



ZXTN619MA

50V NPN LOW SATURATION TRANSISTOR

Features

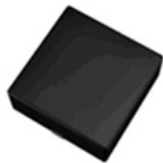
- $V_{CE0} = 50V$
- $R_{SAT} = 68\ m\Omega$
- $I_C = 4A$ Continuous Collector Current
- Low Equivalent On Resistance
- Low Saturation Voltage (100mV max @ 1A)
- h_{FE} specified up to 6A
- **Lead, Halogen, and Antimony Free/RoHS Compliant (Note 1)**
- **“Green” Devices (Note 2)**

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

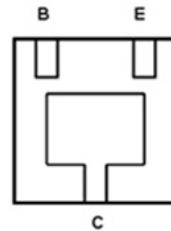
- DC – DC Converters (FET Drivers)
- Charging circuits
- Motor Control
- Power switches



DFN2020B-3



Device symbol



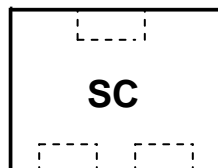
Underside view
DFN2020B-3

Ordering Information

Product	Status	Package	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN619MATA	Active	DFN2020B-3	SC	7	8	3000

Notes: 1. No purposefully added lead. Halogen and Antimony Free.
2. Diodes Inc’s “Green” Policy can be found on our website at <http://www.diodes.com>

Marking Information



SC = Product type Marking Code

ZXTN619MA

50V NPN LOW SATURATION TRANSISTOR

Maximum Ratings

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CB0}	100	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	7.5	V
Peak Pulse Current	I_{CM}	6	A
Continuous Collector Current (Note 3)	I_C	4	A
Base Current	I_B	1	A

Thermal Characteristics

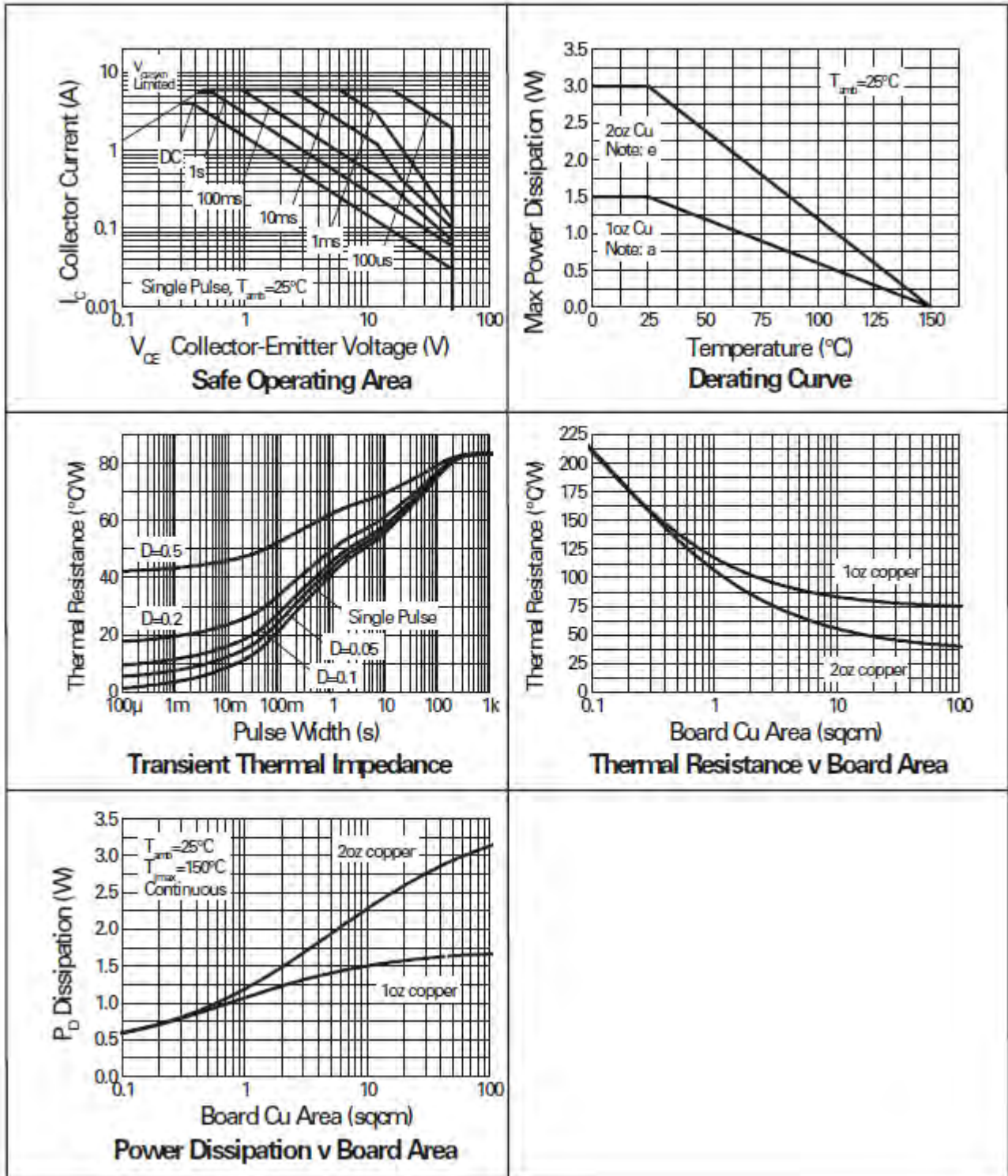
Characteristic	Symbol	Value	Unit
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 3) Linear Derating Factor	P_D	1.5 12	W mW/ $^\circ\text{C}$
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 4) Linear Derating Factor	P_D	2.45 19.6	W mW/ $^\circ\text{C}$
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 5) Linear Derating Factor	P_D	1 8	W mW/ $^\circ\text{C}$
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 6) Linear Derating Factor	P_D	3 24	W mW/ $^\circ\text{C}$
Junction to Ambient (Note 3)	$R_{\theta JA}$	83	$^\circ\text{C/W}$
Junction to Ambient (Note 4)	$R_{\theta JA}$	51	$^\circ\text{C/W}$
Junction to Ambient (Note 5)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Junction to Ambient (Note 6)	$R_{\theta JA}$	42	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- For a single device surface mounted on 10 sq cm single 1 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**.
 - For a single device surface mounted on 10 sq cm single 1 oz copper on FR4 PCB, in still air conditions measured at $t \leq 5$ secs **with all exposed pads attached**.
 - For a single device surface mounted on 10 sq cm 1 oz copper on FR4 PCB, in still air conditions **with minimal lead connections only**.
 - For a single device surface mounted on 65 sq cm 2 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**.

