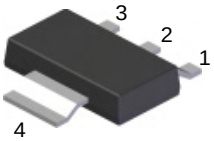
NEW PRODUCT

DZT2222A

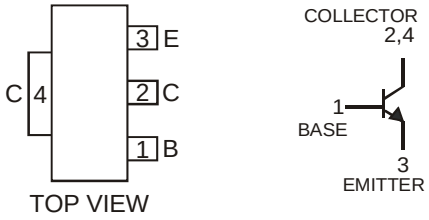
NPN SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DZT2907A)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



SOT-223



Schematic and Pin Configuration

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 Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.115 grams (approximate)

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Continuous Current	I_C	600	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ T_A = 25°C (Note 3)	P_d	1	W
Thermal Resistance, Junction to Ambient Air (Note 3) @T_A = 25°C	$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	°C

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 FR-4 PCB pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

NEW PRODUCT

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Conditions
OFF CHARACTERISTICS (Note 4)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75	—	V	I_C = 10μA, I_E = 0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	—	V	I_E = 10μA, I_C = 0
Collector Cut-Off Current	I_{CBO}	—	10	nA	V_{CB} = 50V, I_E = 0
		—	10	μA	V_{CB} = 50V, I_E = 0, T_A = 150°C
Emitter Cut-Off Current	I_{EBO}	—	10	nA	V_{EB} = 3V, I_C = 0
Collector-Emitter Cut-Off Current	I_{CEX}	—	10	nA	V_{CE} = 60V, $V_{EB(off)}$ = 3V
ON CHARACTERISTICS (Note 4)					
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.3	V	I_C = 150mA, I_B = 15mA
		—	1.0	V	I_C = 500mA, I_B = 50mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	0.6	1.2	V	I_C = 150mA, I_B = 15mA
		—	2.0	V	I_C = 500mA, I_B = 50mA
DC Current Gain	h_{FE}	35	—	V	I_C = 0.1mA, V_{CE} = 10V
		50	—		I_C = 1mA, V_{CE} = 10V
		75	—		I_C = 10mA, V_{CE} = 10V
		35	—		I_C = 10mA, V_{CE} = 10V, T_A = -55°C
		100	300		I_C = 150mA, V_{CE} = 10V
		50	—		I_C = 150mA, V_{CE} = 1V
		40	—		I_C = 500mA, V_{CE} = 10V
SMALL SIGNAL CHARACTERISTICS					
Transition Frequency	f_T	300	—	MHz	I_C = 20mA, V_{CE} = 20V, f = 100MHz
Output Capacitance	C_{obo}	—	8	pF	V_{CB} = 10V, I_E = 0, f = 1MHz
Input Capacitance	C_{ibo}	—	25	pF	V_{EB} = 0.5V, I_C = 0, f = 1MHz
SWITCHING CHARACTERISTICS					
Delay Time	t_d	—	10	ns	V_{CE} = 30V, $V_{EB(off)}$ = 0.5V, I_C = 150mA, I_{B1} = 15mA
Rise Time	t_r	—	25	ns	
Storage Time	t_s	—	225	ns	V_{CE} = 30V, I_C = 150mA, I_{B1} = I_{B2} = 15mA
Fall Time	t_f	—	60	ns	

Notes: 4. Measured under pulsed conditions. Pulse width = 300 μS. Duty Cycle, d< = 2%.

