

Features

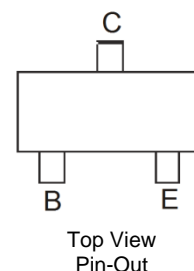
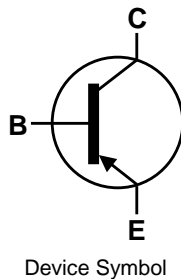
- $BV_{CEO} > -40V$
- $BV_{ECO} > -3V$
- $I_C = -3A$ Continuous Collector Current
- $V_{CE(sat)} < -85mV @ -1A$
- $R_{CE(sat)} = 55m\Omega$ typical
- $P_D = 1.25W$
- High Power Dissipation SOT23 Package
- High Peak Current
- Low Saturation Voltage
- 3V Reverse Blocking Voltage
- Complementary Part Number: ZXTN25040DFH
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**

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 (Ⓢ)
- Weight: 0.008 grams (Approximate)

Applications

- MOSFET and IGBT gate driving
- DC-DC converters
- Motor drives
- High-side drivers

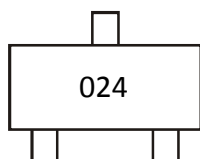


Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25040DFHTA	024	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



024 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-45	V
Collector-Emitter Voltage (Forward Blocking)	V _{CEO}	-40	V
Emitter-collector voltage (Reverse Blocking)	V _{ECO}	-3	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-3	A
Peak Pulse Current	I _{CM}	-9	A

Thermal Characteristics @ T_A = +25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation Linear derating factor	P _D	0.73	W mW/°C
		5.84	
		0.78	
		6.24	
		1.05	
		8.4	
Thermal Resistance, Junction to Ambient	R _{θJA}	1.25	°C/W
		9.6	
		1.81	
		14.5	
		171	
Thermal Resistance, Junction to Lead	R _{θJL}	160	°C/W
		119	
		100	
		69	
Thermal Resistance, Junction to Case	R _{θJC}	74.95	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	45	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

