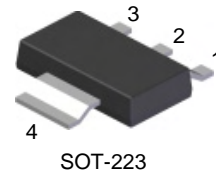


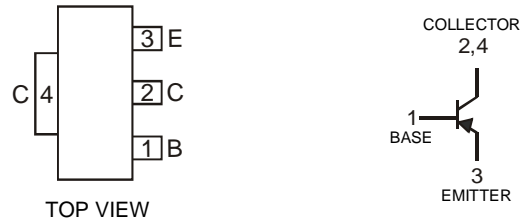
Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DZT2222A)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Amplification and Switching
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



Mechanical Data

- Case: SOT-223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking & Type Code Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.115 grams (approximate)



Schematic and Pin Configuration

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	-60	V
Collector-Emitter Voltage	V _{CE0}	-60	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Continuous Current (Note 3)	I _C	-600	mA
Peak Collector Current	I _{CM}	-800	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ T _A = 25°C	P _d	1000 (Note 3)	mW
		1500 (Note 4)	
Power Derating Factor above 25°C (Note 4)	P _{der}	12	mW/°C
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Ambient Air @ T _A = 25°C (Note 4)	R _{θJA}	83.3	°C/W

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. Device mounted on 2" x 2" FR-4 PC board, 2 oz. copper, single sided, pad layout as shown on page 4, or on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 4. Device mounted on FR-4 PCB, 7cm² of copper pad area.

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

Characteristic	Symbol	Min	Max	Unit	Test Conditions
OFF CHARACTERISTICS (Note 5)					
Collector-Base Cutoff Current	I_{CBO}	—	-0.01	μA	$V_{CB} = -50\text{V}, I_E = 0$
		—	-10		$V_{CB} = -50\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Collector Cutoff Current	I_{CEX}	—	-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$
Base Cutoff Current	I_{BL}	—	-50	nA	$V_{CE} = -30\text{V}, V_{EB(OFF)} = -0.5\text{V}$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-60	—	V	$I_C = -10\ \mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60	—	V	$I_C = -10\ \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	—	V	$I_E = -10\ \mu\text{A}, I_C = 0$
ON CHARACTERISTICS (Note 5)					
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	-0.4	V	$I_C = -150\text{mA}, I_B = -15\text{mA}$
		—	-1.6	V	$I_C = -500\text{mA}, I_B = -50\text{mA}$
DC Current Gain	h_{FE}	75	—	—	$V_{CE} = -10\text{V}, I_C = -100\ \mu\text{A}$
		100	—	—	$V_{CE} = -10\text{V}, I_C = -1\text{mA}$
		100	—	—	$V_{CE} = -10\text{V}, I_C = -10\text{mA}$
		100	300	—	$V_{CE} = -10\text{V}, I_C = -150\text{mA}$
		50	—	—	$V_{CE} = -10\text{V}, I_C = -500\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	-1.3	V	$I_C = -150\text{mA}, I_B = -15\text{mA}$
		—	-2.6	V	$I_C = -500\text{mA}, I_B = -50\text{mA}$
SMALL SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product	f_T	200	—	MHz	$V_{CE} = -20\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	8	pF	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$
Input Capacitance	C_{ibo}	—	30	pF	$V_{EB} = -2\text{V}, I_C = 0\text{A}, f = 1\text{MHz}$
SWITCHING CHARACTERISTICS					
Turn-On Time	t_{on}	—	45	ns	$V_{CC} = -30\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$
Delay Time	t_d	—	10	ns	
Rise Time	t_r	—	40	ns	
Turn-Off Time	t_{off}	—	100	ns	$V_{CC} = -6\text{V}, I_C = -150\text{mA}, I_{B1} = I_{B2} = -15\text{mA}$
Storage Time	t_s	—	80	ns	
Fall Time	t_f	—	30	ns	

Notes: 5. Pulse Test: Pulse width, $t_p < 300\ \mu\text{s}$, Duty Cycle, $d < 0.02$

