

**25V NPN SILICON PLANARR MEDIUM POWER TRANSISTOR**

**Features**

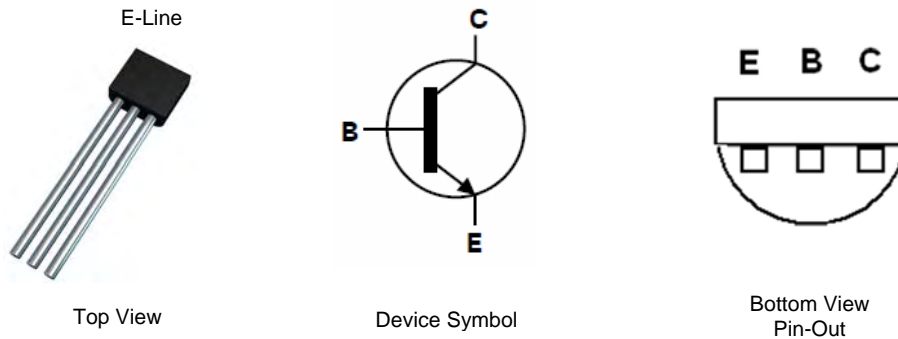
- $BV_{CEO} > 25V$
- Maximum Continuous Current  $I_{C(cont)} = 4A$
- Up to 20A Peak Current
- Low Saturation Voltage
- $P_D = 1W$
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: E-Line (TO-92 Compatible)
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.159 grams (approximate)

**Applications**

- LED Backlight Converters
- Emergency Lighting
- DC-DC Converters

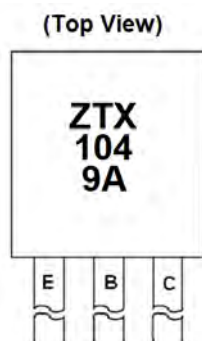


**Ordering Information (Note 4)**

Part Number	Marking	Case	Quantity
ZTX1049ASTZ	ZTX1049A	E-Line	2,000 per box on tape
ZTX1049A	ZTX1049A	E-Line	4,000 loose

- 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> 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>.

**Marking Information**



ZTX1049A = Product type Marking Code

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

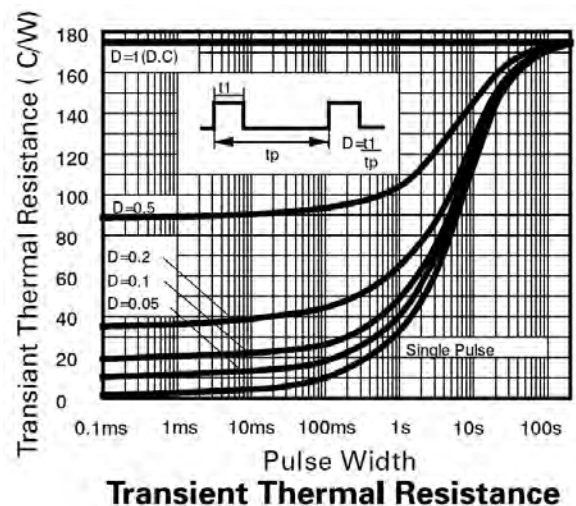
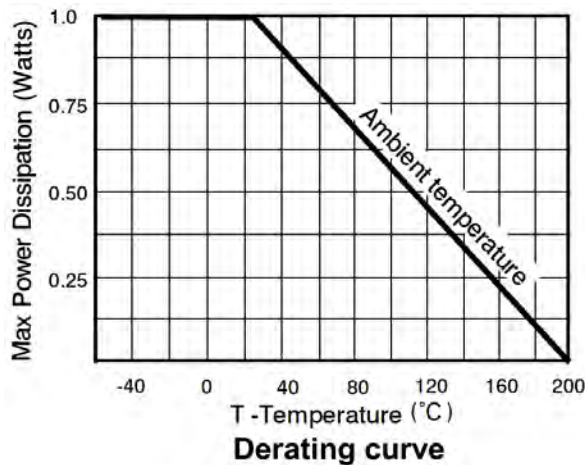
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	25	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Continuous Collector Current	I <sub>C</sub>	4	A
Peak Pulse Current	I <sub>CM</sub>	20	A
Base Current	I <sub>B</sub>	500	mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	175	°C/W
Thermal Resistance, Junction to Leads	R <sub>θJL</sub>	63.75	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +200	°C

Notes: 5. For devices mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum.

