


**ZXTP25040DFL**

**40V PNP LOW POWER TRANSISTOR IN SOT23**

**Features**

- $BV_{CEO} > -40V$
- $BV_{ECO} > -3V$
- $I_C = -1.5A$  Continuous Collector Current
- $V_{CE(sat)} < -115mV @ -1A$
- $R_{CE(sat)} = 82m\Omega$
- High Peak Current
- Complementary Part Number ZXTN25040DFL
- **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 
- Weight: 0.008 grams (Approximate)

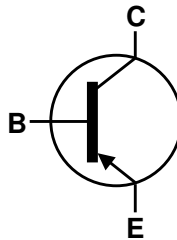
**Applications**

- MOSFET and IGBT Gate Driving
- DC-DC Converters

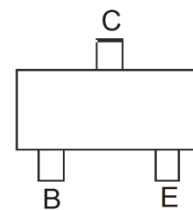
SOT23



Top View



Device Symbol



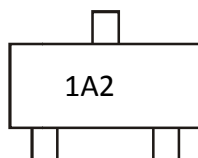
Top View  
Pin-Out

**Ordering Information** (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25040DFLTA	1A2	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](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**



1A2 = Product Type Marking Code

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25 °C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-45	V
Collector-Emitter Voltage (Forward Blocking)	V <sub>CEO</sub>	-40	V
Emitter-collector voltage (Reverse Blocking)	V <sub>ECO</sub>	-3	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current (Note 5)	I <sub>C</sub>	-1.5	A
Base Current	I <sub>B</sub>	-500	mA
Peak Pulse Current	I <sub>CM</sub>	-5	A

**Thermal Characteristics** (@T<sub>A</sub> = +25 °C, unless otherwise specified.)

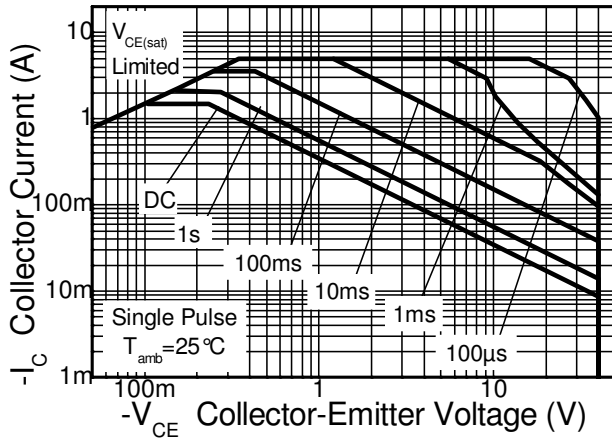
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	310	mW
		350	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	403	°C/W
		357	
Thermal Resistance, Junction to Leads	R <sub>θJL</sub>	350	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 8)

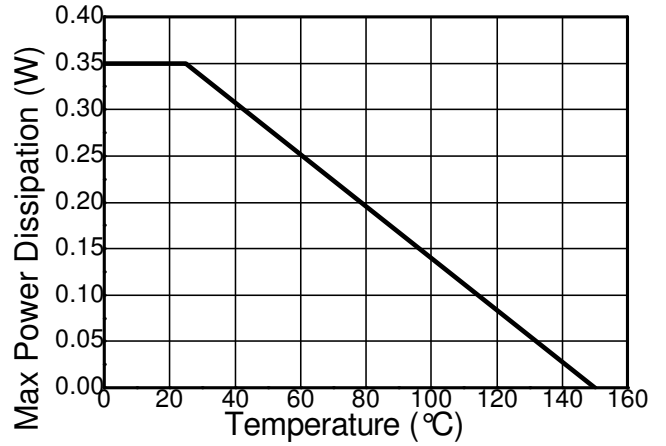
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 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 15 mm x 15mm 1oz copper.
  7. Thermal resistance from junction to solder-point (at the end of the leads).
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

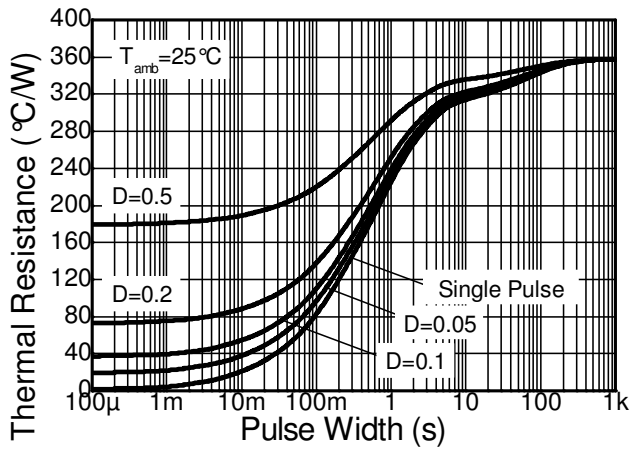
**Thermal Characteristics and Derating Information**



