NPN Silicon Planar Medium Power Transistors

ZTX454
ZTX455

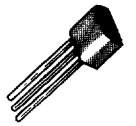
DESCRIPTION

These are plastic encapsulated, general purpose transistors deigned for small and medium signal amplification from d.c. to radio frequencies.

Application areas include: audio frequency amplifiers, drivers and output stages, oscillators and general purpose switching.

The E-line package is formed by transfer 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.



Plastic E-Line
(TO-92 Compatible)

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

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	ZTX454	ZTX455	Unit
Collector-base voltage	V_{CBO}	140	160	V
Collector-emitter voltage	V_{CEO}	120	140	V
Emitter-base voltage	V_{EBO}	5		V
Peak pulse current (see note below)	I_{CM}	2		A
Continuous direct current	I_C	1		A
Base current	I_B	200		mA
Power dissipation at $T_{amb} = 25°C$ at $T_{case} = 25°C$	P_{tot}	1 2		W W
Operating and storage temp. range	T_j;T_{stg}	−55 to +200		°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Maximum	Unit
Thermal resistance: Junction to ambient Junction to case	$R_{th(j\text{-}amb)}$ $R_{th(j\text{-}case)}$	175 87.5	°C/W °C/W

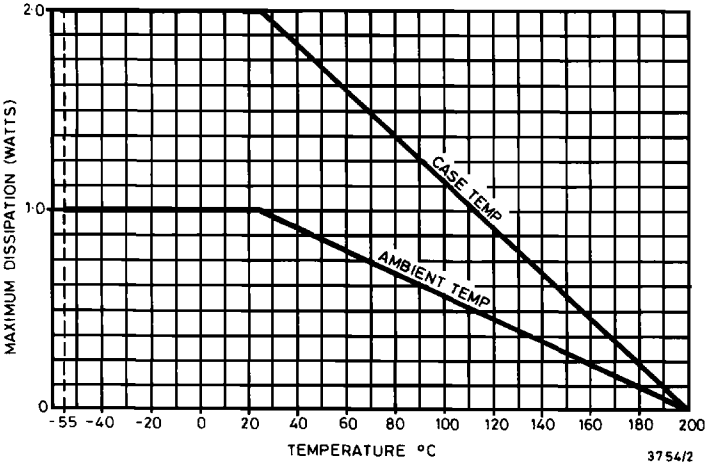
Note: Consult Safe Operating Area graph for conditions.

ZTX454 ZTX455

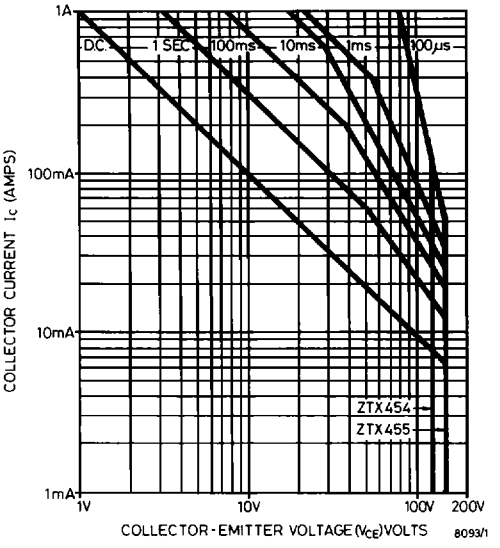
CHARACTERISTICS (at $T_{amb} = 25°C$ unless otherwise stated).