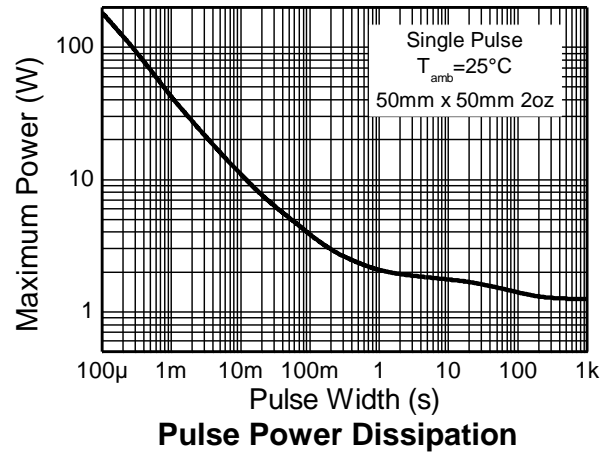
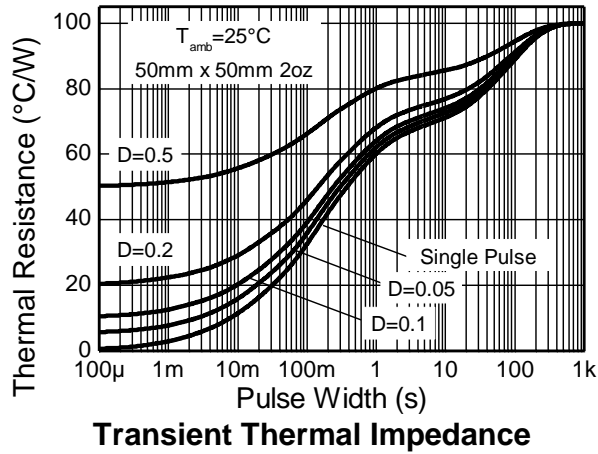
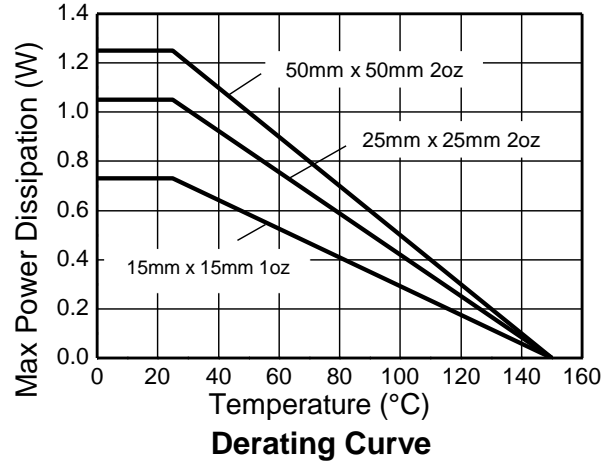
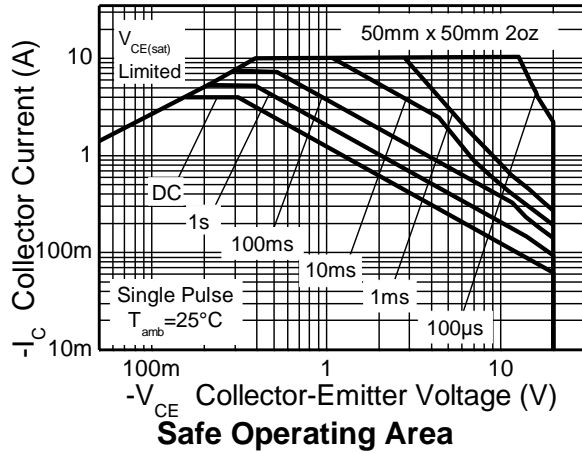
- Notes:
- For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 - Same as note (5), except the device is mounted on FR4 substrate PCB layout with minimum recommended pad layout.
 - Same as note (5), except the device is surface mounted on 25mm x 25mm with 2 oz copper.
 - Same as note (5), except the device is surface mounted on 50mm x 50mm with 2 oz copper.
 - Same as note (8), except the device is measured at t<5secs.
 - Thermal resistance from junction to solder-point (at the end of the collector lead).
 - Thermal resistance from junction to the top of the case.

ESD Ratings (Note 12)

