Lead-free Green

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**

Mechanical Data

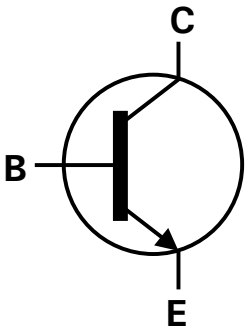
- Case: TO252
- Case material: molded Plastic. "Green" molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.34 grams (Approximate)

Applications

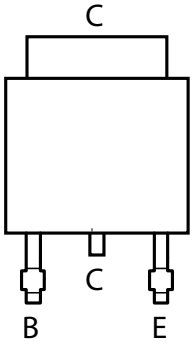
- LED TV backlight

TO252

Top View



Device symbol



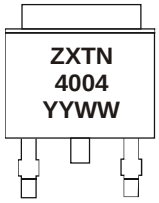
Top View
Pin Out

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)

Maximum Ratings @T_A = 25°C unless otherwise specified

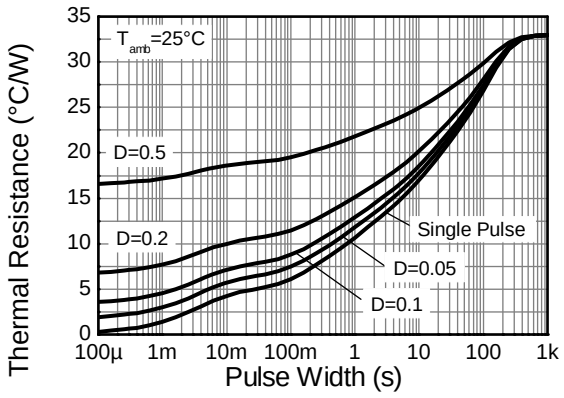
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	1	A
Peak Pulse Current (Note 4)	I_{CM}	3	A
Base Current	I_B	500	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

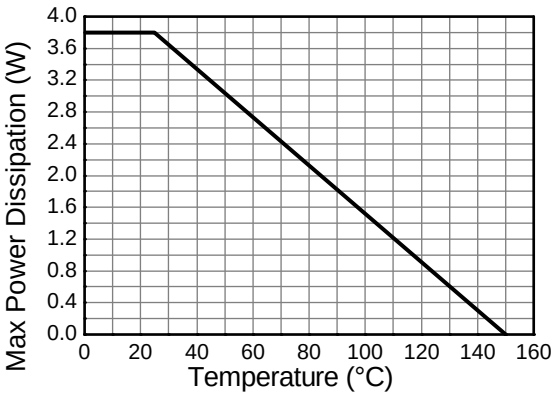
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 3)	P_D	3.8	W
Thermal Resistance, Junction to Ambient	(Note 3)	$R_{\theta JA}$	33	°C/W
Thermal Resistance, Junction to Leads	(Note 5)	$R_{\theta JL}$	12	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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).

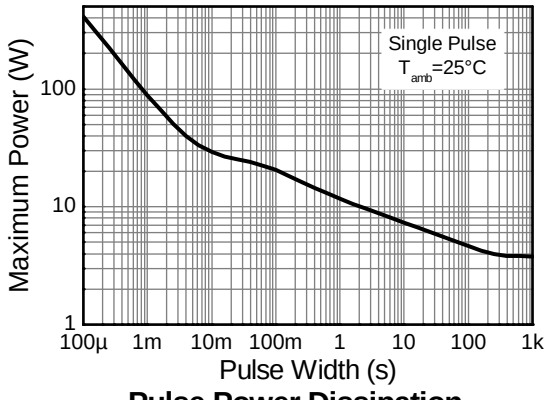
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Derating Curve



