



**ZXTD717MC**

**DUAL 12V PNP LOW SATURATION TRANSISTORS**

**Features and Benefits**

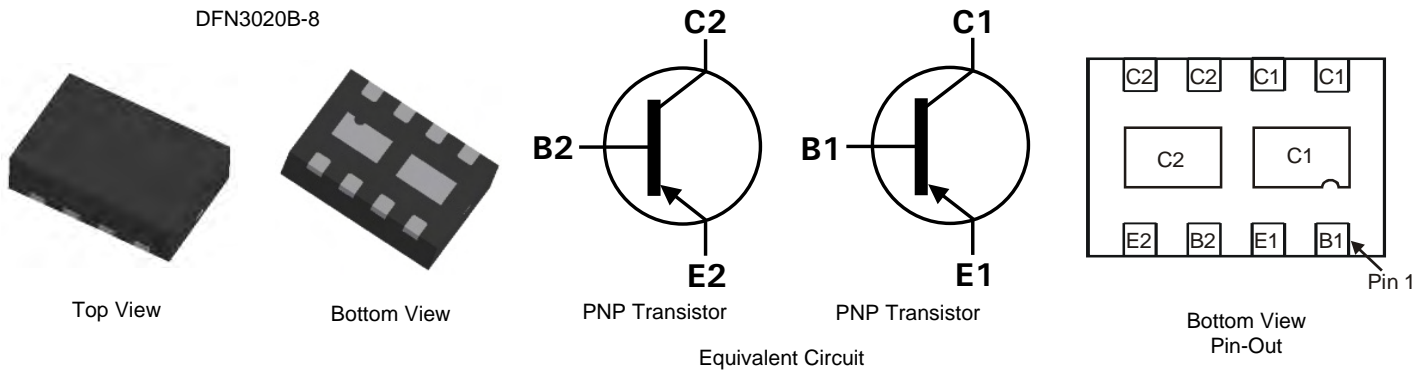
- $BV_{CEO} > -12V$
- $I_C = -4A$  Continuous Collector Current
- Low Saturation Voltage (-140mV @ -1A)
- $R_{SAT} = 60\ m\Omega$  for a low equivalent On-Resistance
- $h_{FE}$  specified up to -10A for a high current gain hold up
- Dual NPN saving footprint and component count
- Low profile 0.8mm high package for thin applications
- $R_{\theta JA}$  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.
- Terminals: Pre-Plated NiPdAu leadframe.
- Nominal package height: 0.8mm
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.013 grams (approximate)

**Applications**

- DC-DC Converters
- Charging circuits
- Power switches
- Motor drive



**Ordering Information**

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTD717MCTA	D11	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**



D11 = Product type marking code  
Top view, dot denotes pin 1

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

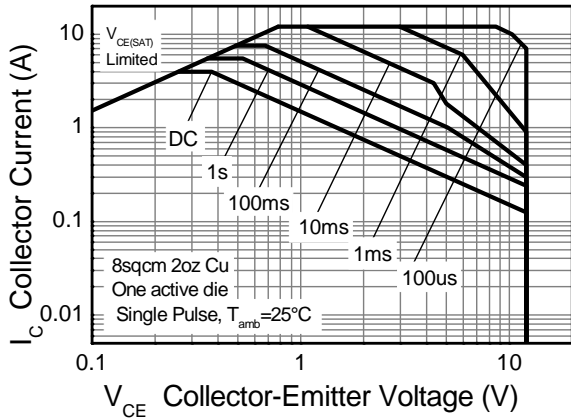
Characteristic	Symbol	Value	Unit	
Collector-Base Voltage	V <sub>CBO</sub>	-20	V	
Collector-Emitter Voltage	V <sub>CEO</sub>	-12		
Emitter-Base Voltage	V <sub>EBO</sub>	-7		
Peak Pulse Current	I <sub>CM</sub>	-12	A	
Continuous Collector Current	I <sub>C</sub>	(Notes 3 & 6)		-4
		(Notes 4 & 6)		-4.4
Base Current	I <sub>B</sub>	1		

