ZXTD718MC

DUAL 20V PNP LOW SATURATION SWITCHING TRANSISTOR

Features and Benefits

- BV_{CEO} > -20V;
- I_C = -3.5A Continuous Collector Current
- R_{SAT} = 64 mΩ 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
- $R_{\theta JA}$ efficient, 40% lower than SOT26
- 6mm^2 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

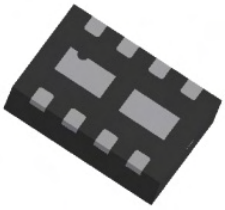
- Case: DFN3020B-8
- Case material: Molded Plastic. "Green" Molding Compound.
- UL Flammability Rating 94V-0
- Terminals: Pre-Plated NiPdAu leadframe.
- Nominal package height: 0.8mm
- Moisture Sensitivity: Level 1 per J-STD-020
- Solderable per MIL-STD-202, Method 208
- Weight: 0.013 grams (approximate)

Applications

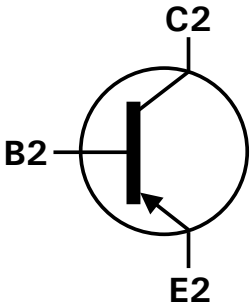
- Battery charging circuits
- Load disconnect switches
- DC-DC converters
- Motor drive
- LED backlighting circuits
- Portable applications

DFN3020B-8

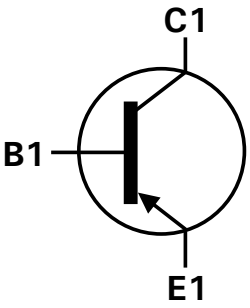
Top View



Bottom View

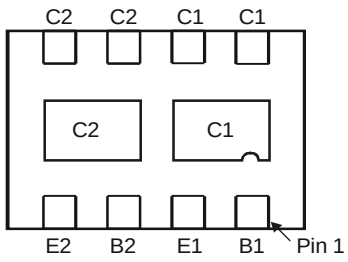


PNP Transistor



PNP Transistor

Equivalent Circuit



Bottom View
Pin Out

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

Maximum Ratings @ T_A = 25°C unless otherwise specified

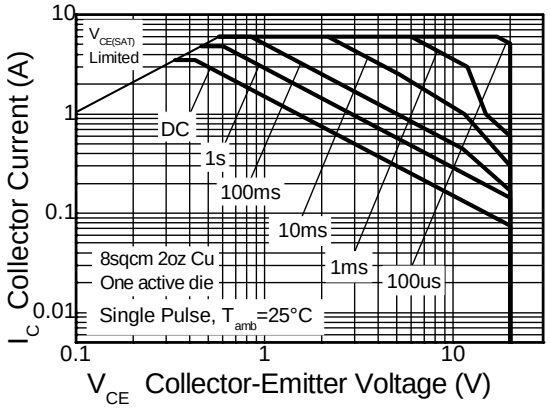
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	-25	V
Collector-Emitter Voltage	V_{CEO}	-20	
Emitter-Base Voltage	V_{EBO}	-7	
Peak Pulse Current	I_{CM}	-6	A
Continuous Collector Current (Notes 4 and 7)	I_C	-3.5	
Base Current	I_B	-1	

Thermal Characteristics @ T_A = 25°C unless otherwise specified

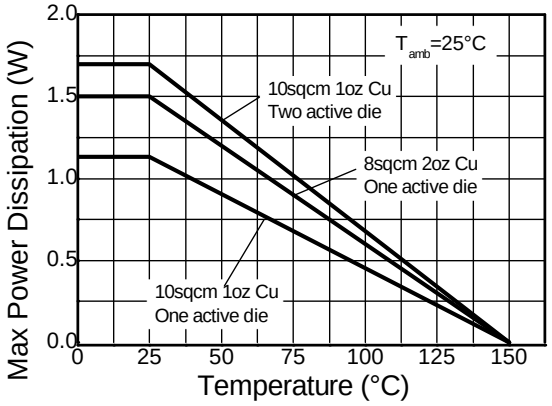
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Notes 4 & 7)	P_D	1.5 12	W mW/°C
	(Notes 5 & 7)		2.45 19.6	
	(Notes 6 & 7)		1.13 8	
	(Notes 6 & 8)		1.7 13.6	
Thermal Resistance, Junction to Ambient	(Notes 4 & 7)	$R_{\theta JA}$	83.3	°C/W
	(Notes 5 & 7)		51.0	
	(Notes 6 & 7)		111	
	(Notes 6 & 8)		73.5	
Thermal Resistance, Junction to Lead	(Notes 7 & 9)	$R_{\theta JL}$	17.1	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes:
4. For a dual device surface mounted on 28mm x 28mm (8cm^2) 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.
6. Same as note (4), except the device is surface mounted on 31mm x 31mm (10cm^2) 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 lead).

