



**THE DATASHEET OF
ZXTN4240F-7**



Features

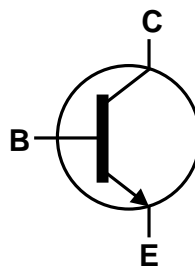
- $BV_{CEO} > 40V$
- $I_C = 2A$ high Continuous Collector Current
- $I_{CM} = 3A$ Peak Pulse Current
- Low Saturation Voltage 180mV Max @ $I_C = 1A$
- $R_{CE(SAT)} = 60m\Omega$ at 0.5A for a Low Equivalent On-Resistance
- 730mW Power Dissipation
- Complimentary PNP Type: ZXTP5240F
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

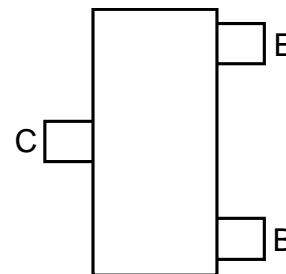
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.008 grams (Approximate)



Top View



Device Symbol

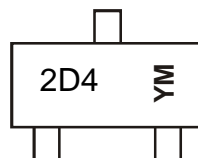

 Top View
Pin Configuration

Ordering Information (Note 4)

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXTN4240F-7	2D4	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 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



2D4= Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: E = 2017)
 M = Month (ex: 9 = September)

Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
Code	E	F	G	H	I	J	K	L	M	N	O	
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	40	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	5	V
Peak Pulse Collector Current	I _{CM}	3	A
Continuous Collector Current	I _C	2	A
Peak Base Current	I _{BM}	0.3	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

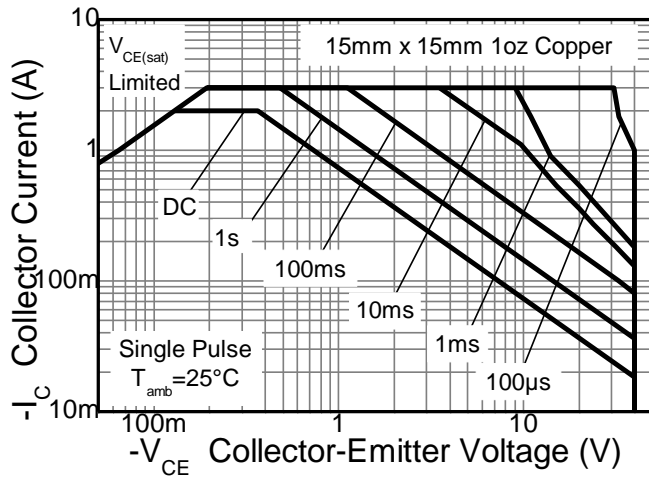
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	730	mW
Power Dissipation (Note 6)	P _D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	171	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	209	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R _{θJL}	75	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

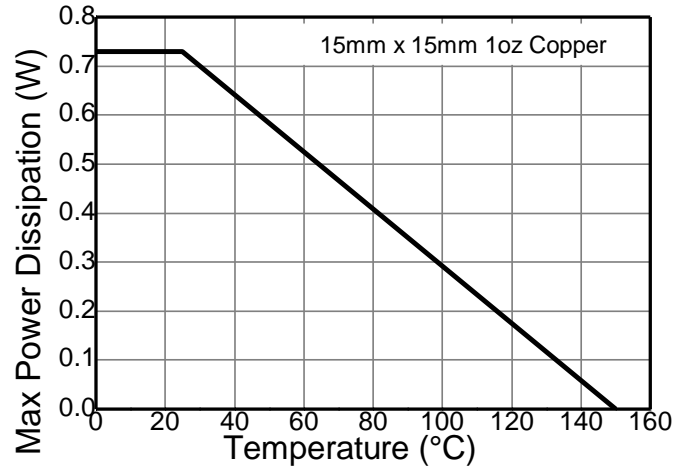
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as note (5), except the device is mounted on minimum recommended pad layout.
 7. Thermal resistance from junction to solder-point (at the end of the collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

