

## Features

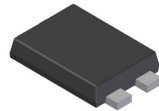
- 43% Smaller than SOT223; 60% Smaller than TO252
- Maximum Height: 1.1mm
- Rated up to 3.2W
- $V_{CE0} = -140V$
- $I_C = -4A$ ;  $I_{CM} = -10A$
- Low Saturation Voltage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q101, PPAP capable, and manufactured in IATF16949 certified facilities), please contact us or your local Diodes representative.**
- <https://www.diodes.com/quality/product-definitions/>

## Applications

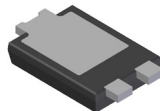
- SLIC DC-DC Converter

## Mechanical Data

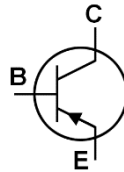
- Case: PowerDI<sup>®</sup>5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.093 grams (Approximate)



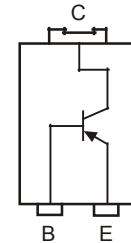
Top View



Bottom View



Device Schematic



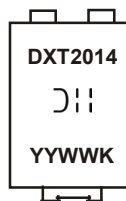
Pin-out diagram

## Ordering Information (Note 4)

Part Number	Marking	Reel Size (Inches)	Tape Width (mm)	Quantity per Reel
DXT2014P5-13	DXT2014	13	16	5000

- 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



- DXT2014 = Product Type Marking Code
- = Manufacturers' Code Marking
- K = Factory Designator
- YYWW = Date Code Marking
- YY = Last Two Digits of Year (ex: 19 for 2019)
- WW = Week code (01 to 53)