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

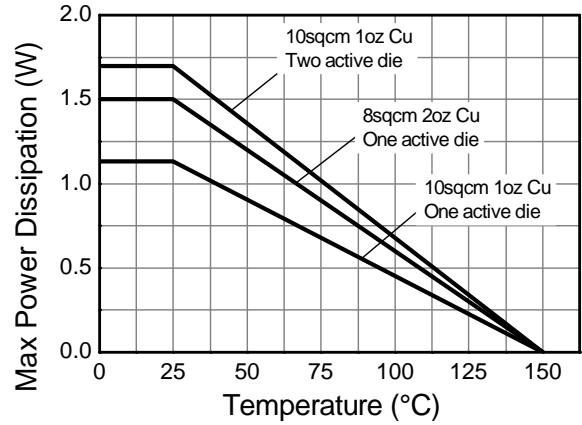
Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P <sub>D</sub>	(Notes 3 & 6)	1.5
		(Notes 4 & 6)	12
		(Notes 5 & 6)	2.45
		(Notes 5 & 7)	19.6
		(Notes 5 & 7)	1.13
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Notes 3 & 6)	8
		(Notes 4 & 6)	1.7
		(Notes 5 & 6)	13.6
		(Notes 5 & 7)	83.3
Thermal Resistance, Junction to Lead	R <sub>θJL</sub>	(Notes 5 & 7)	51.0
		(Notes 6 & 8)	111
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
3. 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.
  4. Same as note (3), except the device is measured at t < 5 sec.
  5. Same as note (3), except the device is surface mounted on 31mm x 31mm (10cm<sup>2</sup>) FR4 PCB with high coverage of single sided 1oz copper.
  6. For a dual device with one active die.
  7. For dual device with 2 active die running at equal power.
  8. Thermal resistance from junction to solder-point (at the end of the collector lead).