Typical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

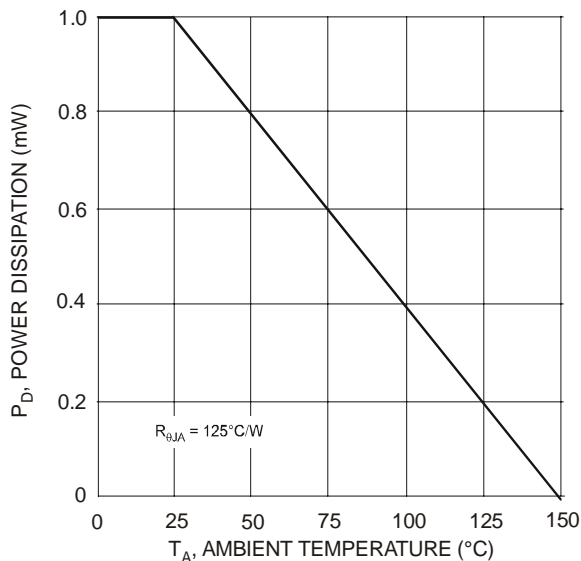


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

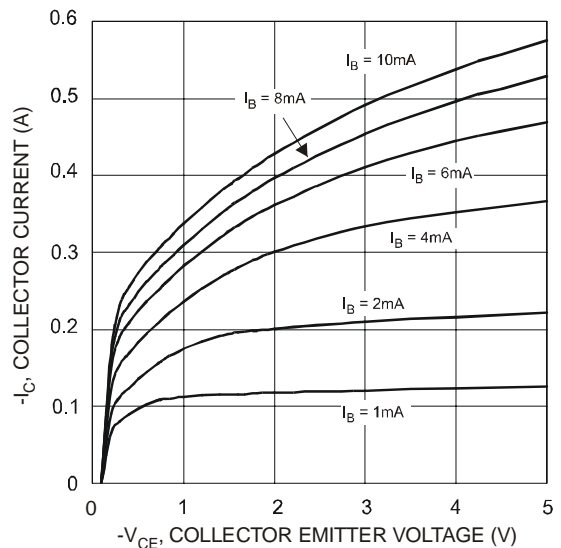


Fig. 2 Typical Collector Current as a Function of Collector Emitter Voltage

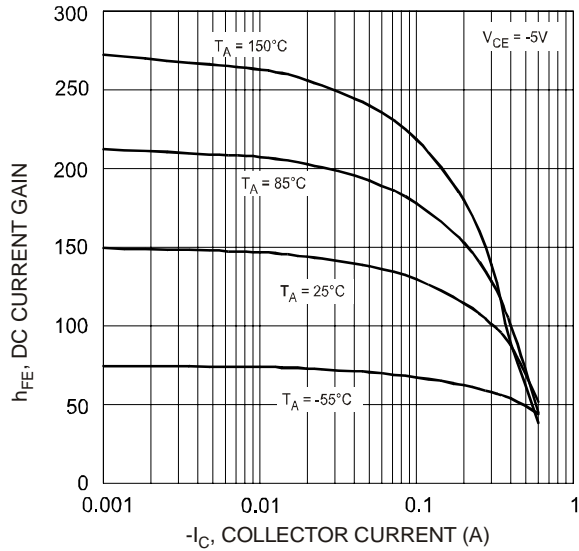


Fig. 3 Typical DC Current Gain vs. Collector Current

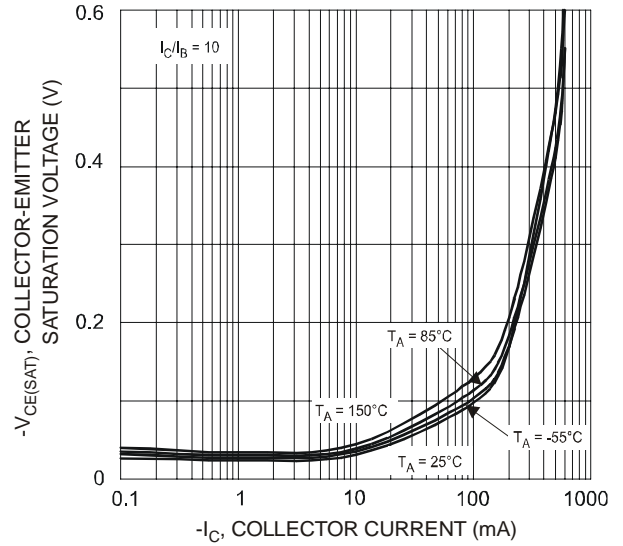


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

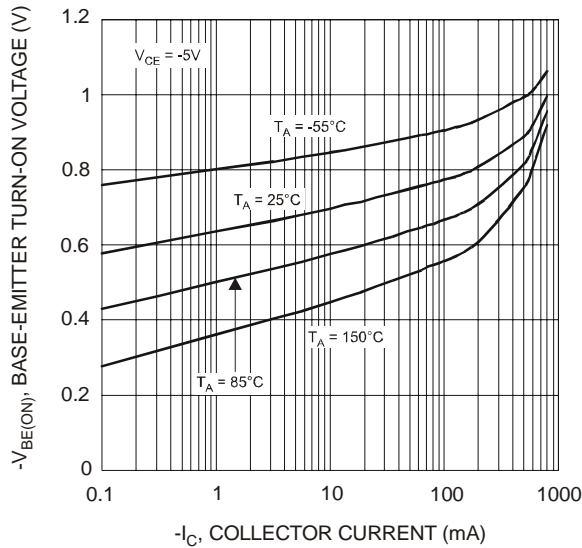


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

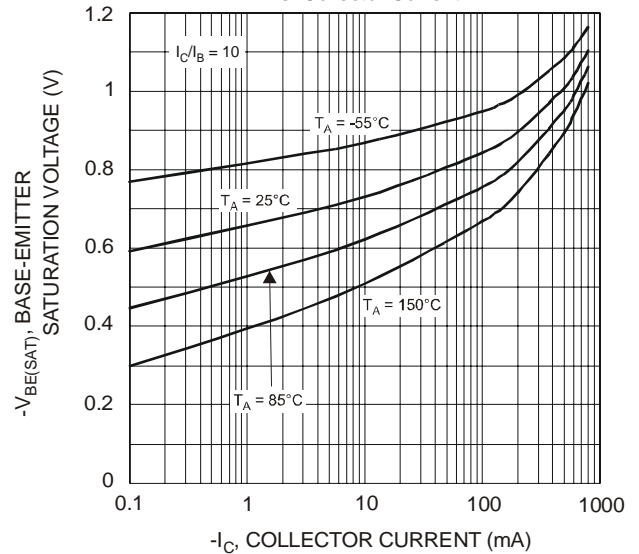


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

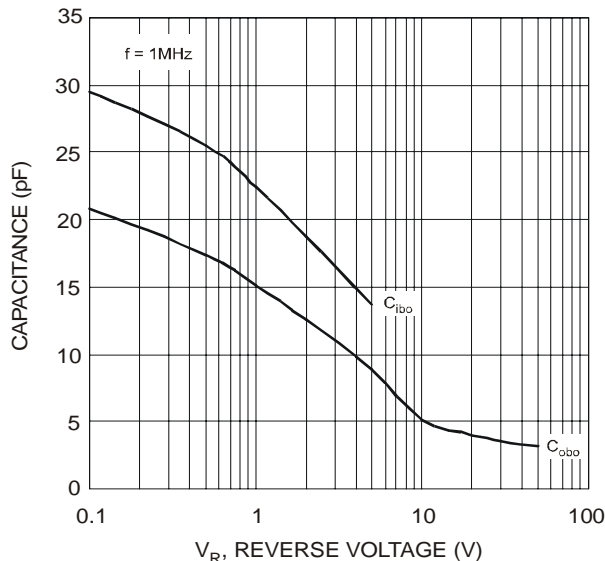


