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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Features

- High Gain Low V_{cesat} NPN transistor
- Very Low R_{cesat}
- High ICM capability
- 1.5A Continuous Current Rating
- 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

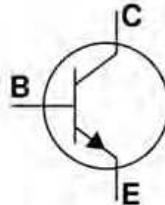
- MOSFET and IGBT gate driving
- DC-DC conversion
- Interface between low voltage IC and Load
- LED driving



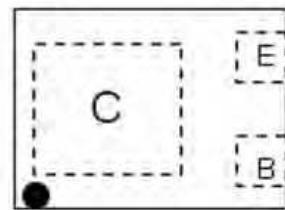
Top view



Bottom view



Device Symbol



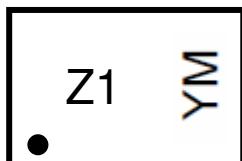
Pin-out Top view

Ordering Information

Product	Status	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN26020DMFTA	Active	Z1	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



Z1 = 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					
Code	W	X	Y	Z	A	B	C					
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	VCBO	20	V
Collector-Emitter Voltage	VCEO	20	V
Emitter-Base Voltage	VEBO	7	V
Continuous Collector Current (Note 4)	I _C	1.5	A
Peak Pulse Current	I _{CM}	4	A
Base Current	I _B	0.5	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°C	R _{θJA}	125	°C/W
Thermal Resistance, Junction to Ambient (Note 3) @ T _A = 25°C	R _{θJA}	330	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°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

