



DXTN58100CFDB

**100V NPN LOW SATURATION TRANSISTOR IN U-DFN2020-3** 

### **Features**

- BVCE0 > 100V
- hFE Specified up to 4A for High Current Gain Hold Up
- Low Profile 0.6mm High Package for Thin Applications
- 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/guality/product-definitions/

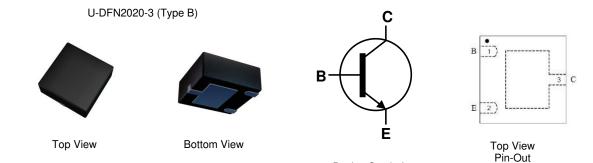
Case: U-DFN2020-3 (Type B)

**Mechanical Data** 

- Nominal Package Height: 0.6mm
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish NiPdAu, Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.01 grams (Approximate)

### Applications

- **DC-DC Converters**
- **Charging Circuits**
- Motor Control
- Power Switches



**Device Symbol** 



Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DXTN58100CFDB-7	2D0	7	8	3,000

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



2D0= Product Type Marking Code YM = Date Code Marking Y = Year (ex: G = 2019)M = Month (ex: 9 = September)

Date Code Kev

Notes:

Year	2019		2020	2021		2022	2023		2024	2025		2026
Code	G		Н			J	K		L	М		Ν
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	Vcbo	100	
Collector-Emitter Voltage	VCEO	100	V
Emitter-Base Voltage	VEBO	6	
Peak Pulse Current	Ісм	6	٨
Continuous Collector Current	lc	4	A

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

Characteristic		Symbol	Value	Unit	
Power Dissipation	(Note 5)	D-	0.69	W	
Power Dissipation	(Note 6)	PD	1.25	vv	
Thermal Desistance, Junction to Ambient	(Note 5)	P	180	°C/W	
Thermal Resistance, Junction to Ambient	(Note 6)	R <sub>θJA</sub>	100		
Operating and Storage Temperature Range	·	TJ, TSTG	-55 to +150	°C	

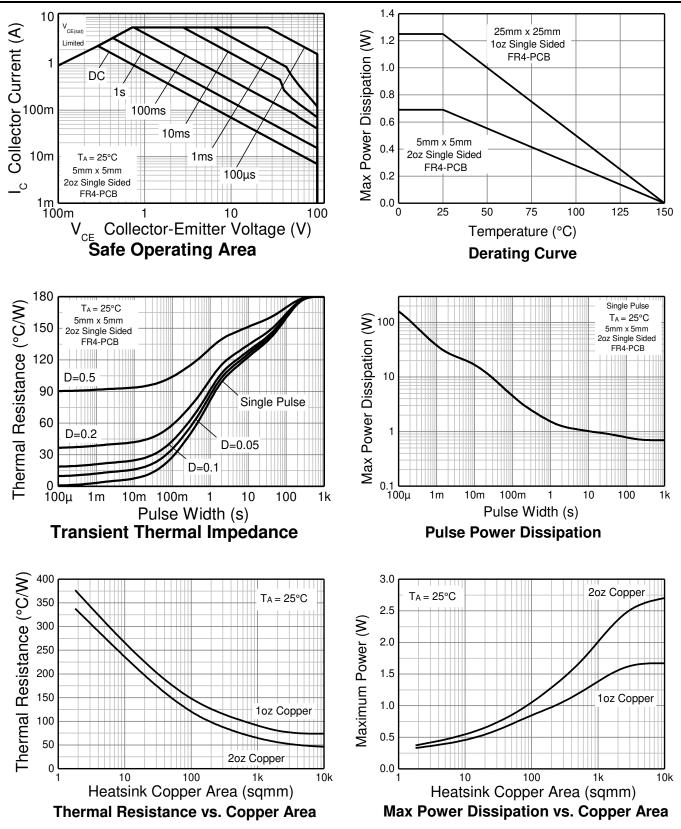
### ESD Ratings (Note 7)

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	С

Notes: 5. For a device mounted with the exposed collector on 5mm x 5mm 2oz copper on single sided FR4 PCB; device is measured under still air conditions whilst operating in the steady state.
Same as Note (5) except the exposed collector pad is mounted on 25mm x 25mm 1oz copper.
Refer to JEDEC specification JESD22-A114 and JESD22-A115.



### **Thermal Characteristics and Derating Information**





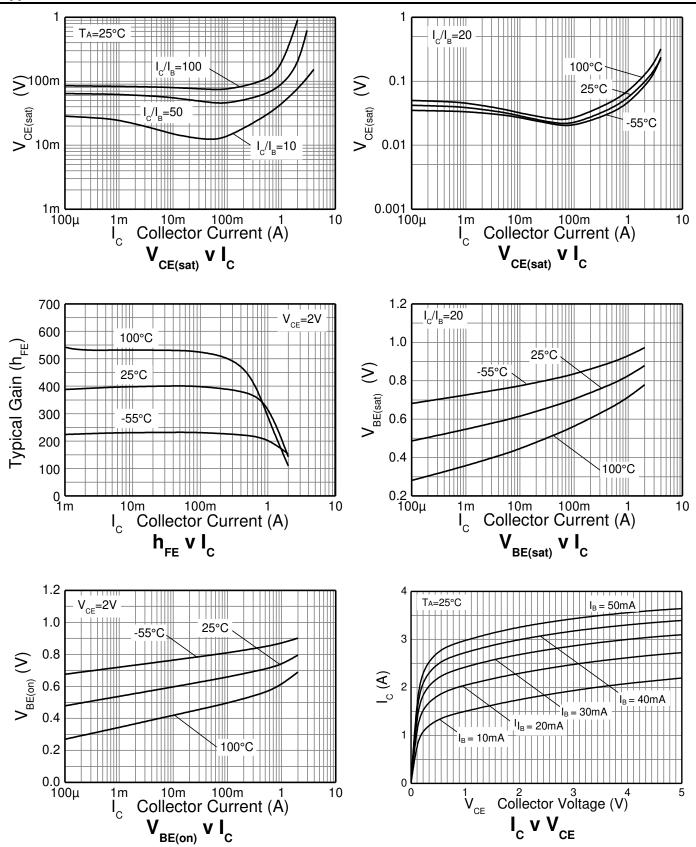
## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified)

