NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ZTX1051A

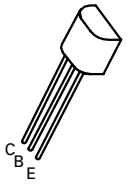
ISSUE 3 – FEBRUARY 95

FEATURES

* B_{CEV}=150V
* Very Low Saturation Voltage
* High Gain
* Inherently Low Noise

APPLICATIONS

* Emergency Lighting
* Low Noise Audio



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	10	A
Continuous Collector Current	I_C	4	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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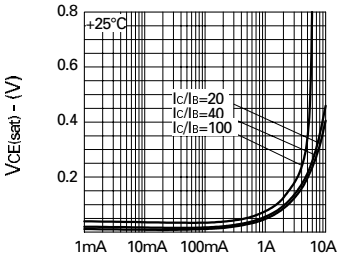
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

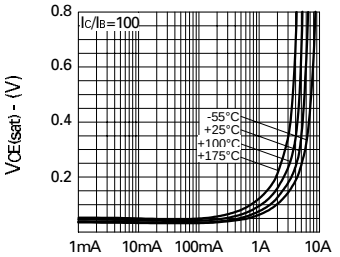
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	190		V	I_C=100μA
Collector-Emitter Breakdown Voltage	V_{CES}	150	190		V	IC=100μA
Collector-Emitter Breakdown Voltage	V_{CEO}	40	60		V	IC=10mA
Collector-Emitter Breakdown Voltage	V_{CEV}	150	190		V	IC=100μA, 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}=120V
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=120V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		17 75 165	25 110 210	mV mV mV	I_C=0.2A, I_B=10mA* I_C=1A, I_B=10mA* I_C=4A, I_B=100mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		920	1000	mV	I_C=4A, I_B=100mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		825	950	mV	IC=4A, V_{CE}=2V*
Static Forward Current Transfer Ratio	h_{FE}	290 300 190 45	440 450 310 70	1200		I_C=10mA, V_{CE}=2V* I_C=1A, V_{CE}=2V* I_C=4A, V_{CE}=2V* I_C=10A, V_{CE}=2V*
Transition Frequency	f_T		155		MHz	I_C=50mA, V_{CE}=10V f=100MHz
Output Capacitance	C_{obo}		27	40	pF	V_{CB}=10V, f=1MHz
Switching Times	t_{on}		100		ns	I_C=4A, I_B=40mA, V_{CC}=10V
	t_{off}		300		ns	I_C=4A, I_B=±40mA, V_{CC}=10V

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

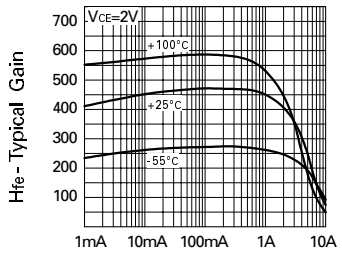
TYPICAL CHARACTERISTICS



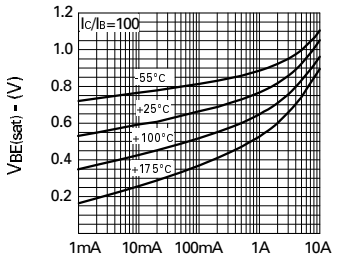
VCE(sat) v IC



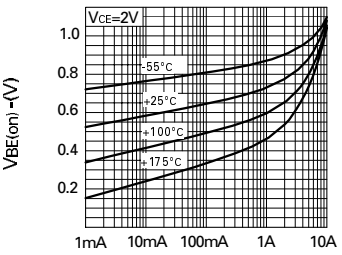
VCE(sat) v IC



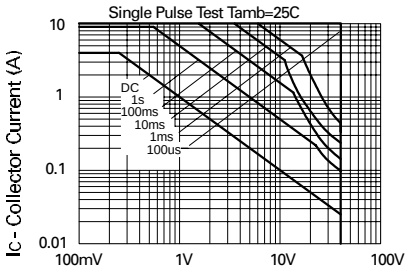
hFE v IC



VBE(sat) v IC



VBE(on) v IC



Safe Operating Area

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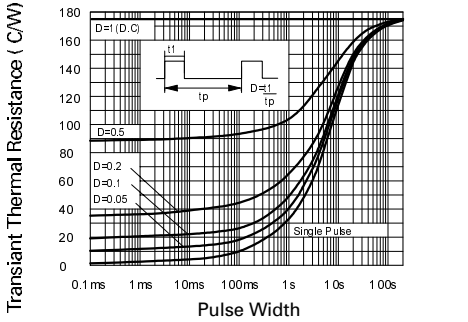
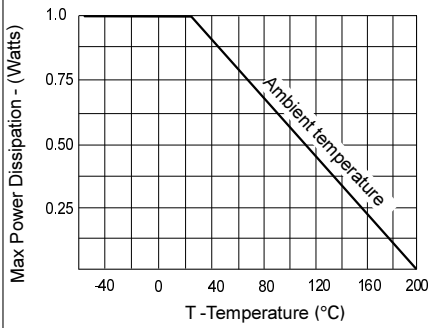


Transient Thermal Resistance



Derating curve

SPICE PARAMETERS

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*ZETEX  ZTX1051A Spice model   Last revision 16/12/94
*
.MODEL   ZTX1051A  NPN IS=1.35E-12  NF=1.0  BF=600  IKF=5.0  VAF=120
+            ISE=0.6E-13  NE=1.25  NR=1.0  BR=150  IKR=3  VAR=15
+            ISC=1.0E-10  NC=1.7  RB=0.1  RE=0.023  RC=0.010
+            CJC=90.36E-12  CJE=547.5E-12  MJC=0.385  MJE=0.357
+            VJC=0.5 VJE=0.741  TF=600E-12  TR=8E-9
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