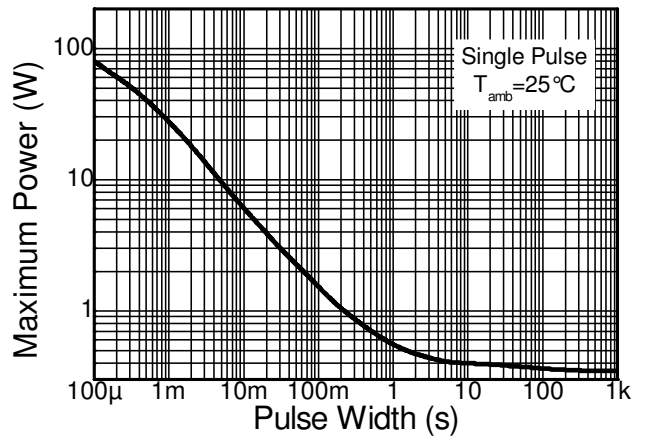
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



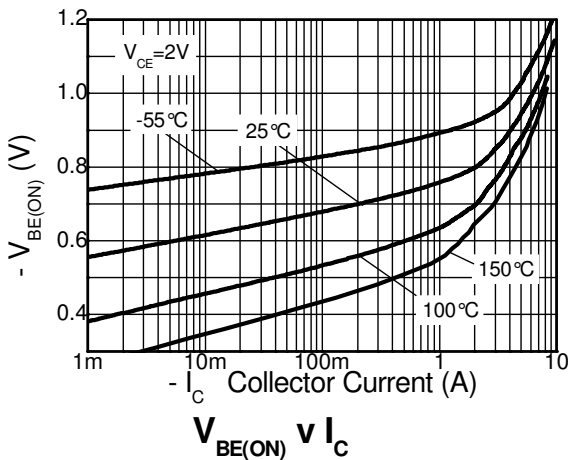
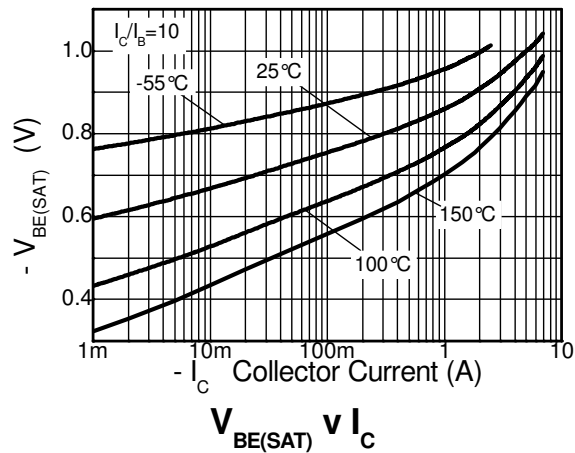
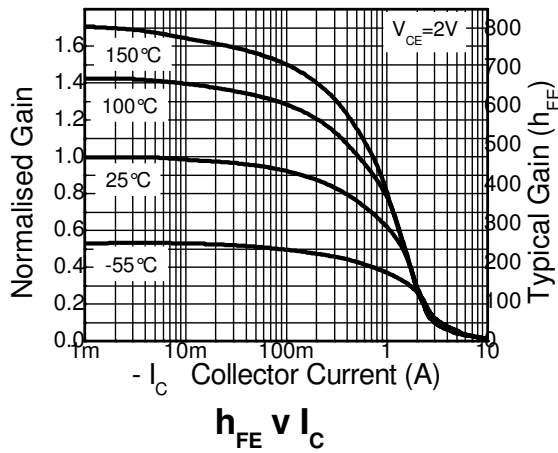
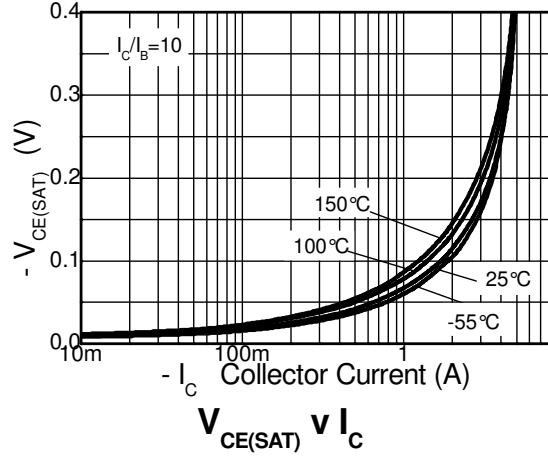
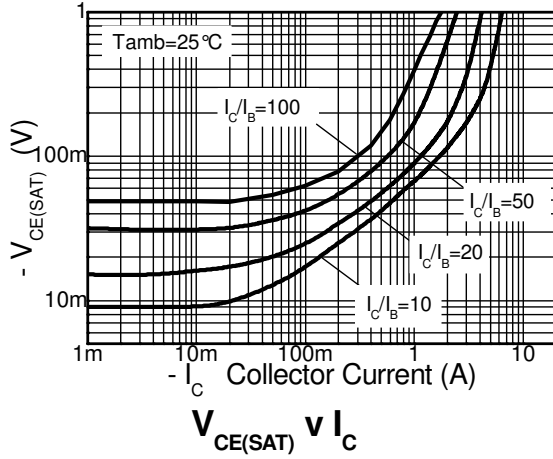
**Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-45	-75	-	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-40	-65	-	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	-8.2	-	V	I <sub>E</sub> = -100μA
Emitter-Base Breakdown Voltage	BV <sub>ECO</sub>	-3	-8.7	-	V	I <sub>E</sub> = -100μA
Collector-Base Cutoff Current	I <sub>CBO</sub>	-	< -1	-50	nA	V <sub>CB</sub> = -36V
		-	-	-20	μA	V <sub>CB</sub> = -36V, T <sub>amb</sub> = +100°C
Emitter-Base Cutoff Current	I <sub>EBO</sub>	-	< -1	-50	nA	V <sub>EB</sub> = -5.6V
Static Forward Current Transfer Ratio (Note 9)	h <sub>FE</sub>	300	450	900	-	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -2V
		120	200	-		I <sub>C</sub> = -1.5A, V <sub>CE</sub> = -2V
		15	40	-		I <sub>C</sub> = -3A, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>	-	-75	-95	mV	I <sub>C</sub> = -0.5A, I <sub>B</sub> = -20mA
		-	-200	-290		I <sub>C</sub> = -1A, I <sub>B</sub> = -20mA
		-	-95	-115		I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA
		-	-160	-190		I <sub>C</sub> = -1.5A, I <sub>B</sub> = -75mA
		-	-245	-300		I <sub>C</sub> = -3A, I <sub>B</sub> = -300mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	-	-915	-1000	mV	I <sub>C</sub> = -1.5A, I <sub>B</sub> = -75mA
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(on)</sub>	-	-825	-900	mV	I <sub>C</sub> = -1.5A, V <sub>CE</sub> = -2V
Output Capacitance	C <sub>obo</sub>	-	17.4	25	pF	V <sub>CB</sub> = -10V, f = 1MHz
Transition Frequency	f <sub>T</sub>	-	270	-	MHz	V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA, f = 50MHz
Delay Time	t <sub>(d)</sub>	-	34	-	ns	V <sub>CC</sub> = -15V, I <sub>C</sub> = -750mA, I <sub>B1</sub> = -I <sub>B2</sub> = -15mA
Rise Time	t <sub>(r)</sub>	-	41	-	ns	
Storage Time	t <sub>(s)</sub>	-	266	-	ns	
Fall Time	t <sub>(f)</sub>	-	53	-	ns	

Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

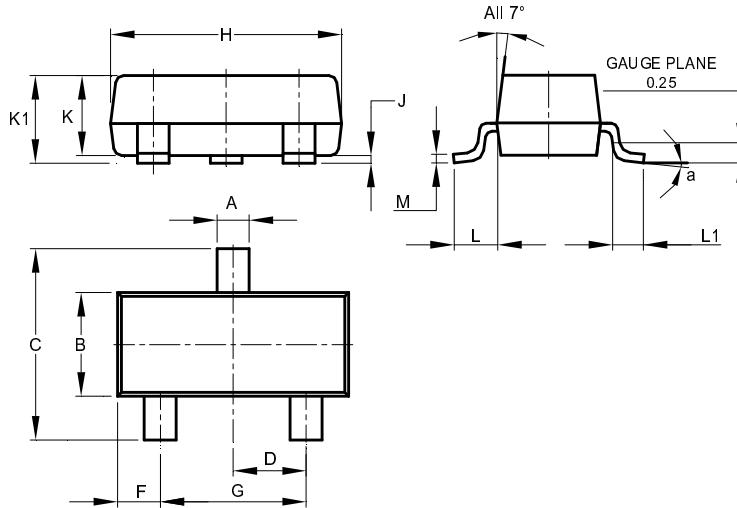
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)



**ZXTP25040DFL**

**Package Outline Dimensions**

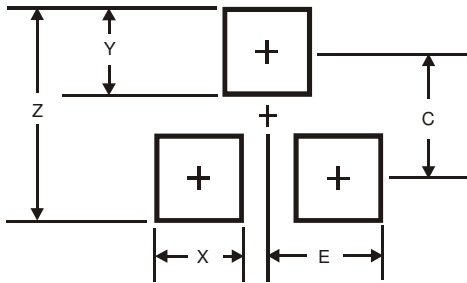
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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	8°		
All Dimensions in mm			

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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