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

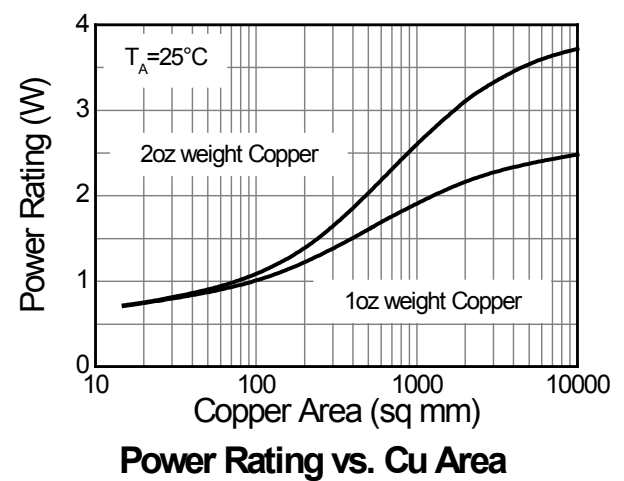
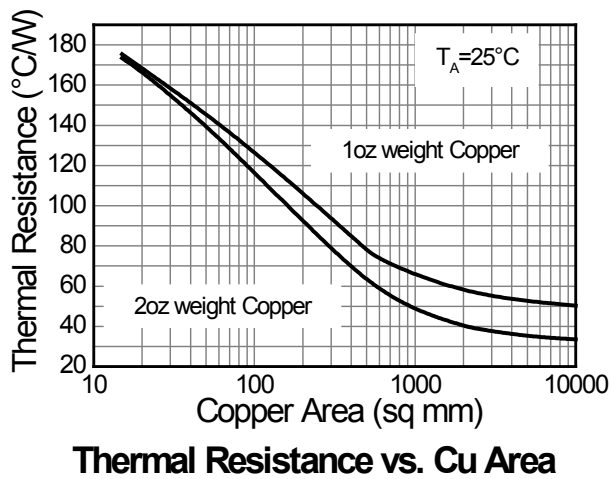
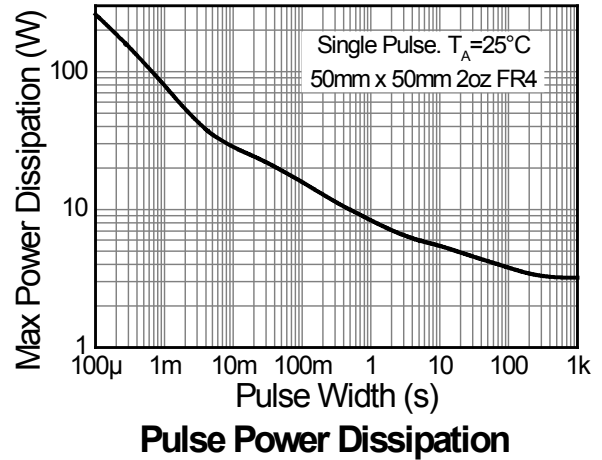
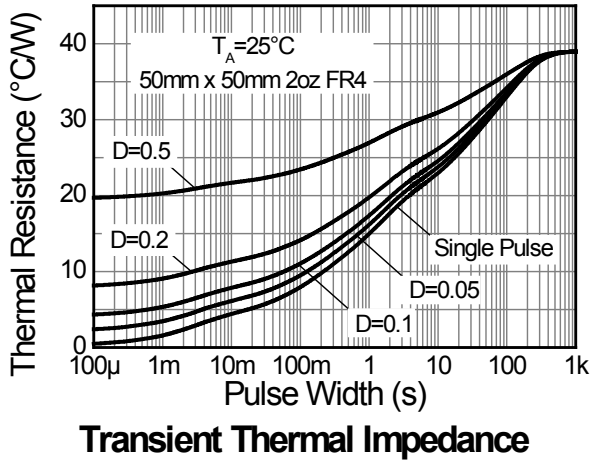
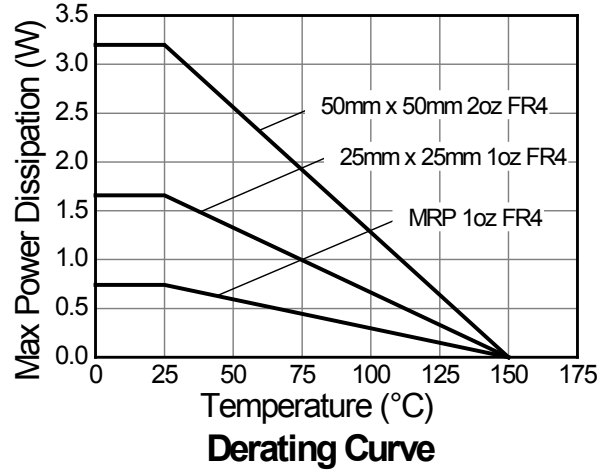
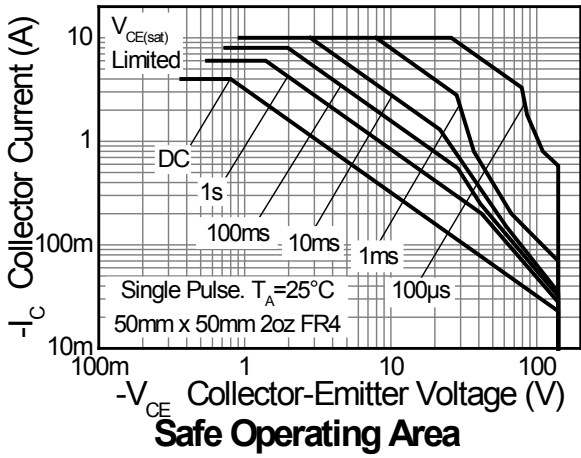
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-180	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-140	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-4	A
Peak Pulse Current	I <sub>CM</sub>	-10	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation @ T <sub>A</sub> = 25°C (Note 5)	P <sub>D</sub>	3.2	W
Thermal Resistance, Junction to Ambient Air (Note 5) @T <sub>A</sub> = 25°C	R <sub>θJA</sub>	39	°C/W
Power Dissipation @ T <sub>A</sub> = 25°C (Note 6)	P <sub>D</sub>	1.7	W
Thermal Resistance, Junction to Ambient Air (Note 6) @T <sub>A</sub> = 25°C	R <sub>θJA</sub>	75	°C/W
Power Dissipation @ T <sub>A</sub> = 25°C (Note 7)	P <sub>D</sub>	0.74	W
Thermal Resistance, Junction to Ambient Air (Note 7) @T <sub>A</sub> = 25°C	R <sub>θJA</sub>	169	°C/W
Thermal Resistance, Junction to Collector Terminal	R <sub>θJT</sub>	5.6	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
5. Device mounted on FR-4 PCB, single sided 2 oz. copper, collector pad dimensions 50mm x 50mm.
  6. Device mounted on FR-4 PCB, single sided 1 oz. copper, collector pad dimensions 25mm x 25mm.
  7. Device mounted on FR-4 PCB, single sided 1 oz. copper, minimum recommended pad layout.