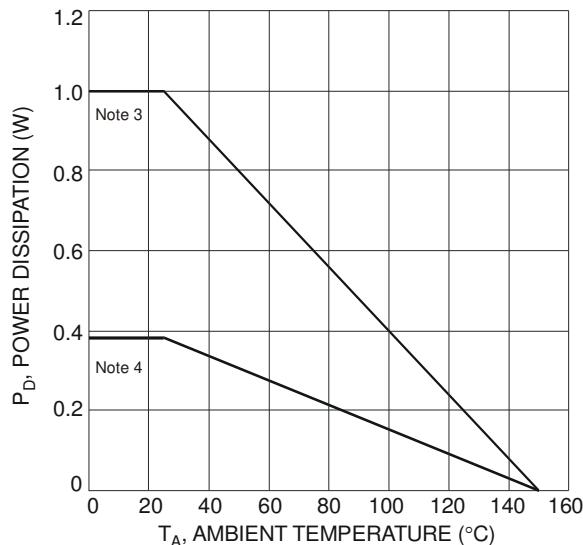


Fig. 1 Power Dissipation vs. Ambient Temperature

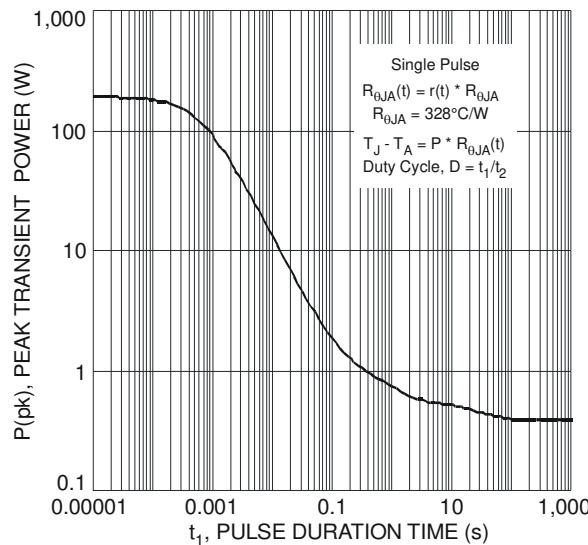


Fig. 2 Single Pulse Maximum Power Dissipation

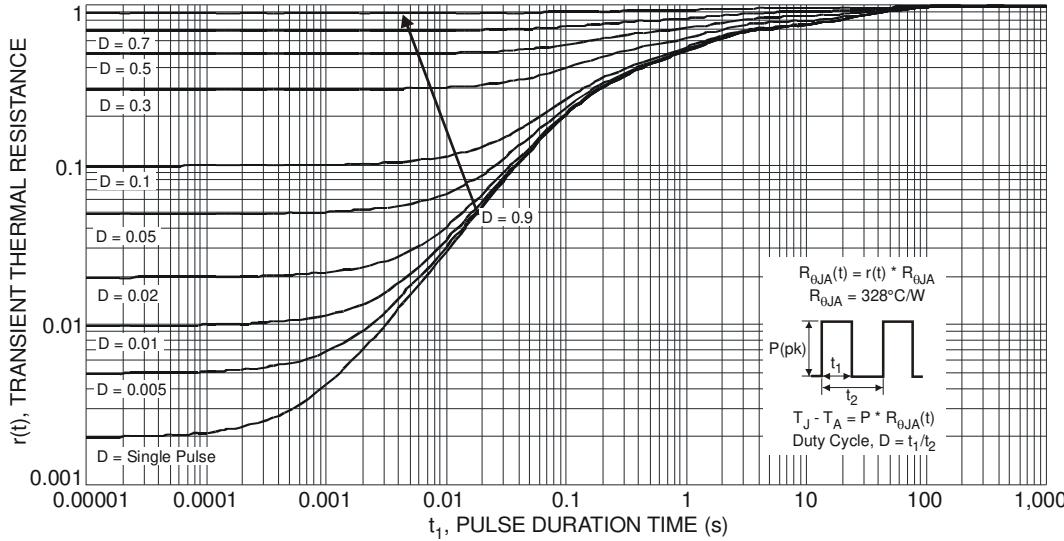


Fig. 3 Transient Thermal Response

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(\text{BR})\text{CBO}}$	20	—	—	V	$I_C = 100\mu\text{A}$, $I_E = 0\text{A}$
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(\text{BR})\text{CEO}}$	20	—	—	V	$I_C = 10\text{mA}$, $I_B = 0\text{A}$
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	7	—	—	V	$I_E = 100\mu\text{A}$, $I_C = 0\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(\text{BR})\text{ECO}}$	5	—	—	V	$I_E = 100\mu\text{A}$, $I_B = 0\text{A}$
Collector Cutoff Current	I_{CBO}	—	—	100 0.5	nA μA	$V_{\text{CB}} = 20\text{V}$, $I_E = 0\text{A}$ $V_{\text{CB}} = 20\text{V}$, $I_E = 0$, $T_A = 125^\circ\text{C}$
Emitter Cutoff Current	I_{CES}	—	—	100	nA	$V_{\text{CE}} = 20\text{V}$, $V_{\text{BE}} = 0\text{V}$
Base Cutoff Current	I_{EBO}	—	—	100	nA	$V_{\text{BE}} = 5.6\text{V}$, $I_C = 0\text{A}$
DC Current Gain (Note 5)	h_{FE}	300 290 270 200	—	1000	—	$V_{\text{CE}} = 2\text{V}$, $I_C = 100\text{mA}$ $V_{\text{CE}} = 2\text{V}$, $I_C = 0.5\text{A}$ $V_{\text{CE}} = 2\text{V}$, $I_C = 1\text{A}$ $V_{\text{CE}} = 2\text{V}$, $I_C = 2\text{A}$
