

ZTX1049A
25V NPN MEDIUM POWER TRANSISTOR IN E-LINE
Features

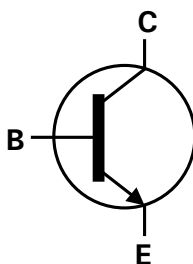
- $BV_{CEO} > 25V$
- $I_C = 4A$ High Continuous Collector Current
- $I_{CM} = 20A$ Peak Pulse Current
- T_J up to $200^{\circ}C$ for High Temperature Operation
- Low Saturation Voltage $< 75mV @ 1A$
- $P_D = 1W$ Power dissipation
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Applications

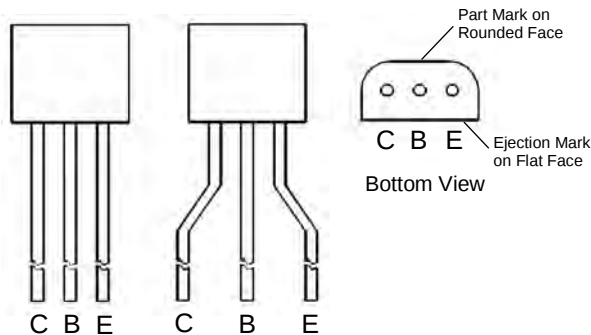
- LCD Backlight Converters
- Emergency Lighting
- DC-DC Converters

 E-Line
 (TO-92 Compatible)


Flat Face View



Device Symbol



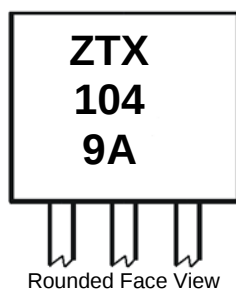
Rounded Face View

Pin-Out Configuration

Ordering Information (Note 4)

Part Number	Marking	Case	Leads	Quantity
ZTX1049ASTZ	ZTX1049A	E-Line	Joggled	2,000 taped per Ammo Box
ZTX1049A	ZTX1049A	E-Line	Straight	4,000 loose in a Box

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain $<900ppm$ bromine, $<900ppm$ chlorine ($<1500ppm$ total Br + Cl) and $<1000ppm$ antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information


ZTX1049A = Product type Marking Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	80	V
Collector-Emitter Voltage	V _{CEO}	25	V
Emitter-Base Voltage	V _{EBO}	5	V
Continuous Collector Current	I _C	4	A
Peak Pulse Current	I _{CM}	20	A
Base Current	I _B	500	mA

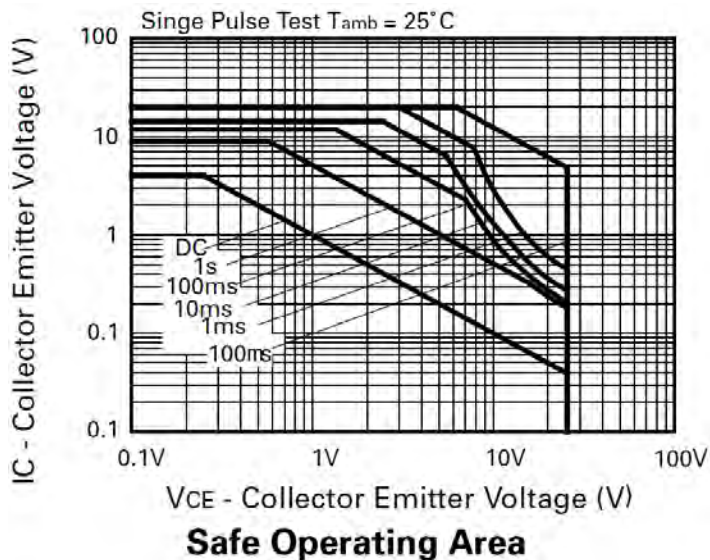
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

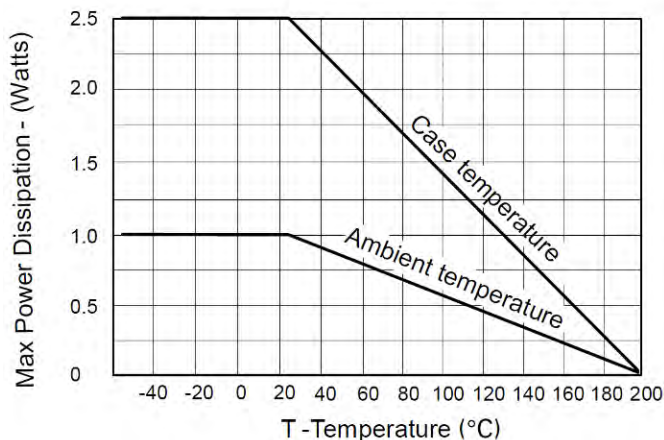
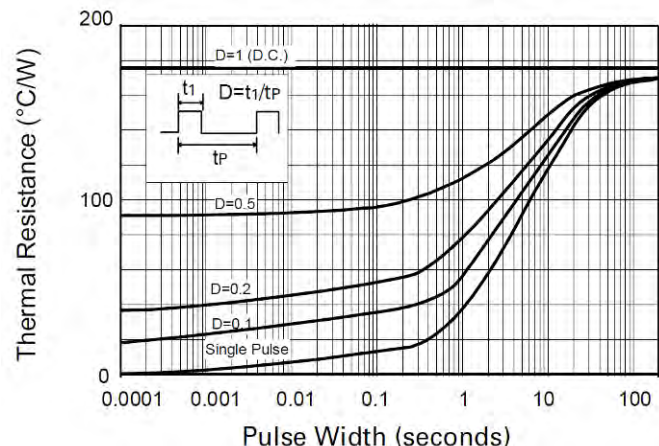
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1.5	W
Power Dissipation (Note 6)	P _D	1	W
Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	116	°C/W
Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	175	°C/W
Thermal Resistance Junction to Lead (Note 7)	R _{θJL}	63.75	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +200	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	≥ 4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	≥ 400	V	C

