

## **Excellent Integrated System Limited**

Stocking Distributor

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[Diodes Incorporated](#)  
[ZXTN617MATA](#)

For any questions, you can email us directly:

[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)

## Features and Benefits

- $BV_{CEO} > 15V$
- $I_C = 4.5A$  Continuous Collector Current
- Low Saturation Voltage (100mV max @ 1A)
- $R_{SAT} = 45\text{ m}\Omega$  for a low equivalent On-Resistance
- $hFE$  specified up to 12A for high current gain hold up
- Low profile 0.6mm high package for thin applications
- $R_{\theta JA}$  efficient, 60% lower than SOT23
- 4mm<sup>2</sup> footprint, 50% smaller than SOT23
- **Lead-Free, RoHS Compliant (Note 1)**
- Halogen and Antimony Free. "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

## Mechanical Data

- Case: DFN2020B-3
- Case Material: Molded Plastic. "Green" Molding Compound.
- Terminals: Pre-Plated NiPdAu leadframe.
- Nominal Package Height: 0.6mm
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.01 grams (approximate)

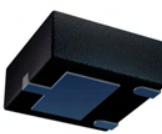
## Applications

- MOSFET Gate Driving
- DC-DC Converters
- Charging Circuits
- Motor Control
- Power switch

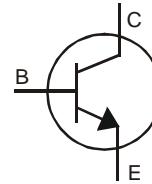
DFN2020B-3



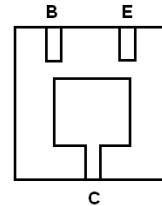
Top View



Bottom View



Device Symbol



Bottom View  
Pin-Out

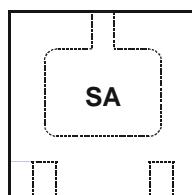
## Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN617MATA	SA	7	8	3000

Notes:

1. No purposefully added lead.
2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>.

## Marking Information



Top View

SA = Product Type Marking code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	40	V
Collector-Emitter Voltage	$V_{CEO}$	15	
Emitter-Base Voltage	$V_{EBO}$	7	
Peak Pulse Current	$I_{CM}$	15	A
Continuous Collector Current	(Note 3)	4.5	
	(Note 4)	5	
Base Current	$I_B$	1	

