



**THE DATASHEET OF  
ZXTP749FTA**



**25V PNP LOW SATURATION TRANSISTOR IN SOT23**
**Features**

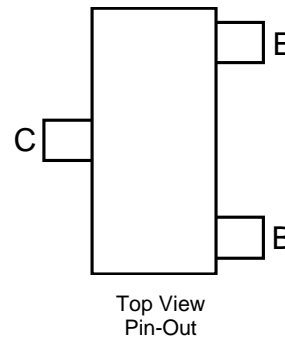
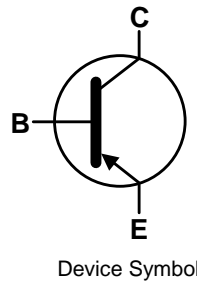
- $BV_{CEO} > -25V$
- $BV_{CEO} > -35V$  forward blocking voltage
- $I_C = -3A$  Continuous Collector Current
- Low Saturation Voltage,  $V_{CE(SAT)} < -150mV @ -1A$ .
- $R_{CE(sat)} = 87m\Omega$  for a low equivalent on-resistance
- 725mW power dissipation
- $h_{FE}$  characterised up to -6A for high current gain hold-up
- Complementary NPN Type: ZXTN649F
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads
- Solderable per MIL-STD-202, Method 208<sup>(3)</sup>
- Weight 0.008 grams (Approximate)

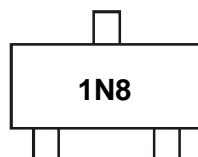
**Application**

- MOSFET Gate Drivers
- Power Switching in Automotive and Industrial Applications
- Motor Drive and Control


**Ordering Information (Note 4)**

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP749FTA	1N8	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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**


1N8 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-35	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-25	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-3	A
Peak Pulse Current	I <sub>CM</sub>	-6	A
Base Current	I <sub>B</sub>	-500	mA
Peak Pulse Current	I <sub>BM</sub>	-2	A

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

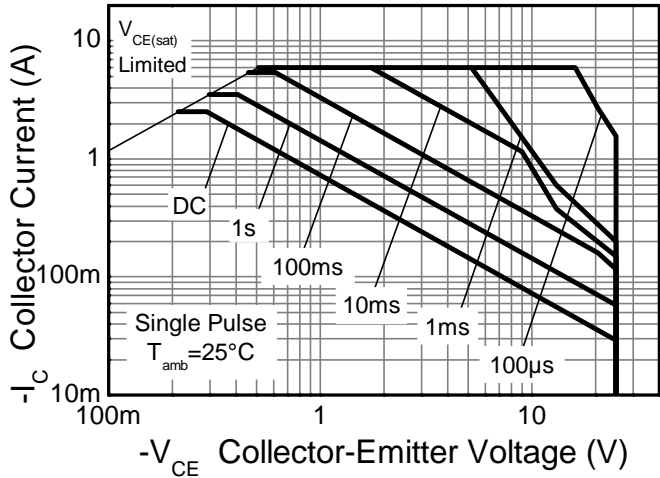
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	725	mW
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	172	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R <sub>θJL</sub>	79	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### ESD Ratings (Note 7)

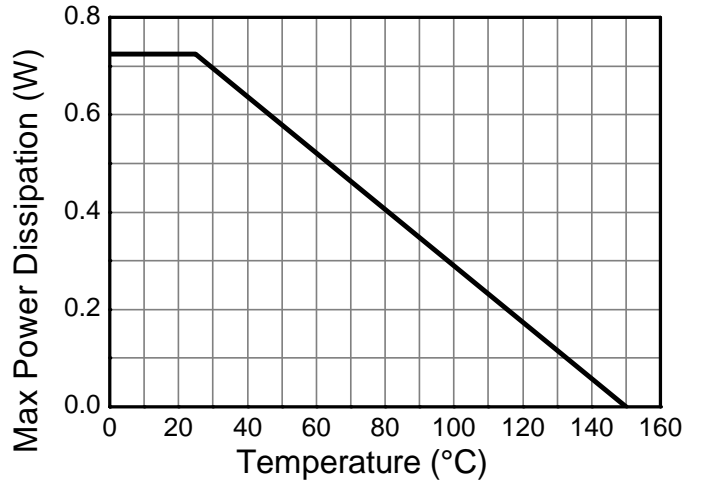
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1 oz. copper, in still air conditions; the device is measured when operating in a steady-state condition.
  6. Thermal resistance from junction to solder-point (at the end of the collector lead).
  7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