Parameter	Symbol	ZTX454			ZTX455			Unit	Conditions
		Min.	Typ.	Max.	Min.	Typ.	Max.		
Collector-base cut-off current	I_{CBO}	–	–	0.1	–	–	–	μA	$V_{BC} = 120V$
		–	–	–	–	–	0.1	μA	$V_{CB} = 140V$
Emitter-base cut-off current	I_{EBO}	–	–	0.1	–	–	0.1	μA	$V_{EB} = 4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	–	–	0.7	–	–	0.7	V	$I_C = 150mA$, $I_B = 15mA$
		–	–	1	–	–	–	V	$I_C = 200mA$, $I_B = 20mA$
Collector-emitter sustaining voltage	$V_{CEO(sus)}$	120	–	–	140	–	–	V	$I_C = 10mA$
Static forward current transfer ratio	h_{FE}	100	–	300	100	–	300		$I_C = 150mA$, $V_{CE} = 10V$*
		30	–	–	–	–	–		$I_C = 200mA$, $V_{CE} = 1V$*
		–	10	–	–	10	–		$I_C = 1A$, $V_{CE} = 10V$*
Transition frequency	f_T	100	–	–	100	–	–	MHz	$I_C = 50mA$, $V_{CE} = 10V$ $f = 100MHz$
Output capacitance	C_{obo}	–	–	15	–	–	15	pF	$V_{CB} = 10V$, $f = 1MHz$

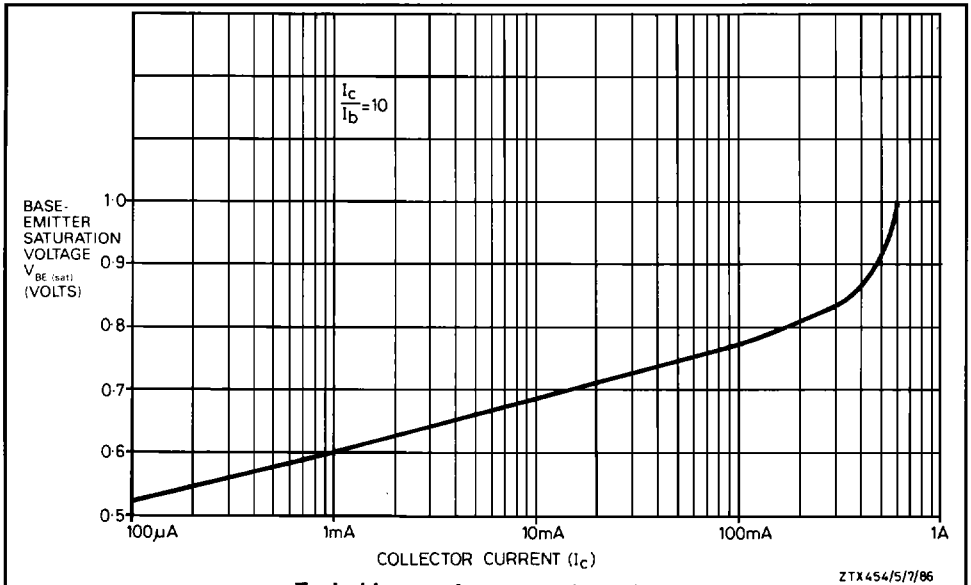
*Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.



