NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ZTX1048A

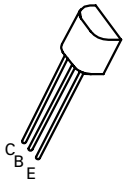
ISSUE 3 – FEBRUARY 1995

FEATURES

* V_{CEV}=50V
* Very Low Saturation Voltages
* High Gain
* 20 Amps pulse current

APPLICATIONS

* LCD Backlight Convertors
* Emergency Lighting
* DC-DC Convertors



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

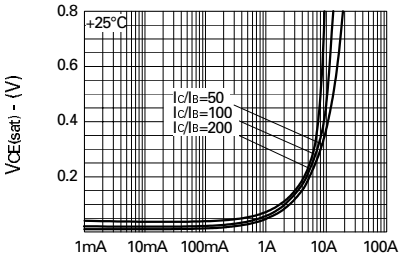
PARAMETER	SYMBOL	ZTX1048A	UNIT
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	17.5	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	20	A
Continuous Collector Current	I_C	4	A
Base Current	I_B	500	mA
Power Dissipation at T_{amb}=25°C	P_{tot}	1	W
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +200	°C

ZTX1048A

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

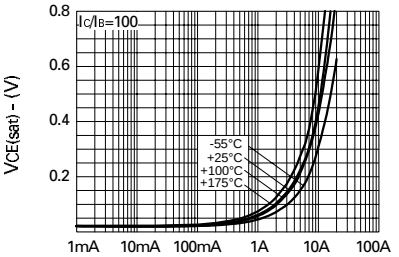
PARAMETER	SYMBOL	ZTX1048A			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50	85		V	I_C=100μA
Collector-Emitter Breakdown Voltage	V_{CES}	50	85		V	IC=100μA
Collector-Emitter Breakdown Voltage	V_{CEO}	17.5	24		V	IC=10mA
Collector-Emitter Breakdown Voltage	V_{CEV}	50	85		V	IC=100μA, V_{EB}=1V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.7		V	I_E=100μA
Collector Cut-Off Current	I_{CBO}		0.3	10	nA	V_{CB}=35V
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=35V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		27 55 110 210	45 75 150 245	mV mV mV mV	I_C=0.5A, I_B=10mA* I_C=1A, I_B=10mA* I_C=2A, I_B=10mA* I_C=4A, I_B=20mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		860	950	mV	I_C=4A, I_B=20mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		860	950	mV	IC=4A, V_{CE}=2V*
Static Forward Current Transfer Ratio	h_{FE}	280 300 300 220 50	440 450 450 330 80	1200		I_C=10mA, V_{CE}=2V* I_C=0.5A, V_{CE}=2V* I_C=1A, V_{CE}=2V* I_C=4A, V_{CE}=2V* I_C=20A, V_{CE}=2V*
Transition Frequency	f_T		150		MHz	I_C=50mA, V_{CE}=10V f=50MHz
Output Capacitance	C_{obo}		60	80	pF	V_{CB}=10V, f=1MHz
Switching Times	t_{on}		130		ns	I_C=4A, I_B=40mA, V_{CC}=10V
	t_{off}		180		ns	I_C=4A, I_B=±40mA, V_{CC}=10V

TYPICAL CHARACTERISTICS



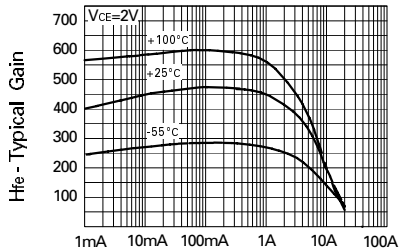
IC-Collector Current

VCE(sat) v IC



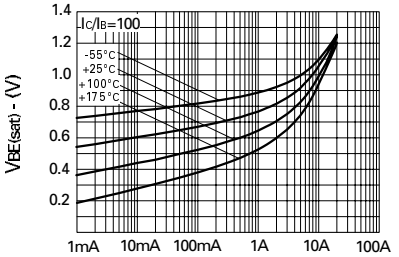
IC-Collector Current

VCE(sat) v IC



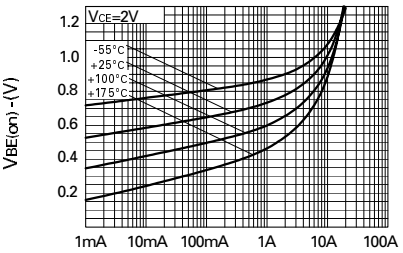
IC-Collector Current

hFE v IC



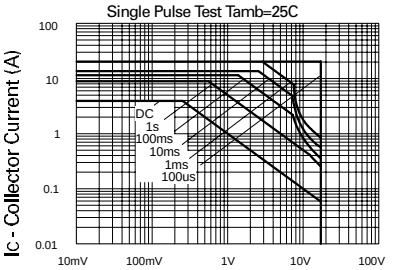
IC-Collector Current

VBE(sat) v IC



IC-Collector Current

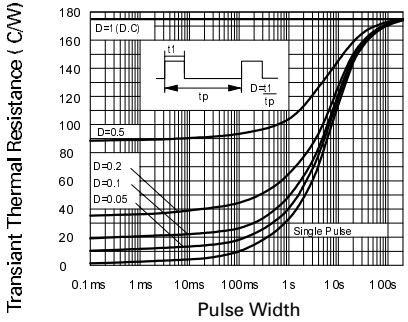
VBE(on) v IC



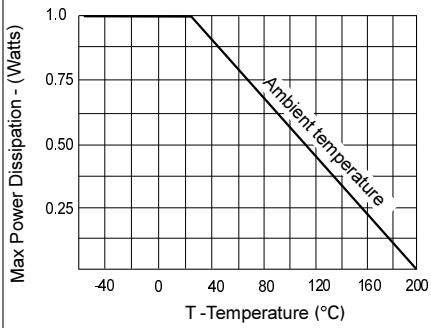
VCE - Collector Voltage

Safe Operating Area

ZTX1048A



Transient Thermal Resistance



Derating curve

SPICE PARAMETERS

```
*ZETEX  ZTX1048A Spice model   Last revision 20/01/95
*
.MODEL   ZTX1048A  NPN IS=13.73E-13  NF=1.0  BF=550  IKF=8.0  VAF=120
+            ISE=2.6E-13  NE=1.38  NR=1.0  BR=300  IKR=6  VAR=15
+            ISC=1.6E-12  NC=1.4  RB=0.1  RE=0.022  RC=0.010
+            CJC=136E-12  CJE=559.1E-12  MJC=0.267  MJE=0.299
+            VJC=0.420  VJE=0.533  TF=600E-12  TR=3E-9
*
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