



ZTX107
ZTX108
ZTX109

NPN Silicon Planar General Purpose Transistors

DESCRIPTION

357-900/923

These are plastic encapsulated general purpose transistors designed for small and medium signal amplifications from d.c. to radio frequencies.

Application areas include: Audio Frequency Amplifiers, Driver and Output Stages, Oscillators and General Purpose Switches.

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.

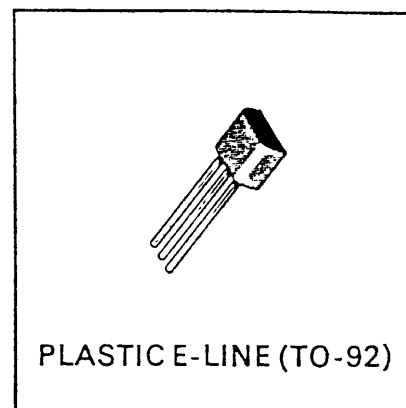
E-line encapsulated devices are approved for use in military, industrial and professional equipments.

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

The basic types, ZTX107, 108 and 109 are similar to the BC107, 108 and 109 series of transistors.

The ZTX107 series of transistors have been APPROVED FOR USE IN MILITARY EQUIPMENT and are identified by the following numbers:

BS 9365 F028 to 030 – Category P



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	ZTX107	ZTX108	ZTX109	Unit
Collector-Base Voltage	V_{CBO}	60	45	45	Volts
Collector-Emitter Voltage	V_{CEO}	50	30	30	Volts
Emitter-Base Voltage	V_{EBO}	5	5	5	Volts
Continuous Collector Current	I_C	100	100	100	mA
Base Current	I_B	20	20	20	mA
Power Dissipation (at $T_{amb} = 25^\circ\text{C}$)	P_{tot}	300	300	300	mW
Operating and Storage Temperature Range		-55 to +175			$^\circ\text{C}$

ZTX107 Series

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

Parameter	Symbol	ZTX107		ZTX108		ZTX109		Unit	Conditions
		Min.	Max.	Min.	Max.	Min.	Max.		
Collector-base cut off current	I_{CBO}	—	0.015	—	—	—	—	μA	$V_{CB} = 50V$
		—	—	—	0.015	—	0.015	μA	$V_{CB} = 30V$
Emitter-base cut off current	I_{EBO}	—	0.015	—	0.015	—	0.015	μA	$V_{EB} = 3V$
Emitter-base voltage	V_{BE}	0.6	0.7	0.6	0.7	0.6	0.7	V	$I_C = 2 mA, V_{CE} = 5V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	100* 200*		100* 200*		100* 200*		mV mV	$I_C = 10 mA, I_B = 1 mA^\dagger$ $I_C = 100 mA$ $I_B = 10 mA^\dagger$
Static forward current transfer ratio ZTX107, 108, 109 ZTX107A, 108A ZTX107B, 108B, 109B ZTX108C, 109C	h_{FE}	40	130*	40	300*	100	300*		$I_C = 10 \mu A, V_{CE} = 5V$
		125	500	125	900	240	900		$I_C = 2 mA, V_{CE} = 5V$
		125	260	125	260	—	—		
		240	500	240	500	240	500		
		—	—	450	900	450	900		
Transition frequency	f_T	115*		115*		115*		MHz	$I_C = 0.05 mA, V_{CE} = 5V$ $f = 100 MHz$
		350*		350*		350*		MHz	$I_C = 10 mA, V_{CE} = 5V$ $f = 100 MHz$
Output capacitance	C_{obo}	—	4.5*	—	4.5*	—	4.5*	pF	$V_{CB} = 5V, f = 1 MHz$
Noise figure	N	—	10	—	10	—	4	dB	$V_{CE} = 5V, I_C = 10 \mu A$ $f = 1 kHz, R_s = 2 k\Omega$
Dynamic characteristics	h_{ie}	4.8*		4.8*		7.3*		k Ω	$V_{CE} = 5V$ $I_C = 2 mA$ $f = 1 kHz$
	h_{re}	4.1*		4.1*		6.4*		$\times 10^{-4}$	
	h_{fe}	125	550	125	1000	240	1000		
	h_{oe}	30*		30*		40*		μmho	