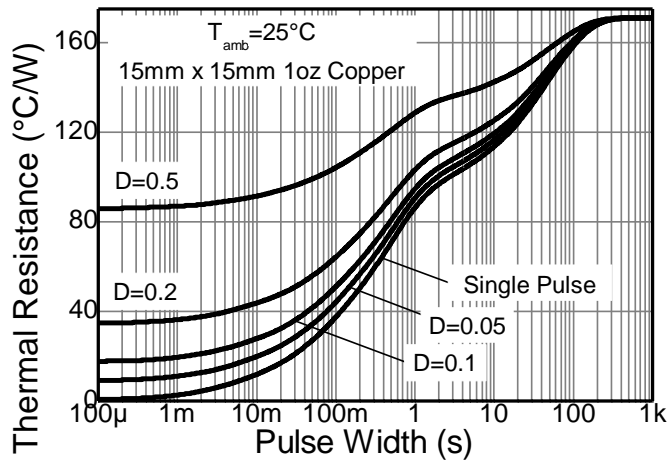
Thermal Characteristics and Derating Information



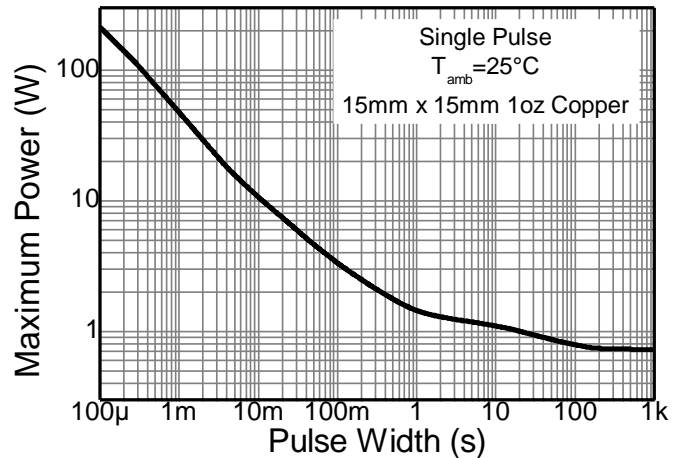
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	40	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	40	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	$I_E = 100\mu\text{A}$
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	$V_{CB} = 30\text{V}, I_E = 0$
Emitter-Base Cutoff Current	I_{EBO}	—	—	50	μA	$V_{CB} = 30\text{V}, I_E = 0, T_A = +150^\circ\text{C}$
		—	—	100	nA	$V_{EB} = 4\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 8)						
DC Current Gain	h_{FE}	350	—	—	—	$V_{CE} = 2\text{V}, I_C = 0.1\text{A}$
		300	—	—		$V_{CE} = 2\text{V}, I_C = 0.5\text{A}$
		300	—	—		$V_{CE} = 2\text{V}, I_C = 1\text{A}$
		150	—	—		$V_{CE} = 2\text{V}, I_C = 2\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	70	mV	$I_C = 100\text{mA}, I_B = 1\text{mA}$
		—	30	100		$I_C = 500\text{mA}, I_B = 50\text{mA}$
		—	—	180		$I_C = 750\text{mA}, I_B = 15\text{mA}$
		—	—	180		$I_C = 1\text{A}, I_B = 50\text{mA}$
		—	—	320		$I_C = 2\text{A}, I_B = 200\text{mA}$
Equivalent On-Resistance	$R_{CE(SAT)}$	—	60	200	m Ω	$I_C = 500\text{mA}, I_B = 50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.1	V	$I_C = 2\text{A}, I_B = 200\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	—	—	0.75	V	$V_{CE} = 2\text{V}, I_C = 100\text{mA}$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	$V_{CE} = 10\text{V}, I_C = 100\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{OB}	—	—	20	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Turn-On Time	t_{ON}	—	43	—	ns	$I_C = 500\text{mA}, V_{CC} = 10\text{V}, I_{B1} = -I_{B2} = 50\text{mA}$
Turn-Off Time	t_{OFF}	—	363	—	ns	

