Lead-free Green

ZXTPS718MC

20V PNP LOW SATURATION TRANSISTOR AND 40V, 1A SCHOTTKY DIODE COMBINATION DUAL

Features

- PNP Transistor
  - V_{CEO} = -20V
  - R_{SAT} = 64mΩ
  - I_C = -3.5A
- Schottky Diode
  - V_R = 40V
  - V_F= 500mv (@1A)
  - I_C = 1A
- I_C = -3.5A Continuous Collector Current
- Low Saturation Voltage (-220mV @ -1A)
- h_{FE} characterized up to -6A
- Low V_F, fast switching Schottky
- **Lead, Halogen, and Antimony Free/RoHS Compliant (Note 1)**
- **"Green" Devices (Note 2)**

Mechanical Data

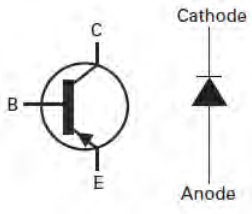
- Case: DFN3020B-8
- Terminals: Pre-Plated NiPdAu leadframe
- Nominal package height: 0.8mm
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Solderable per MIL-STD-202, Method 208
- Weight: 0.013 grams (approximate)

Applications

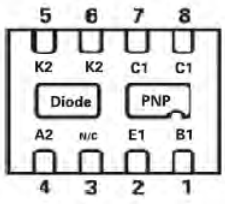
- DC – DC Converters
- Charging circuits
- Mobile phones
- Motor control

DFN3020B-8

Top View



Device symbol



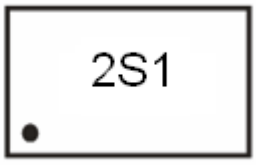
Pin Configuration

Ordering Information

Product	Status	Package	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTPS718MCTA	Active	DFN3020B-8	2S1	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 https://www.diodes.com

Marking Information



2S1 = Product type Marking Code
Dot Denotes Pin 1

Maximum Ratings, Transistor

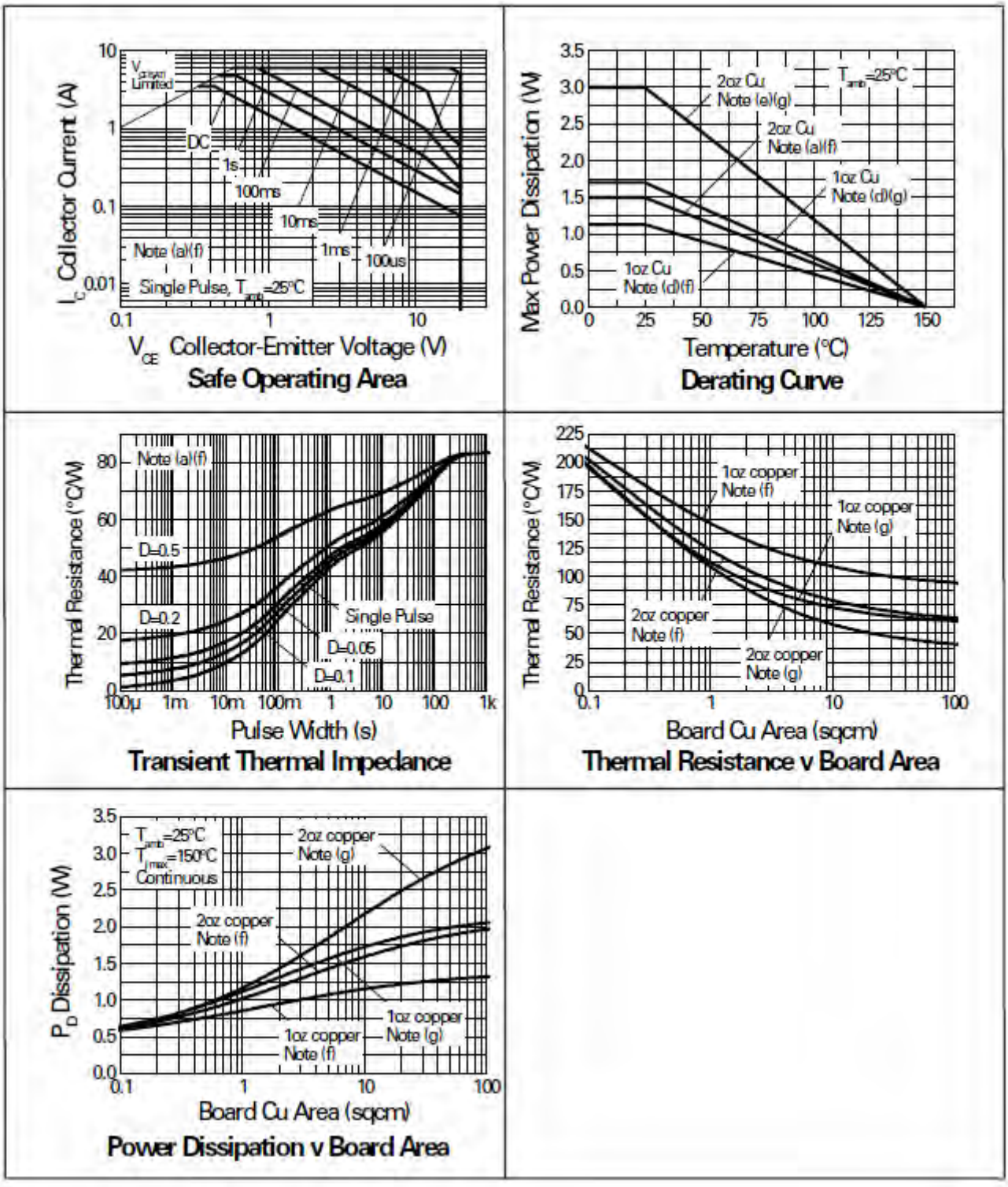
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	-25	V
Collector-Emitter Voltage	V_{CEO}	-20	V
Emitter-Base Voltage	V_{EBO}	-7.5	V
Peak Pulse Current	I_{CM}	-6	A
Continuous Collector Current (Note a and f)	I_C	-3.5	A
Base Current	I_B	1	A