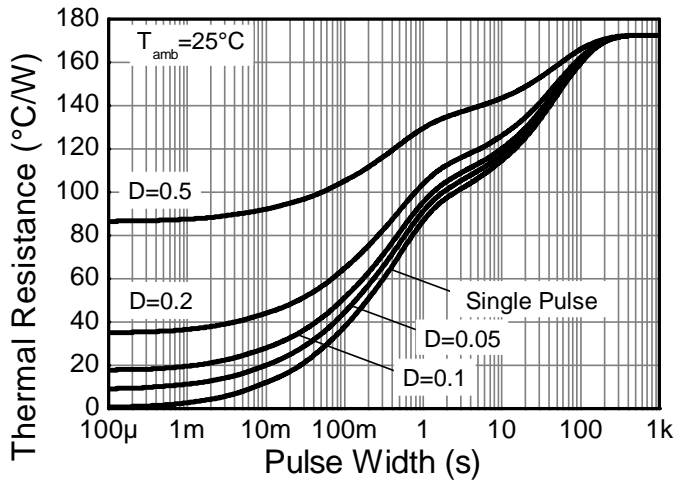
**Thermal Characteristics and Derating information**



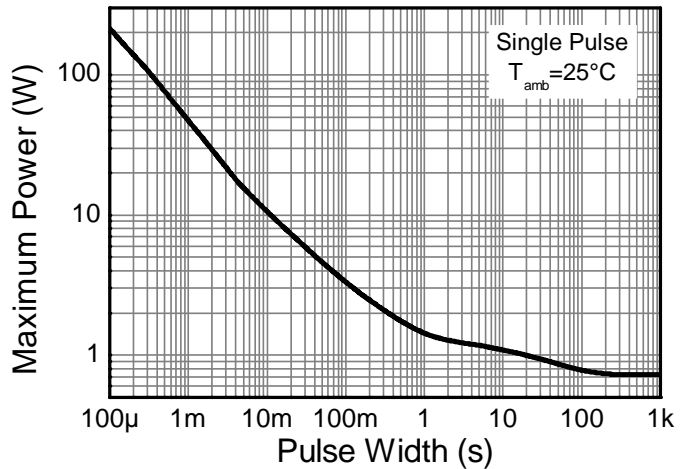
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



