



A Product Line of Diodes Incorporated



ZXTD718MC

**DUAL 20V PNP LOW SATURATION SWITCHING TRANSISTOR** 

#### **Features and Benefits**

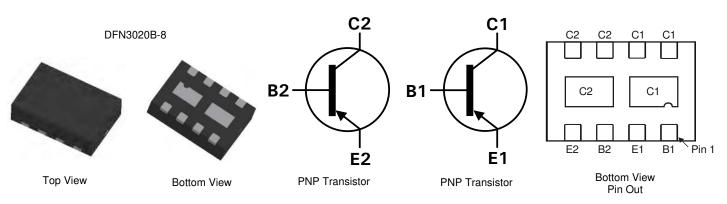
- BV<sub>CEO</sub> > -20V;
- I<sub>C</sub> = -3.5A Continuous Collector Current
- $R_{SAT} = 64 \text{ m}\Omega$  for Low Equivalent On Resistance
- Low Saturation Voltage (-220mV @ -1A)
- hFE characterized up to -6A for high current gain holds up
- Dual NPN saving footprint and component count
- Low profile 0.8mm high package for thin applications
- R<sub>0JA</sub> efficient, 40% lower than SOT26
- 6mm<sup>2</sup> footprint, 50% smaller than TSOP6 and SOT26
- 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: DFN3020B-8
- Case material: Molded Plastic. "Green" Molding Compound.
- UL Flammability Rating 94V-0
- Terminals: Pre-Plated NiPdAu leadframe.
- Nominal package height: 0.8mm
- Moisture Sensitivity: Level 1 per J-STD-020
- Solderable per MIL-STD-202, Method 208
- Weight: 0.013 grams (approximate)

### **Applications**

- Battery charging circuits
- Load disconnect switches
- DC-DC converters
- Motor drive
- LED backlighting circuits
- Portable applications



Equivalent Circuit

#### Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTD718MCTA	D22	7	8	3,000

Notes: 1. No purposefully added lead.

2. Diodes Inc's "Green" Policy can be found on our website at http://www.diodes.com

3. For Packaging Details, go to our website at http://www.diodes.com.

### **Marking Information**



D22 = Product type Marking Code Top view, dot denotes Pin 1



#### ZXTD718MC

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

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-25	
Collector-Emitter Voltage	V <sub>CEO</sub>	-20	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	
Peak Pulse Current	I <sub>CM</sub>	-6	
Continuous Collector Current (Notes 4 and 7)	Ic	-3.5	А
Base Current	IB	-1	]

#### Thermal Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit	
	(Notes 4 & 7)		1.5 12		
Power Dissipation	(Notes 5 & 7)		2.45 19.6	w	
Linear Derating Factor	(Notes 6 & 7)	P <sub>D</sub>	1.13 8	mW/°C	
	(Notes 6 & 8)		1.7 13.6		
	(Notes 4 & 7)		83.3		
Thermal Desistance, lunction to Ambient	(Notes 5 & 7)		51.0		
Thermal Resistance, Junction to Ambient	(Notes 6 & 7)	R <sub>θJA</sub>	111	°C/W	
	(Notes 6 & 8)		73.5		
Thermal Resistance, Junction to Lead	(Notes 7 & 9)	R <sub>θJL</sub>	17.1	]	
Operating and Storage Temperature Range	•	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C	

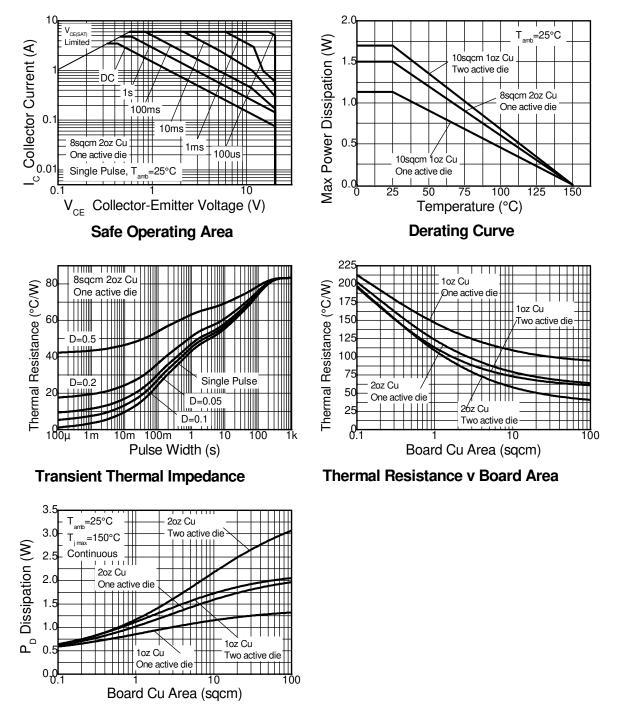
4. For a dual device surface mounted on 28mm x 28mm (8cm<sup>2</sup>) FR4 PCB with high coverage of single sided 2 oz copper, in still air conditions; the device is measured when operating in a steady-state condition. The heatsink is split in half with the exposed collector pads connected to each half.
5. Same as note (4), except the device is measured at t <5 sec.</li>
6. Same as note (4), except the device is surface mounted on 31mm x 31mm (10cm<sup>2</sup>) FR4 PCB with high coverage of single sided 1oz copper.
7. For a dual device with one active die.
8. For dual device with 2 active die running at equal power.
9. Thermal resistance from junction to solder-point (at the end of the collector load). Notes:

