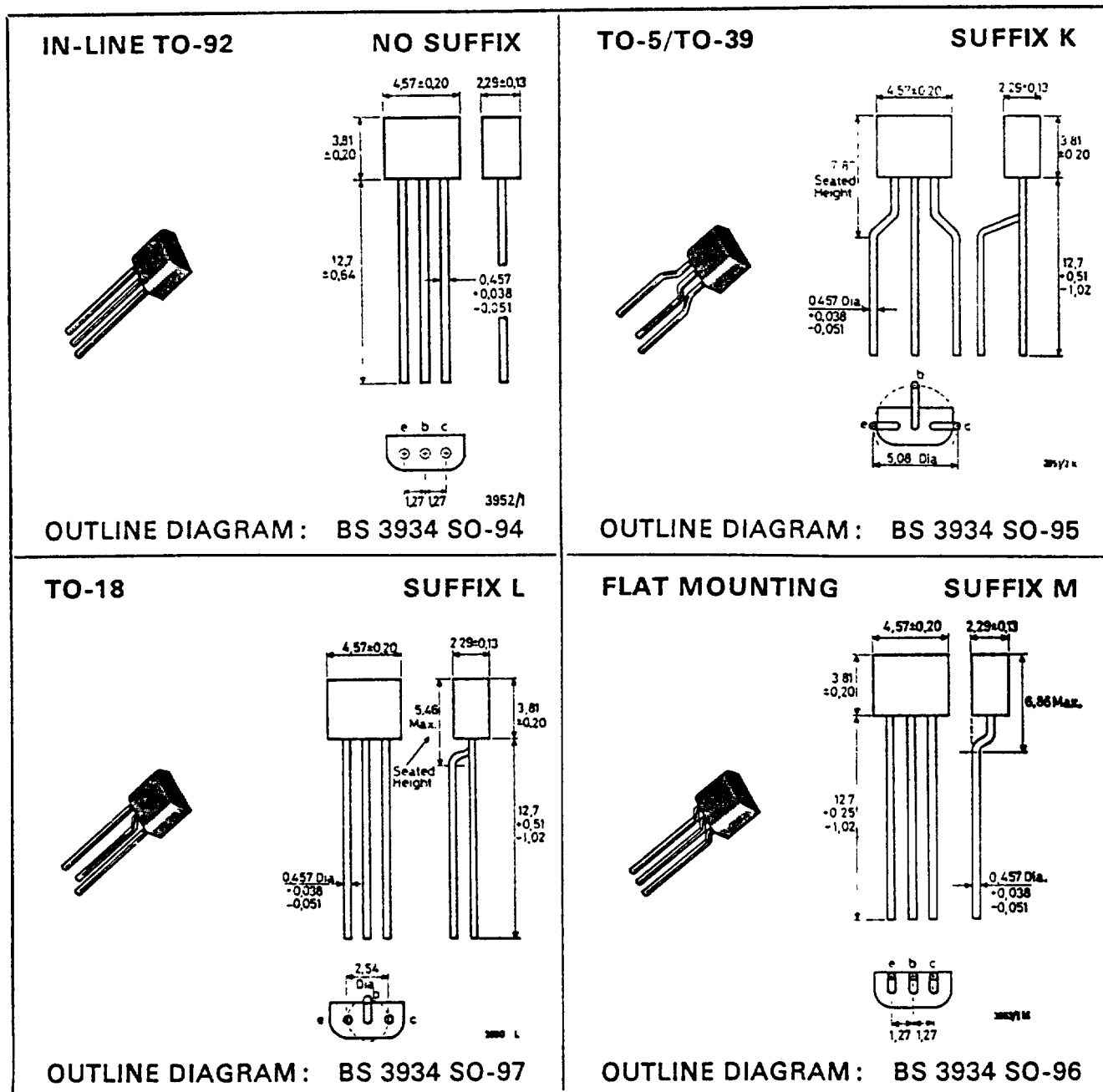


I_C/f_T (ZTX312)

ZTX310 Series

LEAD CONFIGURATIONS

Devices can be ordered with the following lead configurations by adding the indicated suffix to the part number.



© FERRANTI LTD. 1979

The copyright in this work is vested in Ferranti Limited and this document is issued for the purpose only for which it is supplied. No licence is implied for the use of any patented feature. It must not be reproduced in whole or in part, or used for tendering or manufacturing purposes except under an agreement or with the consent in writing of Ferranti Ltd. and then only on the condition that this notice is included in any such reproduction. Information furnished is believed to be accurate but no liability in respect of any use of it is accepted by Ferranti Ltd.

FERRANTI ELECTRONICS LIMITED

FIELDS NEW ROAD, CHADDERTON, OLDHAM OL9 8NP Tel: 061-624 0515 Telex: 668038

Ferranti GmbH, Widenmayerstrasse 5, 8-Munich-22, West Germany
Tel: 089-293871 Telex: 523980

Ferranti Electric Inc., 87 Modular Avenue, Commack, N.Y. 11725, U.S.A.
Tel: 516-543 0200 Telex: 510 226 1490

Interdesign Inc. (a Ferranti company), 1255 Reamwood Avenue, Sunnyvale, California 94086, U.S.A.
Tel: 408-734 8666 Telex: 910 339 9374