**Thermal Characteristics**

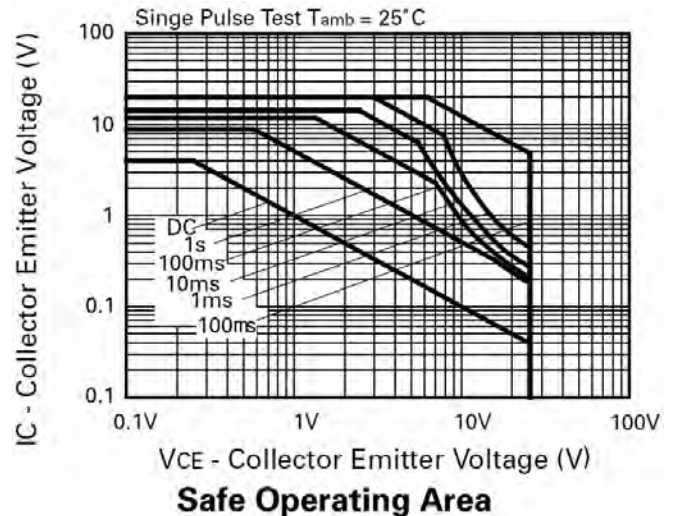
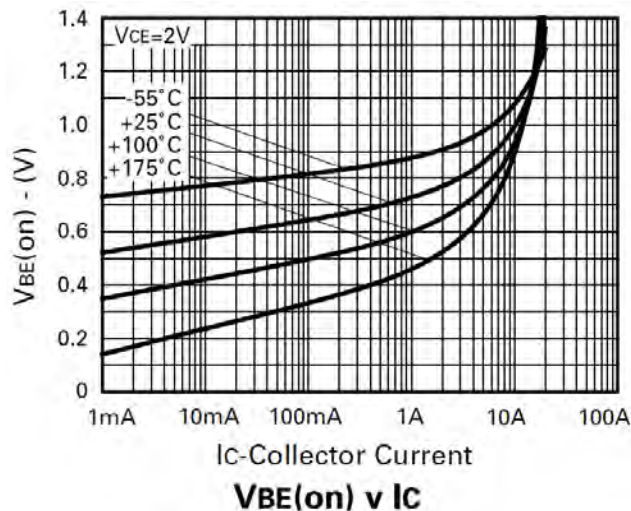
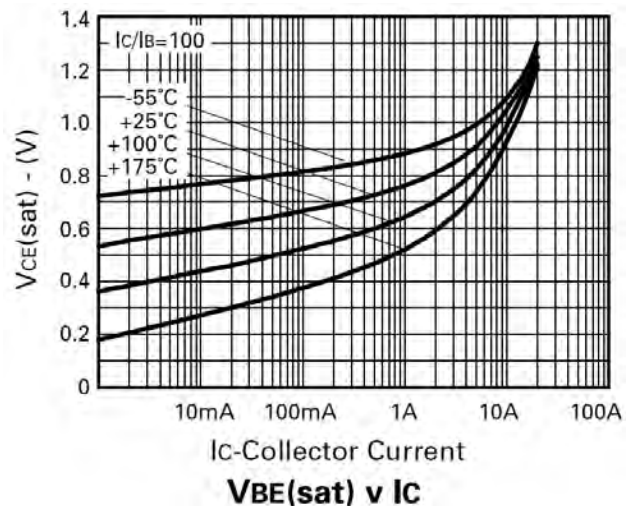
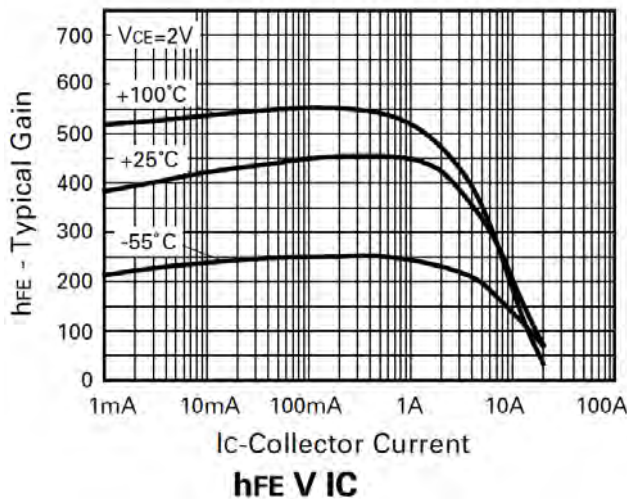
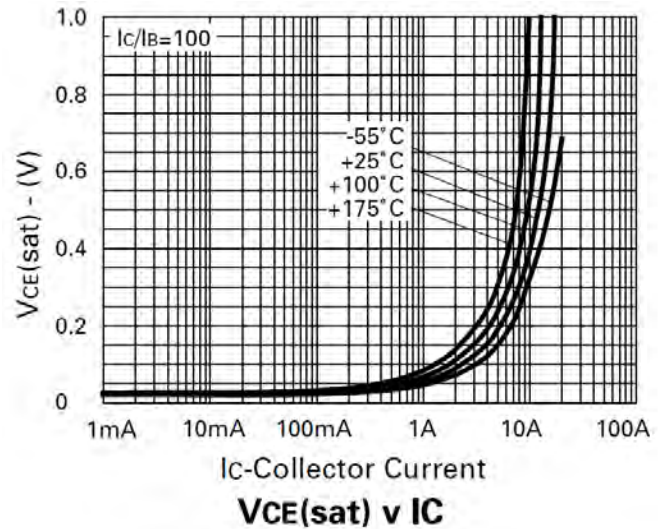
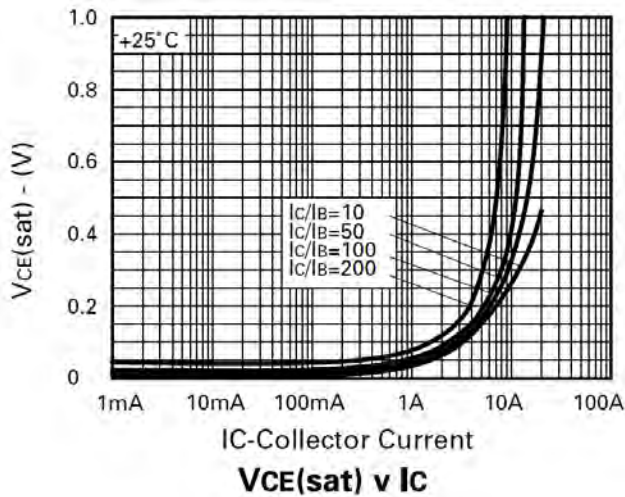