- Notes:
- For a through-hole device mounted at the seating plane (2.5mm lead length) with the collector lead on 25mm X 25mm 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - Same as note (5), except the device is mounted on minimum recommended pad layout with 12mm lead length from the bottom of package to the board.
 - Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the collector lead).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

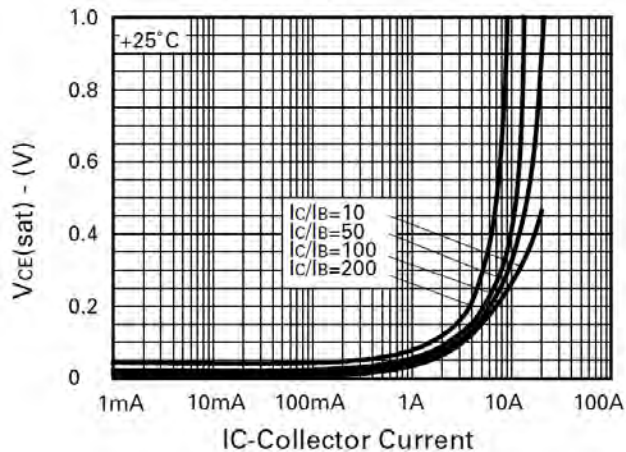
Thermal Characteristics and Derating Information



Derating curve

Maximum transient thermal impedance
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

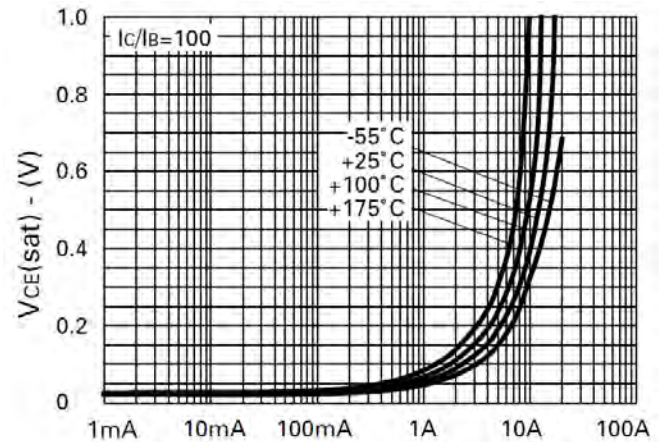
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	80	120	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CES}	80	120	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	25	30	—	V	$I_C = 10\text{mA}$
Collector-Emitter Breakdown Voltage	BV_{CEV}	80	120	—	V	$I_C = 100\mu\text{A}$, $V_{EB} = 1\text{V}$
Emitter-Base Breakdown Voltage	BV_{EBO}	5	8.75	—	V	$I_E = 100\mu\text{A}$
Collector Cut-off Current	I_{CBO}	—	0.3	10	nA	$V_{CB} = 50\text{V}$
Collector Emitter Cut-off Current	I_{CES}	—	0.3	10	nA	$V_{CES} = 50\text{V}$
Emitter Cut-off Current	I_{EBO}	—	0.3	10	nA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	30 60 125 155	45 80 180 220	mV	$I_C = 500\text{mA}$, $I_B = 10\text{mA}$ $I_C = 1\text{A}$, $I_B = 10\text{mA}$ $I_C = 2\text{A}$, $I_B = 10\text{mA}$ $I_C = 4\text{A}$, $I_B = 50\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	890	950	mV	$I_C = 4\text{A}$, $I_B = 50\text{mA}$
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	—	820	900	mV	$I_C = 4\text{A}$, $V_{CE} = 2\text{V}$
DC Current Gain (Note 9)	h_{FE}	250 300 300 200 35	430 450 450 350 70	— — 1200 — —	—	$I_C = 10\text{mA}$, $V_{CE} = 2\text{V}$ $I_C = 0.5\text{A}$, $V_{CE} = 2\text{V}$ $I_C = 1\text{A}$, $V_{CE} = 2\text{V}$ $I_C = 4\text{A}$, $V_{CE} = 2\text{V}$ $I_C = 20\text{A}$, $V_{CE} = 2\text{V}$
Current Gain-Bandwidth Product (Note 9)	f_T	—	180	—	MHz	$V_{CE} = 10\text{V}$, $I_C = 50\text{mA}$ $f = 50\text{MHz}$
Output Capacitance (Note 9)	C_{obo}	—	45	60	pF	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}$
Turn-On Times	t_{on}	—	125	—	ns	$I_C = 4\text{A}$, $I_B = 40\text{mA}$, $V_{CC} = 10\text{V}$
Turn-Off Times	t_{off}	—	380	—	ns	$I_C = 4\text{A}$, $I_B = 40\text{mA}$, $V_{CC} = 10\text{V}$

