



**ZXTP26020DMF**

**20V LOW  $V_{CE(SAT)}$  PNP SURFACE MOUNTED TRANSISTOR**

**Features**

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (ZXTN26020DMF)
- Low Collector-Emitter Saturation Voltage,  $V_{CE(SAT)}$
- High Current Gain ( $h_{FE}$ ) at High  $I_C$
- Surface Mount Package Suited for Automated Assembly
- Ultra-Small Surface Mount Package
- **Qualified to AEC-Q101 Standards for High Reliability**
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **“Green” Device (Note 2)**
- **ESD rating: 400V-MM, 8KV-HBM**

**Mechanical Data**

- Case: DFN1411-3
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.003 grams (approximate)

**Applications**

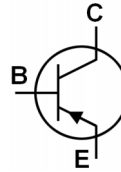
- MOSFET and IGBT gate driving
- DC-DC conversion
- Interface between low voltage IC and Load
- Load disconnect switch



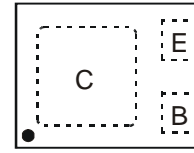
Top view



Bottom view



Device Symbol



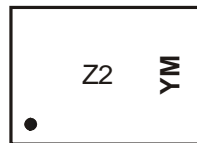
Pin-Out Top view

**Ordering Information**

Product	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP26020DMFTA	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**



Z2= Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: W = 2009)  
M = Month (ex: 9 = September)

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015	2016
Code	W	X	Y	Z	A	B	C	D

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

## Maximum Ratings

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-20	V
Collector-Emitter Voltage	$V_{CEO}$	-20	V
Emitter-Base Voltage	$V_{EBO}$	-7	V
Continuous Collector Current	$I_C$	-1.25	A
Peak Pulse Current	$I_{CM}$	-4	A
Base Current(DC)	$I_B$	-0.3	A
Peak Base Current	$I_{BM}$	-0.6	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	$P_D$	1	W
Power Dissipation (Note 4)	$P_D$	380	mW
Thermal Resistance, Junction to Ambient (Note 3) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	330	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes: 3. Device mounted on FR-4 PCB with 1inch square pads.  
4. Device mounted on FR-4 PCB with minimum recommended pad layout

**Electrical Characteristics** (at  $T_A = 25^\circ\text{C}$  unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-20	—	—	V	$I_C = -100\mu\text{A}, I_E = 0\text{A}$
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(BR)CEO}$	-20	—	—	V	$I_C = -10\text{mA}, I_B = 0\text{A}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-7	—	—	V	$I_E = -100\mu\text{A}, I_C = 0\text{A}$
Collector Cutoff Current	$I_{cbo}$	—	—	-100 -0.5	nA $\mu\text{A}$	$V_{CB} = -20\text{V}, I_E = 0\text{A}$ $V_{CB} = -20\text{V}, I_E = 0\text{A}, T_A = 125^\circ\text{C}$
Emitter Cutoff Current	$I_{ces}$	—	—	-100	nA	$V_{CE} = -20\text{V}, V_{BE} = 0\text{V}$
Base Cutoff Current	$I_{ebo}$	—	—	-50	nA	$V_{BE} = -6\text{V}, I_C = 0\text{A}$
DC Current Gain (Note 5)	$h_{FE}$	300 235 175 140	— — — —	— — — —	—	$V_{CE} = -2\text{V}, I_C = -100\text{mA}$ $V_{CE} = -2\text{V}, I_C = -0.5\text{A}$ $V_{CE} = -2\text{V}, I_C = -1\text{A}$ $V_{CE} = -2\text{V}, I_C = -1.5\text{A}$
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(SAT)}$	— — — —	— — — —	-80 -100 -155 -235	mV mV mV mV	$I_C = -100\text{mA}, I_B = -1\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$ $I_C = -1\text{A}, I_B = -50\text{mA}$ $I_C = -1.25\text{A}, I_B = -62.5\text{mA}$
Equivalent On-Resistance	$R_{CE(SAT)}$	—	125	—	m $\Omega$	$I_C = -1\text{A}, I_B = -50\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	—	—	-1.1	V	$V_{CE} = -5\text{V}, I_C = -1\text{A}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	-1.15	V	$I_C = -1\text{A}, I_B = -50\text{mA}$
Output Capacitance (Note 5)	$C_{obo}$	—	—	20	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	$f_T$	200	—	—	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Turn-On Time	$t_{on}$	—	60	—	ns	$V_{CC} = -10\text{V}, I_C = -1\text{A}$ $I_{B2} = -I_{B1} = -50\text{mA}$
Delay Time	$t_d$	—	20	—	ns	
Rise Time	$t_r$	—	40	—	ns	
Turn-Off Time	$t_{off}$	—	167	—	ns	
Storage Time	$t_s$	—	140	—	ns	
Fall Time	$t_f$	—	27	—	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effect.