Thermal Characteristics, Transistor

Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = 25°C (Notes a and f) Linear Derating Factor	P_D	1.5 12	W mW/°C
Power Dissipation at T_A = 25°C (Notes b and f) Linear Derating Factor	P_D	2.45 19.6	W mW/°C
Power Dissipation at T_A = 25°C (Notes c and f) Linear Derating Factor	P_D	1 8	W mW/°C
Power Dissipation at T_A = 25°C (Notes d and f) Linear Derating Factor	P_D	1.13 9	W mW/°C
Power Dissipation at T_A = 25°C (Notes d and g) Linear Derating Factor	P_D	1.7 13.6	W mW/°C
Power Dissipation at T_A = 25°C (Notes e and g) Linear Derating Factor	P_D	3 24	W mW/°C
Junction to Ambient (Notes a and f)	$R_{\theta JA}$	83	°C/W
Junction to Ambient (Notes b and f)	$R_{\theta JA}$	51	°C/W
Junction to Ambient (Notes c and f)	$R_{\theta JA}$	125	°C/W
Junction to Ambient (Notes d and f)	$R_{\theta JA}$	111	°C/W
Junction to Ambient (Notes d and g)	$R_{\theta JA}$	73.5	°C/W
Junction to Ambient (Notes e and g)	$R_{\theta JA}$	41.7	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Notes:
a. For a dual device surface mounted on 8 sq cm single sided 2 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centre line into two separate areas with one half connected to each half of the dual device.
b. Measured at t <5 secs for a dual device surface mounted on 8 sq cm single sided 2 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centre line into two separate areas with one half connected to each half of the dual device.
c. For a dual device surface mounted on 8 sq cm single sided 2 oz copper on FR4 PCB, in still air conditions **with minimal lead connections only.**
d. For a dual device surface mounted on 10 sq cm single sided 1 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centre line into two separate areas with one half connected to each half of the dual device.
e. For a dual device surface mounted on 85 sq cm single sided 2 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centre line into two separate areas with one half connected to each half of the dual device.
f. For a dual device with one active die.
g. For dual device with 2 active die running at equal power.