Characteristic	Symbol	Min	Тур	Мах	Unit	Test Condition
Collector-Base Breakdown Voltage	ВУсво	100	_	-	V	Ic = 100μA
Collector-Emitter Breakdown Voltage (Note 8)	BVCEO	100	_	—	V	Ic = 10mA
Emitter-Base Breakdown Voltage	BVEBO	6	-	—	V	IE = 100μA
Collector Cutoff Current	Ісво	—	_	100	nA	V <sub>CB</sub> = 100V
Emitter Cutoff Current	IEBO	—	-	100	nA	$V_{EB} = 5V$
Collector Emitter Cutoff Current	ICES	—	_	100	nA	V <sub>CES</sub> = 80V
		180	350	—		$I_{C} = 500 \text{mA}, V_{CE} = 2 \text{V}$
Static Ferward Current Transfer Datic (Nate 9)	h	150	320	—		$I_C = 1A, V_{CE} = 2V$
Static Forward Current Transfer Ratio (Note 8)	hFE	80	135	—		$I_C = 2A, V_{CE} = 2V$
		12	35	—		$I_C = 4A, V_{CE} = 2V$
		—	32	45		Ic = 0.5A, I <sub>B</sub> = 50mA
Collector Emitter Seturation Valtage (Nate 9)	V <sub>CE(sat)</sub>	—	60	90	mV	Ic = 1A, I <sub>B</sub> = 50mA
Collector-Emitter Saturation Voltage (Note 8)		_	210	285		Ic = 1A, I <sub>B</sub> = 20mA
		—	190	260		Ic = 4A, I <sub>B</sub> = 400mA
Base-Emitter Turn-On Voltage (Note 8)	V <sub>BE(on)</sub>	—	0.77	0.9	V	$I_C = 2A, V_{CE} = 2V$
Read Emitter Seturation Voltage (Note 9)	V <sub>BE(sat)</sub>		0.79	0.9	v	Ic = 1A, I <sub>B</sub> = 10mA
Base-Emitter Saturation Voltage (Note 8)			1	1.1	v	$I_{C} = 4A, I_{B} = 400 \text{mA}$
Output Capacitance	Cobo	—	16.5	20	pF	V <sub>CB</sub> = 10V, f = 1MHz
Transition Frequency	f⊤	_	150	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA, f = 100MHz
Delay Time	td	-	20	—		
Rise Time	tr	—	300	—	ns	
Turn-On Time	ton	_	320	_		$V_{CC} = 9V, I_C = 2A$
Storage Time	ts	—	300	—		$I_{B1} = -I_{B2} = 0.1A$
Fall Time	tr	—	250	—	1	
Turn-Off Time	toff	_	550	—		

Note: 8. Measured under pulsed conditions. Pulse width  $\leq$  300µs. Duty cycle  $\leq$  2%.



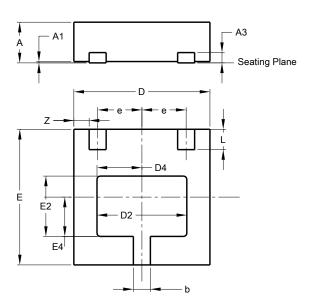
### Typical Electrical Characteristics (@TA = +25°C, unless otherwise specified.)





### **Package Outline Dimensions**

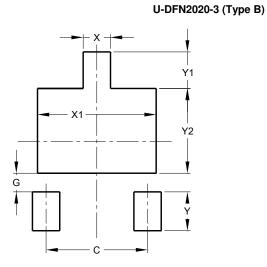
Please see http://www.diodes.com/package-outlines.html for the latest version.



U-DFN2020-3 (Type B)							
Dim	Min	Max	Тур				
Α	0.57	0.63	0.60				
A1	0.00	0.05	0.02				
A3			0.152				
b	0.20	0.30	0.25				
D	1.950	2.075	2.00				
D2	1.22	1.42	1.32				
D4	0.56	0.76	0.66				
ш	1.950	2.075	2.00				
E2	0.79	0.99	0.89				
E4	0.48	0.68	0.58				
e			0.65				
L	0.25	0.35	0.30				
Z	_		0.225				
All	Dimensi	ions in r	nm				

## Suggested Pad Layout

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



Dimensions	Value (in mm)
С	1.300
G	0.240
Х	0.350
X1	1.520
Y	0.500
Y1	0.470
Y2	1.090

# U-DFN2020-3 (Type B)



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