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

- Note: 12. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

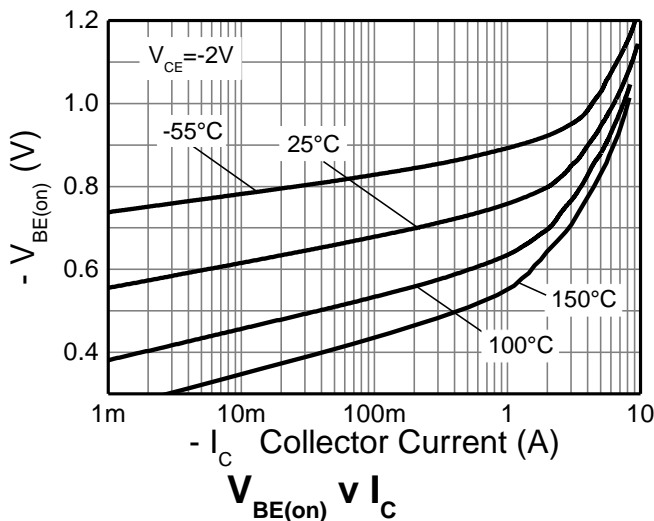
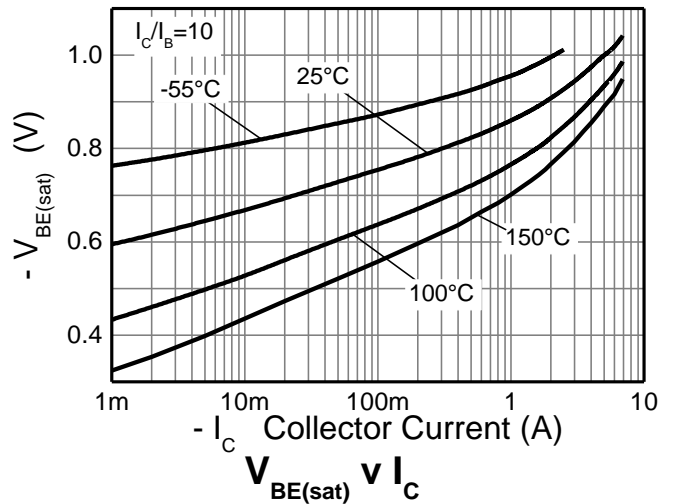
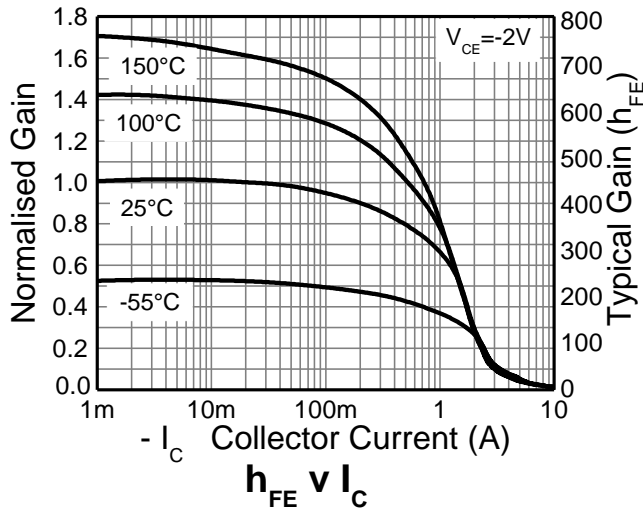
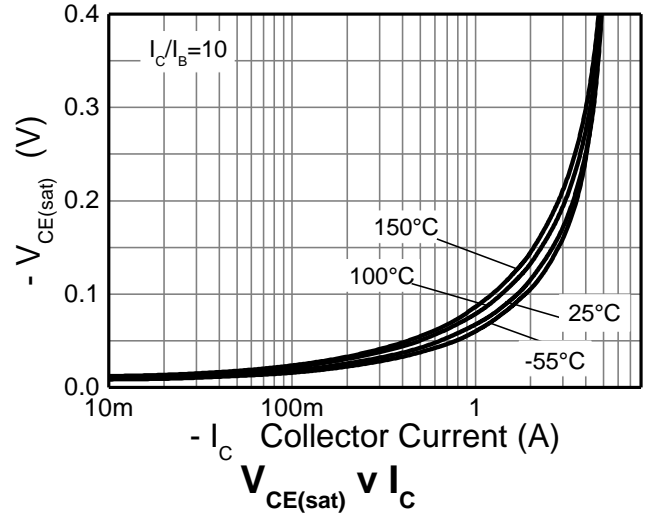
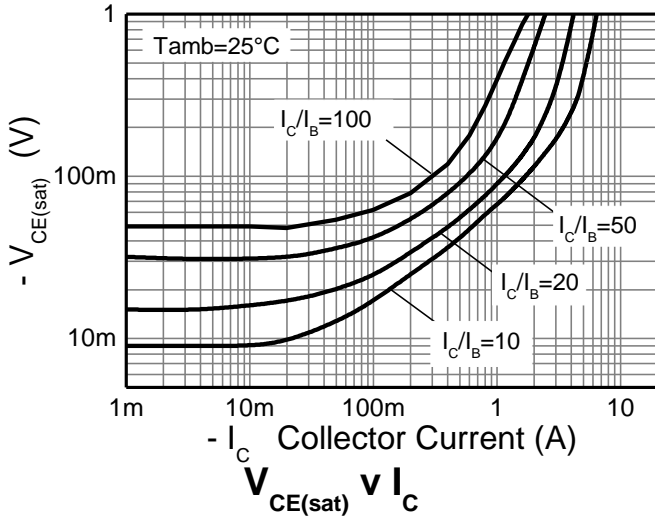