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	80	120	—	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage	BV <sub>CES</sub>	80	120	—	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	25	30	—	V	I <sub>C</sub> = 10mA
Collector-Emitter Breakdown Voltage	BV <sub>CEV</sub>	80	120	—	V	I <sub>C</sub> = 100μA, V <sub>EB</sub> = 1V
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	5	8.75	—	V	I <sub>E</sub> = 100μA
Collector Cut-off Current	I <sub>CBO</sub>	—	0.3	10	nA	V <sub>CB</sub> = 50V
Collector Emitter Cut-off Current	I <sub>CES</sub>	—	0.3	10	nA	V <sub>CES</sub> = 50V
Emitter Cut-off Current	I <sub>EBO</sub>	—	0.3	10	nA	V <sub>EB</sub> = 4V
Collector-Emitter Saturation Voltage (Note 6)	V <sub>CE(sat)</sub>	—	30 60 125 155	45 80 180 220	mV	I <sub>C</sub> = 500mA, I <sub>B</sub> = 10mA I <sub>C</sub> = 1A, I <sub>B</sub> = 10mA I <sub>C</sub> = 2A, I <sub>B</sub> = 10mA I <sub>C</sub> = 4A, I <sub>B</sub> = 50mA
Base-Emitter Saturation Voltage (Note 6)	V <sub>BE(sat)</sub>	—	890	950	mV	I <sub>C</sub> = 4A, I <sub>B</sub> = 50mA
Base-Emitter Turn-On Voltage (Note 6)	V <sub>BE(on)</sub>	—	820	900	mV	I <sub>C</sub> = 4A, V <sub>CE</sub> = 2V
DC Current Gain (Note 6)	h <sub>FE</sub>	250 300 300 200 35	430 450 450 350 70	— — 1200 — —	—	I <sub>C</sub> = 10mA, V <sub>CE</sub> = 2V I <sub>C</sub> = 0.5A, V <sub>CE</sub> = 2V I <sub>C</sub> = 1A, V <sub>CE</sub> = 2V I <sub>C</sub> = 4A, V <sub>CE</sub> = 2V I <sub>C</sub> = 20A, V <sub>CE</sub> = 2V
Current Gain-Bandwidth Product (Note 6)	f <sub>T</sub>	—	180	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 50mA f = 50MHz
Output Capacitance (Note 6)	C <sub>obo</sub>	—	45	60	pF	V <sub>CB</sub> = 10V, f = 1MHz
Turn-On Times	t <sub>on</sub>	—	125	—	ns	I <sub>C</sub> = 4A, I <sub>B</sub> = 40mA, V <sub>CC</sub> = 10V
Turn-Off Times	t <sub>off</sub>	—	380	—	ns	I <sub>C</sub> = 4A, I <sub>B</sub> = 40mA, V <sub>CC</sub> = 10V

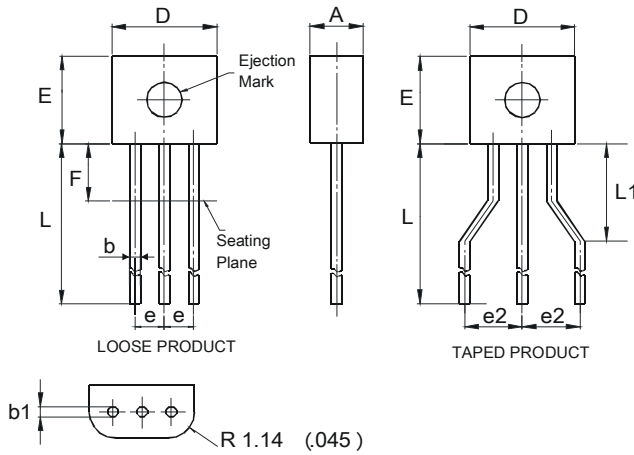
Notes: 6. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%

**Typical Characteristics**



**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	-
<b>All Dimensions in mm</b>			

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