**ZXTP26020DMF**

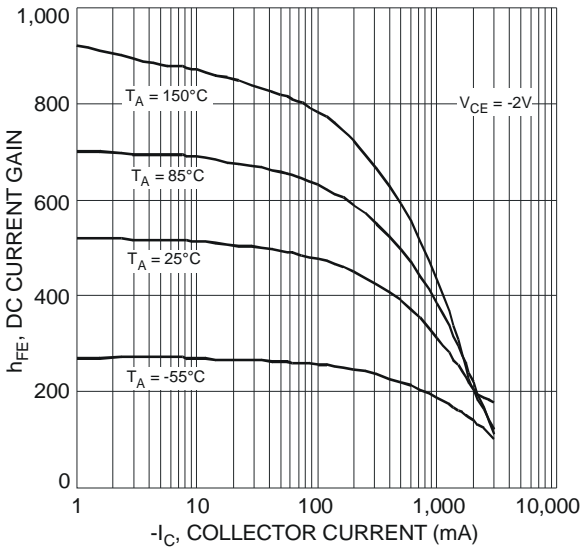


Fig. 1 Typical DC Current Gain vs. Collector Current

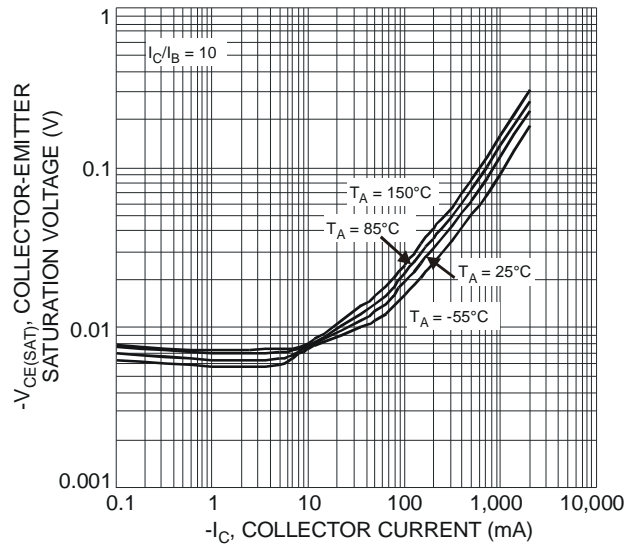


Fig. 2 Typical Collector-Emitter Saturation Voltage vs. Collector Current

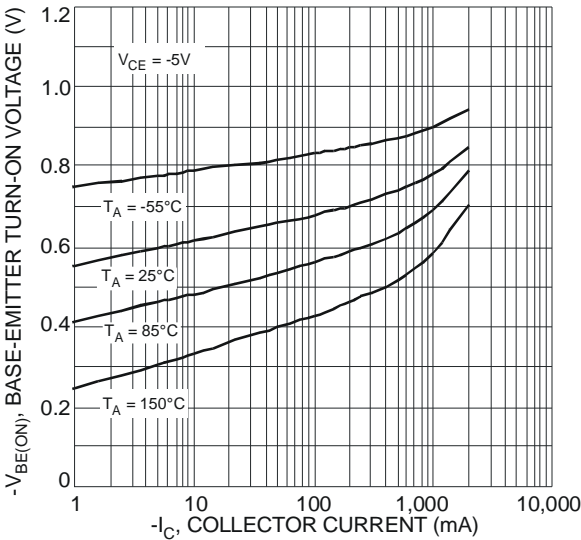


Fig. 3 Typical Base-Emitter Turn-On Voltage vs. Collector Current

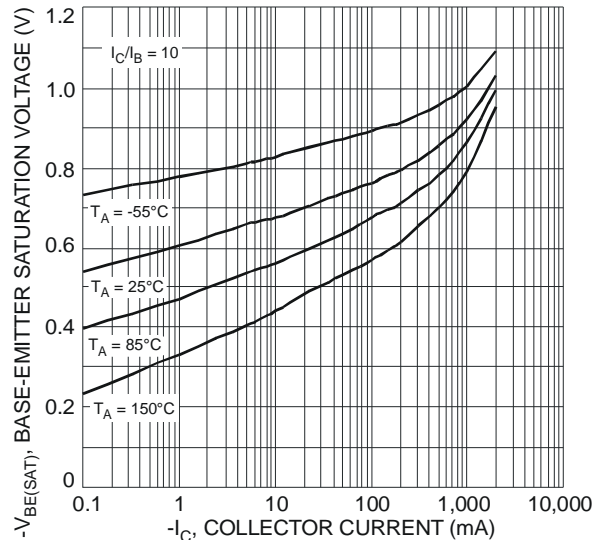


Fig. 4 Typical Base-Emitter Saturation Voltage vs. Collector Current

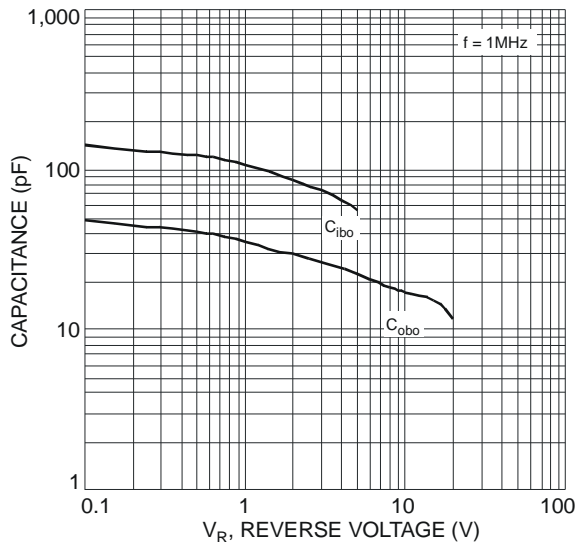
