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## Features

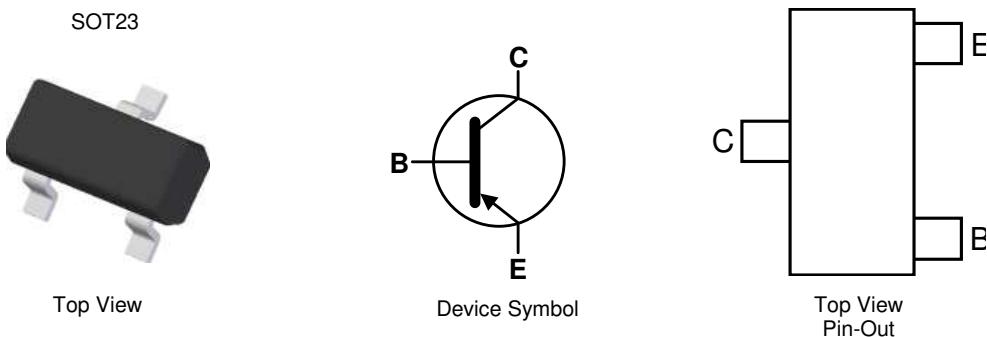
- $BV_{CEO} > -25V$
- $BV_{CEO} > -35V$  forward blocking voltage
- $I_C = -3A$  Continuous Collector Current
- Low Saturation Voltage,  $V_{CE(SAT)} < -150mV$  @  $-1A$ .
- $R_{CE(sat)} = 87m\Omega$  for a low equivalent on-resistance
- 725mW power dissipation
- $h_{FE}$  characterised up to  $-6A$  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>(e3)</sup>
- Weight 0.008 grams (Approximate)

## Application

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



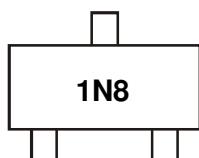
## Ordering Information (Note 4)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-35	V
Collector-Emitter Voltage	$V_{CEO}$	-25	V
Emitter-Base Voltage	$V_{EBO}$	-7	V
Continuous Collector Current	$I_C$	-3	A
Peak Pulse Current	$I_{CM}$	-6	A
Base Current	$I_B$	-500	mA
Peak Pulse Current	$I_{BM}$	-2	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	725	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	172	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	79	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

