

Features

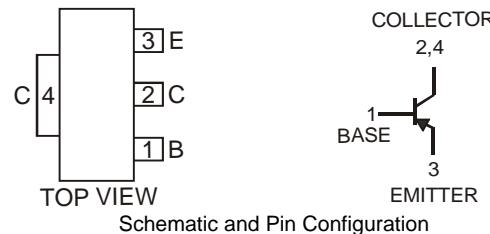
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)**



SOT-223

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)



Schematic and Pin Configuration

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-180	V
Collector-Emitter Voltage	V_{CEO}	-140	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-4	A
Peak Pulse Current	I_{CM}	-10	A

Thermal Characteristics

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

Notes:

- No purposefully added lead.
- Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
- Device mounted on FR-4 PCB; pad layout as shown on page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	$V_{(\text{BR})\text{CBO}}$	-180	—	—	V	$I_C = -100\mu\text{A}$, $I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(\text{BR})\text{CEO}}$	-140	—	—	V	$I_C = -10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	-6	—	—	V	$I_E = -100\mu\text{A}$, $I_C = 0$
Collector Cutoff Current	I_{CBO}	—	—	-50 -1	nA μA	$V_{\text{CB}} = -150\text{V}$, $I_E = 0$ $V_{\text{CB}} = -150\text{V}$, $I_E = 0$, $T_A = 100^\circ\text{C}$
Emitter Cutoff Current	I_{EBO}	—	—	-10	nA	$V_{\text{EB}} = -6\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 4)						
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	—	—	-60 -120 -150 -370	mV	$I_C = -100\text{mA}$, $I_B = -5\text{mA}$ $I_C = -500\text{mA}$, $I_B = -50\text{mA}$ $I_C = -1\text{A}$, $I_B = -100\text{mA}$ $I_C = -3\text{A}$, $I_B = -300\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	—	-1110	mV	$I_C = -3\text{A}$, $I_B = -300\text{mA}$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{ON})}$	—	—	-950	mV	$I_C = -3\text{A}$, $V_{\text{CE}} = -5\text{V}$
DC Current Gain	h_{FE}	100 100 75 —	—	300 — — 10	—	$I_C = -10\text{mA}$, $V_{\text{CE}} = -5\text{V}$ $I_C = -1\text{A}$, $V_{\text{CE}} = -5\text{V}$ $I_C = -3\text{A}$, $V_{\text{CE}} = -5\text{V}$ $I_C = -10\text{A}$, $V_{\text{CE}} = -5\text{V}$
SMALL SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	—	150	—	MHz	$I_C = -100\text{mA}$, $V_{\text{CE}} = -10\text{V}$, $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	40	—	pF	$V_{\text{CB}} = -20\text{V}$, $f = 1\text{MHz}$
SWITCHING CHARACTERISTICS						
Switching Times	t_{on} t_{off}	—	85	—	ns	$I_C = -1\text{A}$, $I_{B1} = -100\text{mA}$ $I_{B2} = 100\text{mA}$, $V_{\text{CC}} = -50\text{V}$