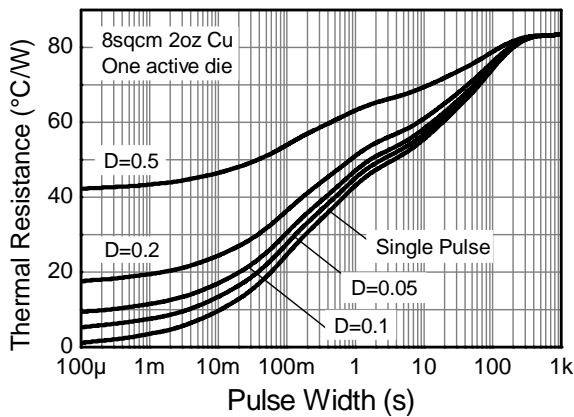
**Thermal Characteristics**



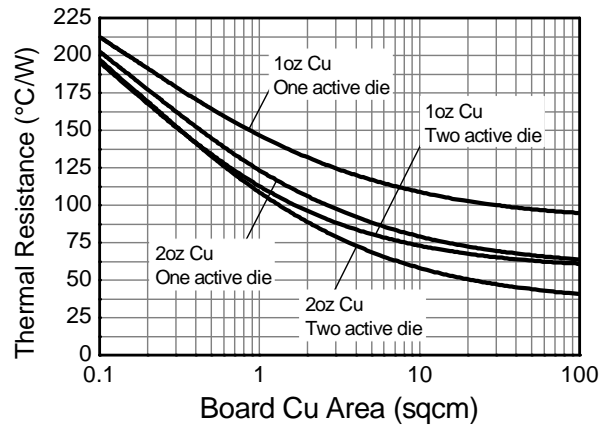
**Safe Operating Area**



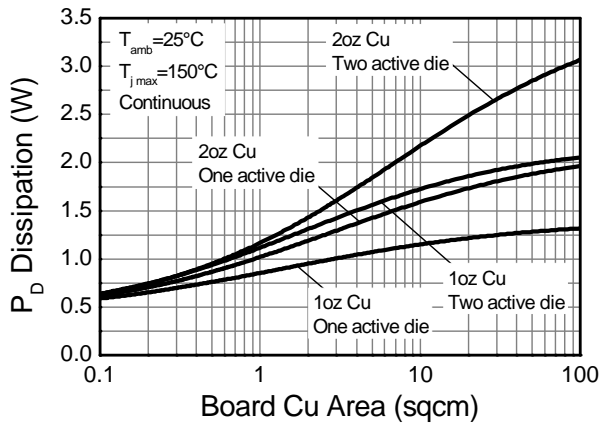
**Derating Curve**



**Transient Thermal Impedance**



**Thermal Resistance v Board Area**



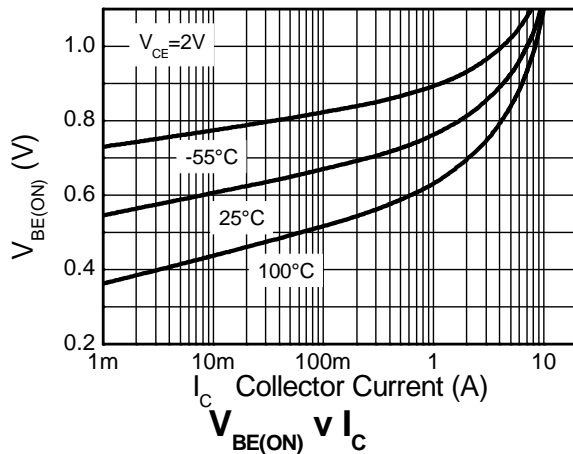
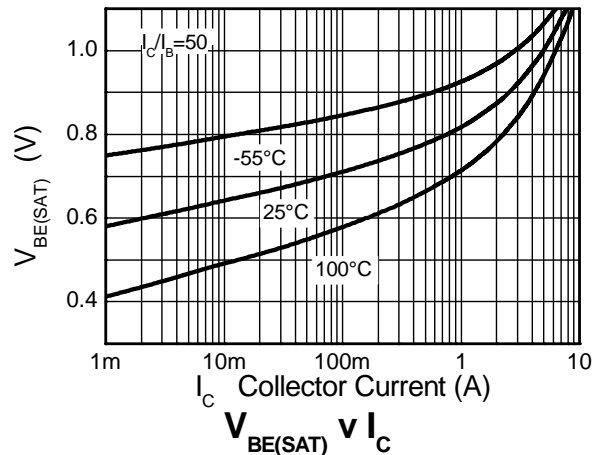
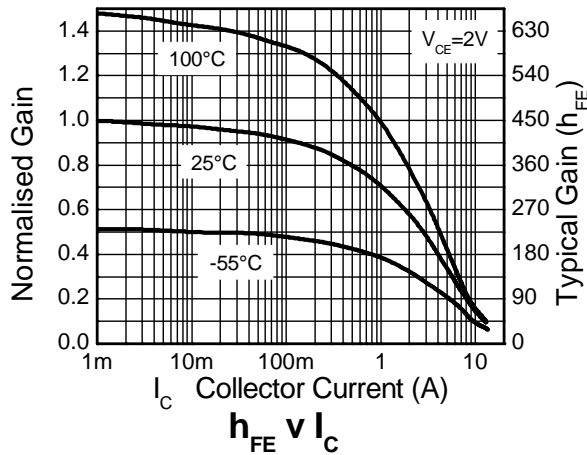
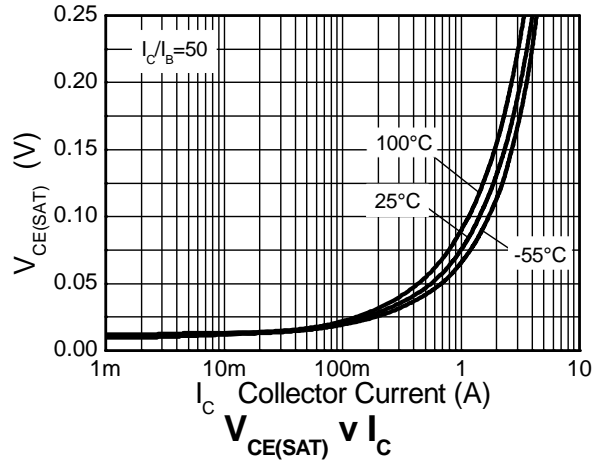
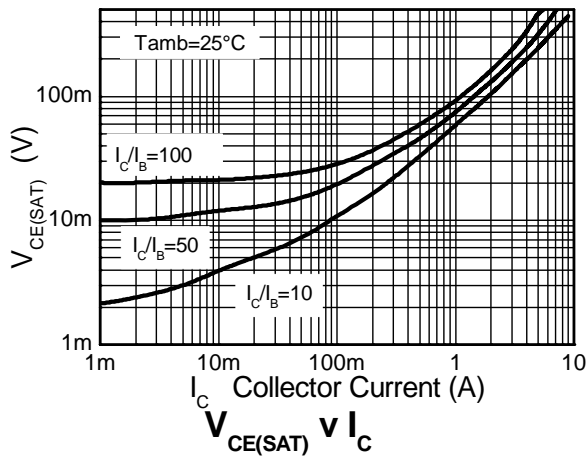
**Power Dissipation v Board Area**