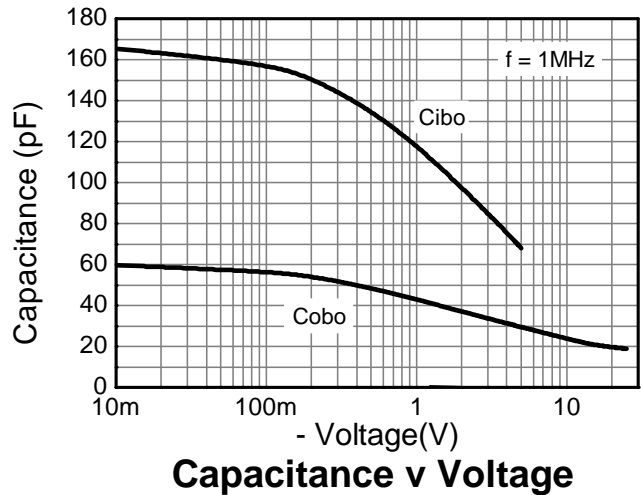
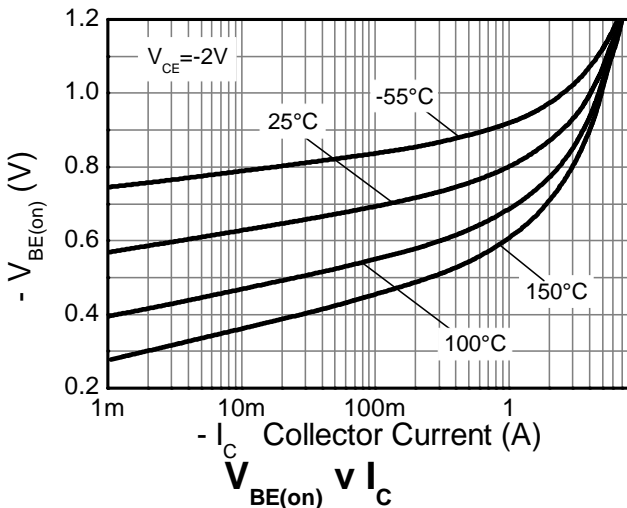
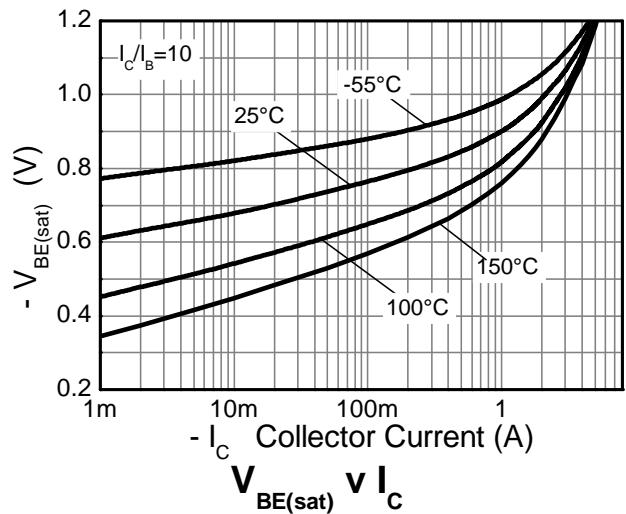
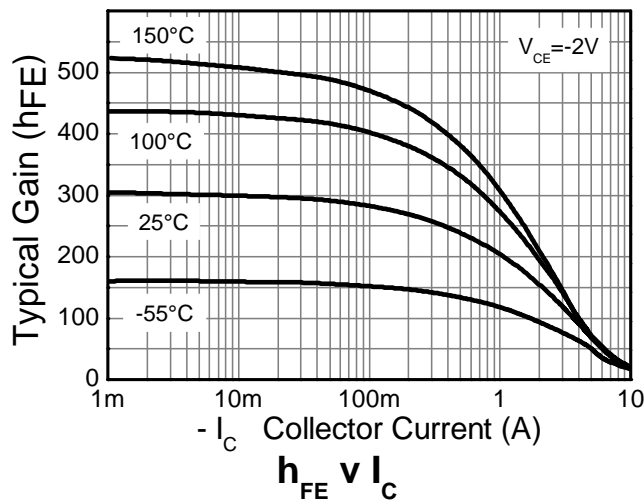
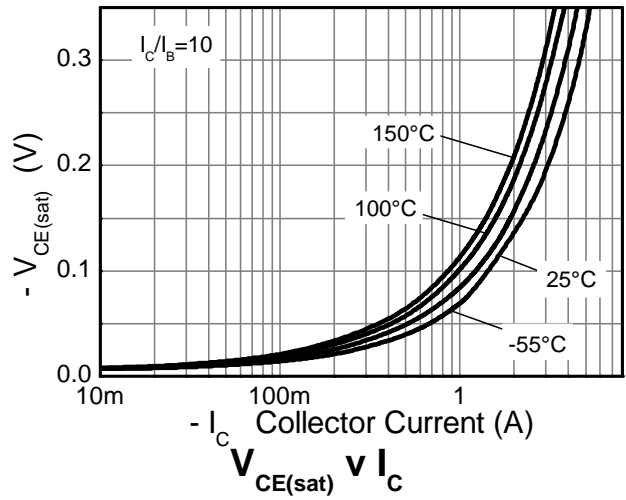
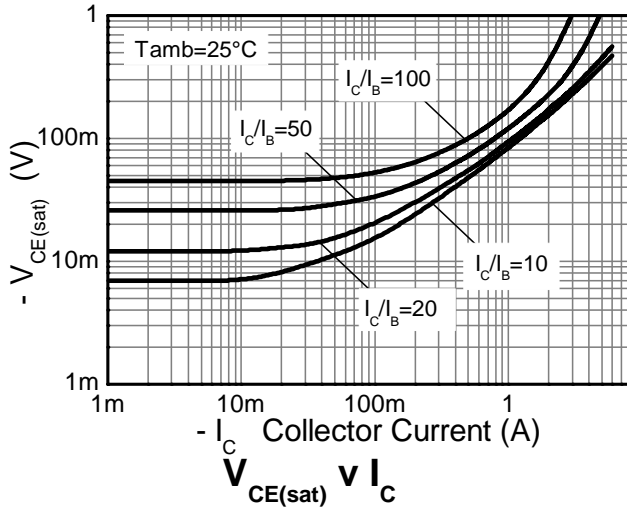
**Pulse Power Dissipation**