Notes: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$

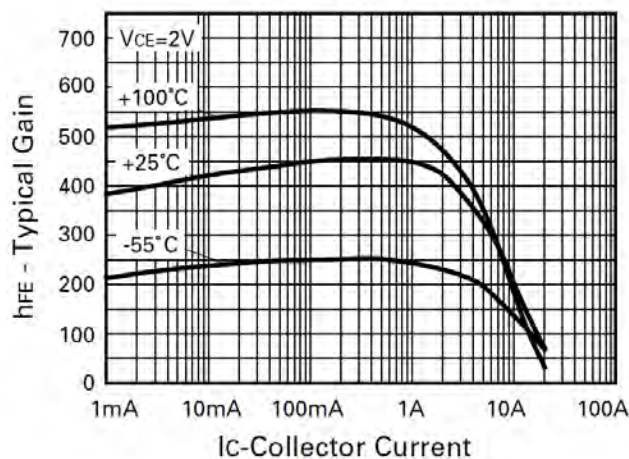
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



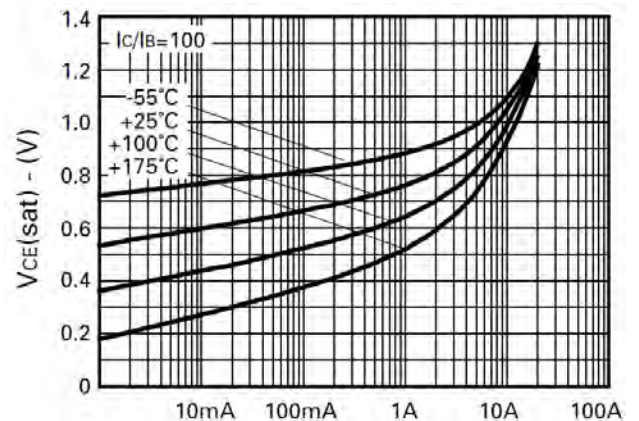
$V_{CE(sat)}$ v I_C



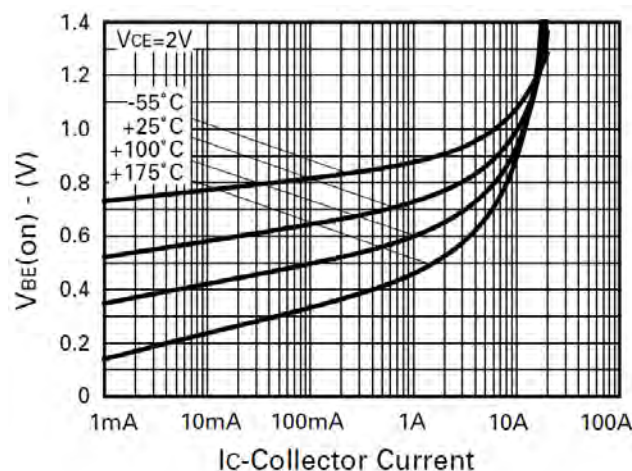
$V_{CE(sat)}$ v I_C



h_{FE} v I_C



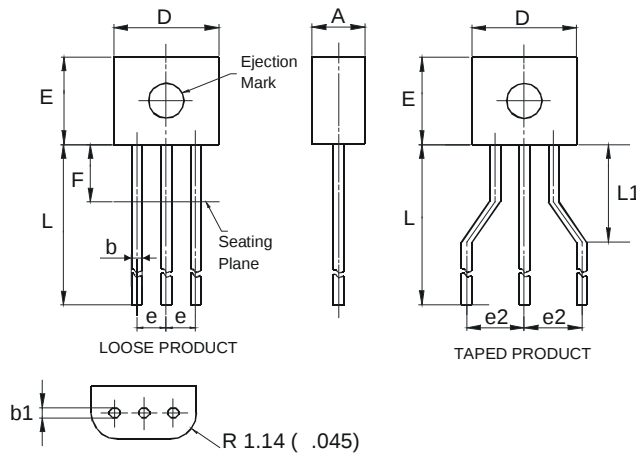
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



E-Line			
Dim	Min	Max	Typ
A	2.16	2.41	—
b	0.41	0.495	—
b1	0.41	0.495	—
D	4.37	4.77	—
E	3.61	4.01	—
e	—	—	1.27
e2	—	—	2.54
F	—	2.50	—
L	13.00	13.97	—
L1	2.50	3.50	—
All Dimensions in mm			

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