



ZXTN4004K

150V NPN LED DRIVING TRANSISTOR IN TO252

Features

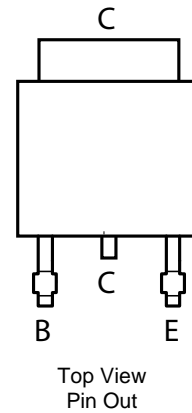
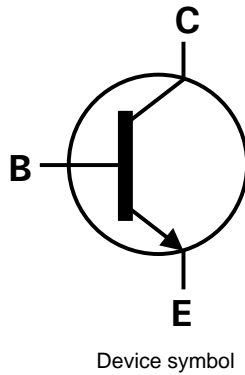
- $BV_{CEO} > 150V$
- $h_{FE} > 100$ for $I_C = 150mA$, $V_{CE} = 0.25V$
- $I_C (cont) = 1A$
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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)

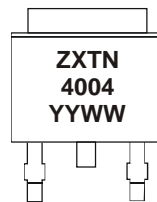


Ordering Information

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_A = 25°C unless otherwise specified

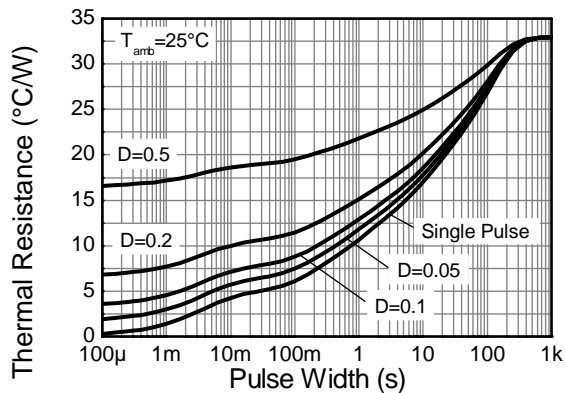
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	150	V
Collector-Emitter Voltage	V _{CEO}	150	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	1	A
Peak Pulse Current (Note 4)	I _{CM}	3	A
Base Current	I _B	500	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

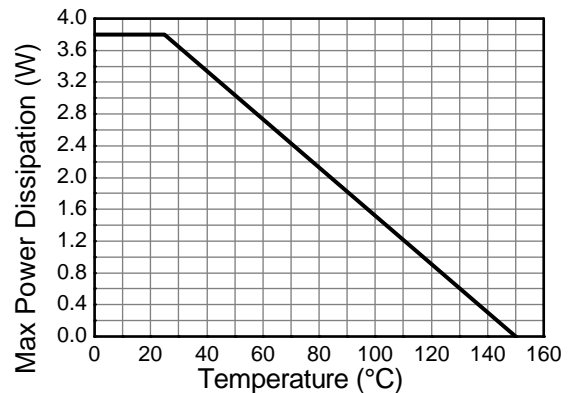
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P _D	3.8	W
Thermal Resistance, Junction to Ambient (Note 3)	R _{θJA}	33	°C/W
Thermal Resistance, Junction to Leads (Note 5)	R _{θJL}	12	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- 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).

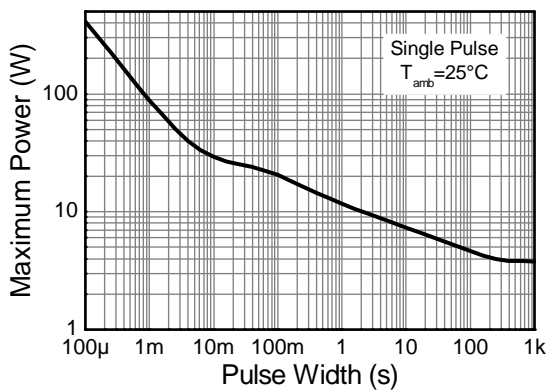
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Derating Curve