Thermal Characteristics and Derating information, Transistor



Maximum Ratings, Schottky Diode

Parameter	Symbol	Limit	Unit
Continuous Reverse Voltage	V_R	40	V
Forward Voltage @ I_F = 1000mA (typ)	V_F	425	mV
Forward Current	I_F	1850	mA
Average Peak Forward Current D=50%	I_{FAV}	3	A
Non Repetitive Forward Current t≤ 100µs t≤ 10ms	I_{FSM}	12 7	A A

Thermal Characteristics, Schottky Diode

Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = 25°C (Notes a and f) Linear Derating Factor	P_D	1.2 12	W mW/°C
Power Dissipation at T_A = 25°C (Notes b and f) Linear Derating Factor	P_D	2 20	W mW/°C
Power Dissipation at T_A = 25°C (Notes c and f) Linear Derating Factor	P_D	0.8 8	W mW/°C
Power Dissipation at T_A = 25°C (Notes d and f) Linear Derating Factor	P_D	0.9 9	W mW/°C
Power Dissipation at T_A = 25°C (Notes d and g) Linear Derating Factor	P_D	1..36 13.6	W mW/°C
Power Dissipation at T_A = 25°C (Notes e and g) Linear Derating Factor	P_D	2.4 24	W mW/°C
Junction to Ambient (Notes a and f)	$R_{\theta JA}$	83	°C/W
Junction to Ambient (Notes b and f)	$R_{\theta JA}$	51	°C/W
Junction to Ambient (Notes c and f)	$R_{\theta JA}$	125	°C/W
Junction to Ambient (Notes d and f)	$R_{\theta JA}$	111	°C/W
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Junction Temperature	T_J	125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Notes:
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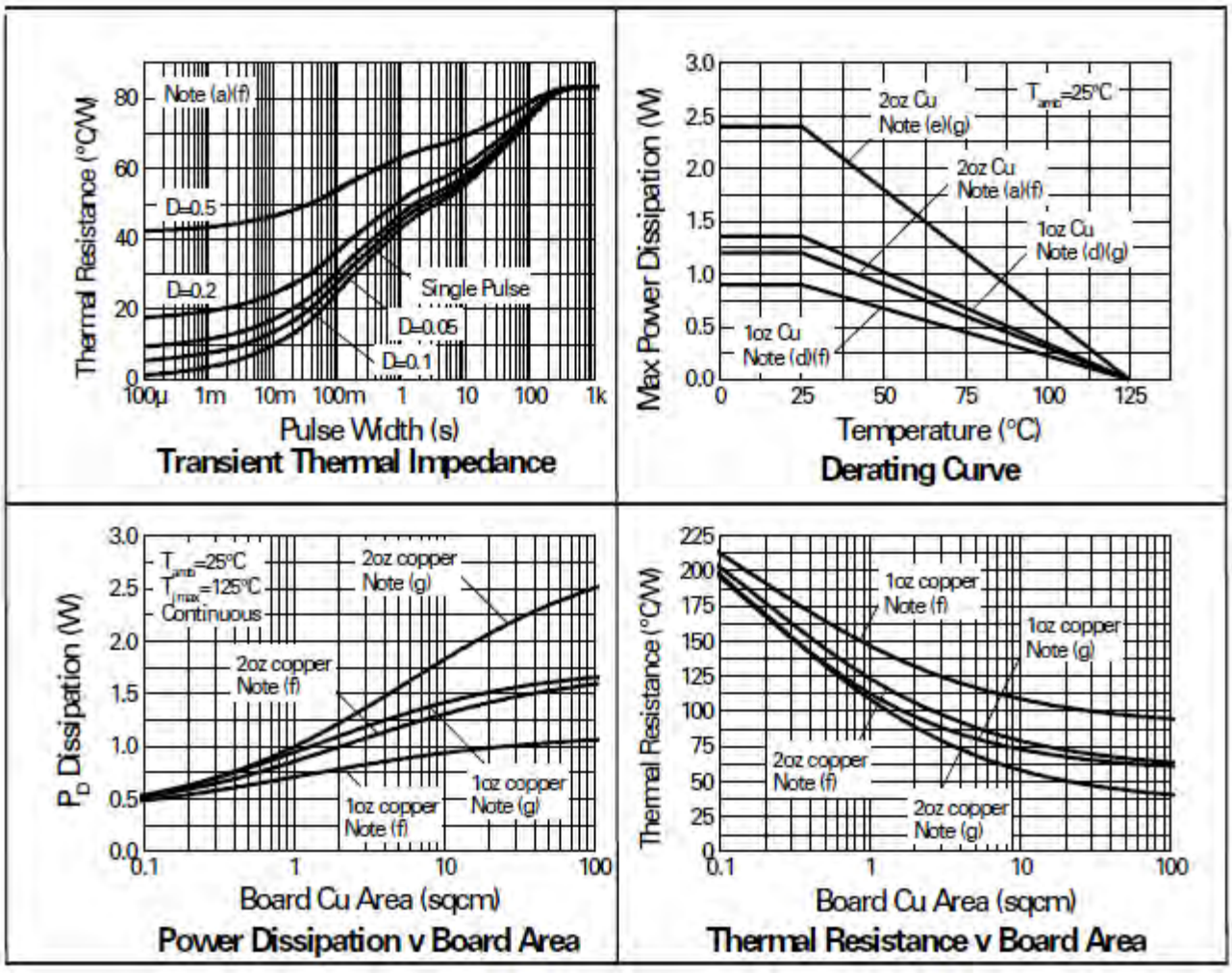
d. For a dual device surface mounted on 10 sq cm single sided 1 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centre line into two separate areas with one half connected to each half of the dual device.
e. For a dual device surface mounted on 85 sq cm single sided 2 oz copper on FR4 PCB, in still air conditions **with all exposed pads attached**. The copper area is split down the centre line into two separate areas with one half connected to each half of the dual device.
f. For a dual device with one active die.
g. For dual device with 2 active die running at equal power.