**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>	-35	-60	-	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV <sub>CEO</sub>	-25	-40	-	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	-8.4	-	V	I <sub>E</sub> = -100μA
Collector Cutoff Current	I <sub>CBO</sub>	-	<1	-50 -0.5	nA μA	V <sub>CB</sub> = -28V V <sub>CB</sub> = -28V, T <sub>A</sub> = +100°C
Emitter Cutoff Current	I <sub>EBO</sub>	-	<1	-50	nA	V <sub>EB</sub> = -5.6V
Static Forward Current Transfer Ratio (Note 8)	h <sub>FE</sub>	200 130 100 25	320 230 180 50	500 - - -	-	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -2V I <sub>C</sub> = -1A, V <sub>CE</sub> = -2V I <sub>C</sub> = -2A, V <sub>CE</sub> = -2V I <sub>C</sub> = -6A, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage (Note 8)	V <sub>CE(sat)</sub>	-	-85 -229	-150 -350	mV	I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA I <sub>C</sub> = -3A, I <sub>B</sub> = -300mA
Base-Emitter Turn-On Voltage (Note 8)	V <sub>BE(on)</sub>	-	-786	-850	mV	I <sub>C</sub> = -1A, V <sub>CE</sub> = -2V
Base-Emitter Saturation Voltage (Note 8)	V <sub>BE(sat)</sub>	-	-895	-1,000	mV	I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA

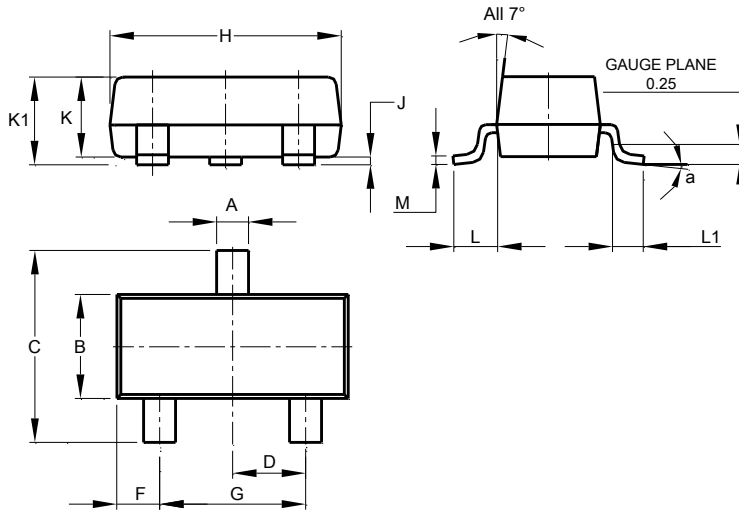
Notes: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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



**Package Outline Dimensions**

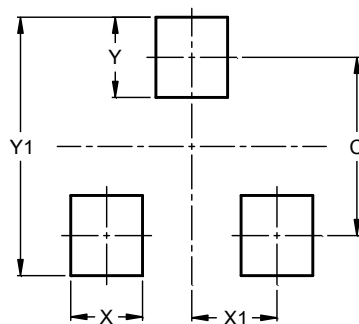
Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

**Suggested Pad Layout**

Please see AP02001 at [http://www.diodes.com/\\_files/datasheets/ap02001.pdf](http://www.diodes.com/_files/datasheets/ap02001.pdf) for the latest version.



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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