

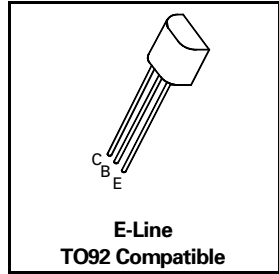
NPN SILICON PLANAR MEDIUM POWER TRANSISTORS

ZTX652
ZTX653

ISSUE 2 – JULY 94

FEATURES

- * 100 Volt V_{CE0}
- * 2 Amp continuous current
- * Low saturation voltage
- * $P_{tot}=1$ Watt



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	ZTX652	ZTX653	UNIT
Collector-Base Voltage	V_{CBO}	100	120	V
Collector-Emitter Voltage	V_{CEO}	80	100	V
Emitter-Base Voltage	V_{EBO}	5		V
Peak Pulse Current	I_{CM}	6		A
Continuous Collector Current	I_C	2		A
Power Dissipation at $T_{amb}=25^\circ\text{C}$ derate above 25°C	P_{tot}	1 5.7		W mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200		$^\circ\text{C}$

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

PARAMETER	SYMBOL	ZTX652			ZTX653			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	100			120			V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	80			100			V	$I_C=10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			5			V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}			0.1 10			0.1 10	μA μA μA μA	$V_{CB}=80\text{V}$ $V_{CB}=100\text{V}$ $V_{CB}=80\text{V}, T_{amb}=100^\circ\text{C}$ $V_{CB}=100\text{V}, T_{amb}=100^\circ\text{C}$
Emitter Cut-Off Current	I_{EBO}			0.1			0.1	μA	$V_{EB}=4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.13 0.23	0.3 0.5			0.13 0.23 0.3 0.5	V V	$I_C=1\text{A}, I_B=100\text{mA}^*$ $I_C=2\text{A}, I_B=200\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.25			0.9	V	$I_C=1\text{A}, I_B=100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.8	1			0.8	V	$I_C=1\text{A}, V_{CE}=2\text{V}^*$

ZTX652 ZTX653

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

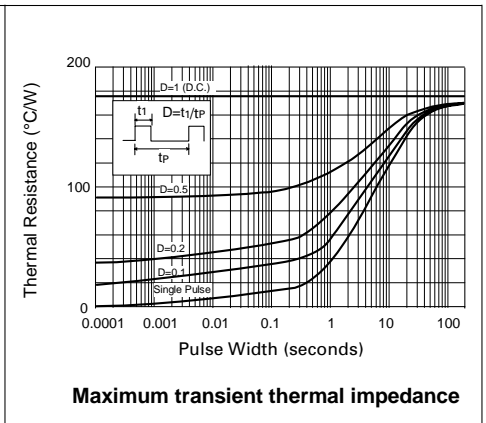
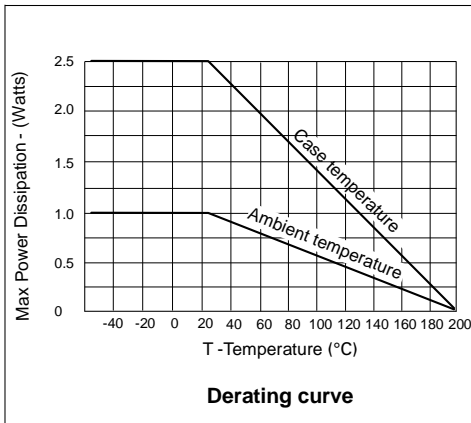
PARAMETER	SYMBOL	ZTX652			ZTX653			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
Transition Frequency	f_T	140	175		140	175		MHz	$I_C=100\text{mA}$, $V_{CE}=5\text{V}$ $f=100\text{MHz}$
Switching Times	t_{on}		80			80		ns	$I_C=500\text{mA}$, $V_{CC}=10\text{V}$ $I_{B1}=I_{B2}=50\text{mA}$
	t_{off}		1200			1200		ns	
Output Capacitance	C_{obo}			30			30	pF	$V_{CB}=10\text{V}$ $f=1\text{MHz}$

