Features

- 43% Smaller than SOT223; 60% Smaller than TO252
- Maximum Height: 1.1mm
- Rated up to 3.2W
- V_{CEO} = -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/**

Mechanical Data

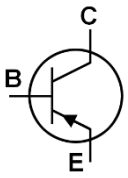
- Case: PowerDI®5
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.093 grams (Approximate)

Applications

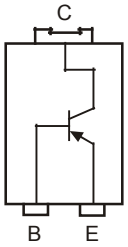
- SLIC DC-DC Converter

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_A = 25°C unless otherwise specified)

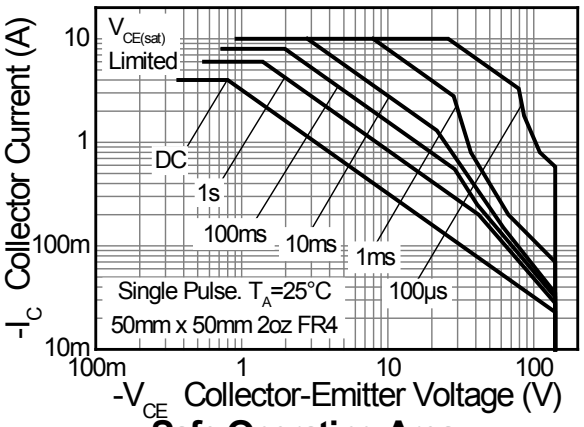
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-180	V
Collector-Emitter Voltage	V_{CEO}	-140	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-4	A
Peak Pulse Current	I_{CM}	-10	A

Thermal Characteristics

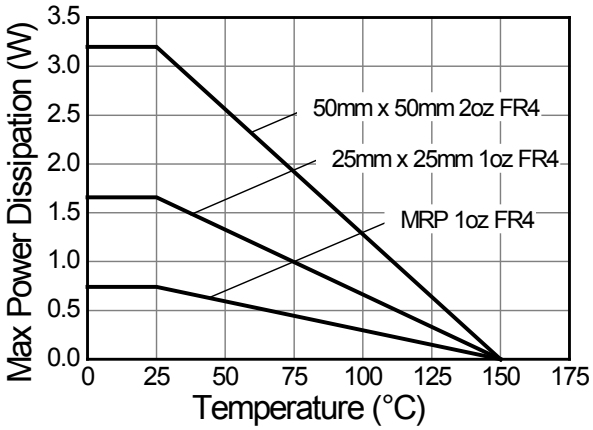
Characteristic	Symbol	Value	Unit
Power Dissipation @ T_A = 25°C (Note 5)	P_D	3.2	W
Thermal Resistance, Junction to Ambient Air (Note 5) @T_A = 25°C	$R_{\theta JA}$	39	°C/W
Power Dissipation @ T_A = 25°C (Note 6)	P_D	1.7	W
Thermal Resistance, Junction to Ambient Air (Note 6) @T_A = 25°C	$R_{\theta JA}$	75	°C/W
Power Dissipation @ T_A = 25°C (Note 7)	P_D	0.74	W
Thermal Resistance, Junction to Ambient Air (Note 7) @T_A = 25°C	$R_{\theta JA}$	169	°C/W
Thermal Resistance, Junction to Collector Terminal	$R_{\theta JT}$	5.6	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-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.

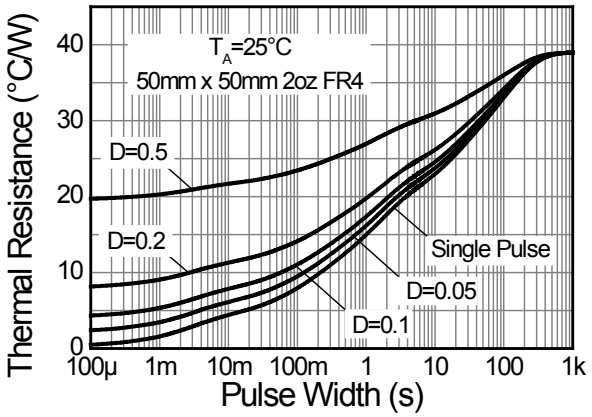
Thermal Characteristics and Derating Information



