



**ZXTN4004K**

**150V NPN LED DRIVING TRANSISTOR IN TO252**

**Features**

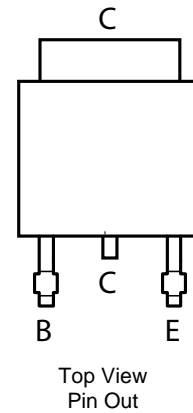
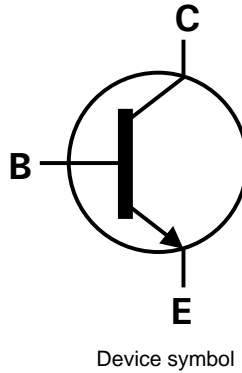
- $BV_{CEO} > 150V$
- $h_{FE} > 100$  for  $I_C = 150mA$ ,  $V_{CE} = 0.25V$
- $I_C (cont) = 1A$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Applications**

- LED TV backlight

**Mechanical Data**

- Case: TO252
- Case material: molded Plastic. "Green" molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.34 grams (Approximate)

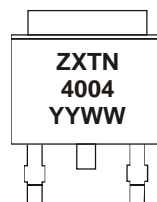


**Ordering Information**

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN4004KTC	ZXTN4004	13	16	2,500

Notes: 1. No purposefully added lead.  
2. "Green" devices, Halogen and Antimony Free, Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>

**Marking Information**



ZXTN4004 = Product Marking Code  
YYWW = Date Code Marking  
YY = Last Digit of Year (ex: 10 = 2010)  
WW = Week Code (01 – 53)

**ZXTN4004K**

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

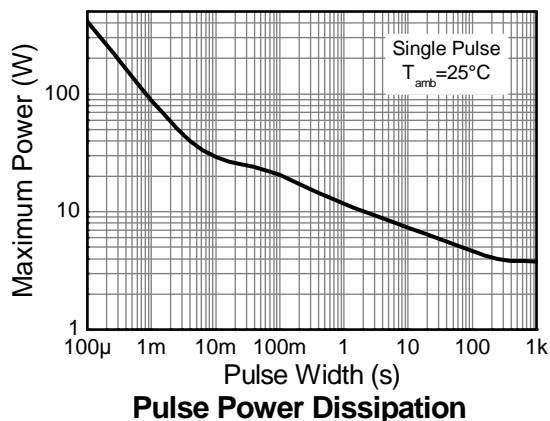
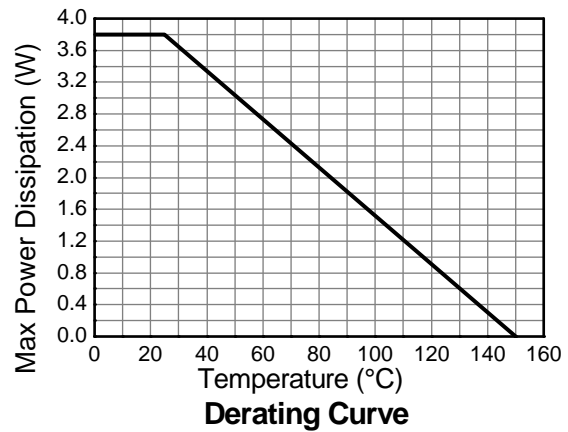
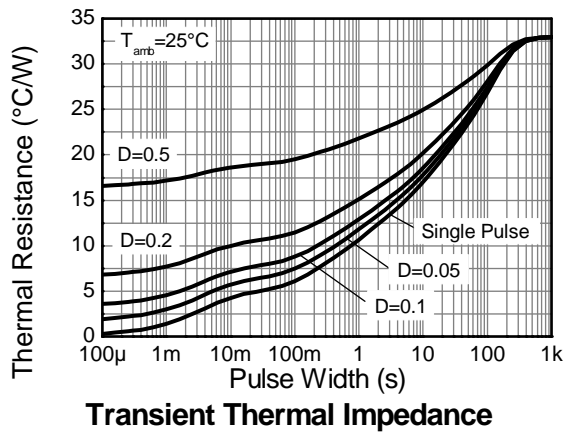
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	150	V
Collector-Emitter Voltage	V <sub>CEO</sub>	150	V
Emitter-Base Voltage	V <sub>EBO</sub>	7	V
Continuous Collector Current	I <sub>C</sub>	1	A
Peak Pulse Current (Note 4)	I <sub>CM</sub>	3	A
Base Current	I <sub>B</sub>	500	mA

**Thermal Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P <sub>D</sub>	3.8	W
Thermal Resistance, Junction to Ambient (Note 3)	R <sub>θJA</sub>	33	°C/W
Thermal Resistance, Junction to Leads (Note 5)	R <sub>θJL</sub>	12	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
- 3. For a device surface mounted on 50mm X 50mm FR4 PCB with high coverage of single sided 2 oz copper, in still air conditions
  - 4. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%.
  - 5. Thermal resistance from junction to solder-point (on the exposed collector pad).