Collector-Emitter Saturation Voltage (Note 5)	$V_{\text{CE}(\text{SAT})}$	—	—	45 70 125 225 225 290	mV mV mV mV mV	$I_C = 100\text{mA}$, $I_B = 1\text{mA}$ $I_C = 500\text{mA}$, $I_B = 25\text{mA}$ $I_C = 1\text{A}$, $I_B = 50\text{mA}$ $I_C = 1.5\text{A}$, $I_B = 30\text{mA}$ $I_C = 2\text{A}$, $I_B = 100\text{mA}$ $I_C = 2\text{A}$, $I_B = 40\text{mA}$
Equivalent On-Resistance	$R_{\text{CE}(\text{SAT})}$	—	90	—	$\text{m}\Omega$	$I_C = 1\text{A}$, $I_B = 50\text{mA}$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{ON})}$	—	—	1.2	V	$V_{\text{CE}} = 2\text{V}$, $I_C = 2\text{A}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	—	1.1	V	$I_C = 2\text{A}$, $I_B = 100\text{mA}$
Output Capacitance (Note 5)	C_{obo}	—	—	20	pF	$V_{\text{CB}} = 10\text{V}$, $f = 1.0\text{MHz}$
Input Capacitance (Note 5)	$C_{\text{ib}o}$	—	—	150	pF	$V_{\text{EB}} = 0.5\text{V}$, $f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	f_T	—	260	—	MHz	$V_{\text{CE}} = 10\text{V}$, $I_C = 50\text{mA}$, $f = 100\text{MHz}$
Turn-On Time	t_{on}	—	60	—	ns	$V_{\text{CC}} = 10\text{V}$, $I_C = 1\text{A}$ $I_{\text{B}2} = -I_{\text{B}1} = 50\text{mA}$
Delay Time	t_d	—	20	—	ns	
Rise Time	t_r	—	40	—	ns	
Turn-Off Time	t_{off}	—	225	—	ns	
Storage Time	t_s	—	205	—	ns	
Fall Time	t_f	—	20	—	ns	