**Thermal Characteristics and Derating Information**

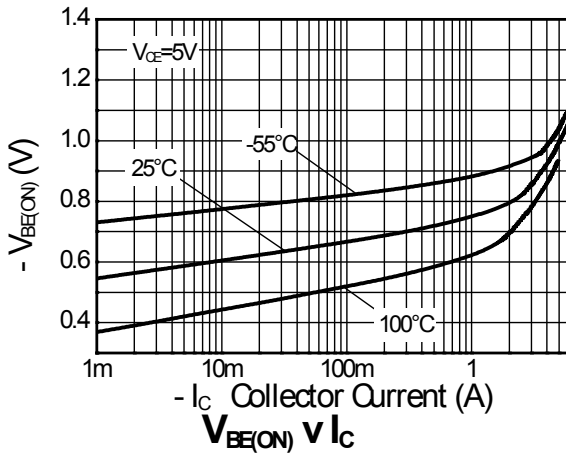
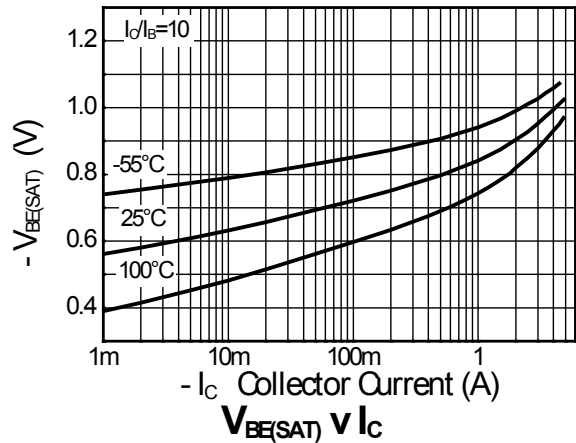
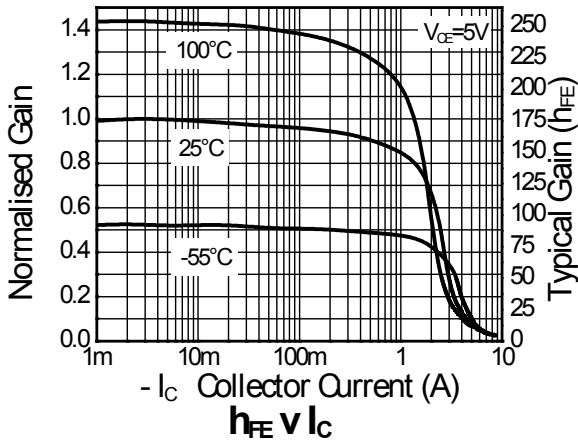
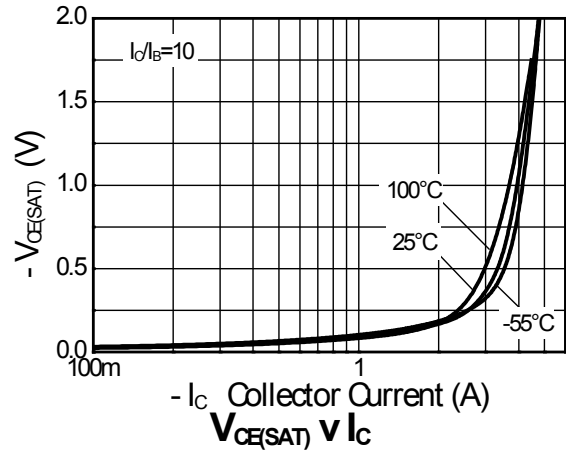
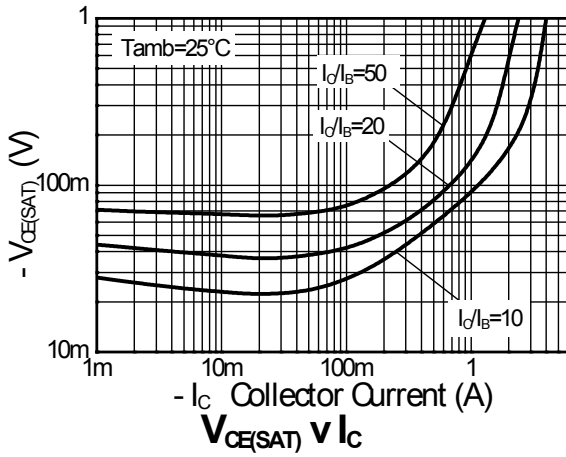