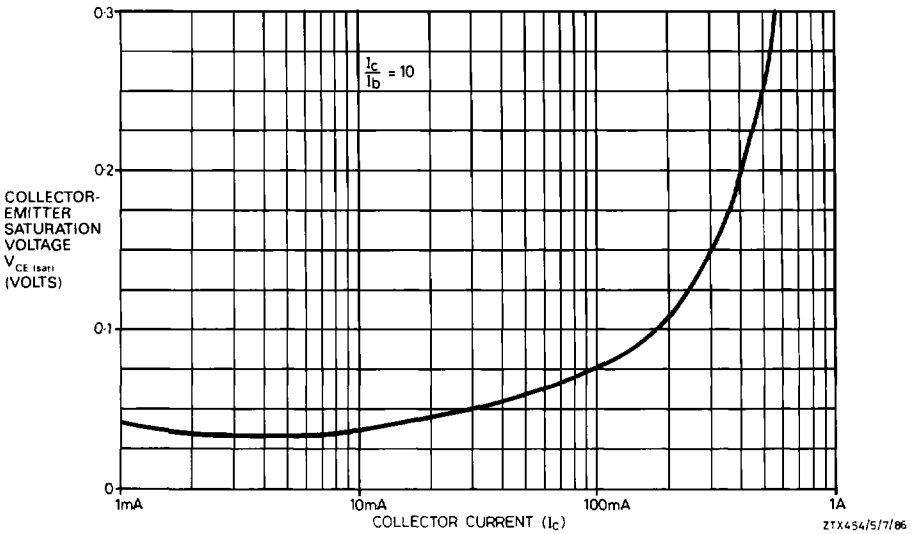
Dissipation derating curve



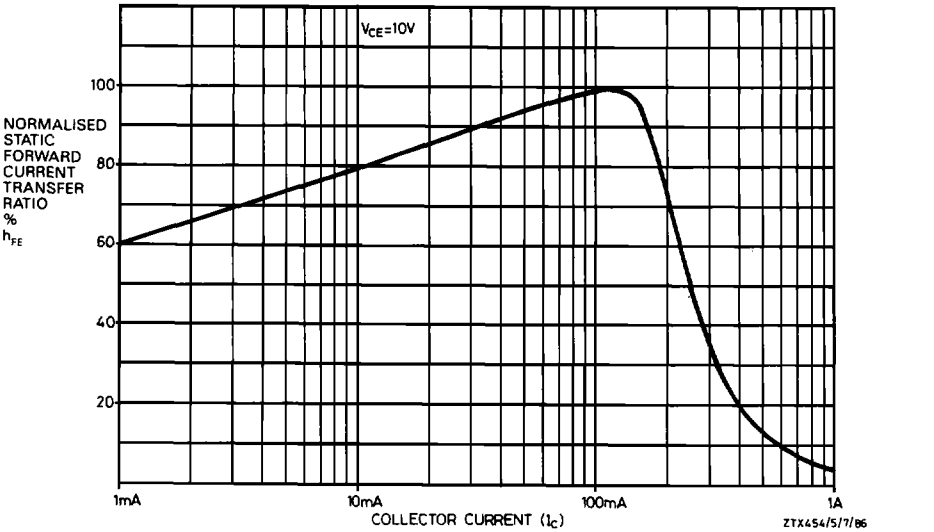
Safe operating area at $T_{amb} = 25°C$ (single-pulse)



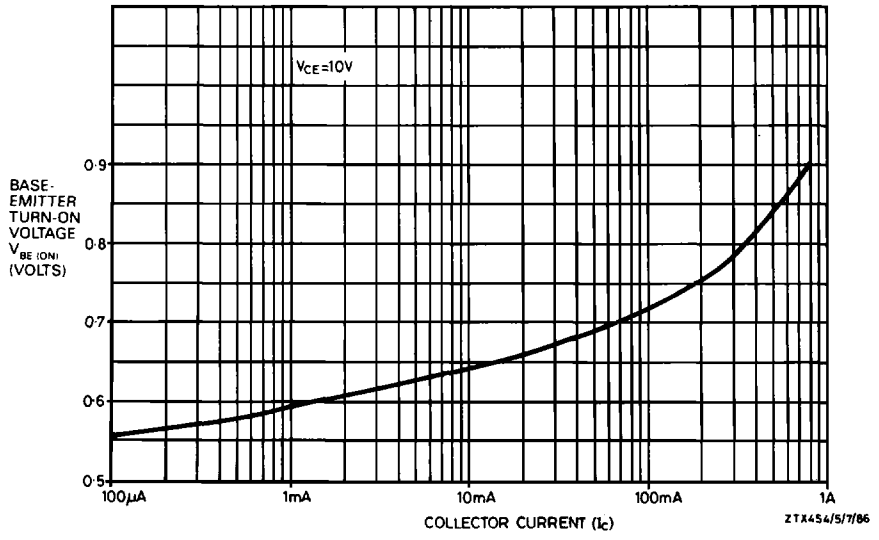
Typical base-emitter saturation voltage plotted against collector current