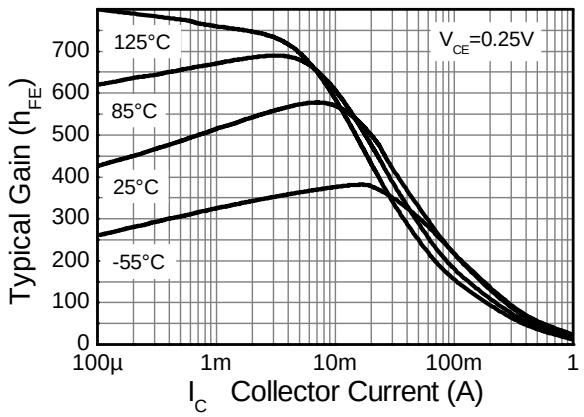
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified

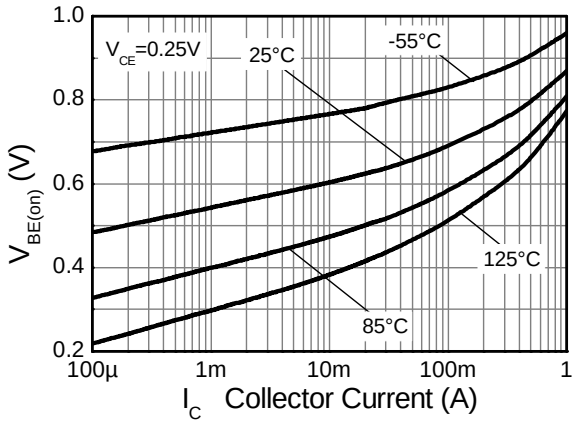
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	150	175	-	V	I_C = 10mA
Collector Cut-off Current	I_{CBO}	-	-	50	nA	V_{CB} = 150V
Emitter Cut-off Current	I_{EBO}	-	-	50	nA	V_{EB} = 7V
Static Forward Current Transfer Ratio (Note 6)	h_{FE}	60 100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

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

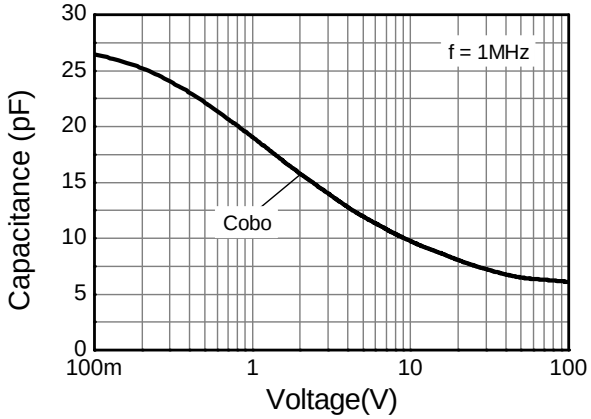
Typical Characteristics



h_{FE} v I_C

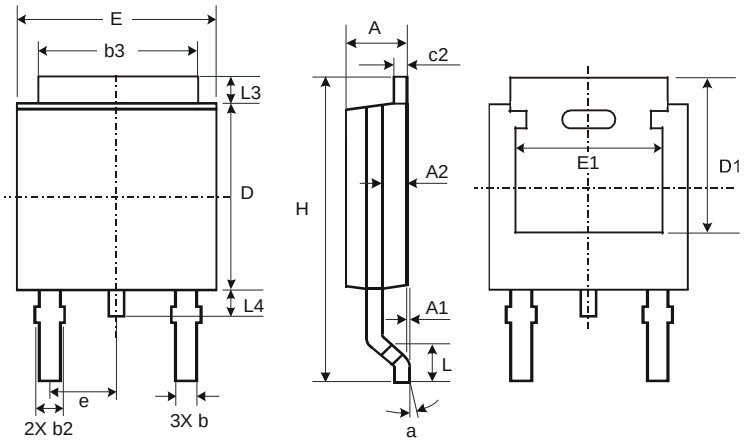


$V_{BE(on)}$ v I_C



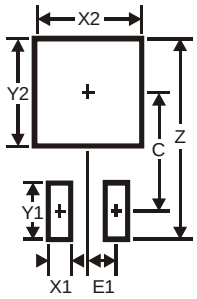
Capacitance v Voltage

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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