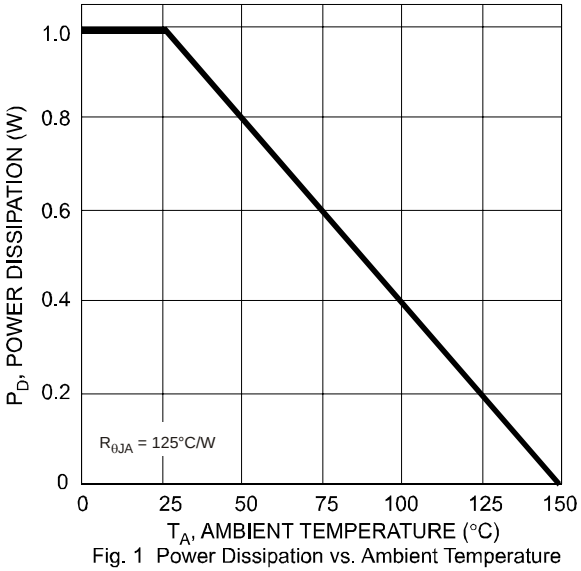


Fig. 1 Power Dissipation vs. Ambient Temperature

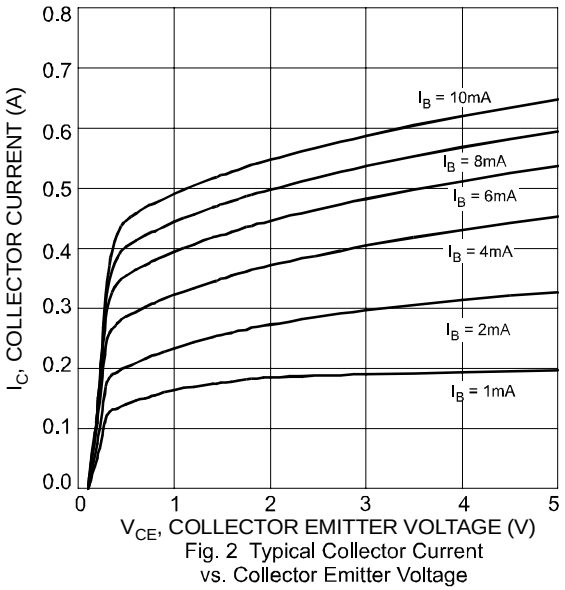


Fig. 2 Typical Collector Current vs. Collector Emitter Voltage

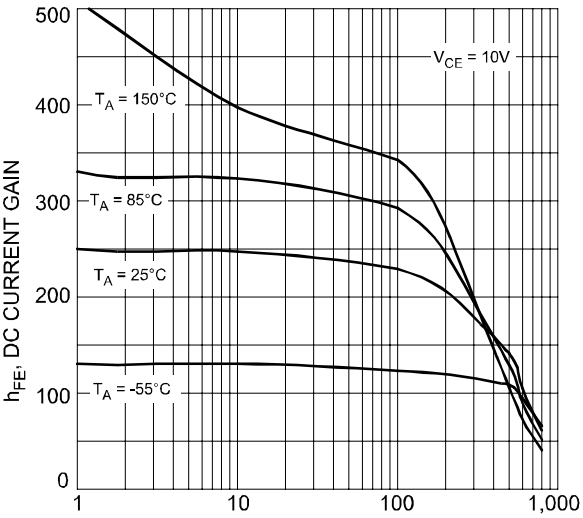


Fig. 3 Typical DC Current Gain vs. Collector Current

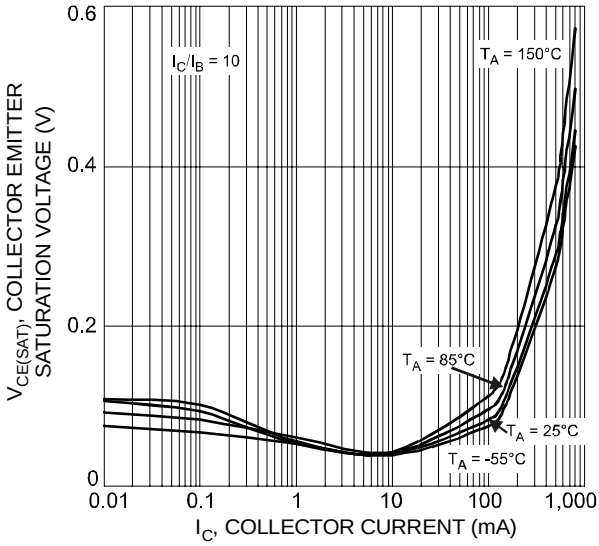


Fig. 4 Typical Collector Emitter Saturation Voltage vs. Collector Current

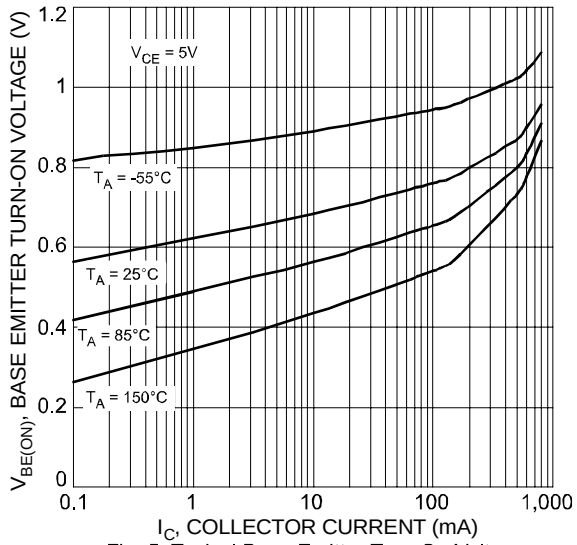


Fig. 5 Typical Base Emitter Turn-On Voltage vs. Collector Current

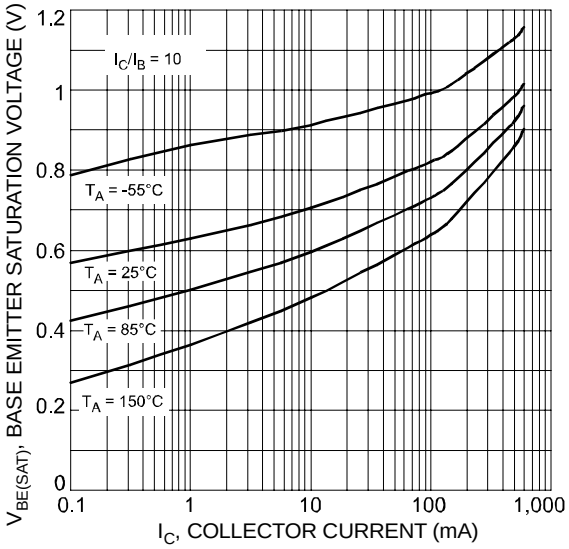


Fig. 6 Typical Base Emitter Saturation Voltage vs. Collector Current

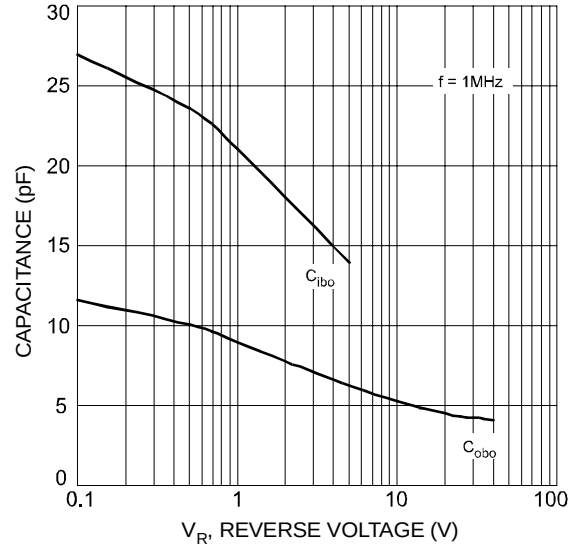


Fig. 7 Typical Capacitance Characteristics

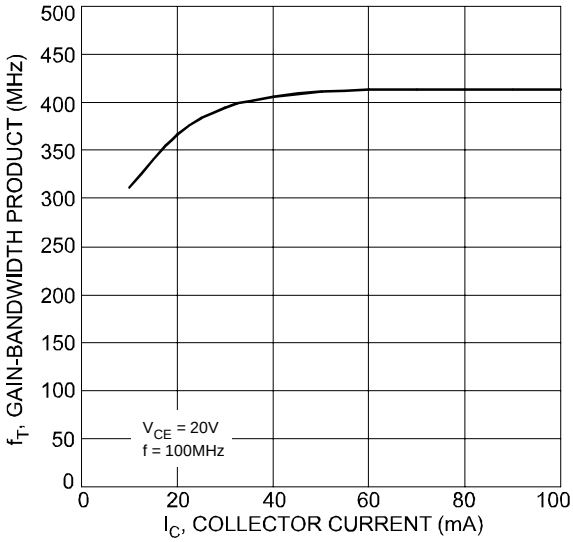