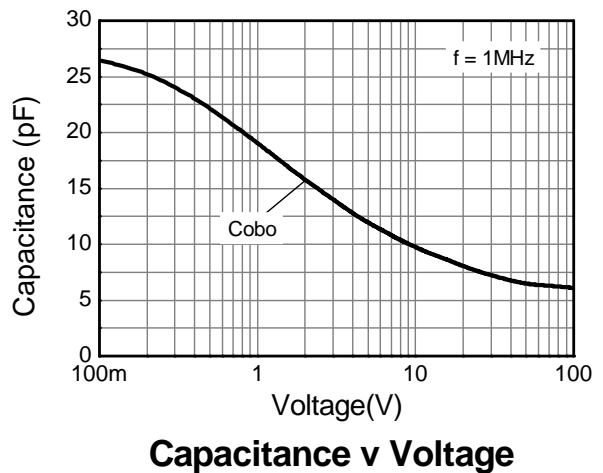
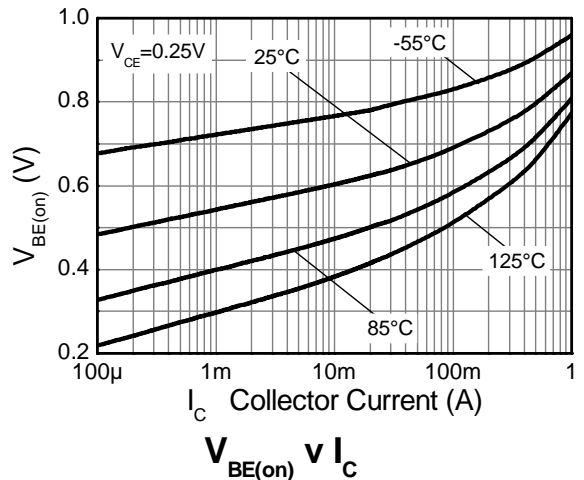
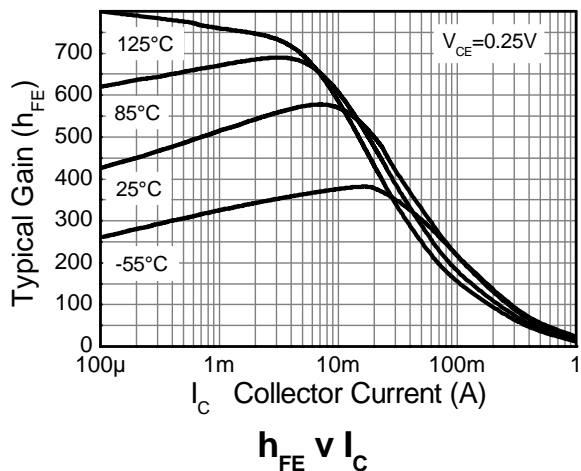
Pulse Power Dissipation

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	150	175	-	V	$I_C = 10\text{mA}$
Collector Cut-off Current	I_{CBO}	-	-	50	nA	$V_{CB} = 150\text{V}$
Emitter Cut-off Current	I_{EBO}	-	-	50	nA	$V_{EB} = 7\text{V}$
Static Forward Current Transfer Ratio (Note 6)	h_{FE}	60 100	- -	- -	-	$I_C = 85\text{mA}, V_{CE} = 0.20\text{V}$ $I_C = 150\text{mA}, V_{CE} = 0.25\text{V}$
Base-Emitter Turn-On Voltage (Note 6)	$V_{BE(on)}$	-	0.71	0.95	V	$I_C = 150\text{mA}, V_{CE} = 0.25\text{V}$
Delay Time	$t_{(d)}$	-	512	-	ns	$V_{CC} = 120\text{V}, I_C = 150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = 0.25\text{V}$
Rise Time	$t_{(r)}$	-	426	-	ns	
Storage Time	$t_{(s)}$	-	3413	-	ns	
Fall Time	$t_{(f)}$	-	321	-	ns	
Storage Time	$t_{(s)}$	-	65	-	ns	
Fall Time	$t_{(f)}$	-	294	-	ns	$V_{CC} = 120\text{V}, I_C = 150\text{mA},$ $-I_{B2} = 1.5\text{mA}, V_{CE(ON)} = 4\text{V}$

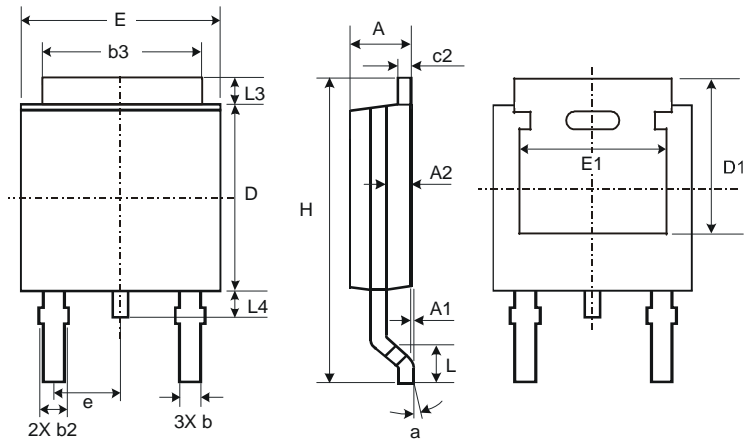
Notes: 6. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$

Typical Characteristics



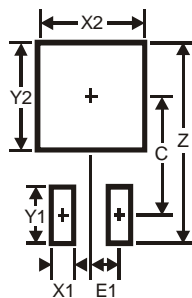
ZXTN4004K

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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