



ZXTD717MC

DUAL 12V PNP LOW SATURATION TRANSISTORS

Features and Benefits

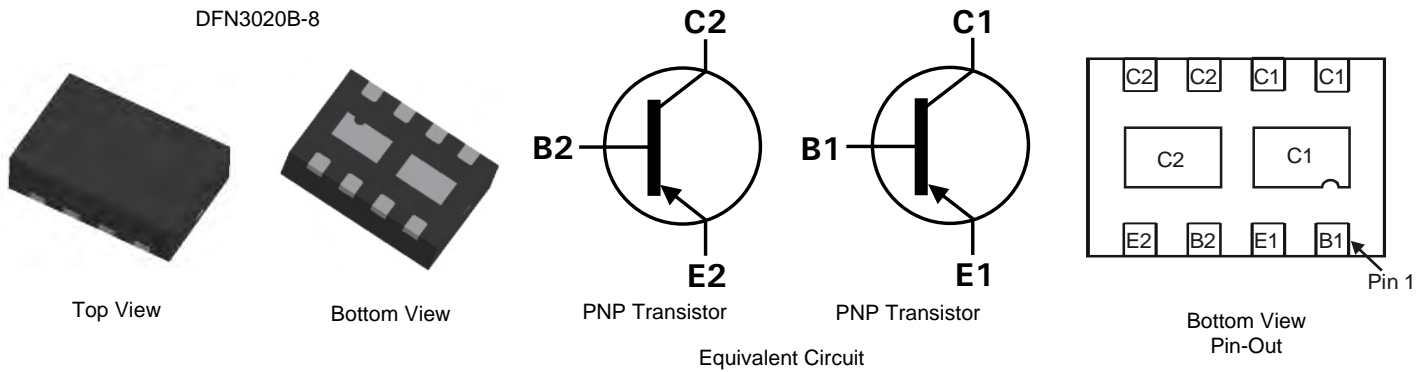
- $BV_{CEO} > -12V$
- $I_C = -4A$ Continuous Collector Current
- Low Saturation Voltage (-140mV @ -1A)
- $R_{SAT} = 60\ m\Omega$ for a low equivalent On-Resistance
- h_{FE} specified up to -10A for a high current gain hold up
- Dual NPN saving footprint and component count
- Low profile 0.8mm high package for thin applications
- $R_{\theta JA}$ efficient, 40% lower than SOT26
- 6mm² 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

ZXTD717MC

Maximum Ratings @ T_A = 25°C unless otherwise specified

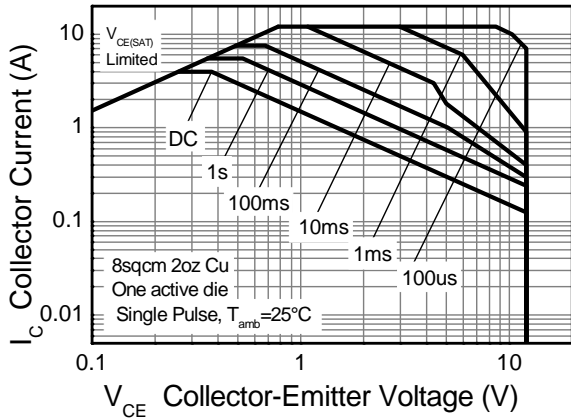
Characteristic		Symbol	Value	Unit
Collector-Base Voltage		V _{CBO}	-20	V
Collector-Emitter Voltage		V _{CEO}	-12	
Emitter-Base Voltage		V _{EBO}	-7	
Peak Pulse Current		I _{CM}	-12	A
Continuous Collector Current	(Notes 3 & 6)	I _C	-4	
	(Notes 4 & 6)		-4.4	
Base Current		I _B	1	

Thermal Characteristics @ T_A = 25°C unless otherwise specified

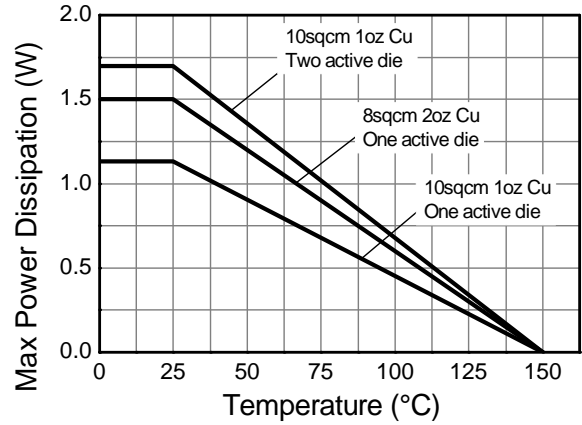
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Notes 3 & 6)	P _D	1.5	W mW/°C
	(Notes 4 & 6)		12	
	(Notes 5 & 6)		2.45	
			19.6	
			1.13	
(Notes 5 & 7)	8			
	1.7			
Thermal Resistance, Junction to Ambient	(Notes 3 & 6)	R _{θJA}	83.3	°C/W
	(Notes 4 & 6)		51.0	
	(Notes 5 & 6)		111	
	(Notes 5 & 7)		73.5	
Thermal Resistance, Junction to Lead	(Notes 6 & 8)	R _{θJL}	17.1	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

- Notes:
3. For a dual device surface mounted on 28mm x 28mm (8cm²) 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 (10cm²) 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).