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-45	-75	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 13)	BV_{CEO}	-40	-65	-	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.2	-	V	$I_E = -100\mu\text{A}$
Emitter-Collector Breakdown Voltage	BV_{ECO}	-3	-8.7	-	V	$I_E = -100\mu\text{A}$
Collector-Base Cutoff Current	I_{CBO}	-	< -1	-50	nA	$V_{CB} = -45\text{V}$
		-	-	-0.5	μA	$V_{CB} = -45\text{V}, T_{amb} = +100^\circ\text{C}$
Emitter-Base Cutoff Current	I_{EBO}	-	< -1	-50	nA	$V_{EB} = -5.6\text{V}$
Static Forward Current Transfer Ratio (Note 13)	h_{FE}	300	450	900	-	$I_C = -10\text{mA}, V_{CE} = -2\text{V}$
		200	300	-		$I_C = -1\text{A}, V_{CE} = -2\text{V}$
		30	60	-		$I_C = -3\text{A}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 13)	$V_{CE(sat)}$	-	-170	-260	mV	$I_C = -1\text{A}, I_B = -20\text{mA}$
		-	-65	-85		$I_C = -1\text{A}, I_B = -100\text{mA}$
		-	-165	-220		$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Saturation Voltage (Note 13)	$V_{BE(sat)}$	-	-930	-1000	mV	$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Saturation Voltage (Note 13)	$V_{BE(on)}$	-	-830	-900	mV	$I_C = -3\text{A}, V_{CE} = -2\text{V}$
Output Capacitance	C_{obo}	-	17.4		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Transition Frequency	f_T	-	270	-	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Turn-on Time	$t_{(on)}$	-	75.5	-	ns	$V_{CC} = -15\text{V}, I_C = -750\text{mA},$
Turn-off Time	$t_{(off)}$	-	320	-	ns	$I_{B1} = -I_{B2} = -15\text{mA}$

Note: 13. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

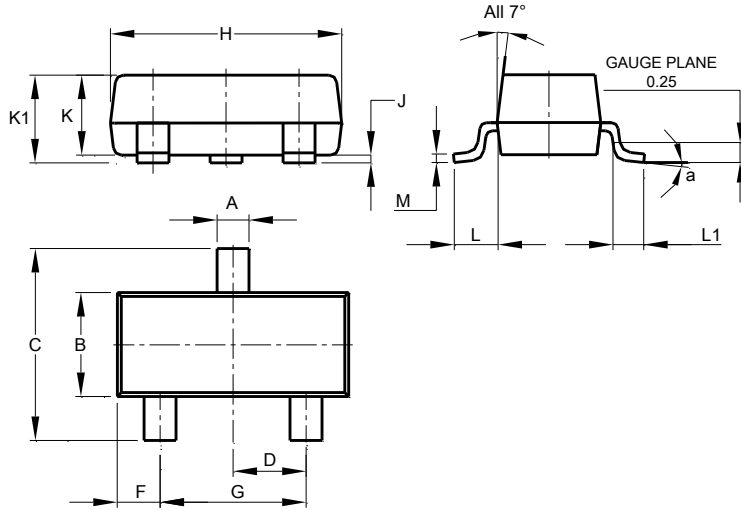
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23

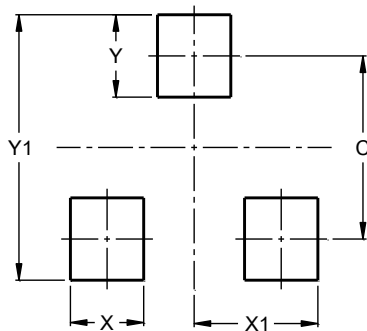


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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