Thermal Characteristics and Derating information, Schottky Diode



Electrical Characteristics, Transistor @T_A = 25°C unless otherwise specified

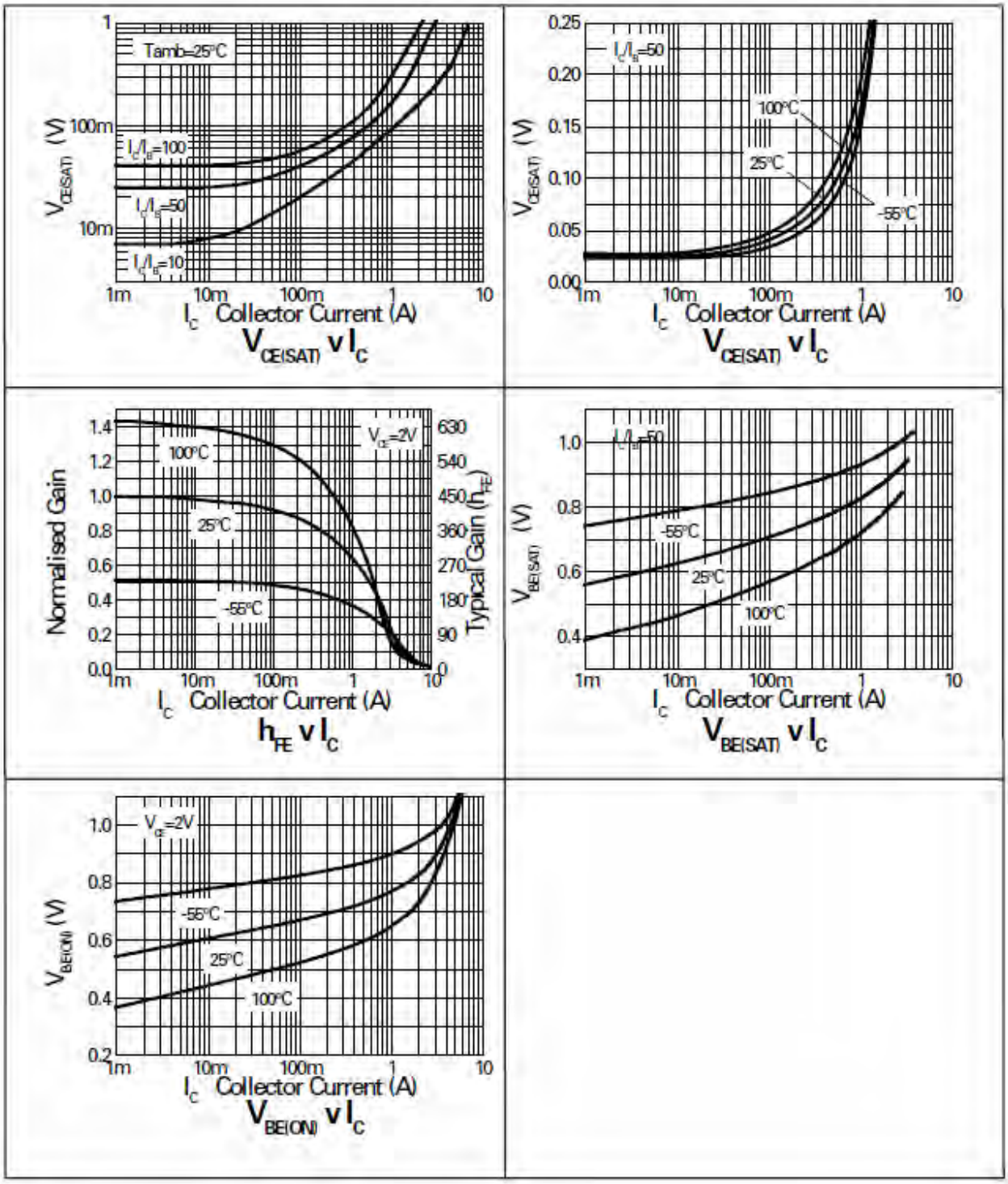
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-25	-35	-	V	I_C = -100µA
Collector-Emitter Breakdown Voltage (Note 3)	$V_{(BR)CEO}$	-20	-25	-	V	I_C = -10mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-7.5	-8.5	-	V	I_E = -100µA
Collector Cutoff Current	I_{CBO}	-	-	-25	nA	V_{CB} = -20V
Emitter Cutoff Current	I_{EBO}	-	-	-25	nA	V_{EB} = -6V
Collector Emitter Cutoff Current	I_{CES}	-	-	-25	nA	V_{CES} = -16V
Static Forward Current Transfer Ratio (Note 3)	h_{FE}	300 300 150 15	475 450 230 30	- - - -	-	I_C = -10mA, V_{CE} = -2V I_C = -100mA, V_{CE} = -2V I_C = -2A, V_{CE} = -2V I_C = -6A, V_{CE} = -2V
Collector-Emitter Saturation Voltage (Note 3)	$V_{CE(sat)}$	- - - - -	-19 -170 -190 -240 -225	-30 -220 -250 -350 -300	mV	I_C = -0.1A, I_B = -10mA I_C = -1A, I_B = -20mA I_C = -1.5A, I_B = -50mA I_C = -2.5A, I_B = -150mA I_C = -3.5A, I_B = -350mA
Base-Emitter Turn-On Voltage (Note 3)	$V_{BE(on)}$	-	-0.87	-0.95	V	I_C = -3.5A, V_{CE} = -2V
Base-Emitter Saturation Voltage (Note 3)	$V_{BE(sat)}$	-	-1.10	-1.075	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 I_{B1} = I_{B2} = -50mA
Turn-off Time	t_{off}	-	670	-	ns	