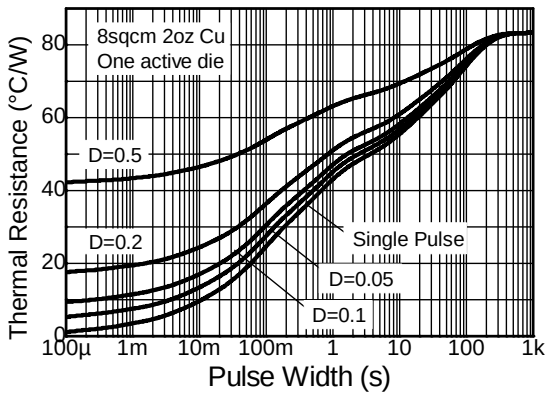
Thermal Characteristics



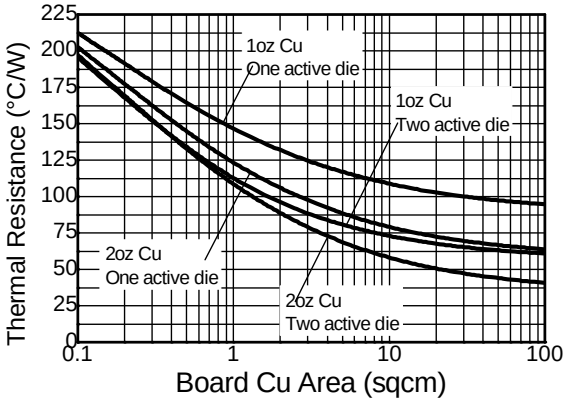
Safe Operating Area



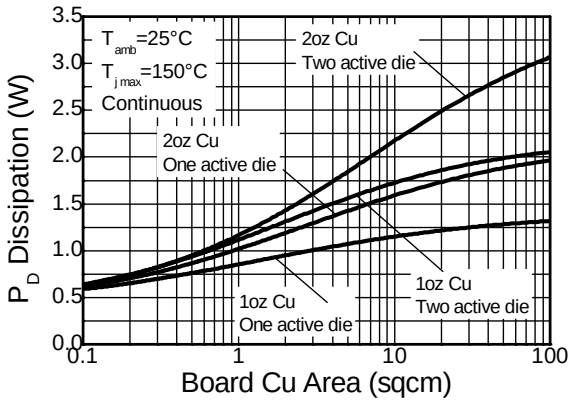
Derating Curve



Transient Thermal Impedance



Thermal Resistance v Board Area



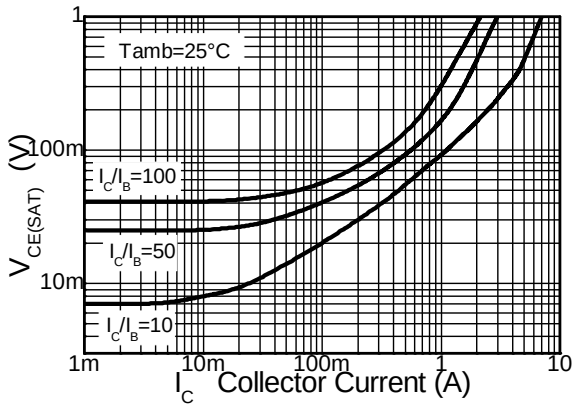
Power Dissipation v Board Area

Electrical Characteristics @T_A = 25°C unless otherwise specified

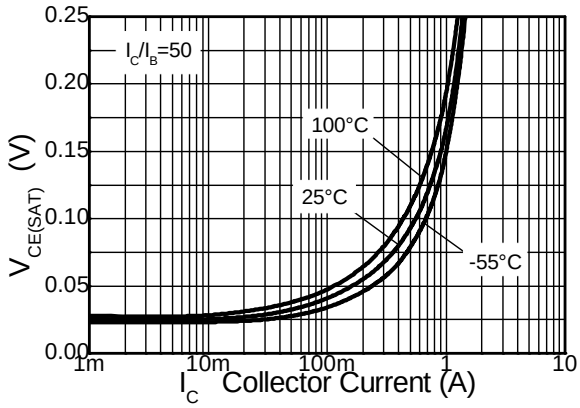
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-25	-35	-	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-20	-25	-	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	8.5	-	V	I_E = -100µA
Collector Cutoff Current	I_{CBO}	-	-	-100	nA	V_{CB} = -20V
Emitter Cutoff Current	I_{EBO}	-	-	-100	nA	V_{EB} = -6V
Collector Emitter Cutoff Current	I_{CES}	-	-	-100	nA	V_{CES} = -16V
Static Forward Current Transfer Ratio (Note 10)	h_{FE}	300	475	-	-	I_C = -10mA, V_{CE} = -2V
		300	450	-		I_C = -100mA, V_{CE} = -2V
		150	230	-		I_C = -2A, V_{CE} = -2V
		15	30	-		I_C = -6A, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(sat)}$	-	-19	-30	mV	I_C = - 0.1A, I_B = -10mA
		-	-170	-220		I_C = -1A, I_B = -20mA
		-	-190	-250		I_C = -1.5A, I_B = -50mA
		-	-240	-350		I_C = -2.5A, I_B = -150mA
		-	-225	-300		I_C = -3.5A, I_B = -350m
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(on)}$	-	-0.87	-0.95	V	I_C = -3.5A, V_{CE} = -2V
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(sat)}$	-	-1.01	-1.12	V	I_C = -3.5A, I_B = -350mA
Output Capacitance	C_{obo}	-	21	30	pF	V_{CB} = 10V, f = 1MHz
Transition Frequency	f_T	150	180	-	MHz	V_{CE} = -10V, I_C = -50mA, f = 100MHz
Turn-On Time	t_{on}	-	40	-	ns	V_{CC} = -10V, I_C = 1A
Turn-Off Time	t_{off}	-	670	-	ns	I_{B1} = I_{B2} = 20mA