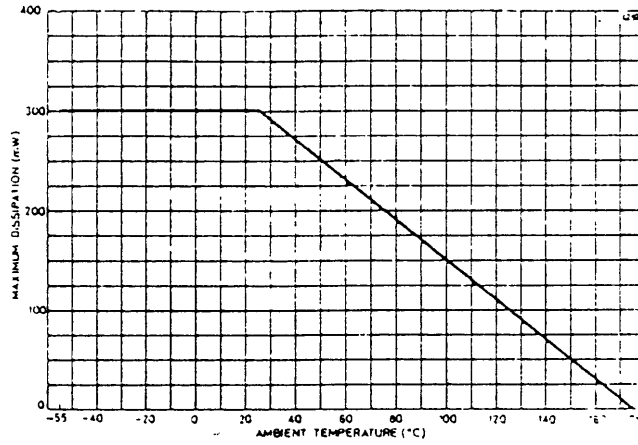
*Typical values.

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

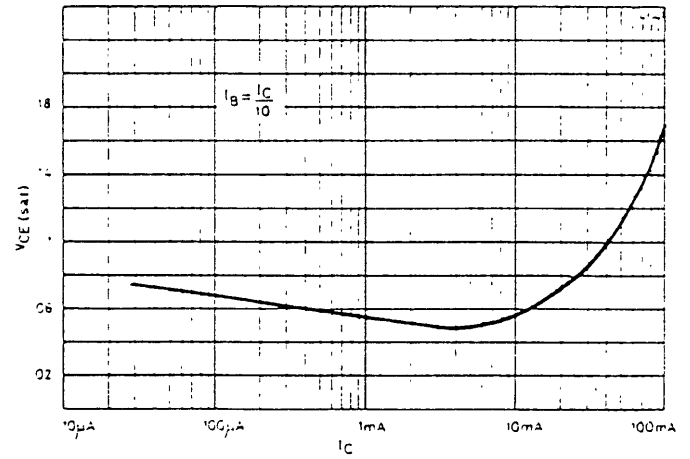
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ZTX107 Series