ZXTN619MA

50V NPN LOW SATURATION TRANSISTOR

Thermal Characteristics and Derating information



ZXTN619MA

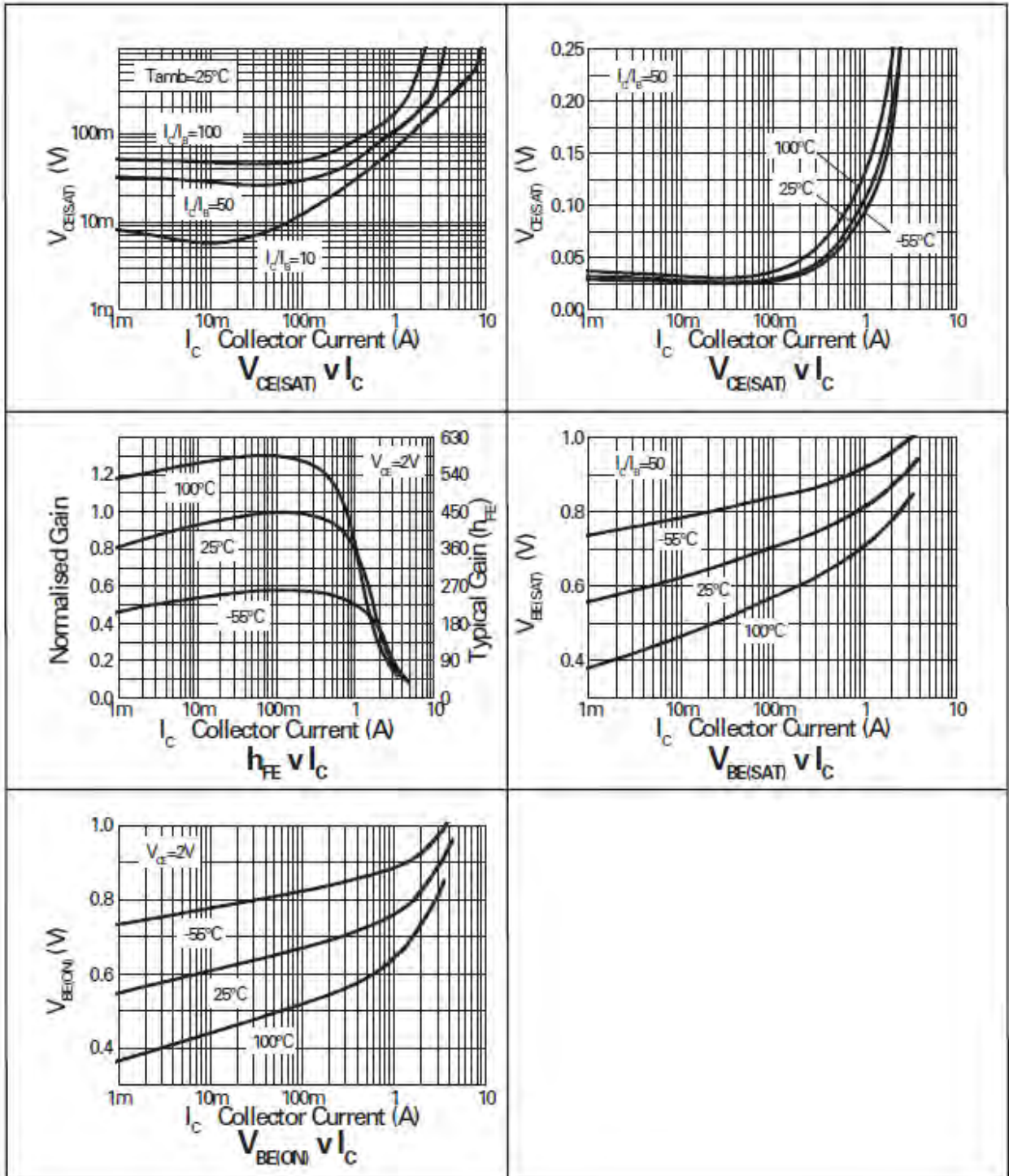
50V NPN LOW SATURATION TRANSISTOR

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	100	190	-	V	I _C = 100 μA
Collector-Emitter Breakdown Voltage (Note 7)	V _{(BR)CEO}	50	65	-	V	I _C = 10 mA
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	7.5	8.2	-	V	I _E = 100 μA
Collector Cutoff Current	I _{CBO}	-	-	25	nA	V _{CB} = 80V
Emitter Cutoff Current	I _{EBO}	-	-	25	nA	V _{EB} = 6V
Collector Emitter Cutoff Current	I _{CES}	-	-	25	nA	V _{CES} = 40V
Static Forward Current Transfer Ratio (Note 7)	h _{FE}	200	400	-	-	I _C = 10mA, V _{CE} = 2V
		300	450	-		I _C = 200mA, V _{CE} = 2V
		200	400	-		I _C = 1A, V _{CE} = 2V
		100	225	-		I _C = 2A, V _{CE} = 2V
		-	40	-		I _C = 6A, V _{CE} = 2V
Collector-Emitter Saturation Voltage (Note 7)	V _{CE(SAT)}	-	10	20	mV	I _C = 0.1A, I _B = 10mA