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

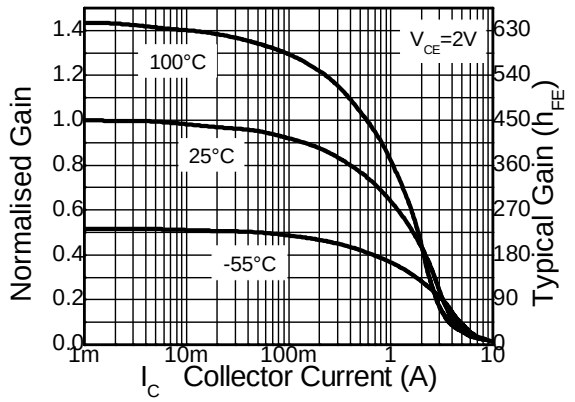
Typical Electrical Characteristics



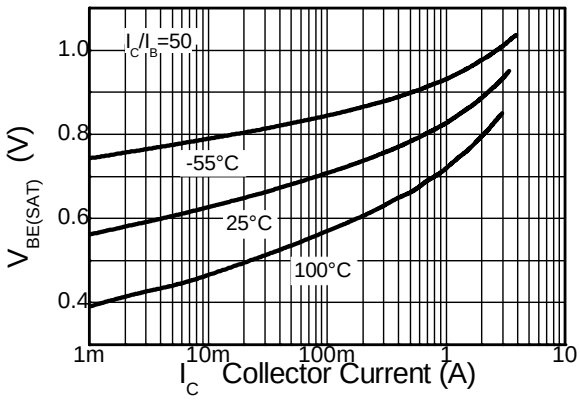
$V_{CE(SAT)}$ v I_C



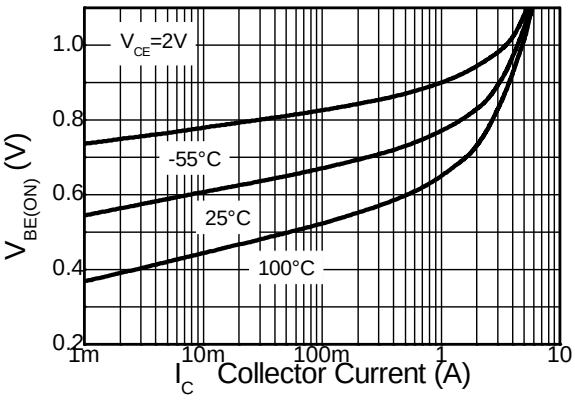
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

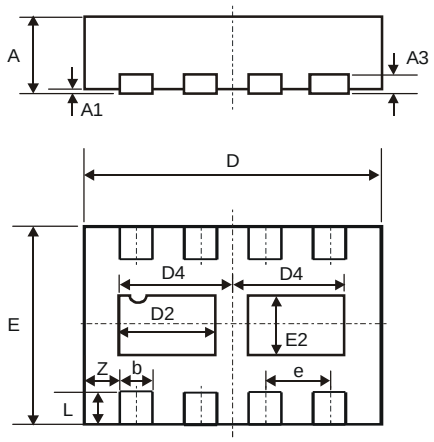


$V_{BE(SAT)}$ v I_C



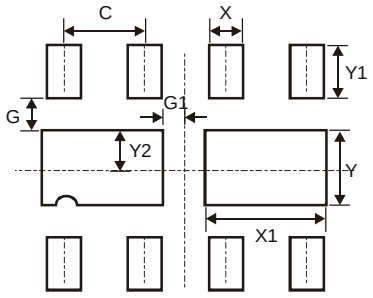
$V_{BE(ON)}$ v I_C

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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