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

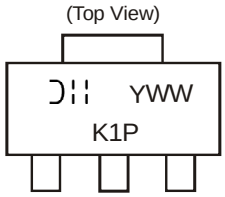
NEW PRODUCT

Ordering Information (Note 5)

Device	Packaging	Shipping
DZT2222A-13	SOT-223	2500/Tape & Reel

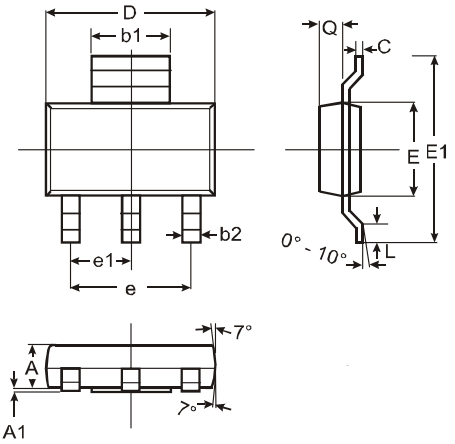
Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



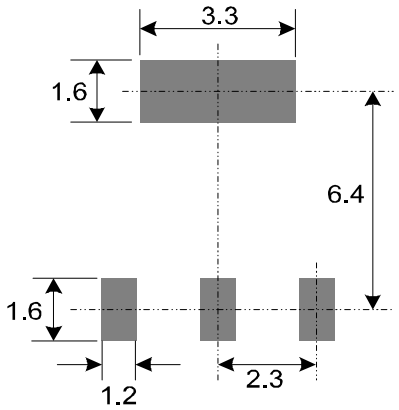
K1P = Product Type Marking Code
YWW = Date Code Marking
Y = Last Digit of Year ex: 7 = 2007
WW = Week Code 01-52

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	0.55	0.75	0.65
Q	0.84	0.94	0.89
All Dimensions in mm			

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



(Unit: mm)

Mouser Electronics

Authorized Distributor

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Diodes Incorporated:

DZT2222A-13