

ZTX652 ZTX653

NPN SILICON PLANAR MEDIUM POWER TRANSISTORS

ZTX652 ZTX653

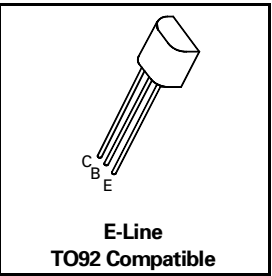
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

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

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

FEATURES

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



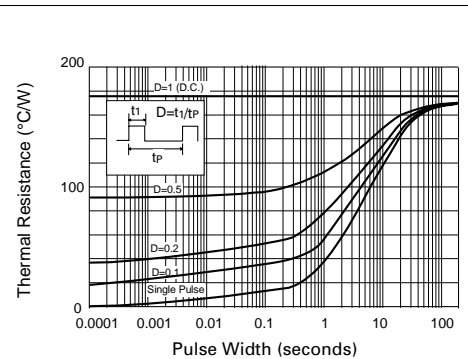
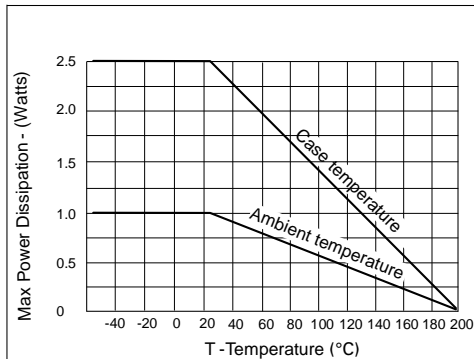
ABSOLUTE MAXIMUM RATINGS.

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 $T_{amb}=25^{\circ}C$ derate above $25^{\circ}C$	P_{tot}		1 5.7	W mW/ $^{\circ}C$
Operating and Storage Temperature Range	$T_j; T_{stg}$		-55 to +200	$^{\circ}C$

THERMAL CHARACTERISTICS

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

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



ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ 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	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	80			100			V	$I_C=10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			5			V	$I_E=100\mu A$
Collector Cut-Off Current	I_{CBO}			0.1			0.1	μA	$V_{CB}=80V$ $V_{CB}=100V$ $V_{CB}=80V, T_{amb}=100^{\circ}C$ $V_{CB}=100V, T_{amb}=100^{\circ}C$
Emitter Cut-Off Current	I_{EBO}			0.1			0.1	μA	$V_{EB}=4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.13 0.23	0.3 0.5		0.13 0.23	0.3 0.5	V	$I_C=1A, I_B=100mA^*$ $I_C=2A, I_B=200mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.9	1.25		0.9	1.25	V	$I_C=1A, I_B=100mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.8	1		0.8	1	V	$I_C=1A, V_{CE}=2V^*$

**ZTX652
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ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

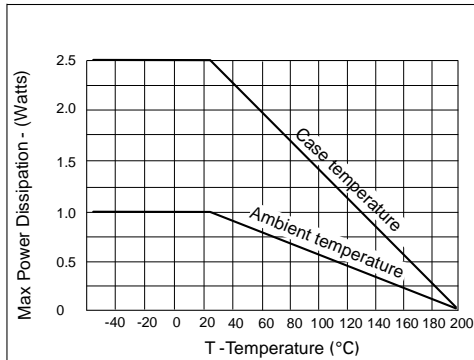
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Transition Frequency	f _T	140	175		140	175		MHz	I _C =100mA, V _{CE} =5V f=100MHz
Switching Times	t _{on}		80			80		ns	I _C =500mA, V _{CE} =10V I _{B1} =I _{B2} =50mA
	t _{off}		1200			1200		ns	
Output Capacitance	C _{obo}			30			30	pF	V _{CB} =10V f=1MHz

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

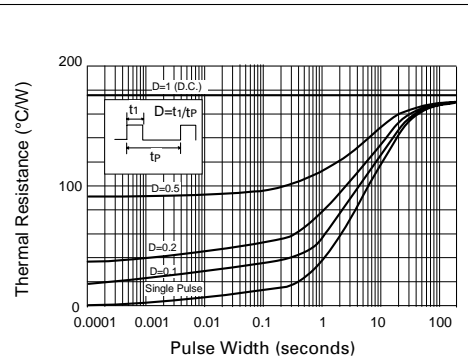
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Junction to Ambient ₂	R _{th(j-amb)2} †	116	°C/W
Junction to Case	R _{th(j-case)}	70	°C/W

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



Derating curve



Maximum transient thermal impedance

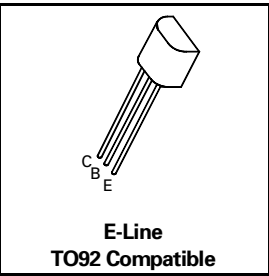
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MEDIUM POWER TRANSISTORS**

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ISSUE 2 - JULY 94

FEATURES

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- * Low saturation voltage
- * P_{tot}=1 Watt



**E-Line
TO92 Compatible**

ABSOLUTE MAXIMUM RATINGS.