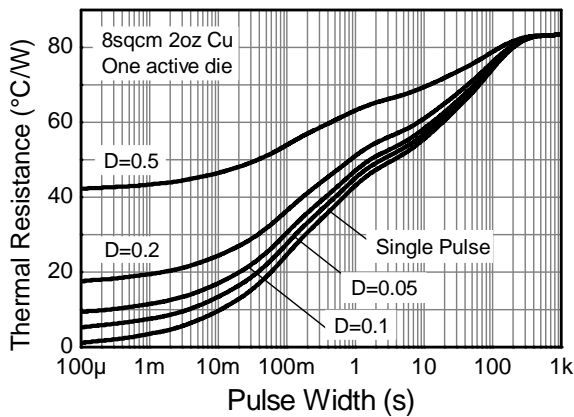
Thermal Characteristics



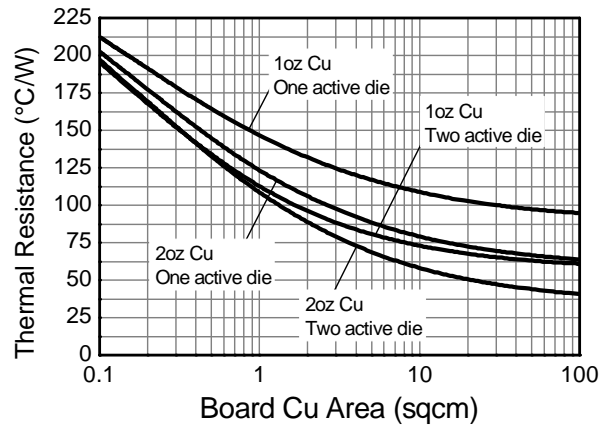
Safe Operating Area



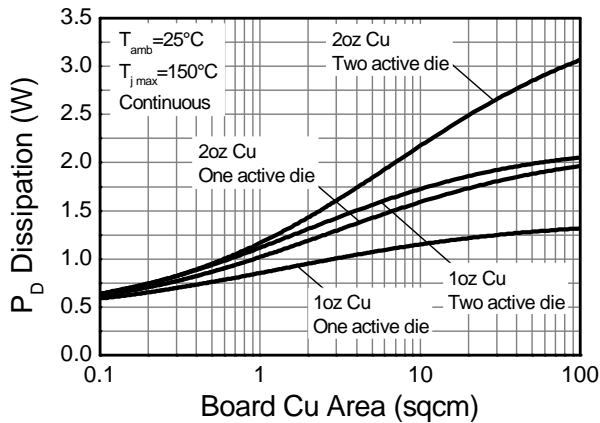
Derating Curve



Transient Thermal Impedance



Thermal Resistance v Board Area



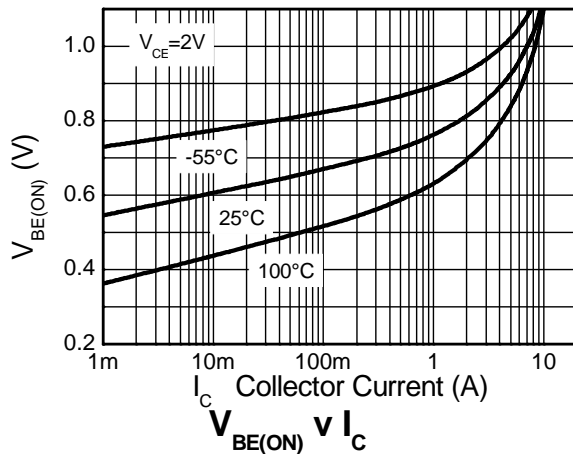
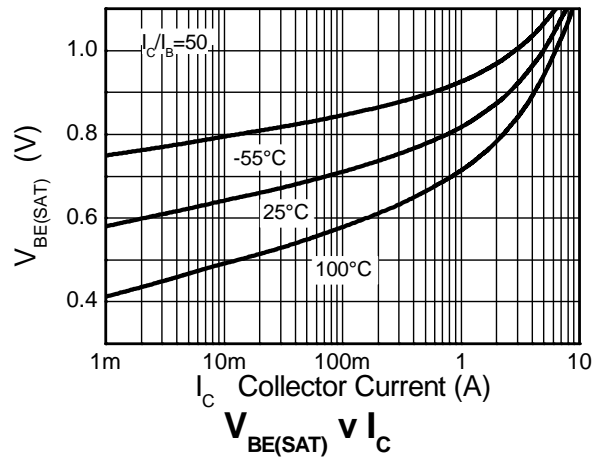
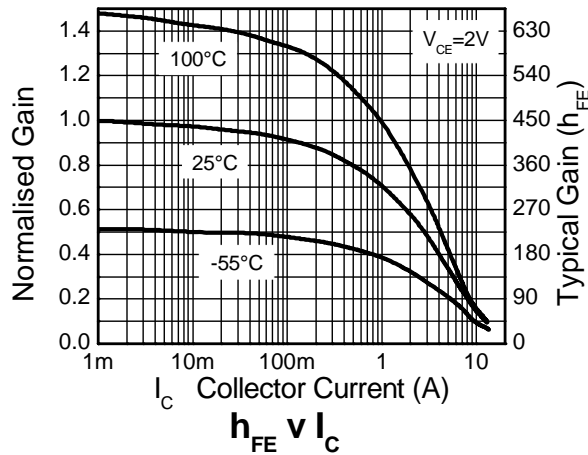
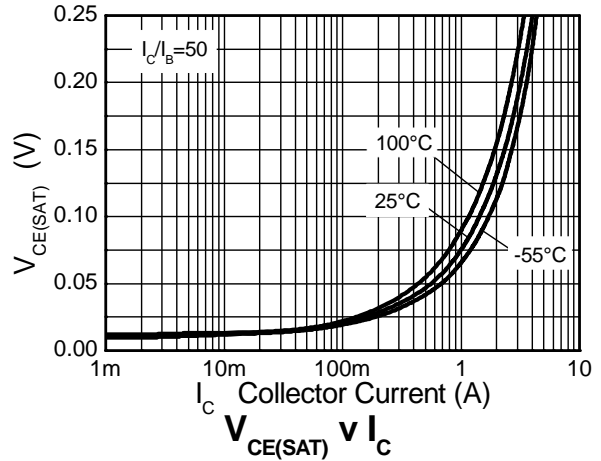
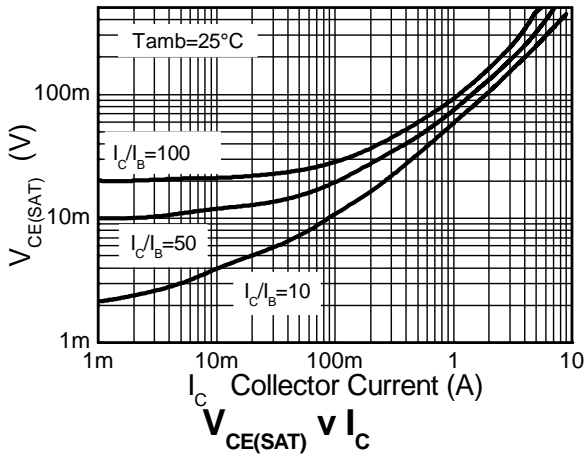
Power Dissipation v Board Area

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-20	-35	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-12	-25	-	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.5	-	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	-	-	-100	nA	$V_{CB} = -16\text{V}$
Emitter Cutoff Current	I_{EBO}	-	-	-100	nA	$V_{EB} = -6\text{V}$
Collector Emitter Cutoff Current	I_{CES}	-	-	-100	nA	$V_{CES} = -10\text{V}$
Static Forward Current Transfer Ratio (Note 9)	h_{FE}	300	475	-	-	$I_C = -10\text{mA}, V_{CE} = -2\text{V}$
		300	450	-	-	$I_C = -100\text{mA}, V_{CE} = -2\text{V}$
		180	275	-	-	$I_C = -2.5\text{A}, V_{CE} = -2\text{V}$
		60	100	-	-	$I_C = -8\text{A}, V_{CE} = -2\text{V}$