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

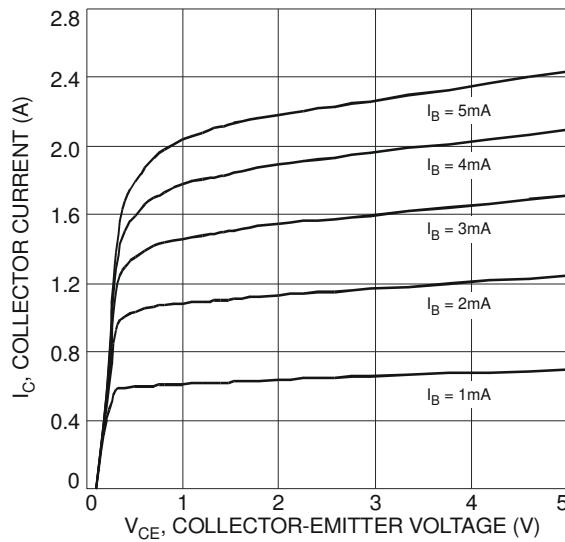


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

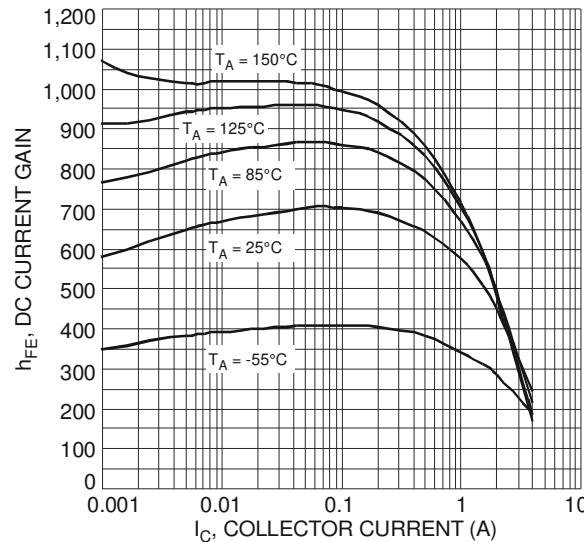


Fig. 5 Typical DC Current Gain vs. Collector Current

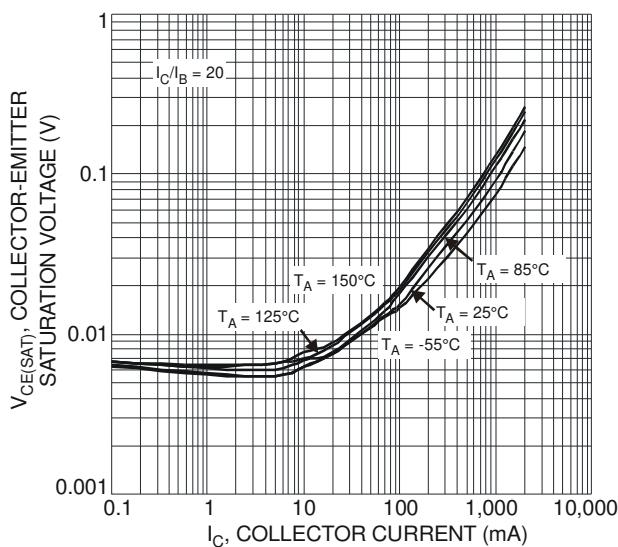


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

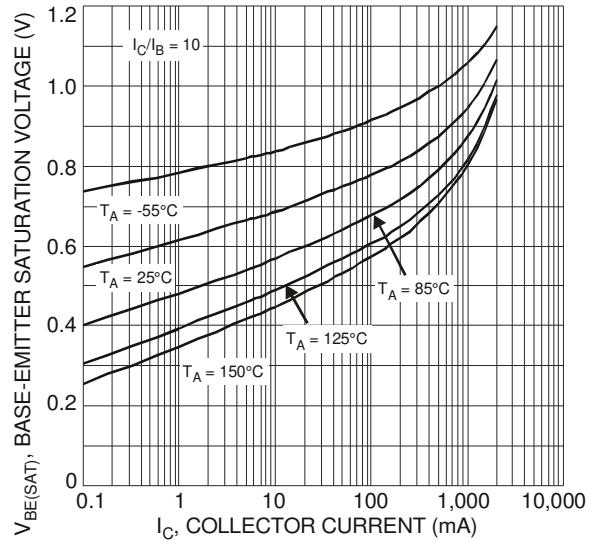


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

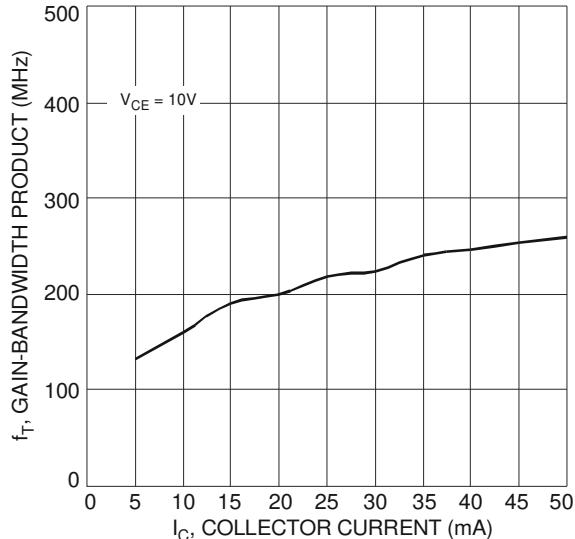


Fig. 10 Typical Gain-Bandwidth Product vs. Collector Current

