358-204

ZTX500 (BCW11)
ZTX501 (BCW13)
ZTX502 (BCW15)
ZTX503 (BCW17)
ZTX504 (BCW19)

GENERAL DESCRIPTION

These plastic encapsulated transistors are designed for small and medium signal amplification from d.c. to radio frequencies. Typical application areas include: Audio Frequency Amplifiers, Drivers and Output Stages, Oscillators and General Purpose Switches.

These transistors are complementary to the ZTX300 series n-p-n transistors and electrically similar to the ZT180 series.

The ZTX500 series transistors have been APPROVED FOR USE IN MILITARY EQUIPMENT and are identified by the following numbers: BS.9365 F031-F035–Category P

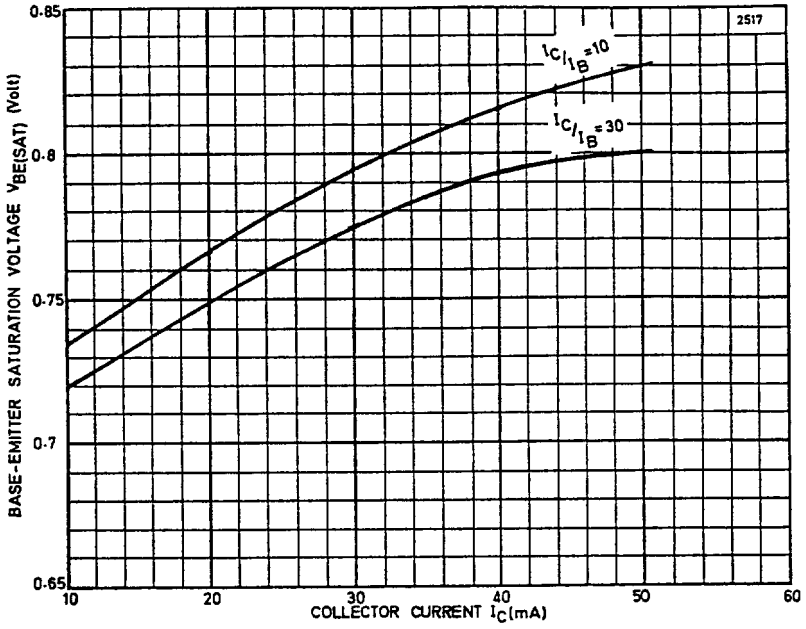
PLASTIC E-LINE

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	ZTX500 (BCW11)	ZTX501 (BCW13)	ZTX502 (BCW15)	ZTX503 (BCW17)	ZTX504 (BCW19)	Units
Collector-Base Voltage	V_{CBO}	–25	–35	–35	–45	–70	Volts
Collector-Emitter Voltage	V_{CEO}	–25	–35	–35	–45	–70	Volts
Emitter-Base Voltage	V_{EB}	–5	–5	–5	–5	–5	Volts
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°C	P_{tot}	300	300	300	300	300	mW
Operating and Storage Temperature Range		–55 to +175					°C

ZTX500 Series

TYPICAL CHARACTERISTIC for the ZTX502



$V_{BE(sat)}/I_C$

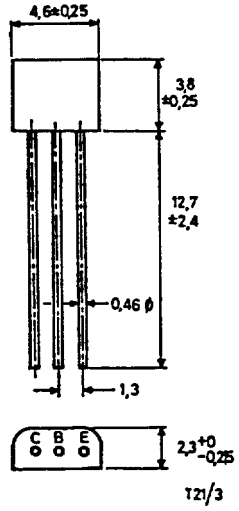
LEAD CONNECTIONS

The device can be supplied to the following lead configurations by using the indicated suffix.