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-20	-35	-	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	-12	-25	-	V	I <sub>C</sub> = -10mA
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> = -16V
Emitter Cutoff Current	I <sub>EBO</sub>	-	-	-100	nA	V <sub>EB</sub> = -6V
Collector Emitter Cutoff Current	I <sub>CES</sub>	-	-	-100	nA	V <sub>CES</sub> = -10V
Static Forward Current Transfer Ratio (Note 9)	h <sub>FE</sub>	300	475	-	-	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -2V
		300	450	-	-	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -2V
		180	275	-	-	I <sub>C</sub> = -2.5A, V <sub>CE</sub> = -2V
		60	100	-	-	I <sub>C</sub> = -8A, V <sub>CE</sub> = -2V
		45	70	-	-	I <sub>C</sub> = -10A, V <sub>CE</sub> = -2V
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>	-	-10	-17	mV	I <sub>C</sub> = -0.1A, I <sub>B</sub> = -10mA
		-	-100	-140	mV	I <sub>C</sub> = -1A, I <sub>B</sub> = -10mA
		-	-100	-150	mV	I <sub>C</sub> = -1.5A, I <sub>B</sub> = -50mA
		-	-195	-300	mV	I <sub>C</sub> = -3A, I <sub>B</sub> = -50mA
		-	-240	-310	mV	I <sub>C</sub> = -4A, I <sub>B</sub> = -150mA
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	-	-0.87	-0.96	V	I <sub>C</sub> = -4A, V <sub>CE</sub> = -2V
Base-Emitter Saturation Voltage (Note 9)	V <sub>BE(sat)</sub>	-	-0.97	-1.07	V	I <sub>C</sub> = -4A, I <sub>B</sub> = -150mA
Output Capacitance	C <sub>obo</sub>	-	21	30	pF	V <sub>CB</sub> = -10V, f = 1MHz
Transition Frequency	f <sub>T</sub>	100	110	-	MHz	V <sub>CE</sub> = -10V, I <sub>C</sub> = -50mA, f = 100MHz
Turn-on Time	t <sub>on</sub>	-	70	-	ns	V <sub>CC</sub> = -6V, I <sub>C</sub> = -2A
Turn-off Time	t <sub>off</sub>	-	130	-	ns	I <sub>B1</sub> = I <sub>B2</sub> = -50mA

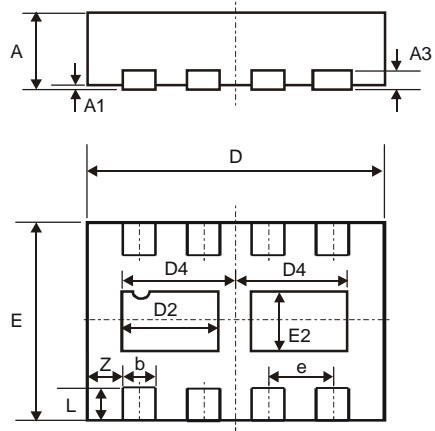
Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%

**Typical Electrical Characteristics**



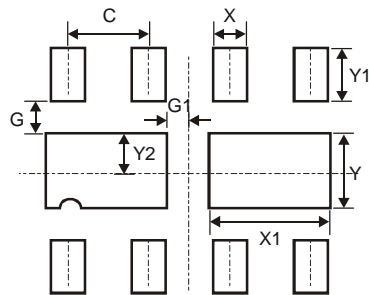
**ZXTD717MC**

**Package Outline Dimensions**



DFN3020B-8			
Dim	Min	Max	Typ
A	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
e	-	-	0.65
E	1.95	2.075	2.00
E2	0.43	0.63	0.53
L	0.25	0.35	0.30
Z	-	-	0.375
All Dimensions in mm			

**Suggested Pad Layout**



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

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