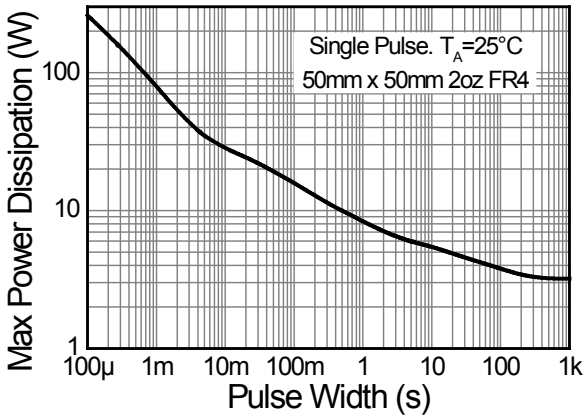
Safe Operating Area



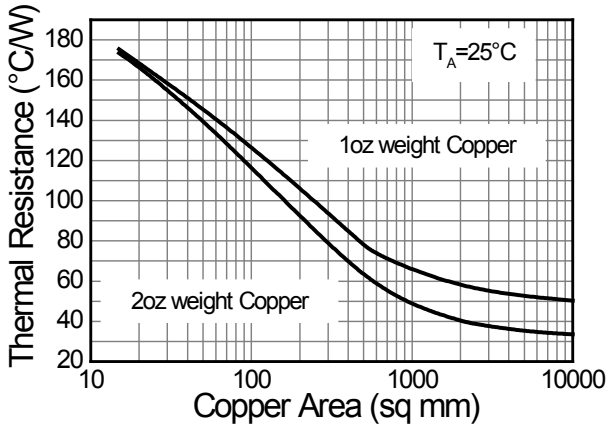
Derating Curve



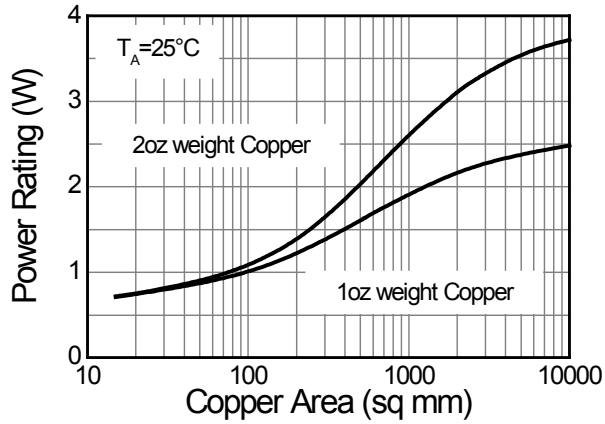
Transient Thermal Impedance



Pulse Power Dissipation



Thermal Resistance vs. Cu Area



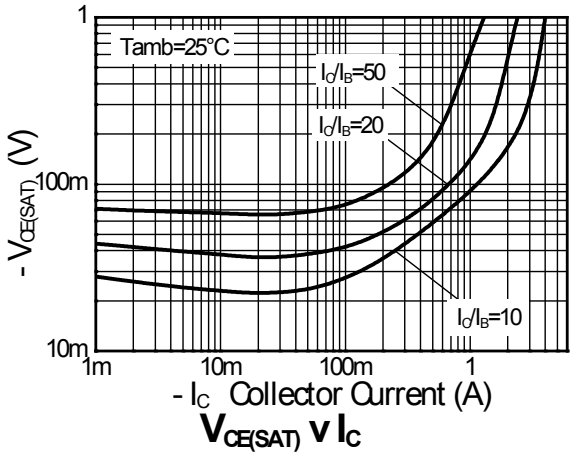
Power Rating vs. Cu Area

Electrical Characteristics @T_A = 25°C unless otherwise specified

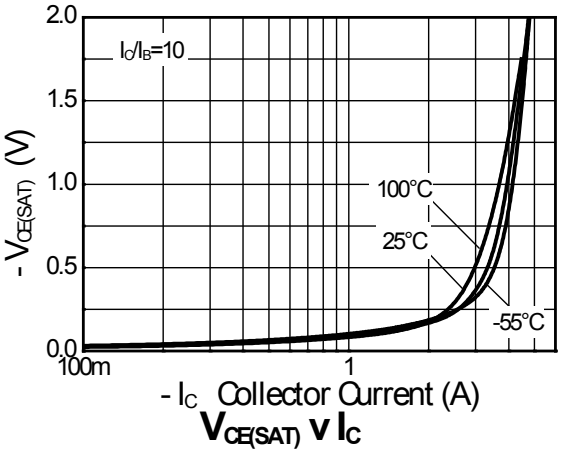
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-180	-200	—	V	I_C = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	$V_{(BR)CEO}$	-140	-160	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-7.0	-8.0	—	V	I_E = -100μA
Collector Cutoff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

Notes: 8. Pulse Test: Pulse width ≤ 300μs. Duty cycle ≤ 2.0%.