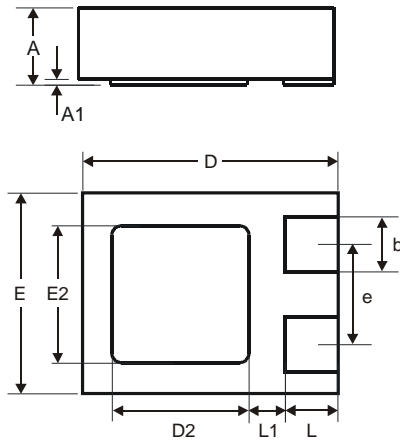


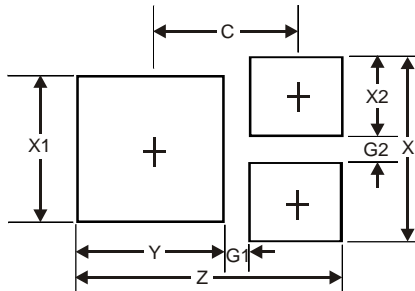
Fig. 5 Typical Capacitance Characteristics

**Package Outline Dimensions**



DFN1411-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.02
b	0.25	0.35	0.30
D	1.35	1.475	1.40
D2	0.65	0.85	0.75
E	1.05	1.18	1.10
E2	0.65	0.85	0.75
e	—	—	0.55
L	0.225	0.325	0.275
L1	—	—	0.20
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	1.38
G1	0.15
G2	0.15
X	0.95
X1	0.75
X2	0.40
Y	0.75
C	0.76

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