Electrical Characteristics, Schottky Diode @T_A = 25°C unless otherwise specified

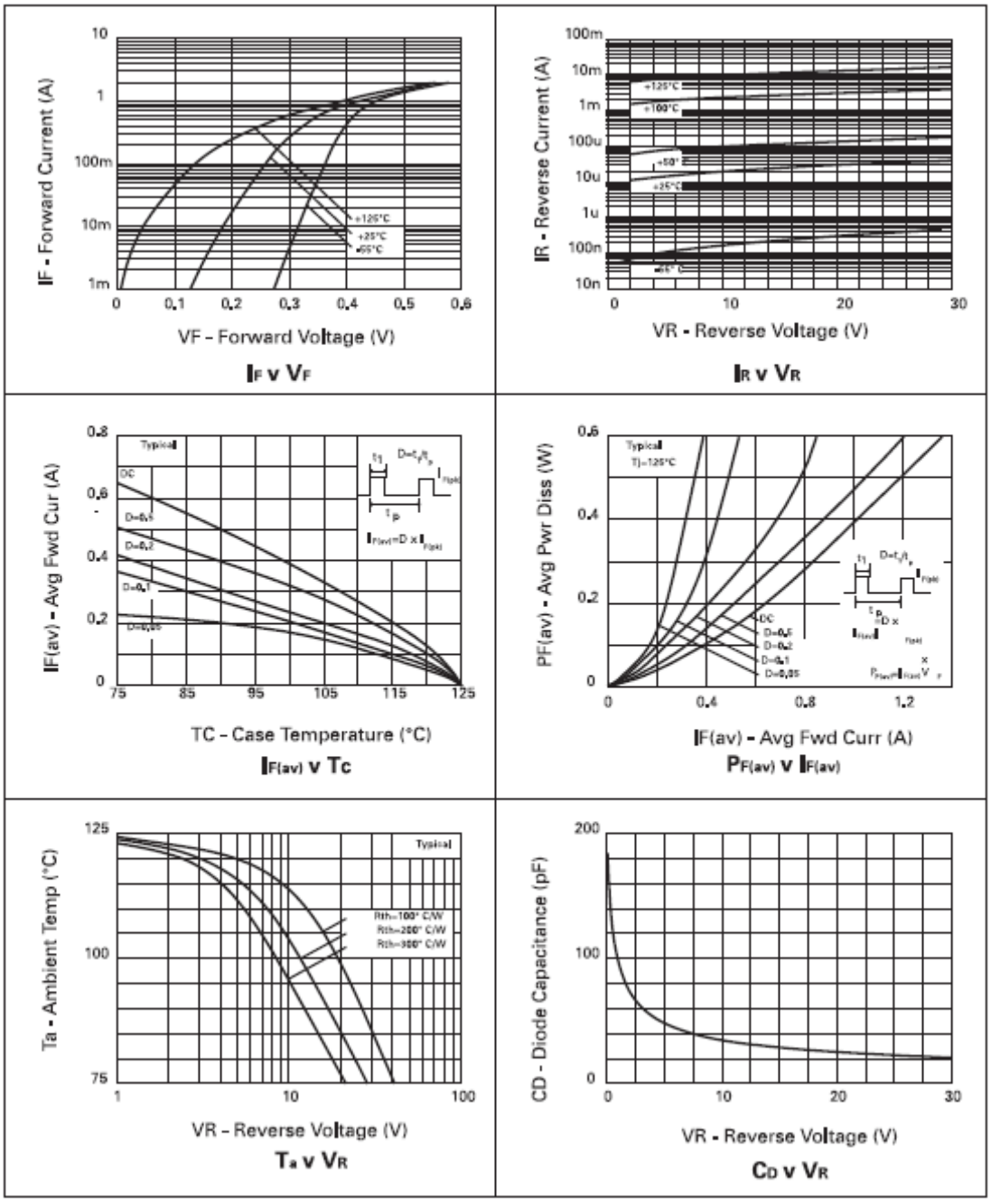
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	$V_{(BR)R}$	40	60	-	V	I_R = -300µA
Forward Voltage (Note 3)	V_F	- - - - - - - - -	240 265 305 355 390 425 495 420	270 290 340 400 450 500 600 -	mV	I_F = 50mA I_F = 100mA I_F = 250mA I_F = 500mA I_F = 750mA I_F = 1000mA I_F = 1500mA I_F = 1000mA, T_A = 100°C
Reverse Current	I_R	-	50	100	µA	V_R = 30V
Diode Capacitance	C_D	-	25	-	pF	V_R = 25V, f = 1MHz
Reverse Recovery Time	t_{rr}	-	12	-	ns	switched from I_F = 500mA to I_R = 500mA Measured at I_R = 50mA

Notes: 3. Measured under pulsed conditions.

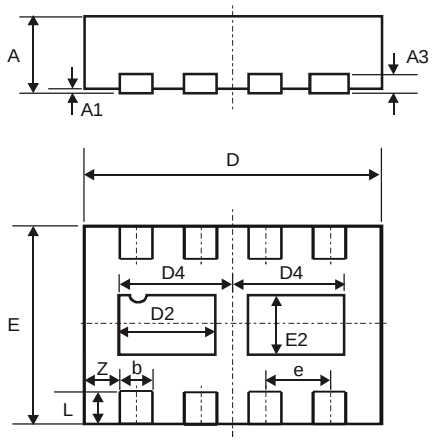
Typical Characteristics, Transistor



Typical Characteristics, Schottky Diode

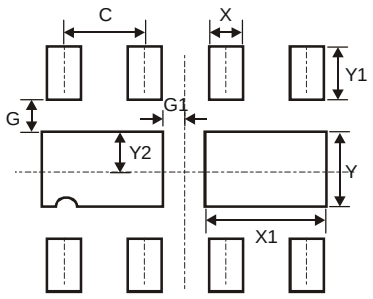


Package Outline Dimensions



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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