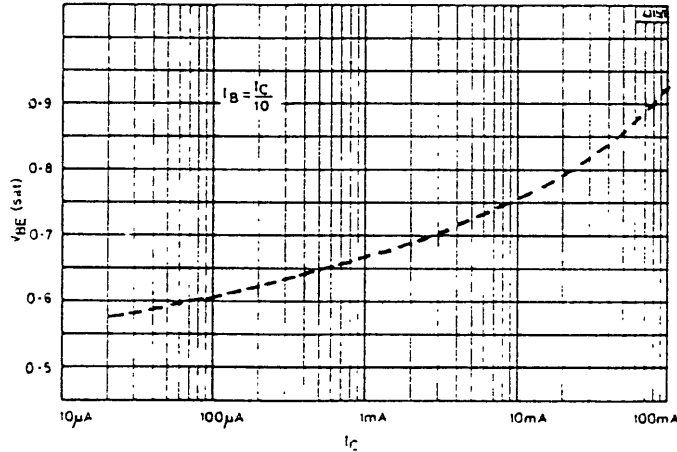
TYPICAL CHARACTERISTICS



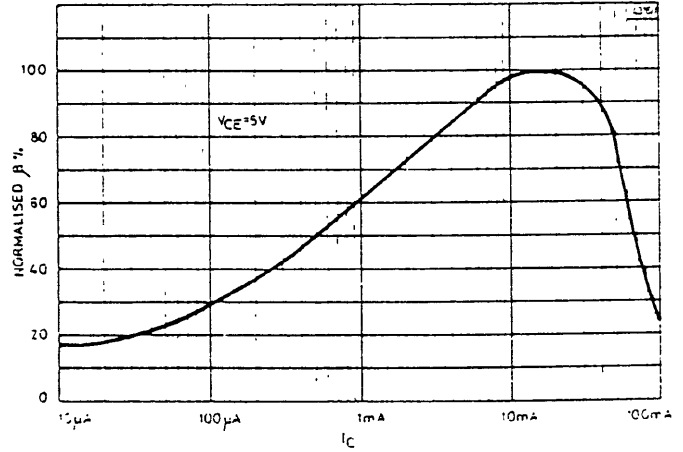
DERATING CURVE



$V_{CE(sat)}/I_C$



$V_{BE(sat)}/I_C$



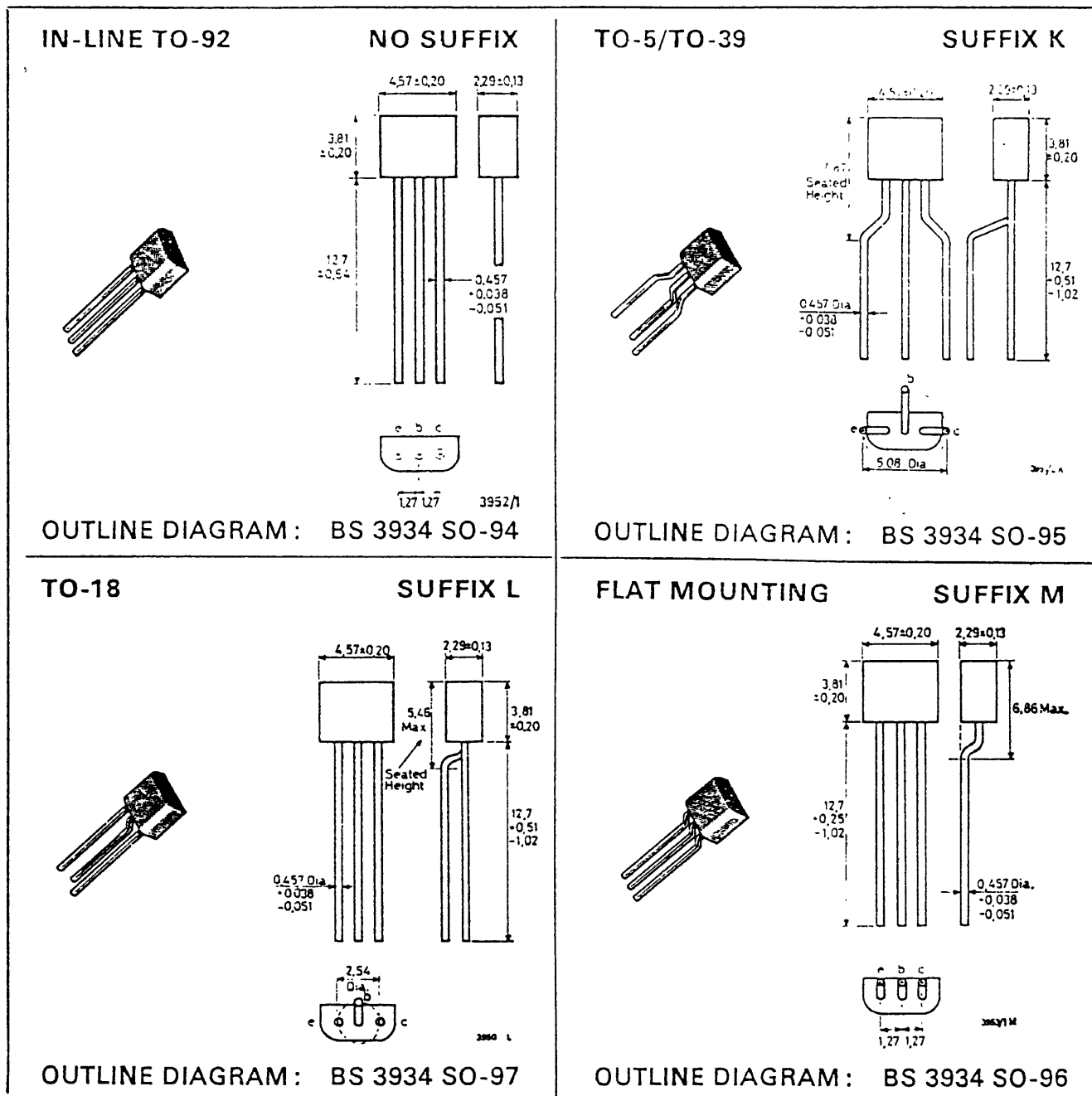
$\% \beta / I_C$

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ZTX107 Series

LEAD CONFIGURATIONS

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



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