

ZTX869

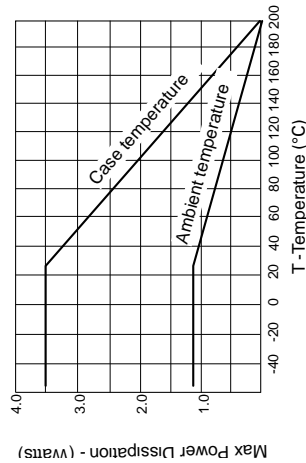
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	V _{BE(on)}		800	900	mV	I _C =5A, V _{CE} =1V*
Static Forward Current Transfer Ratio	h _{FE}	300	450			I _C =10mA, V _{CE} =1V
		300	450			I _C =1A, V _{CE} =1V**
		250	400			I _C =5A, V _{CE} =1V**
		40	100			I _C =20A, V _{CE} =1V*
Transition Frequency	f _T		100		MHz	I _C =100mA, V _{CE} =10V f=50MHz
Output Capacitance	C _{obo}		70		pF	V _{CE} =10V, f=1MHz
Switching Times	t _{on}		60		ns	I _C =1A, I _{BE} =100mA
	t _{off}		680		ns	I _{BE} =100mA, V _{CE} =10V

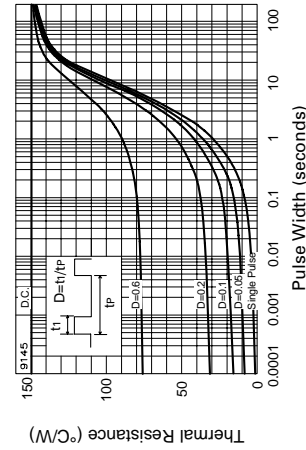
*Measured under pulsed conditions. Pulse width=300µs. Duty cycle ≤2%

THERMAL 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



Derating curve



Maximum transient thermal impedance

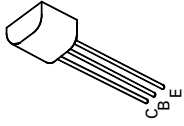
NPN SILICON PLANAR MEDIUM POWER HIGH CURRENT TRANSISTOR

ISSUE 1 – APRIL 94

ZTX869

FEATURES

- * 25 Volt V_{CEO}
- * 5 Amps continuous current
- * Up to 20 Amps peak current
- * Very low saturation voltage
- * High Gain
- * P_{tot}=1.2 Watts



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V _{CBO}	60	V
Collector-Emitter Voltage	V _{CEO}	25	V
Emitter-Base Voltage	V _{EBO}	6	V
Peak Pulse Current	I _{CM}	20	A
Continuous Collector Current	I _C	5	A
Practical Power Dissipation*	P _{totp}	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}	60	120		V	I _C =100µA
Collector-Emitter Breakdown Voltage	V _{(BR)CER}	60	120		V	I _C =1µA, R _B ≤ 1KΩ
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	25	35		V	I _C =10mA*
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6	8		V	I _E =100µA
Collector Cut-Off Current	I _{CBO}				nA	V _{CE} =50V, T _{amb} =100°C
Collector Cut-Off Current	I _{CER}				nA	V _{CE} =50V, T _{amb} =100°C
Collector Cut-Off Current	I _{CEO}				nA	V _{CE} =50V, T _{amb} =100°C
Collector-Emitter Saturation Voltage	V _{CE(sat)}				mV	I _C =0.5A, I _B =10mA*
Base-Emitter Saturation Voltage	V _{BE(sat)}	25	50	80	mV	I _C =1A, I _B =10mA*
		100	200	200	mV	I _C =2A, I _B =100mA*
		180	220	220	mV	I _C =5A, I _B =100mA*
					mV	I _C =5A, I _B =100mA*

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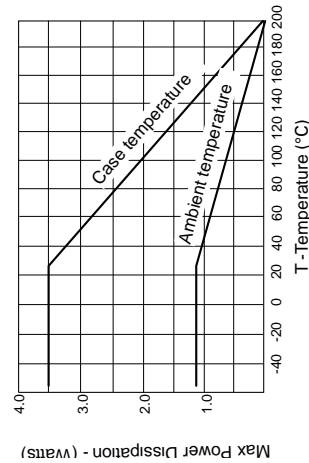
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		800	900	mV	$I_C=5A, V_{CE}=1V^*$
Static Forward Current Transfer Ratio	h_{FE}	300	450			$I_C=10mA, V_{CE}=1V$
		300	450			$I_C=1A, V_{CE}=1V^*$
		250	400			$I_C=5A, V_{CE}=1V^*$
		40	100			$I_C=20A, V_{CE}=1V^*$
Transition Frequency	f_T		100		MHz	$I_C=100mA, V_{CE}=10V, f=50MHz$
Output Capacitance	C_{obo}		70		pF	$V_{CE}=10V, f=1MHz$
Switching Times	t_{on}		60		ns	$I_C=1A, I_B=100mA$
	t_{off}		680		ns	$I_B=100mA, V_{CC}=10V$

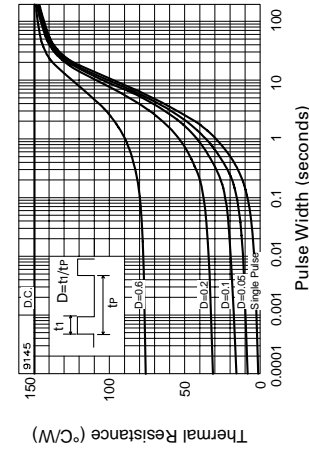
*Measured under pulsed conditions. Pulse width=300 μ s. Duty cycle \leq 2%

THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient Junction to Case	$R_{\theta(j-amb)}$	150	$^{\circ}\text{C/W}$
	$R_{\theta(j-case)}$	50	$^{\circ}\text{C/W}$



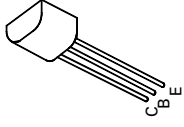
Derating curve



Maximum transient thermal impedance

FEATURES

- * 25 Volt V_{CEO}
- * 5 Amps continuous current
- * Up to 20 Amps peak current
- * Very low saturation voltage
- * High Gain
- * $P_{tot}=1.2$ Watts



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ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	6	V
Peak Pulse Current	I_{CM}	20	A
Continuous Collector Current	I_C	5	A
Practical Power Dissipation*	P_{totp}	1.58	W
Power Dissipation at $T_{amb}=25^{\circ}\text{C}$	P_{tot}	1.2	W
Operating and Storage Temperature Range	T_j, T_{stg}	-55 to +200	$^{\circ}\text{C}$

*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 $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	120		V	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	60	120		V	$I_C=1\mu A, R_B \leq 1K\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	25	35		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	$V_{CE}=50V, T_{amb}=100^{\circ}\text{C}$
				1	μA	$V_{CE}=50V, T_{amb}=100^{\circ}\text{C}$
Collector Cut-Off Current	I_{CER}			50	nA	$V_{CE}=50V, R \leq 1K\Omega, T_{amb}=100^{\circ}\text{C}$
				1	μA	$V_{CE}=50V, R \leq 1K\Omega, T_{amb}=100^{\circ}\text{C}$
Emitter Cut-Off Current	I_{EBO}			10	nA	$V_{EB}=6V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	25	50		mV	$I_C=0.5A, I_B=10mA^*$
		50	80		mV	$I_C=1A, I_B=10mA^*$
		100	200		mV	$I_C=2A, I_B=100mA^*$
		180	220		mV	$I_C=5A, I_B=100mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		880	950	mV	$I_C=5A, I_B=100mA^*$

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TYPICAL CHARACTERISTICS