		45	70	-	-	$I_C = -10\text{A}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	-	-10	-17	mV	$I_C = -0.1\text{A}, I_B = -10\text{mA}$
		-	-100	-140	mV	$I_C = -1\text{A}, I_B = -10\text{mA}$
		-	-100	-150	mV	$I_C = -1.5\text{A}, I_B = -50\text{mA}$
		-	-195	-300	mV	$I_C = -3\text{A}, I_B = -50\text{mA}$
		-	-240	-310	mV	$I_C = -4\text{A}, I_B = -150\text{mA}$
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	-	-0.87	-0.96	V	$I_C = -4\text{A}, V_{CE} = -2\text{V}$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	-	-0.97	-1.07	V	$I_C = -4\text{A}, I_B = -150\text{mA}$
Output Capacitance	C_{obo}	-	21	30	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Transition Frequency	f_T	100	110	-	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Turn-on Time	t_{on}	-	70	-	ns	$V_{CC} = -6\text{V}, I_C = -2\text{A}$
Turn-off Time	t_{off}	-	130	-	ns	$I_{B1} = I_{B2} = -50\text{mA}$

Notes: 9. Measured under pulsed conditions. Pulse width $\leq 300 \mu\text{s}$. Duty cycle $\leq 2\%$

Typical Electrical Characteristics



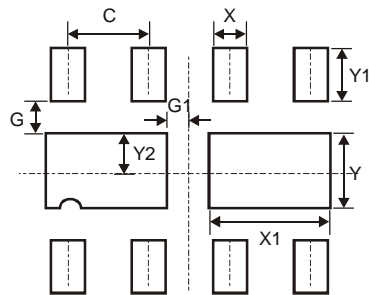
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Package Outline Dimensions



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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