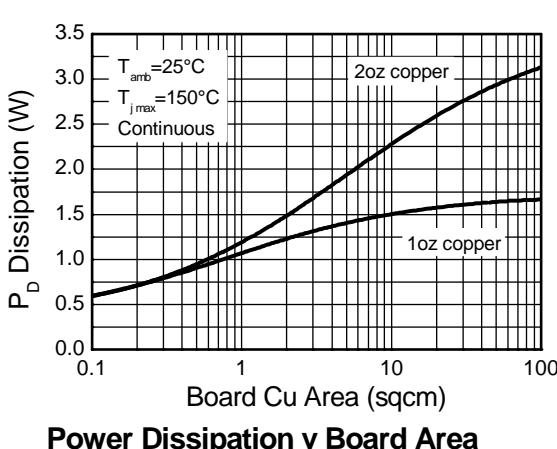
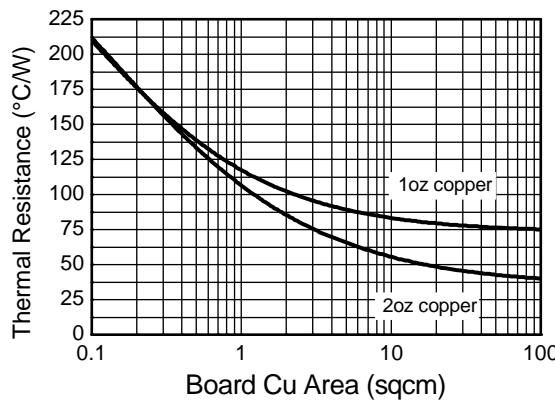
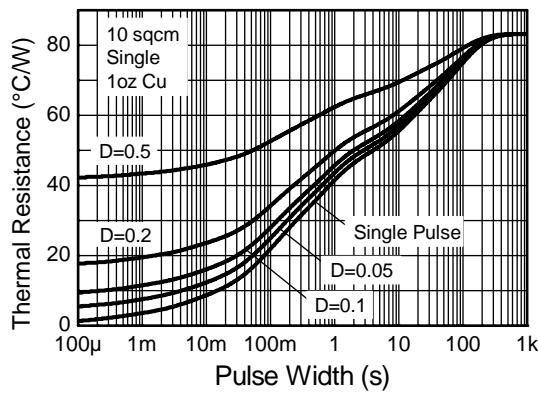
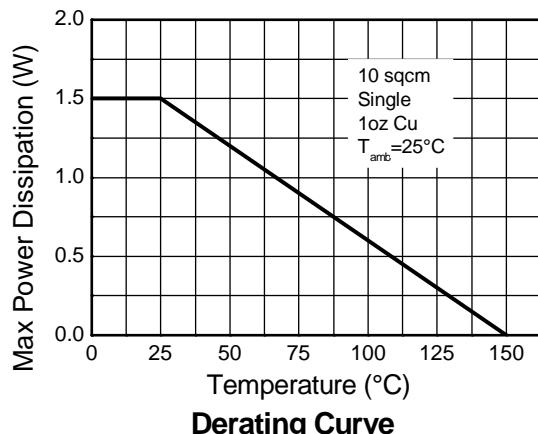
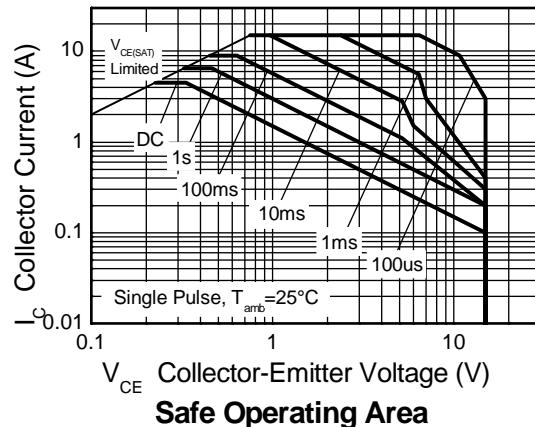
**Thermal Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation	$P_D$	1.5	W mW/°C
Linear Derating Factor		12	
(Note 3)		2.45	
(Note 4)		19.6	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	83	°C/W
(Note 3)		51	
(Note 4)		16.8	
Thermal Resistance, Junction to Lead	$R_{\theta JL}$		
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

Notes:

3. For a device surface mounted on 31mm x 31mm (10cm<sup>2</sup>) 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. The entire exposed collector pad is attached to the heatsink.
4. Same as note (3), except the device is measured at  $t \leq 5$  sec.
5. For a single device, thermal resistance from junction to solder-point (at the end of the drain lead).