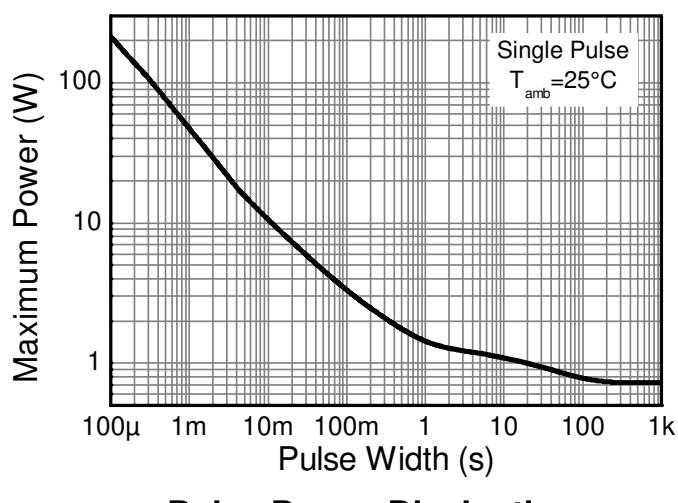
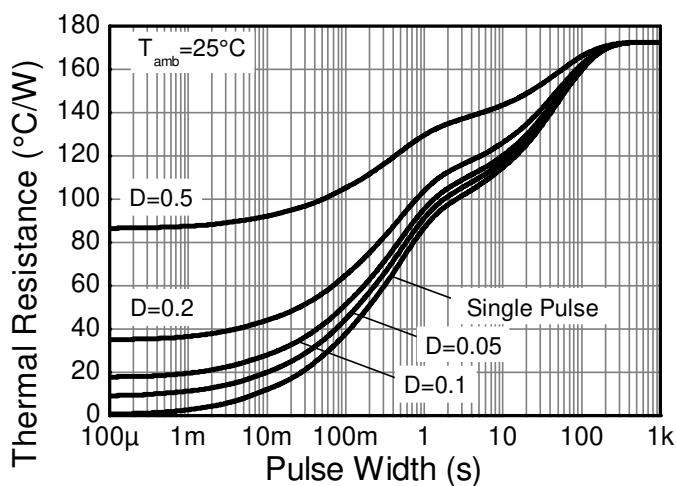
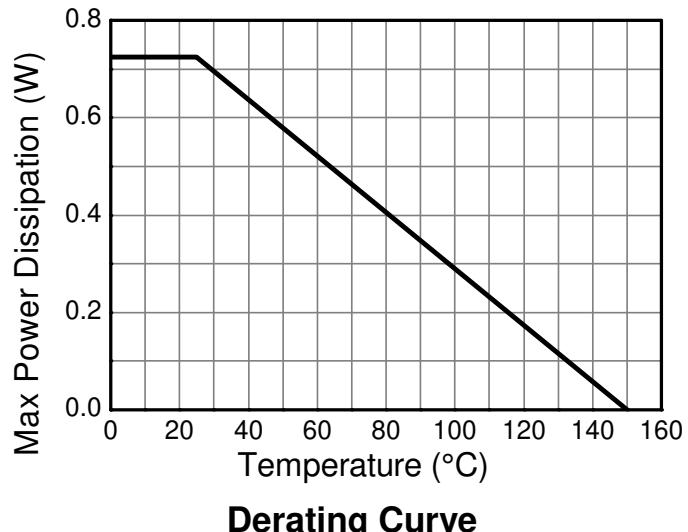
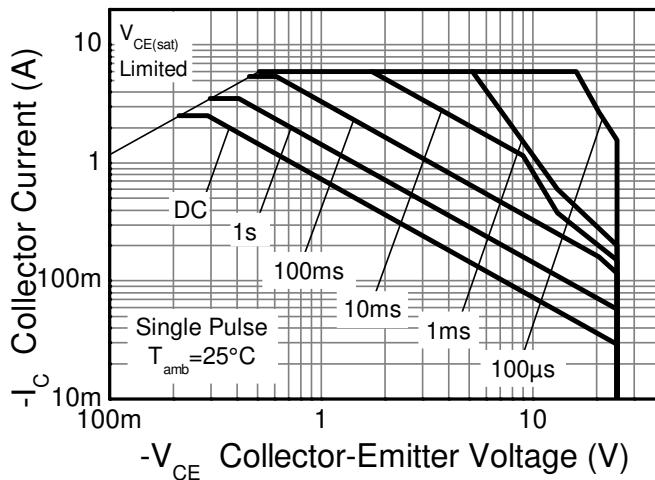
**ESD Ratings** (Note 7)