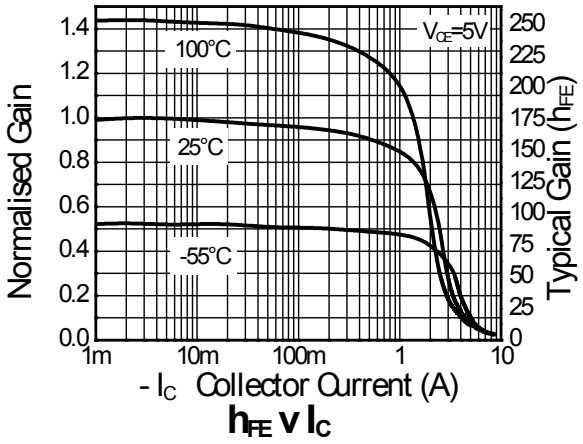
Typical Characteristic



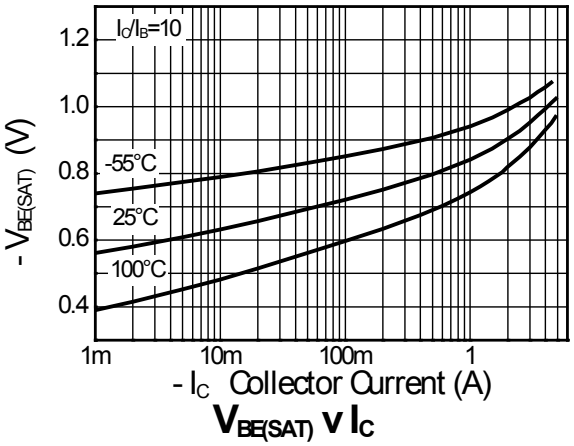
$V_{CE(SAT)}$ v I_C



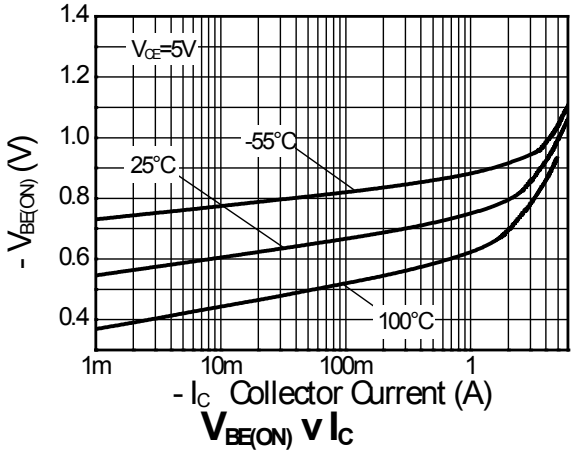
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C

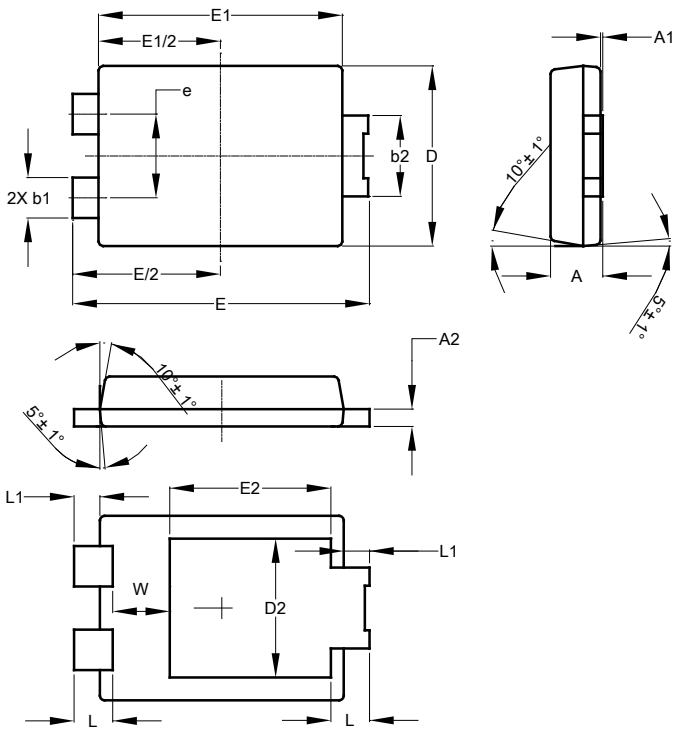


$V_{BE(ON)}$ v I_C

Package Outline Dimensions

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

PowerDI5

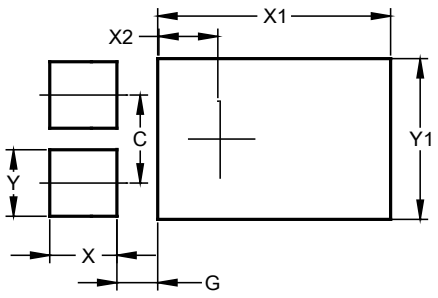


PowerDI5			
Dim	**Min**	**Max**	**Typ**
A	1.05	1.15	1.10
A1	0.00	0.05	--
A2	0.33	0.43	0.381
b1	0.80	0.99	0.89
b2	1.70	1.88	1.78
D	3.90	4.05	3.966
D2	--	--	3.054
E	6.40	6.60	6.51
e	--	--	1.84
E1	5.30	5.45	5.37
E2	--	--	3.549
L	0.75	0.95	0.85
L1	0.50	0.65	0.57
W	1.10	1.41	1.255
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI5



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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