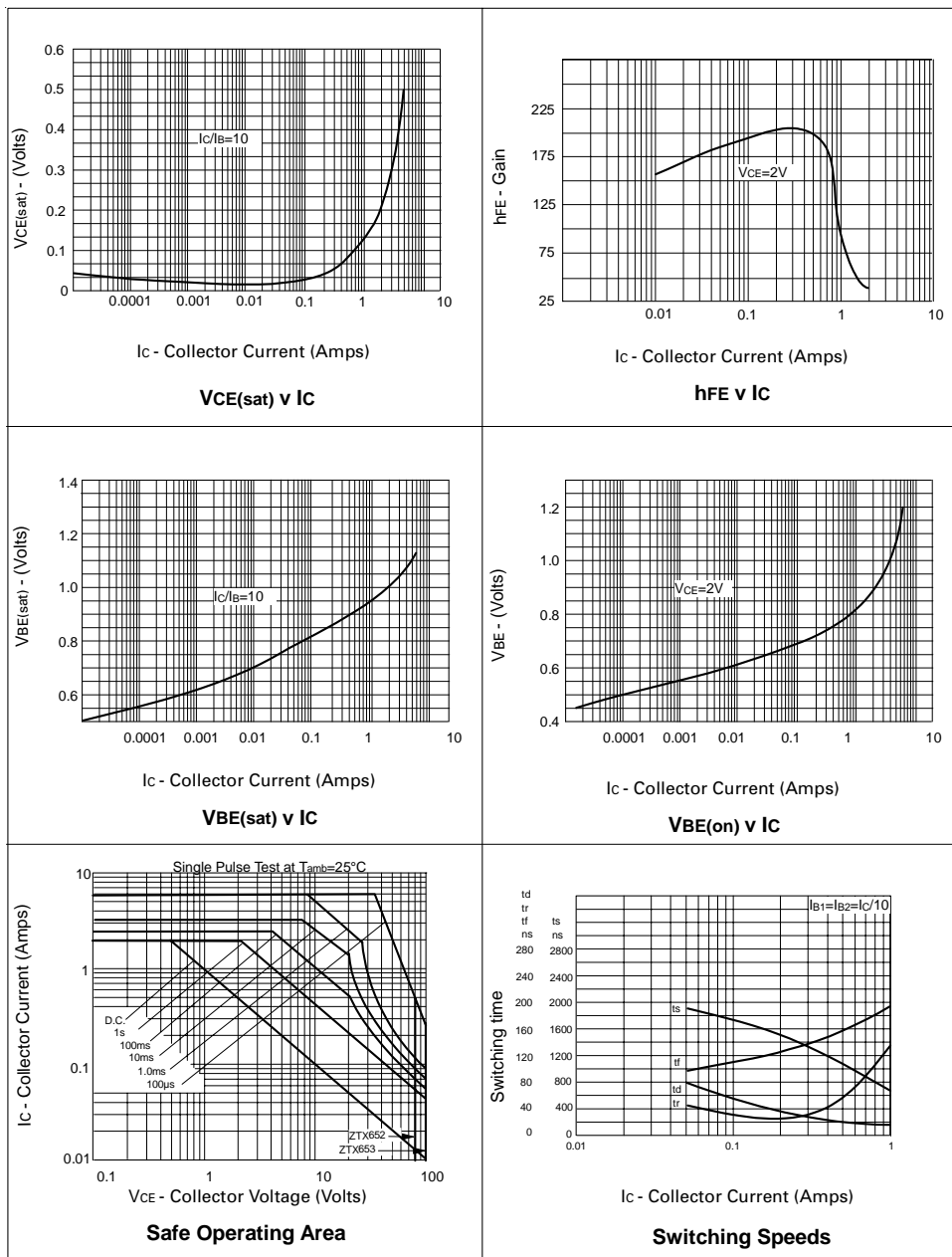
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Collector-Emitter Voltage	V _{CEO}	80	100	V
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Power Dissipation at T _{amb} =25°C derate above 25°C	P _{tot}		1 5.7	W mW/°C
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Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	80			100			V	I _C =10mA*
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	5			5			V	I _E =100μA
Collector Cut-Off Current	I _{CBO}			0.1			0.1	μA	V _{CB} =80V V _{CB} =100V V _{CB} =80V, T _{amb} =100°C V _{CB} =100V, T _{amb} =100°C
Emitter Cut-Off Current	I _{EBO}			0.1			0.1	μA	V _{EB} =4V
Collector-Emitter Saturation Voltage	V _{CE(sat)}		0.13	0.3		0.13	0.3	V	I _C =1A, I _B =100mA*
			0.23	0.5		0.23	0.5	V	I _C =2A, I _B =200mA*
Base-Emitter Saturation Voltage	V _{BE(sat)}		0.9	1.25		0.9	1.25	V	I _C =1A, I _B =100mA*
Base-Emitter Turn-On Voltage	V _{BE(on)}		0.8	1		0.8	1	V	I _C =1A, V _{CE} =2V*

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TYPICAL CHARACTERISTICS



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