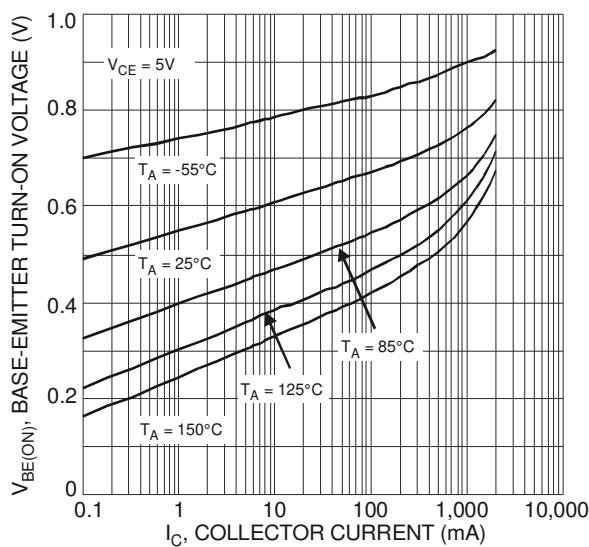


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

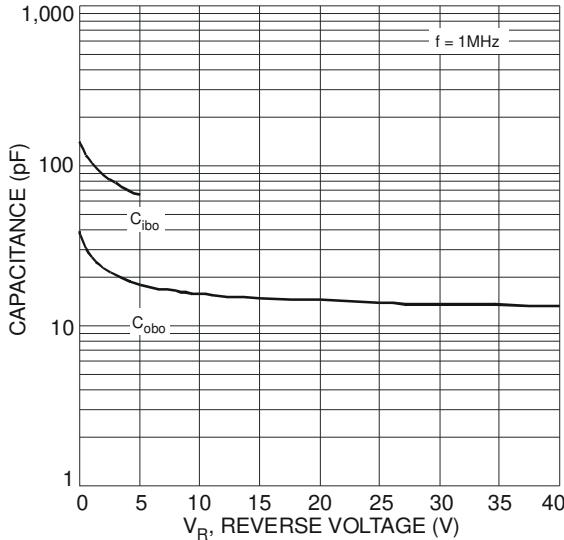


Fig. 9 Typical Capacitance Characteristics

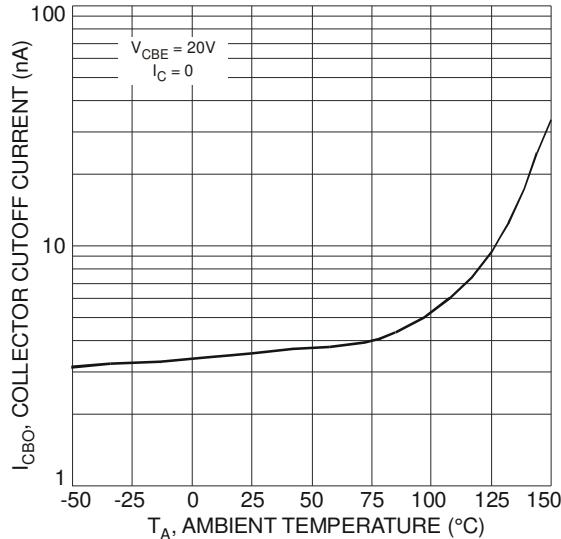
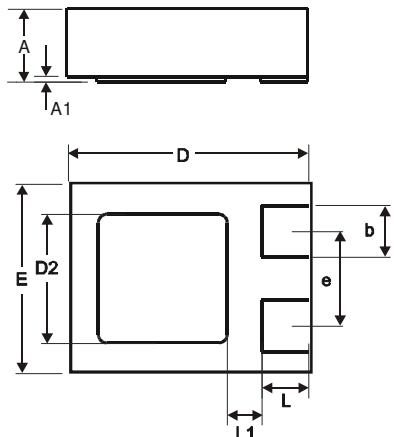


Fig. 11 Collector Cutoff Current vs. Ambient Temperature

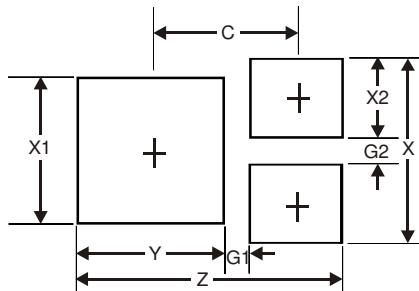
Package Outline Dimensions



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
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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