## Thermal Characteristics

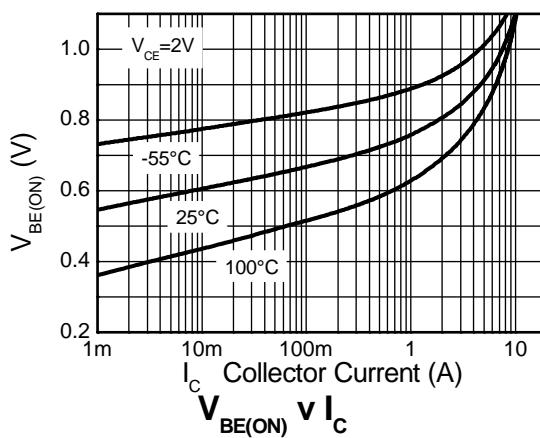
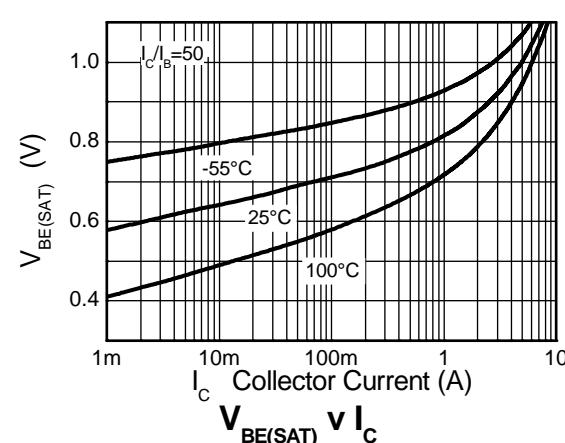
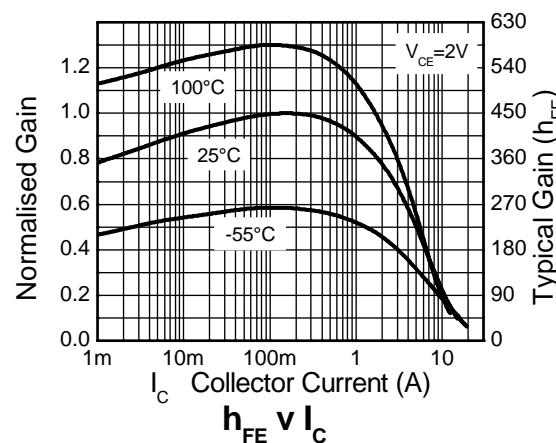
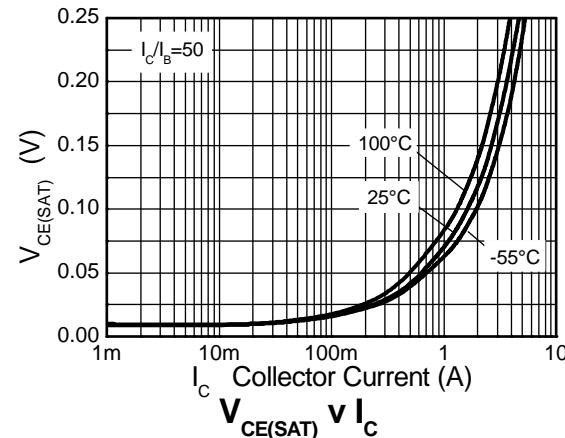
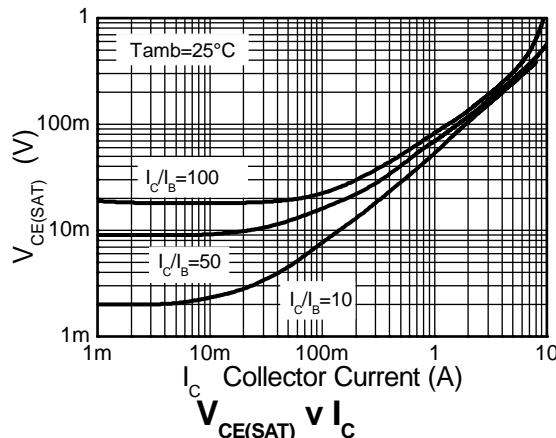