Lead Configuration	Suffix
TO- 5 (SO-95)	K
TO-18 (SO-96)	L
Flat mounting (SO-97)	M

OUTLINE

BS.3934 .. .. SO-94



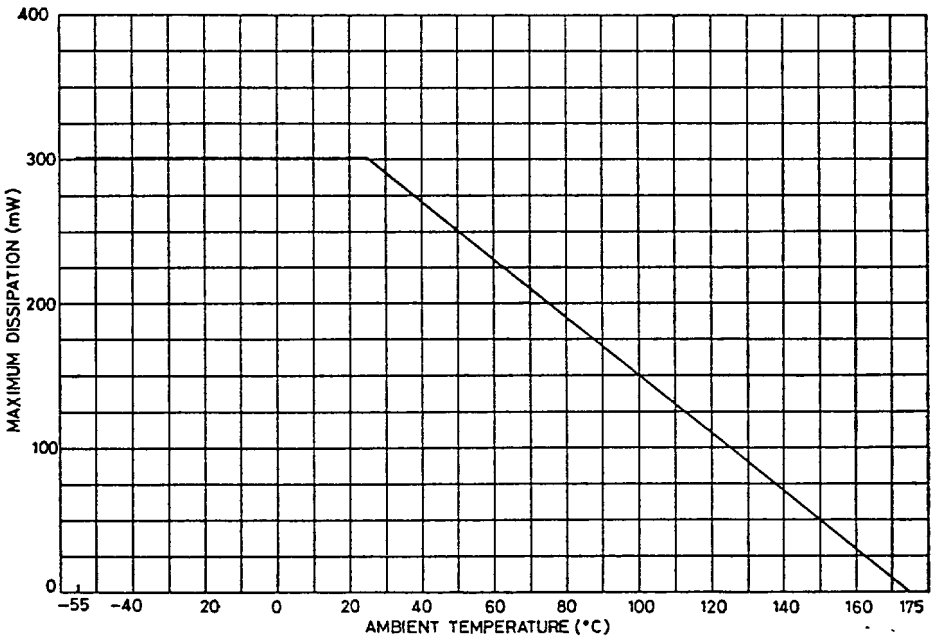
Dimensions in millimetres

ZTX500 Series

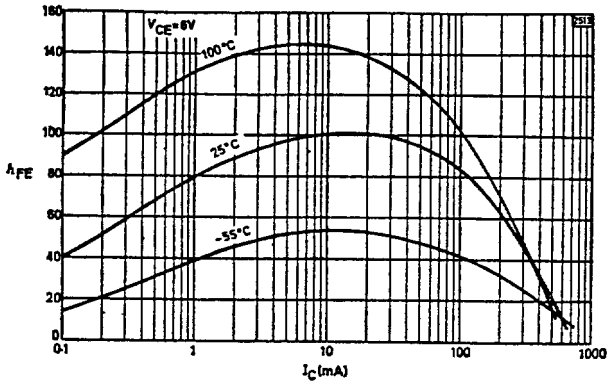
CHARACTERISTICS (at 25°C ambient temperature unless otherwise specified).

Parameter	Symbol	ZTX500 (BCW11)	ZTX501 (BCW13)	ZTX502 (BCW15)	ZTX503 (BCW17)	ZTX504 (BCW19)	Units	Test Conditions
Max. Collector-base cut-off current	I_{CBO}	−0·2 — — —	— −0·2 — —	— −0·2 — —	— — −0·2 —	— — — −0·2	μA μA μA μA	V_{CB} = −25V V_{CB} = −35V V_{CB} = −45V V_{CB} = −70V
Maximum emitter-base cut-off current	I_{EBO}	−0·2	−0·2	−0·2	−0·2	−0·2	μA	V_{EB} = −4V
Minimum collector-emitter sustaining voltage	$V_{CEO(sus)}$	−25	−35	−35	−45	−70	V	I_C = −5 mA
Maximum collector-emitter saturation voltage	$V_{CE(sat)}$	−0·35	−0·25	−0·25	−0·35	−0·60	V	I_C = −50 mA, I_B = −5 mA
Base-emitter saturation voltage Minimum Maximum	$V_{BE(sat)}$	−0·65 −1·0	−0·65 −1·0	−0·65 −1·0	−0·65 −1·0	−0·65 −1·0	V V	I_C = −10 mA, I_B = −1 mA
Static forward current transfer ratio Minimum Maximum Minimum Minimum	h_{FE}	50 300 — —	50 300 — —	100 300 20 50	50 300 — —	50 300 — —		I_C = −10 mA, V_{CE} = −6V I_C = −100 μA, V_{CE} = −6V I_C = −50 mA, V_{CE} = −6V
Minimum transition frequency	f_T	150	150	150	150	150	MHz	I_C = −10 mA, V_{CE} = −6V f = 100 MHz
Maximum output capacitance	C_{obo}	6	6	6	6	6	pF	V_{CB} = −6V, f = 1 MHz
Typical noise figure	N	7	7	7	7	7	dB	I_C = −100 μA, R_S = 1500Ω f = 1 kHz