**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-180	-200	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 8)	$V_{(BR)CEO}$	-140	-160	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-7.0	-8.0	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	$I_{CBO}$	—	<1	-20 -0.5	nA $\mu\text{A}$	$V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}, T_{amb} = 100^\circ\text{C}$
Collector Cutoff Current	$I_{CER}$ $R \leq 1\text{k}\Omega$	—	<1	-20 -0.5	nA $\mu\text{A}$	$V_{CB} = -150\text{V}$ $V_{CB} = -150\text{V}, T_{amb} = 100^\circ\text{C}$
Emitter Cutoff Current	$I_{EBO}$	—	<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	—	-40 -55 -85 -275	-60 -80 -120 -360	mV	$I_C = -0.1\text{A}, I_B = -5\text{mA}$ $I_C = -0.5\text{A}, I_B = -50\text{mA}$ $I_C = -1\text{A}, I_B = -100\text{mA}$ $I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	—	-940	-1040	mV	$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Turn-On Voltage (Note 8)	$V_{BE(on)}$	—	-830	-930	mV	$V_{CE} = -5\text{V}, I_C = -3\text{A}$
DC Current Gain (Note 8)	$h_{FE}$	100 100 45 —	225 200 100 5	— 300 — —	—	$V_{CE} = -5\text{V}, I_C = -10\text{mA}$ $V_{CE} = -5\text{V}, I_C = -1\text{A}$ $V_{CE} = -5\text{V}, I_C = -3\text{A}$ $V_{CE} = -5\text{V}, I_C = -10\text{A}$
Transition Frequency	$f_T$	—	120	—	MHz	$V_{CE} = -10\text{V}, I_C = -100\text{mA}$ , $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$	—	33	—	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$	— —	42 636	— —	ns ns	$V_{CC} = -50\text{V}, I_C = 1\text{A}$ , $I_{B1} = -I_{B2} = -100\text{mA}$

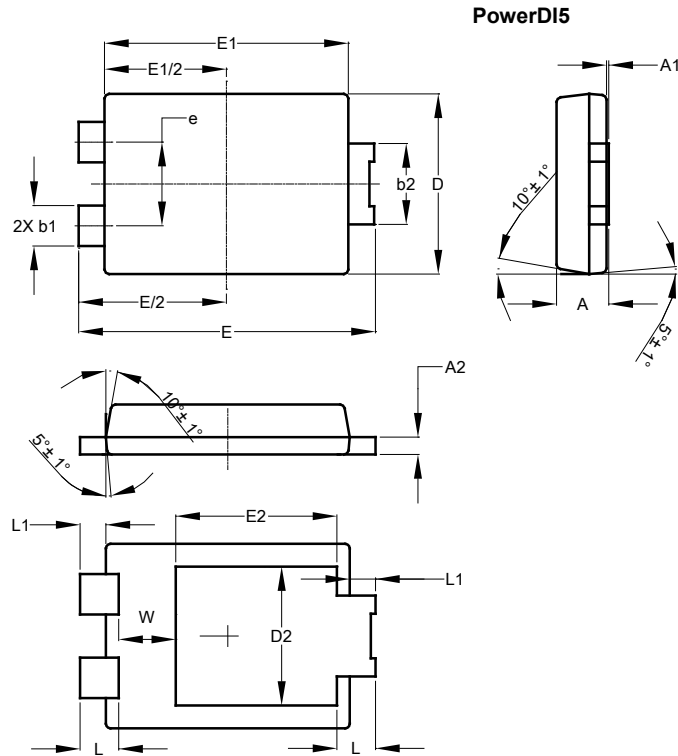
 Notes: 8. Pulse Test: Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2.0\%$ .

**Typical Characteristic**



## Package Outline Dimensions

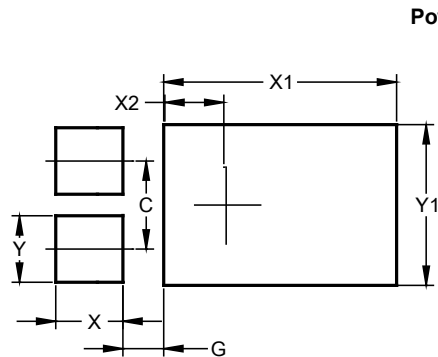
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



PowerDI5			
Dim	Min	Max	Typ
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

## Suggested Pad Layout

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



Dimensions	Value (in mm)
C	1.840
G	0.852
X	1.400
X1	4.860
X2	1.310
Y	1.390
Y1	3.360

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