9. Thermal resistance from junction to solder-point (at the end of the collector lead).





#### **Thermal Characteristics**



Power Dissipation v Board Area





ZXTD718MC

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

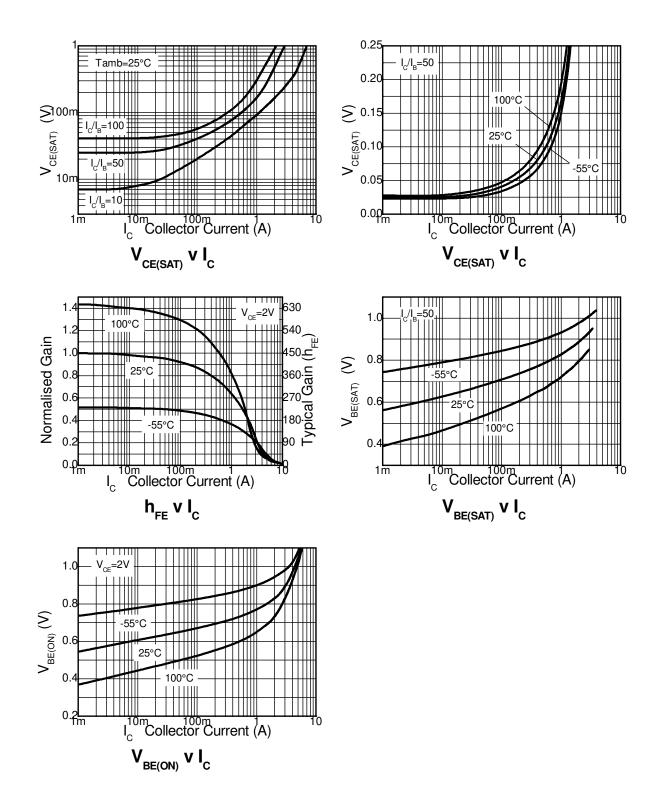
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-25	-35	-	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV <sub>CEO</sub>	-20	-25	-	V	$I_{\rm C} = 10 {\rm mA}$
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-7	8.5	-	V	I <sub>E</sub> = -100μA
Collector Cutoff Current	I <sub>CBO</sub>	-	-	-100	nA	V <sub>CB</sub> = -20V
Emitter Cutoff Current	I <sub>EBO</sub>	-	-	-100	. nA	$V_{EB} = -6V$
Collector Emitter Cutoff Current	I <sub>CES</sub>	-	-	-100	nA	V <sub>CES</sub> = -16V
	h <sub>FE</sub>	300	475	-	-	$I_{C} = -10 \text{mA}, V_{CE} = -2 \text{V}$
Statia Forward Current Transfer Patia (Nata 10)		300	450	-		$I_{C} = -100 \text{mA}, V_{CE} = -2 \text{V}$
Static Forward Current Transfer Ratio (Note 10)		150	230	-		$I_{C} = -2A, V_{CE} = -2V$
		15	30	-		$I_{C} = -6A, V_{CE} = -2V$
	V <sub>CE(sat)</sub>	-	-19	-30		I <sub>C</sub> = - 0.1A, I <sub>B</sub> = -10mA
		-	-170	-220	mV	I <sub>C</sub> = -1A, I <sub>B</sub> = -20mA
Collector-Emitter Saturation Voltage (Note 10)		-	-190	-250		I <sub>C</sub> = -1.5A, I <sub>B</sub> = -50mA
		-	-240	-350		I <sub>C</sub> = -2.5A, I <sub>B</sub> = -150mA
		-	-225	-300		I <sub>C</sub> = -3.5A, I <sub>B</sub> = -350m
Base-Emitter Turn-On Voltage (Note 10)	V <sub>BE(on)</sub>	-	-0.87	-0.95	V	I <sub>C</sub> = -3.5A, V <sub>CE</sub> = -2V
Base-Emitter Saturation Voltage (Note 10)	V <sub>BE(sat)</sub>	-	-1.01	-1.12	V	I <sub>C</sub> = -3.5A, I <sub>B</sub> = -350mA
Output Capacitance	C <sub>obo</sub>	-	21	30	pF	$V_{CB} = 10V$ , f = 1MHz
Transition Frequency	fT	150	180	-	MHz	V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA, f = 100MHz
Turn-On Time	t <sub>on</sub>	-	40	-	ns	$V_{CC} = -10V, I_{C} = 1A$
Turn-Off Time	t <sub>off</sub>	-	670	-	ns	$I_{B1} = I_{B2} = 20mA$

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





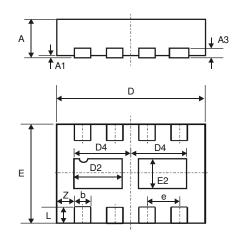
## **Typical Electrical Characteristics**





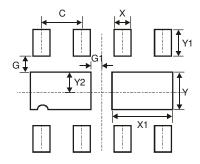


# Package Outline Dimensions



DFN3020B-8					
Dim	Min	Max	Тур		
Α	0.77	0.83	0.80		
A1	0	0.05	0.02		
A3	-	-	0.15		
b	0.25	0.35	0.30		
D	2.95	3.075	3.00		
D2	0.82	1.02	0.92		
D4	1.01	1.21	1.11		
е	-	-	0.65		
ш	1.95	2.075	2.00		
E2	0.43	0.63	0.53		
L	0.25	0.35	0.30		
Ζ	-	-	0.375		
All Dimensions in mm					

# Suggested Pad Layout



Dimensions	Value (in mm)		
С	0.650		
G	0.285		
G1	0.090		
Х	0.400		
X1	1.120		
Y	0.730		
Y1	0.500		
Y2	0.365		



#### ZXTD718MC

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