**Thermal Characteristics and Derating Information**

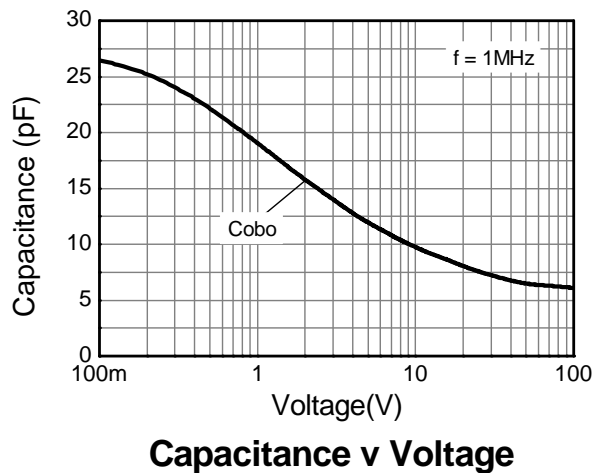
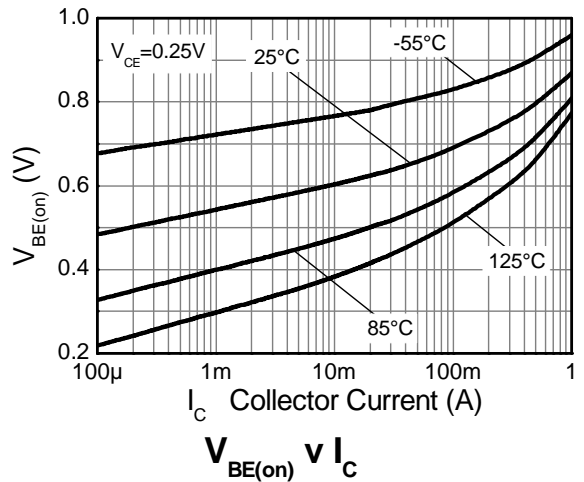
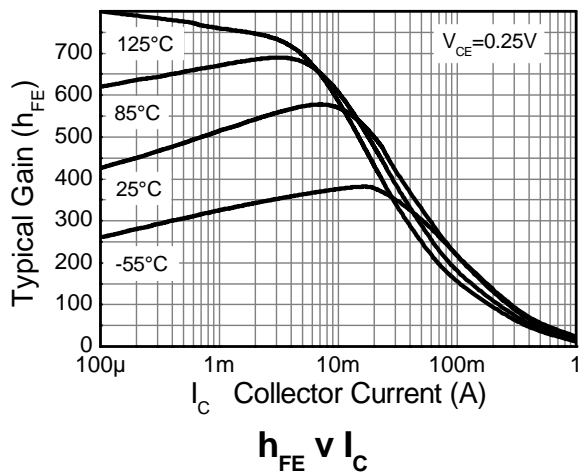


**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage (Note 6)	BV <sub>CEO</sub>	150	175	-	V	I <sub>C</sub> = 10mA
Collector Cut-off Current	I <sub>CBO</sub>	-	-	50	nA	V <sub>CB</sub> = 150V
Emitter Cut-off Current	I <sub>EBO</sub>	-	-	50	nA	V <sub>EB</sub> = 7V
Static Forward Current Transfer Ratio (Note 6)	h <sub>FE</sub>	60 100	- -	- -	-	I <sub>C</sub> = 85mA, V <sub>CE</sub> = 0.20V I <sub>C</sub> = 150mA, V <sub>CE</sub> = 0.25V
Base-Emitter Turn-On Voltage (Note 6)	V <sub>BE(on)</sub>	-	0.71	0.95	V	I <sub>C</sub> = 150mA, V <sub>CE</sub> = 0.25V
Delay Time	t <sub>(d)</sub>	-	512	-	ns	V <sub>CC</sub> = 120V, I <sub>C</sub> = 150mA, -I <sub>B2</sub> = 1.5mA, V <sub>CE(ON)</sub> = 0.25V
Rise Time	t <sub>(r)</sub>	-	426	-	ns	
Storage Time	t <sub>(s)</sub>	-	3413	-	ns	
Fall Time	t <sub>(f)</sub>	-	321	-	ns	
Storage Time	t <sub>(s)</sub>	-	65	-	ns	
Fall Time	t <sub>(f)</sub>	-	294	-	ns	V <sub>CC</sub> = 120V, I <sub>C</sub> = 150mA, -I <sub>B2</sub> = 1.5mA, V <sub>CE(ON)</sub> = 4V

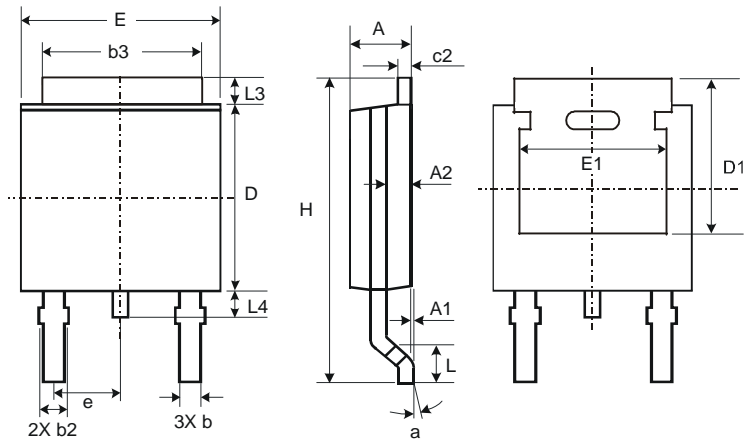
Notes: 6. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%

**Typical Characteristics**



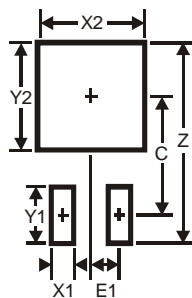
**ZXTN4004K**

**Package Outline Dimensions**



TO252			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c2	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	–	–
e	–	–	2.286
E	6.45	6.70	6.58
E1	4.32	–	–
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	–
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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