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

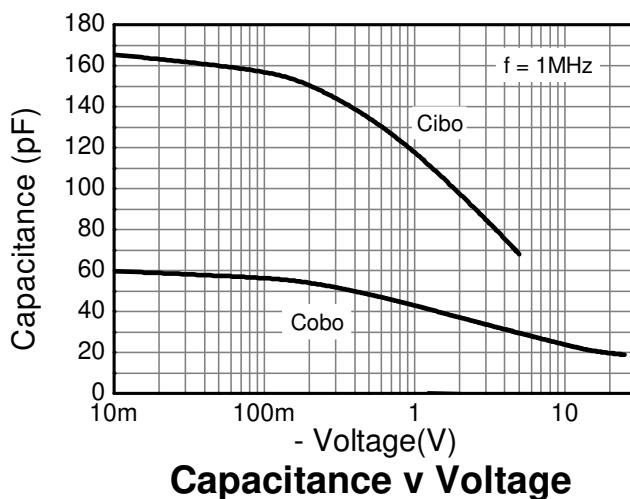
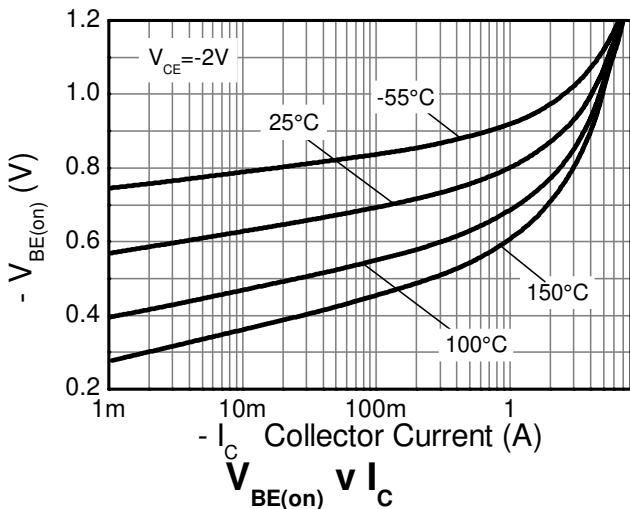
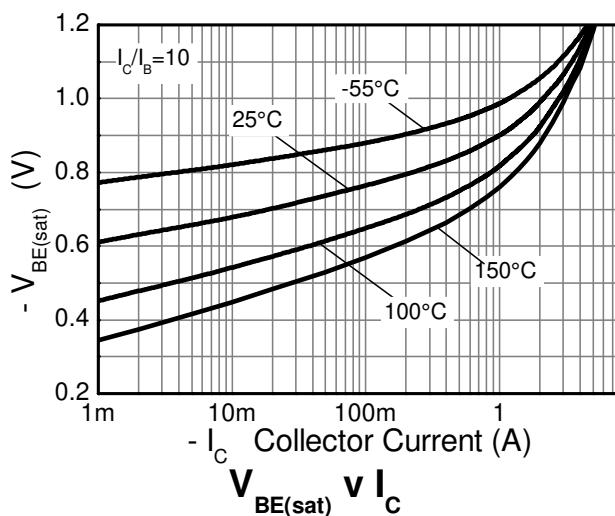
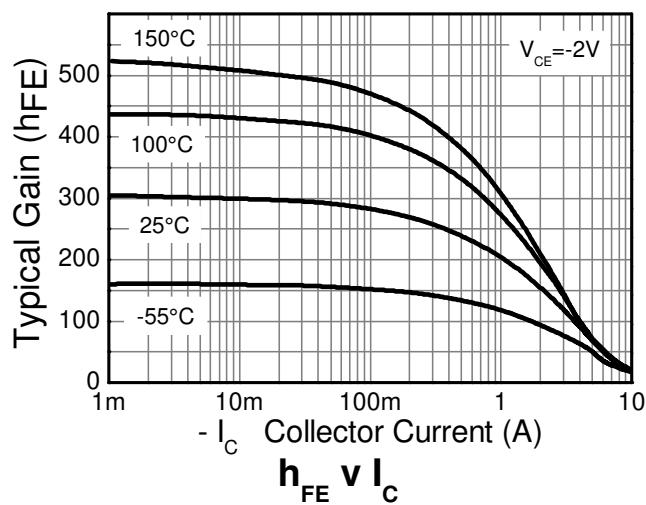
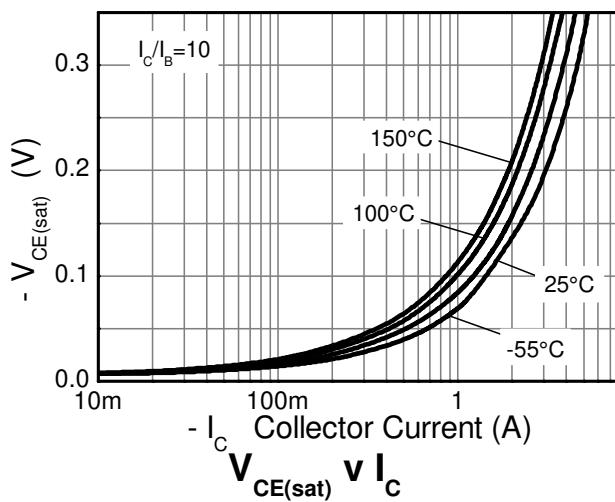
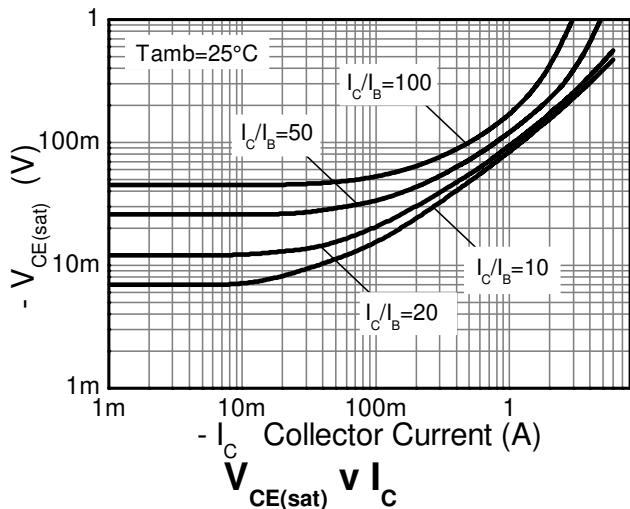


