



ZTX951

PNP SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ZTX951

ISSUE 4 - JUNE 94

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

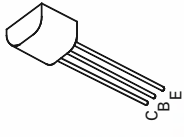
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	V _{BE(on)}		-850	-1000	mV	I _C =4A, V _{CE} =1V*
Static Forward Current Transfer Ratio	h _{FE}	100	200	300		I _C =10mA, V _{CE} =1V*
		100	200	300		I _C =1A, V _{CE} =1V*
		75	120	200		I _C =4A, V _{CE} =1V*
		10	25	100		I _C =10A, V _{CE} =1V*
Transition Frequency	f _T		120		MHz	I _C =100mA, V _{CE} =10V, f=50MHz
Output Capacitance	C _{obo}		74		pF	V _{CE} =10V, f=1MHz
Switching Times	t _{on}		82		ns	I _C =2A, I _B =200mA, V _{CC} =10V
	t _{off}		350		ns	I _B =200mA, V _{CC} =10V

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

HERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient	R _{th(j-amb)}	150	°C/W
Junction to Case	R _{th(j-case)}	50	°C/W

- * 4 Amps continuous current
- * Up to 15 Amps peak current
- * Very low saturation voltage
- * Excellent gain up to 10 Amps
- * Spice model available



E-Line
TO92 Compatible

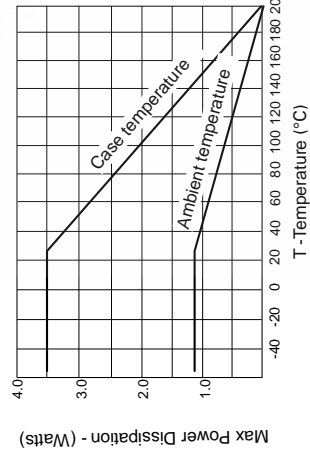
ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V _{CB0}	-100	V
Collector-Emitter Voltage	V _{CE0}	-60	V
Emitter-Base Voltage	V _{EBO}	-6	V
Peak Pulse Current	I _{CM}	-15	A
Continuous Collector Current	I _C	-4	A
Practical Power Dissipation*	P _{top}	1.58	W
Power Dissipation at T _{amb} =25°C	P _{tot}	1.2	W
Operating and Storage Temperature Range	T _J ; T _{stg}	-55 to +200	°C

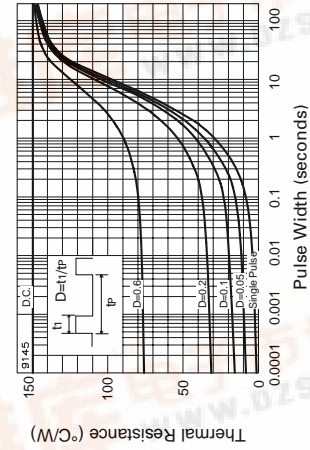
*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-100	-140		V	I _C =100µA
Collector-Emitter Breakdown Voltage	V _{(BR)CER}	-100	-140		V	I _C =1µA, R _B ≤ 1KΩ
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-60	-90		V	I _C =10mA*
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-6	-8		V	I _E =100µA
Collector Cut-Off Current	I _{CBO}			-50	nA	V _{CB} =80V, V _{CE} =80V, T _{amb} =100°C
Collector Cut-Off Current	I _{CER}			-50	nA	V _{CB} =80V, V _{CE} =80V, T _{amb} =100°C
Collector Cut-Off Current	I _{CER}			-50	nA	V _{CB} =80V, V _{CE} =80V, T _{amb} =100°C
Emitter Cut-Off Current	I _{EBO}			-10	nA	V _{EB} =6V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	-15	-50		mV	I _C =100mA, I _B =10mA*
		-60	-100		mV	I _C =1A, I _B =100mA*
		-120	-160		mV	I _C =2A, I _B =200mA*
		-220	-300		mV	I _C =4A, I _B =400mA*
Base-Emitter Saturation Voltage	V _{BE(sat)}		-960		mV	I _C =4A, I _B =400mA*



Derating curve



Maximum transient thermal impedance

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Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-850	-1000	mV	$I_C = -4A, V_{CE} = -1V^*$
Static Forward Current Transfer Ratio	h_{FE}	100	200	300		$I_C = -10mA, V_{CE} = -1V^*$
		100	200			$I_C = -1A, V_{CE} = -1V^*$
		75	120			$I_C = -4A, V_{CE} = -1V^*$
		10	25			$I_C = -10A, V_{CE} = -1V^*$
Transition Frequency	f_T		120		MHz	$I_C = -100mA, V_{CE} = -10V, f = 50MHz$
Output Capacitance	C_{obo}		74		pF	$V_{CB} = -10V, f = 1MHz$
Switching Times	t_{on}		82		ns	$I_C = -2A, I_B = -200mA$
	t_{off}		350		ns	$I_B = -200mA, V_{CC} = -10V$

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

HERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient	$R_{th(j-amb)}$	150	$^{\circ}C/W$
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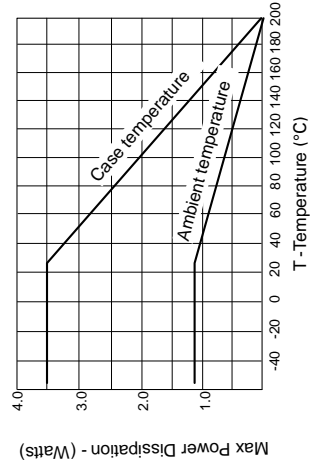
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PARAMETER	SYMBOL	VALUE	UNIT
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Operating and Storage Temperature Range	T_J, T_{stg}	-55 to +200	$^{\circ}C$

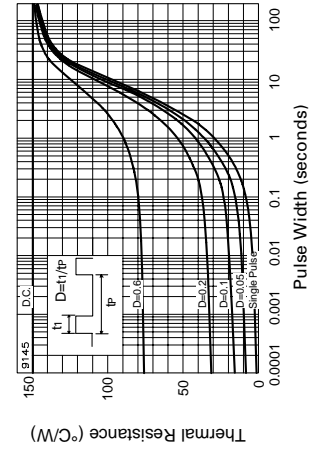
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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated)

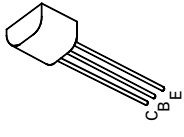
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-100	-140		V	$I_C = -100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CE}$	-100	-140		V	$I_C = -1\mu A, R_B \leq 1K\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60	-90		V	$I_C = -10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	$I_E = -100\mu A$
Collector Cut-Off Current	I_{CBO}			-50	nA	$V_{CB} = -80V, T_{amb} = 100^{\circ}C$
Collector Cut-Off Current	I_{CER}			-1	μA	$V_{CB} = -80V, T_{amb} = 100^{\circ}C$
Collector Cut-Off Current	$R \leq 1K\Omega$			-50	nA	$V_{CB} = -80V, T_{amb} = 100^{\circ}C$
Emitter Cut-Off Current	I_{EBO}			-10	nA	$V_{EB} = -6V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-15	-50		mV	$I_C = -100mA, I_B = -10mA^*$
		-60	-100		mV	$I_C = -1A, I_B = -100mA^*$
		-120	-160		mV	$I_C = -2A, I_B = -200mA^*$
		-220	-300		mV	$I_C = -4A, I_B = -400mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-960		mV	$I_C = -4A, I_B = -400mA^*$



Derating curve



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TYPICAL CHARACTERISTICS