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

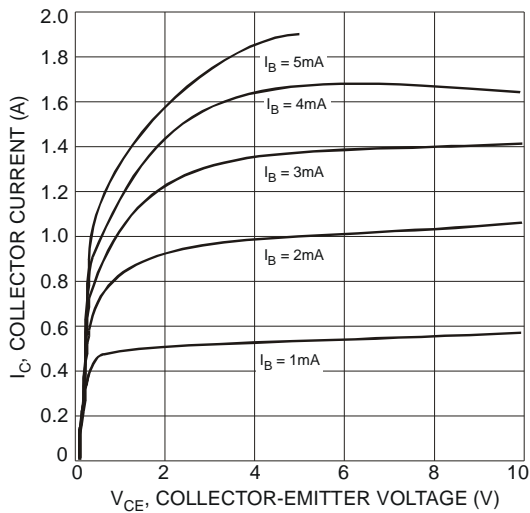
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

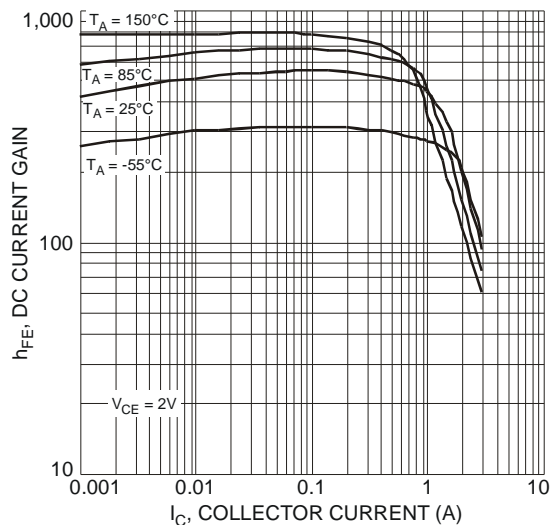


Fig. 3 Typical DC Current Gain vs. Collector Current

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

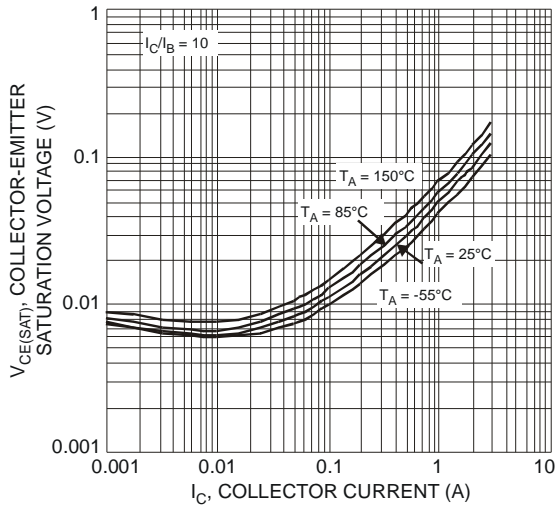


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

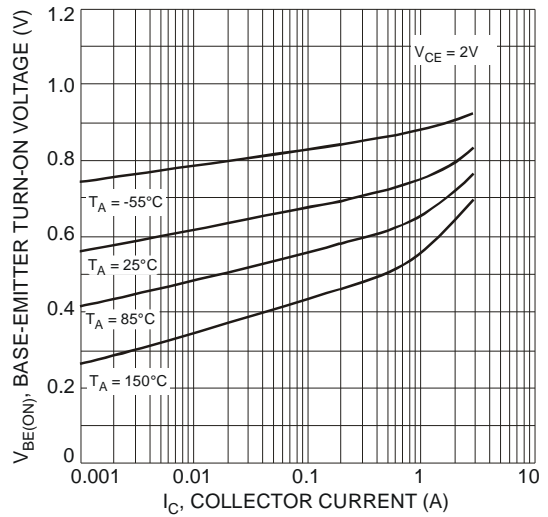


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