**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

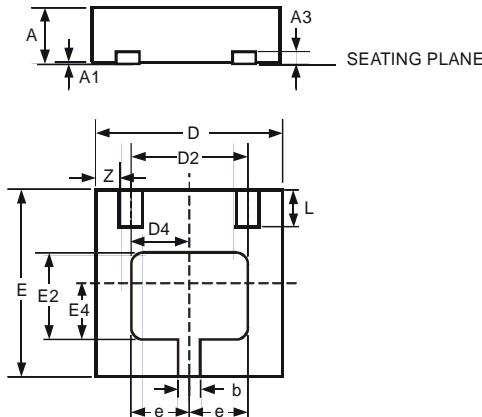
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$\text{BV}_{\text{CBO}}$	40	70	-	V	$I_C = 100 \mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 6)	$\text{BV}_{\text{CEO}}$	15	18	-	V	$I_C = 10 \text{ mA}$
Emitter-Base Breakdown Voltage	$\text{BV}_{\text{EBO}}$	7	8.2	-	V	$I_E = 100 \mu\text{A}$
Collector Cutoff Current	$I_{\text{CBO}}$	-	-	100	nA	$V_{\text{CB}} = 30\text{V}$
Emitter Cutoff Current	$I_{\text{EBO}}$	-	-	100	nA	$V_{\text{EB}} = 6\text{V}$
Collector Emitter Cutoff Current	$I_{\text{CES}}$	-	-	100	nA	$V_{\text{CES}} = 12\text{V}$
Static Forward Current Transfer Ratio (Note 6)	$h_{\text{FE}}$	200 300 200 150 -	415 450 320 240 80	- - - - -	-	$I_C = 10\text{mA}, V_{\text{CE}} = 2\text{V}$ $I_C = 200\text{mA}, V_{\text{CE}} = 2\text{V}$ $I_C = 3\text{A}, V_{\text{CE}} = 2\text{V}$ $I_C = 5\text{A}, V_{\text{CE}} = 2\text{V}$ $I_C = 12\text{A}, V_{\text{CE}} = 2\text{V}$
Collector-Emitter Saturation Voltage (Note 6)	$V_{\text{CE}(\text{sat})}$	- - - - -	8 70 165 240 200	14 100 200 310 -	mV	$I_C = 0.1\text{A}, I_B = 10\text{mA}$ $I_C = 1\text{A}, I_B = 10\text{mA}$ $I_C = 3\text{A}, I_B = 50\text{mA}$ $I_C = 4.5\text{A}, I_B = 50\text{mA}$ $I_C = 4.5\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn-On Voltage (Note 6)	$V_{\text{BE}(\text{on})}$	-	0.88	0.96	V	$I_C = 4.5\text{A}, V_{\text{CE}} = 2\text{V}$
Base-Emitter Saturation Voltage (Note 6)	$V_{\text{BE}(\text{sat})}$	-	0.94	1.05	V	$I_C = 4.5\text{A}, I_B = 50\text{mA}$
Output Capacitance	$C_{\text{obo}}$	-	30	40	pF	$V_{\text{CB}} = 10\text{V}, f = 1\text{MHz}$
Transition Frequency	$f_T$	80	120	-	MHz	$V_{\text{CE}} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
Turn-On Time	$t_{\text{on}}$	-	120	-	ns	$V_{\text{CC}} = 10\text{V}, I_C = 1\text{A}$
Turn-Off Time	$t_{\text{off}}$	-	160	-	ns	$I_{B1} = I_{B2} = 10\text{mA}$

Notes: 6. Measured under pulsed conditions. Pulse width  $\leq 300 \mu\text{s}$ . Duty cycle  $\leq 2\%$ .

## Typical Electrical Characteristics



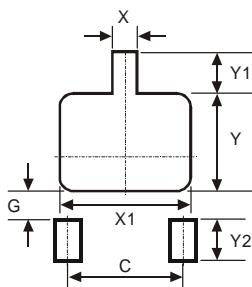
## Package Outline Dimensions



DFN2020B-3			
Dim	Min	Max	Typ
A	0.57	0.63	0.60
A1	0	0.05	0.02
A3	—	—	0.152
b	0.20	0.30	0.25
D	1.95	2.075	2.00
D2	1.22	1.42	1.32
D4	0.56	0.76	0.66
e	—	—	0.65
E	1.95	2.075	2.00
E2	0.79	0.99	0.89
E4	0.48	0.68	0.58
L	0.25	0.35	0.30
Z	—	—	0.225

All Dimensions in mm

## Suggested Pad Layout



Dimensions	Value (in mm)
C	1.30
G	0.24
X	0.35
X1	1.52
Y	1.09
Y1	0.47
Y2	0.50

A Product Line of  
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