		-	70	100	mV	I _C = 1A, I _B = 5mA
		-	145	200	mV	I _C = 1A, I _B = 10mA
		-	115	220	mV	I _C = 2A, I _B = 50mA
		-	225	300	mV	I _C = 3A, I _B = 100mA
		-	270	320	mV	I _C = 4A, I _B = 200mA
Base-Emitter Turn-On Voltage (Note 7)	V _{BE(ON)}	-	0.94	1.00	V	I _C = 4A, V _{CE} = 2V
Base-Emitter Saturation Voltage (Note 7)	V _{BE(SAT)}	-	1.00	1.05	V	I _C = 4A, I _B = 200mA
Output Capacitance	C _{obo}	-	12	20	pF	V _{CB} = 10V, f = 1MHz
Transition Frequency	f _T	100	165	-	MHz	V _{CE} = 10V, I _C = 50mA, f = 100MHz
Turn-On Time	t _{on}	-	170	-	ns	V _{CC} = 10V, I _C = 1A
Turn-Off Time	t _{off}	-	750	-	ns	I _{B1} = I _{B2} = 10mA

Notes: 7. Measured under pulsed conditions. Pulse width = 300 μs. Duty cycle ≤ 2%

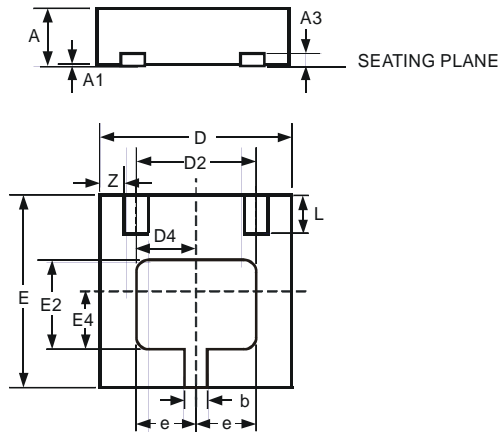
Typical Characteristics



ZXTN619MA

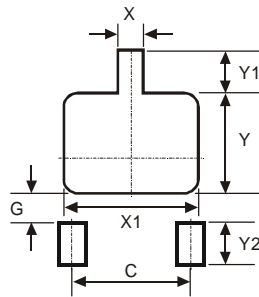
50V NPN LOW SATURATION TRANSISTOR

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

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