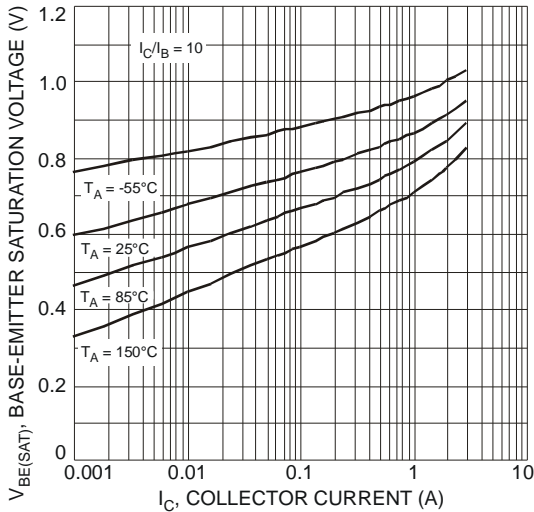


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

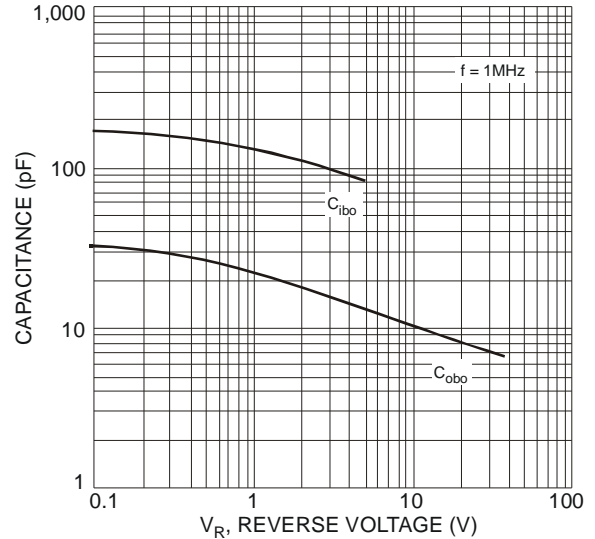


Fig. 7 Typical Capacitance Characteristics

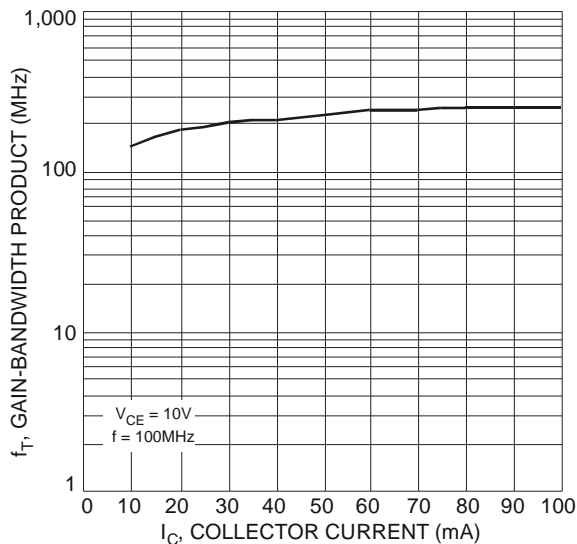
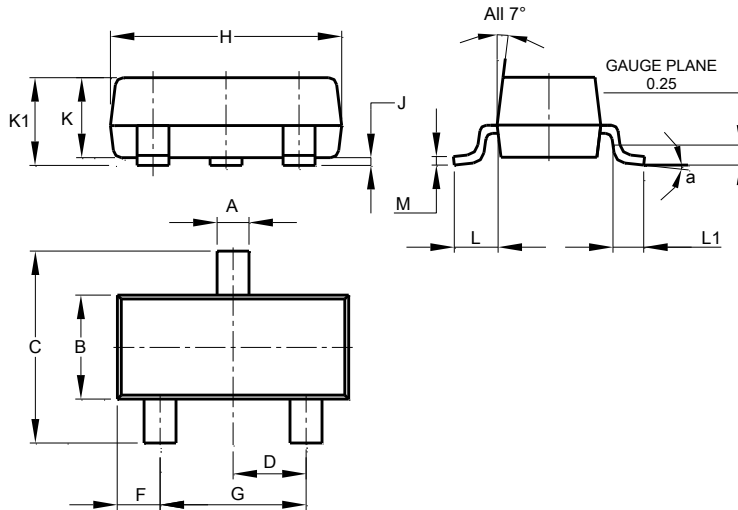


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

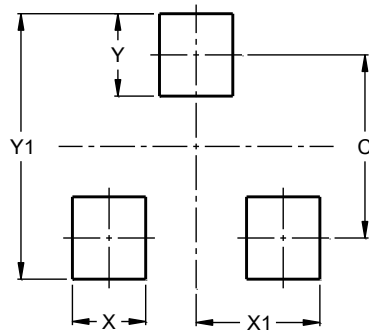


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



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

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