Fig. 7 Typical Capacitance Characteristics

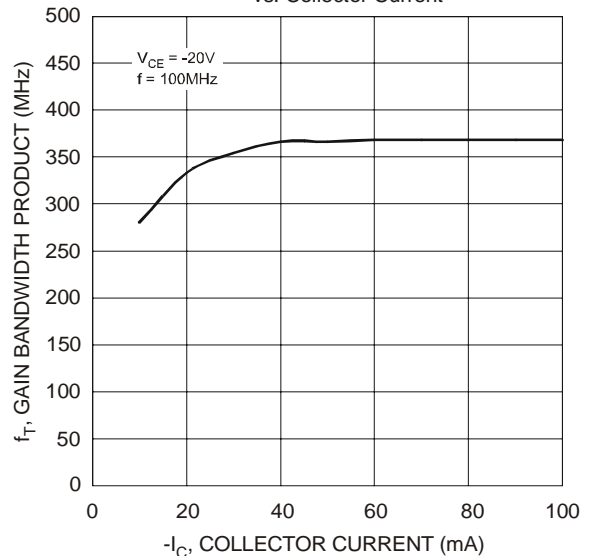


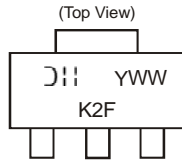
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 6)

Device	Packaging	Shipping
DZT2907A-13	SOT-223	2500/Tape & Reel

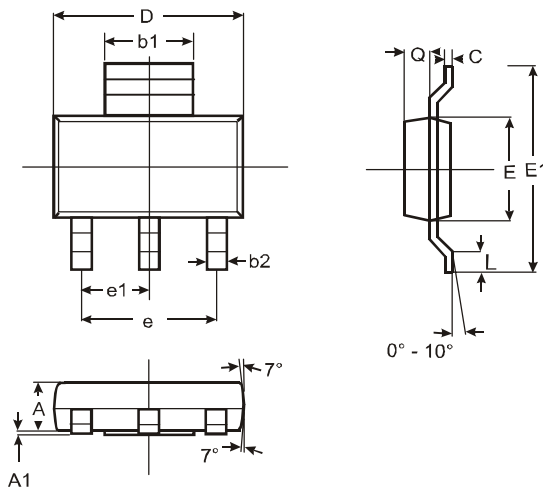
Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



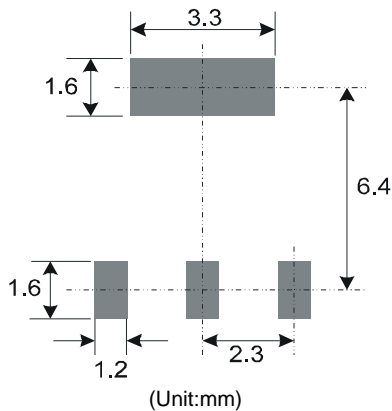
D = Manufacturer's code marking
K2F = Product type marking code
YWW = Date code marking
Y = Last digit of year ex: 7 = 2007
WW = Week code 01 - 52

Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout: (Based on IPC-SM-782)



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