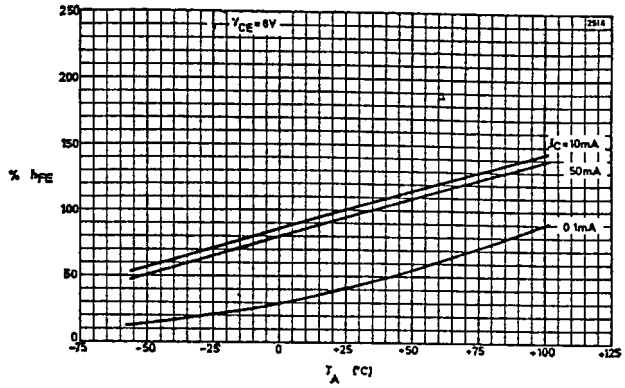
Derating Curve



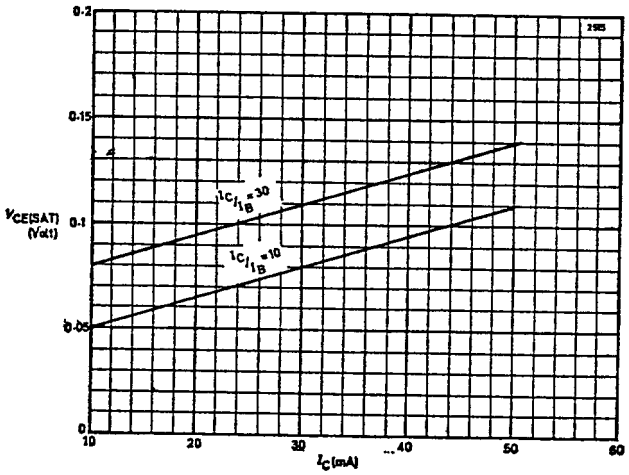
TYPICAL CHARACTERISTICS for the ZTX502



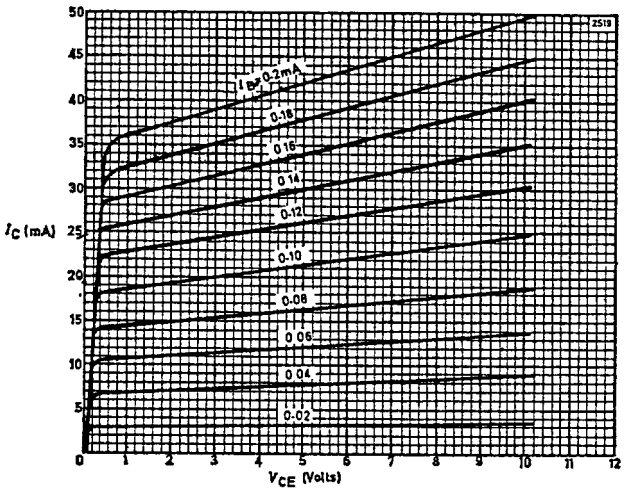
h_{FE}/I_C



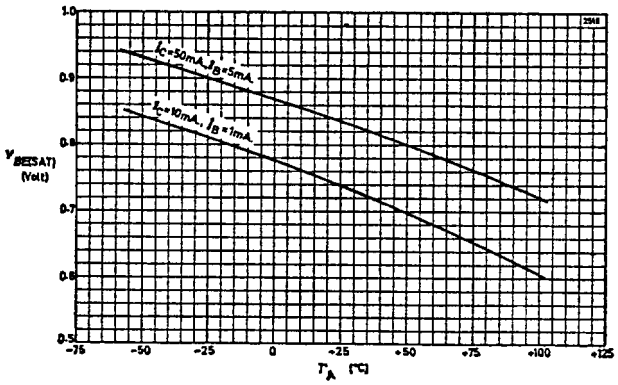
$h_{FE}/T_{ambient}$



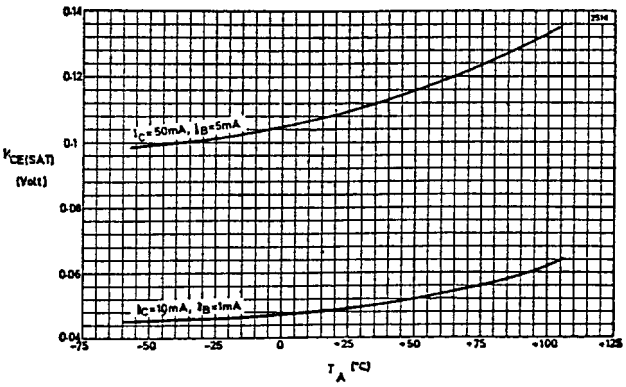
$V_{CE(sat)}/I_C$



I_C/V_{CE}



$V_{BE(sat)}/T_{ambient}$



$V_{CE(sat)}/T_{ambient}$

TABLE 2 : PNP GENERAL PURPOSE

The devices shown in this table are general purpose transistors designed for small signal amplification from d.c. to radio frequencies. Typical application areas include: AUDIO FREQUENCY AMPLIFIERS, DRIVERS and OUTPUT STAGES, OSCILLATORS, AND GENERAL PURPOSE SWITCHES.

Type	V_{CBO} V	V_{CEO} V	Max I_C mA	Max $V_{CE(sat)}$ at V	at I_C mA	at I_B mA	h_{FE} at Min	Max	at I_C mA	Min f_T at MHz	at I_C mA	P_{tot} at $T_{amb}=25°C$ mW	Complement
BC556P	80	65	200	0.25	10	0.5	75	450	2	150*	10	500	BC546P
