NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ZTX1055A

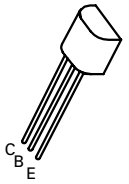
ISSUE 3 – JANUARY 1995

FEATURES

* V_{CEO}=120V
* 3 Amp continuous Current
* 6 Amp pulse Current
* Very Low Saturation Voltage

APPLICATIONS

* Automotive Switching Circuit
* Audio Driver Stages



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	175	V
Collector-Emitter Voltage	V_{CEO}	120	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	6	A
Continuous Collector Current	I_C	3	A
Base Current	I_B	500	mA
Power Dissipation at T_{amb}=25°C	P_{tot}	1	W
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +200	°C

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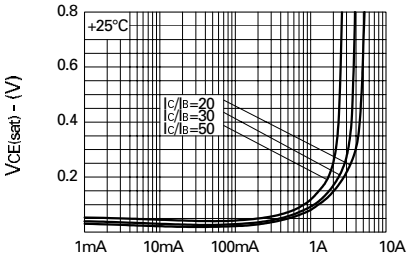
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	175	280		V	I_C=100μA
Collector-Emitter Breakdown Voltage	V_{CES}	175	280		V	IC=100μA
Collector-Emitter Breakdown Voltage	V_{CEO}	120	150		V	IC=10mA
Collector-Emitter Breakdown Voltage	V_{CEV}	175	280		V	IC=100μA, V_{EB}=1V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.8		V	I_E=100μA
Collector Cut-Off Current	I_{CBO}		0.3	10	nA	V_{CB}=130V
Emitter Cut-Off Current	I_{EBO}		0.3	10	nA	V_{EB}=4V
Collector Emitter Cut-Off Current	I_{CES}		0.3	10	nA	VCES=130V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		22 120 220	50 160 310	mV mV mV	I_C=0.1A, I_B=5mA* I_C=1A, I_B=20mA* I_C=3A, I_B=150mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		950	1000	mV	I_C=3A, I_B=150mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		810	900	mV	IC=3A, V_{CE}=10V*
Static Forward Current Transfer Ratio	h_{FE}	275 300 50	400 450 110 15	1200		I_C=10mA, V_{CE}=10V* I_C=1A, V_{CE}=10V* I_C=3A, V_{CE}=10V* I_C=6A, V_{CE}=10V*
Transition Frequency	f_T		130		MHz	I_C=50mA, V_{CE}=10V f=100MHz
Output Capacitance	C_{obo}		17	30	pF	V_{CB}=10V, f=1MHz
Switching Times	t_{on}		90		ns	I_C=1A, I_B=10mA, V_{CC}=50V
	t_{off}		2400		ns	I_C=1A, I_B=±10mA, V_{CC}=50V

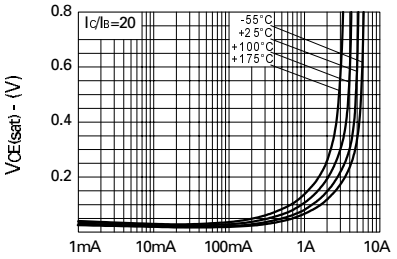
*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%

TYPICAL CHARACTERISTICS



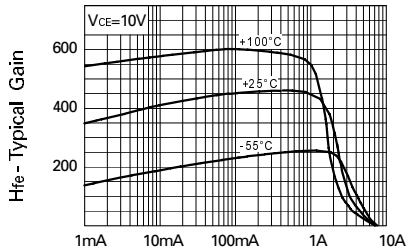
IC-Collector Current

VCE(sat) v IC



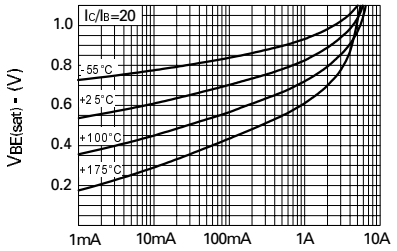
IC-Collector Current

VCE(sat) v IC



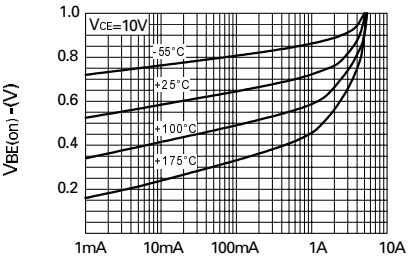
IC-Collector Current

hFE v IC



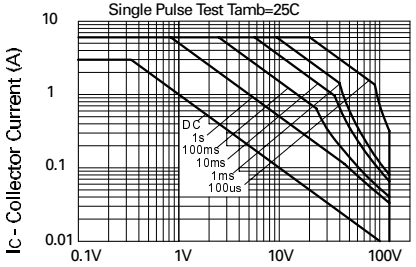
IC-Collector Current

VBE(sat) v IC



IC-Collector Current

VBE(on) v IC



VCE - Collector Voltage

Safe Operating Area

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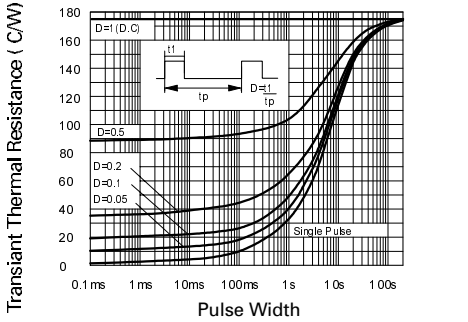
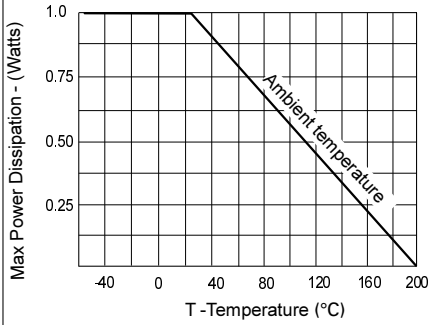


Transient Thermal Resistance



Derating curve

SPICE PARAMETERS

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*ZETEX  ZTX1055A Spice model   Last revision 25/1/95
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.MODEL   ZTX1055A  NPN IS=1.60E-12  NF=1.0  BF=500  IKF=4.0  VAF=120
+            ISE=4.0E-13  NE=1.4  NR=1.0  BR=80  IKR=2.5  VAR=15
+            ISC=5.0E-10  NC=1.7  RB=0.1  RE=0.040  RC=0.030
+            CJC=63.3E-12  CJE=512.6E-12  MJC=0.439  MJE=0.373
+            VJC=0.511  VJE=0.800  TF=700E-12  TR=110E-9
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