**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$\text{BV}_{\text{CBO}}$	-35	-60	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	$\text{BV}_{\text{CEO}}$	-25	-40	-	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$\text{BV}_{\text{EBO}}$	-7	-8.4	-	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	$I_{\text{CBO}}$	-	<1	-50 -0.5	nA $\mu\text{A}$	$V_{\text{CB}} = -28\text{V}$ $V_{\text{CB}} = -28\text{V}, T_A = +100^\circ\text{C}$
Emitter Cutoff Current	$I_{\text{EBO}}$	-	<1	-50	nA	$V_{\text{EB}} = -5.6\text{V}$
Static Forward Current Transfer Ratio (Note 8)	$\text{h}_{\text{FE}}$	200 130 100 25	320 230 180 50	500 - - -		$I_C = -100\text{mA}, V_{\text{CE}} = -2\text{V}$ $I_C = -1\text{A}, V_{\text{CE}} = -2\text{V}$ $I_C = -2\text{A}, V_{\text{CE}} = -2\text{V}$ $I_C = -6\text{A}, V_{\text{CE}} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 8)	$V_{\text{CE}(\text{sat})}$	- -	-85 -229	-150 -350	mV	$I_C = -1\text{A}, I_B = -100\text{mA}$ $I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Turn-On Voltage (Note 8)	$V_{\text{BE}(\text{on})}$	-	-786	-850	mV	$I_C = -1\text{A}, V_{\text{CE}} = -2\text{V}$
Base-Emitter Saturation Voltage (Note 8)	$V_{\text{BE}(\text{sat})}$	-	-895	-1,000	mV	$I_C = -1\text{A}, I_B = -100\text{mA}$

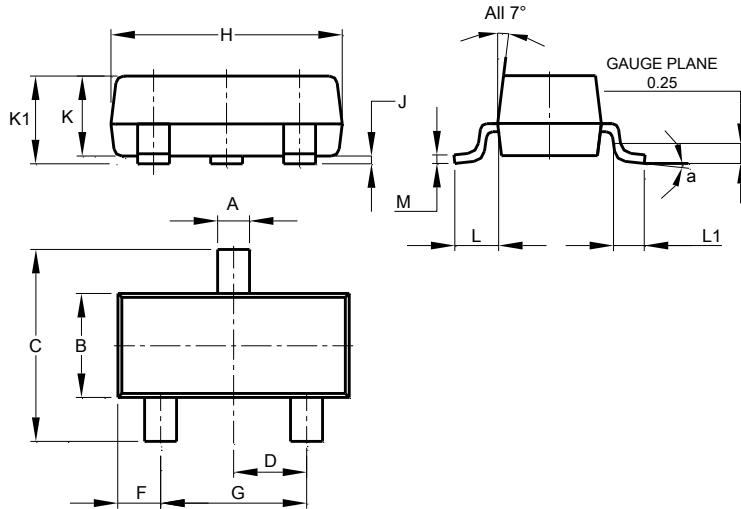
Notes: 8. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

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



## 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.

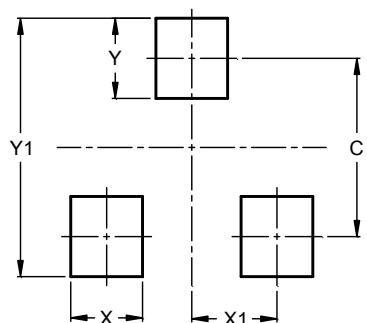


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--

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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