ZTX504	70	70	500	0.6	50	5	50	300	10	150	10	300	ZTX304
ZTX212	60	50	200	0.25	10	0.5	60	400	2	200	10	500	ZTX107
BC212P	60	50	200	0.6	100	5	60	400	2	200	10	300	BC182P
BC557P	50	45	200	0.25	10	0.5	75	450	2	150*	10	500	BC547P
BC177P	50	45	200	0.2	10	0.5	120	460	2	130	10	300	BC107P
BC307P	50	45	200	0.2	10	0.5	120	460	2	130*	10	300	BC237P
ZTX503	45	45	500	0.35	50	5	50	300	10	150	10	300	ZTX303
ZTX531	45	45	500	0.7	10	0.5	40	120	0.01	30	0.5	250	ZTX331
ZTX213	45	30	200	0.25	10	0.5	80	550	2	200	10	500	ZTX108
BC213P	45	30	200	0.6	100	5	80	600	2	200	10	300	BC183P
ZTX502	35	35	500	0.25	50	5	100	300	10	150	10	300	ZTX302
ZTX501	35	35	500	0.25	50	5	50	300	10	150	10	300	ZTX301
ZTX530	30	30	500	0.7	10	0.5	100	400	0.1	30	0.5	250	ZTX330
BC558P	30	30	200	0.25	10	0.5	75	800	2	150*	10	500	BC548P
BC178P	30	25	200	0.2	10	0.5	120	800	2	130	10	300	BC108P
BC308P	30	25	200	0.2	10	0.5	120	800	2	130*	10	300	BC238P
ZTX500	25	25	500	0.35	50	5	50	300	10	150	10	300	ZTX300

* Typical