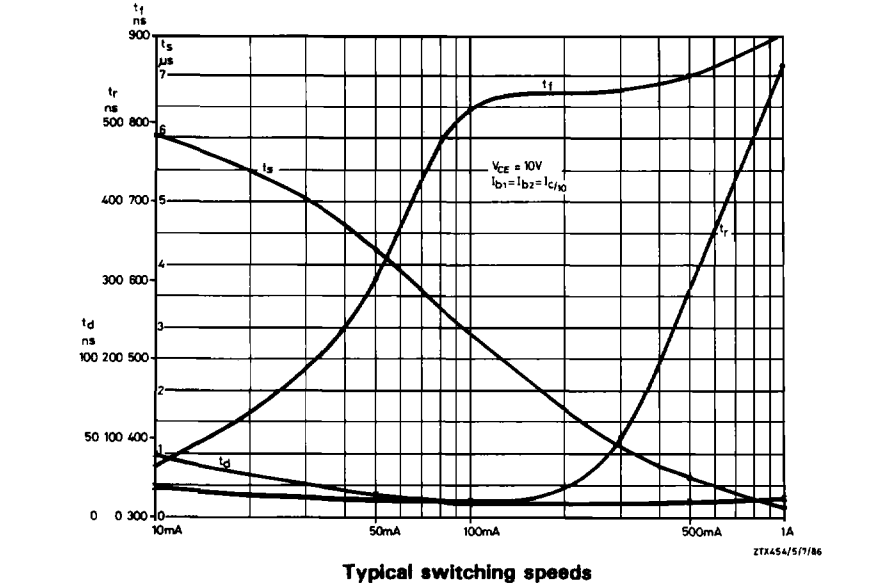
Typical collector-emitter saturation voltage plotted against collector current



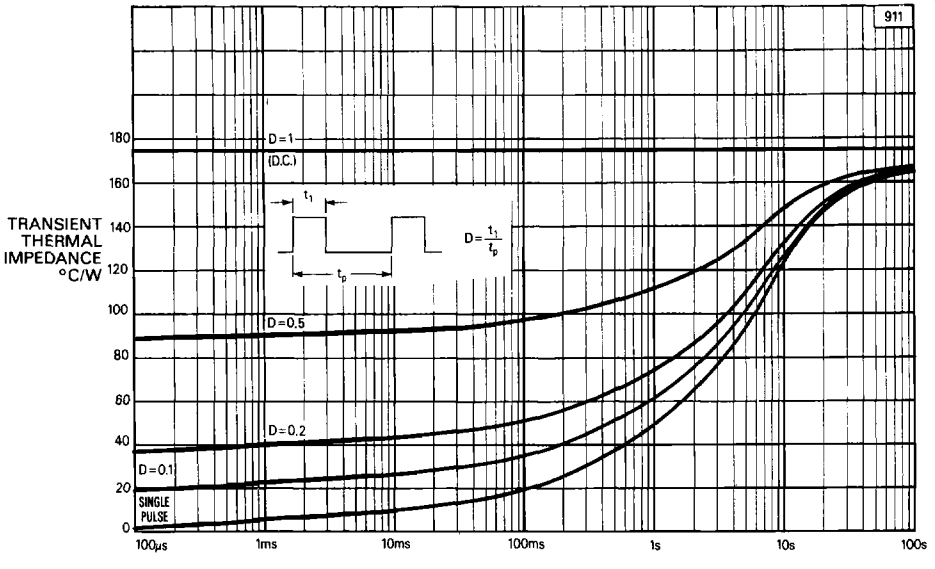
Typical static forward current transfer ratio plotted against collector current



Typical base-emitter turn-on voltage plotted against collector current



Typical switching speeds



Maximum transient thermal impedance curves