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

THERMAL CHARACTERISTICS

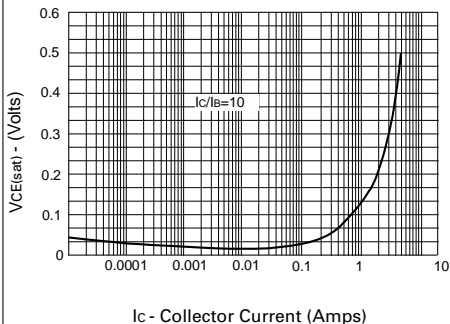
PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient ₁	$R_{th(j-amb)1}$	175	$^{\circ}\text{C/W}$
Junction to Ambient ₂	$R_{th(j-amb)2}^{\dagger}$	116	$^{\circ}\text{C/W}$
Junction to Case	$R_{th(j-case)}$	70	$^{\circ}\text{C/W}$

\dagger Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.

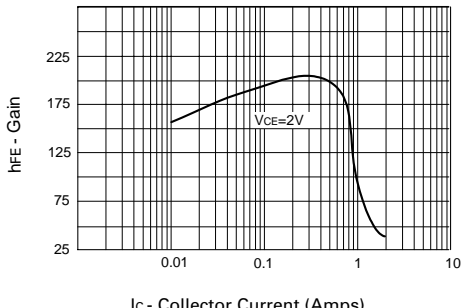


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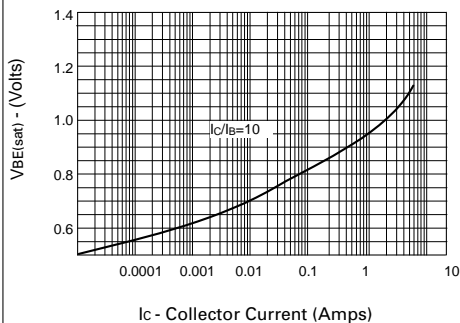
TYPICAL CHARACTERISTICS



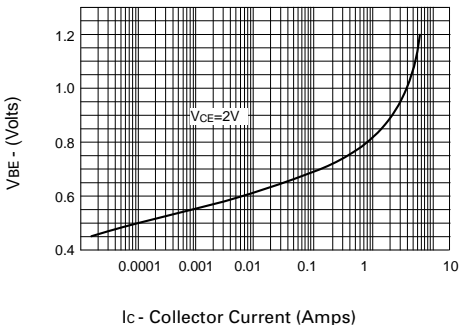
$V_{CE(sat)}$ v I_C



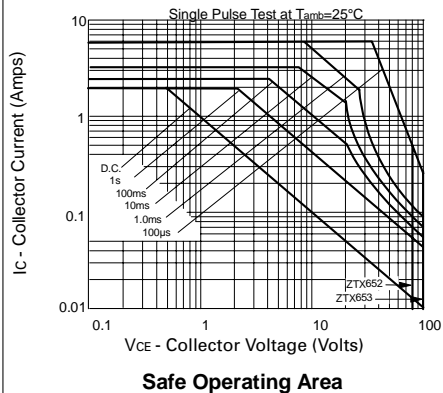
h_{FE} v I_C



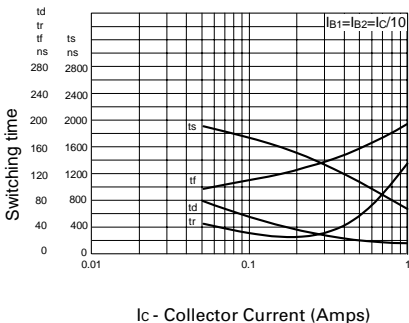
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Safe Operating Area



Switching Speeds

Mouser Electronics

Authorized Distributor

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