Notes: 4. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

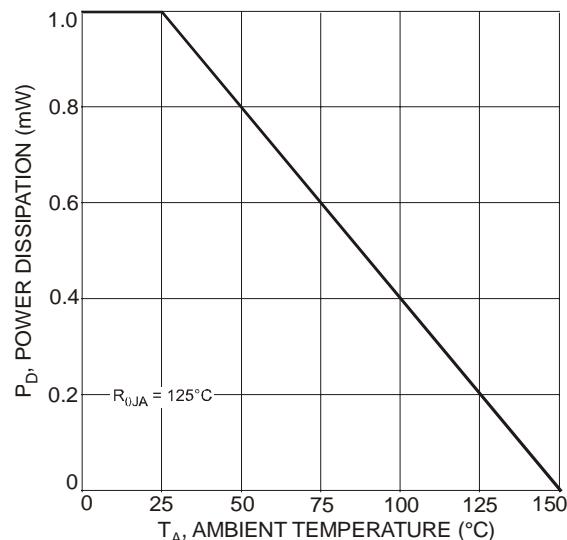


Fig. 1 Max Power Dissipation vs. Ambient Temperature

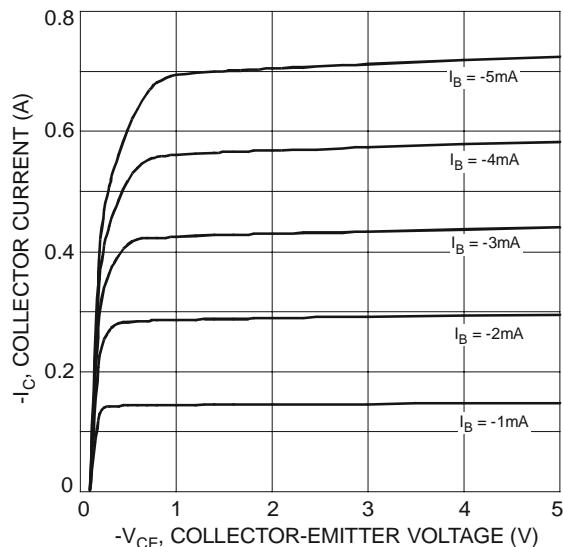


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

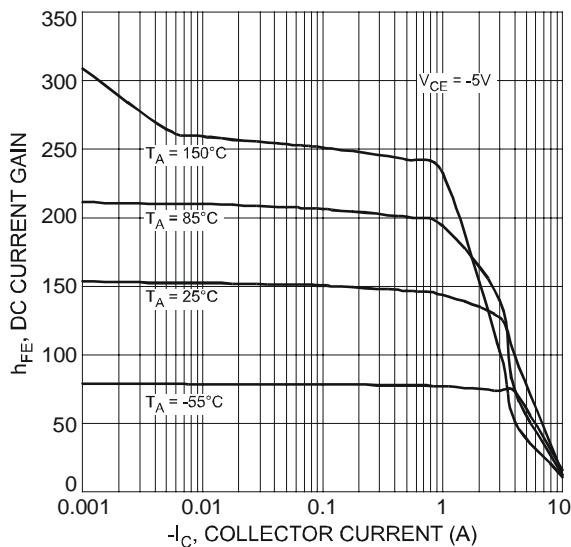


Fig. 3 Typical DC Current Gain vs. Collector Current

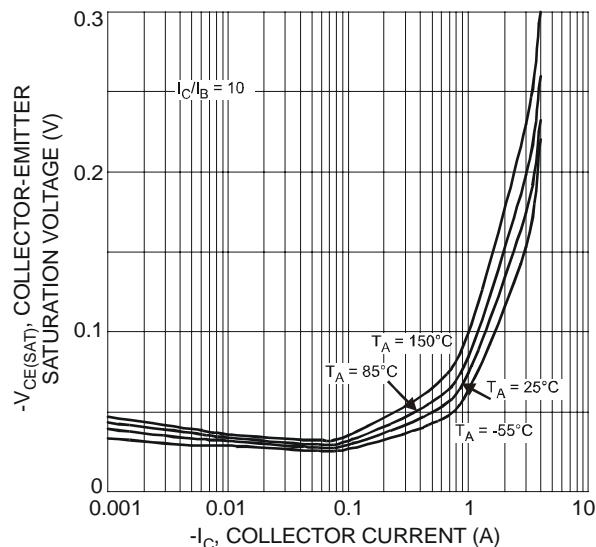


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

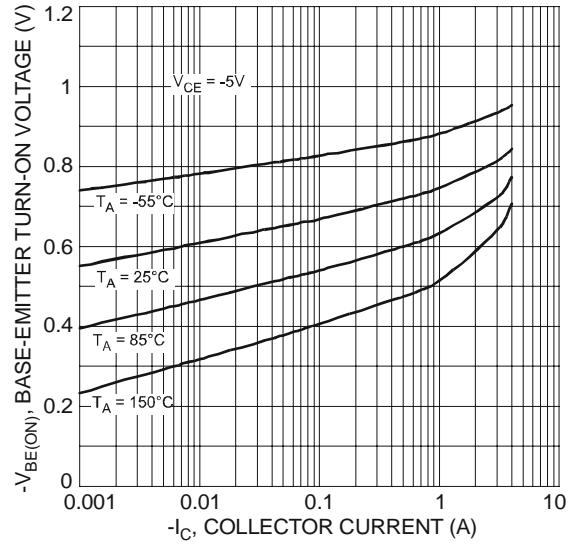


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

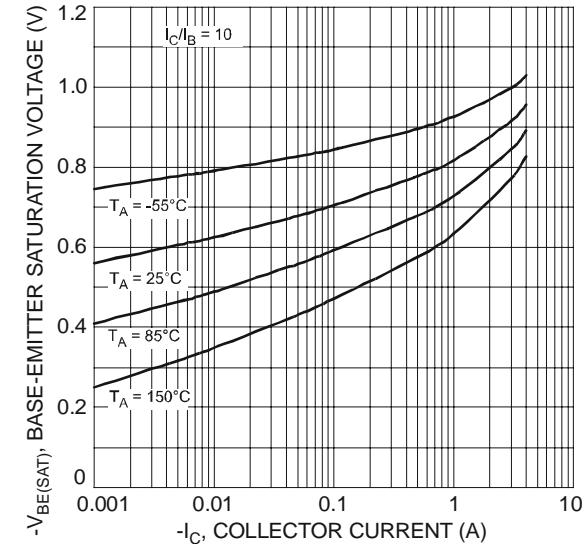


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

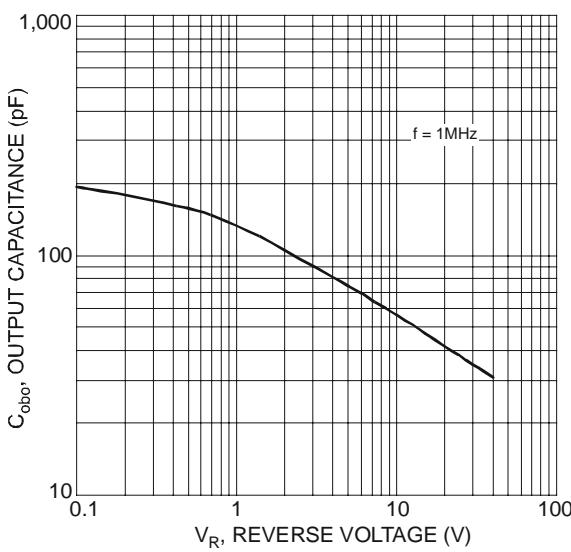


Fig. 7 Typical Output Capacitance Characteristics

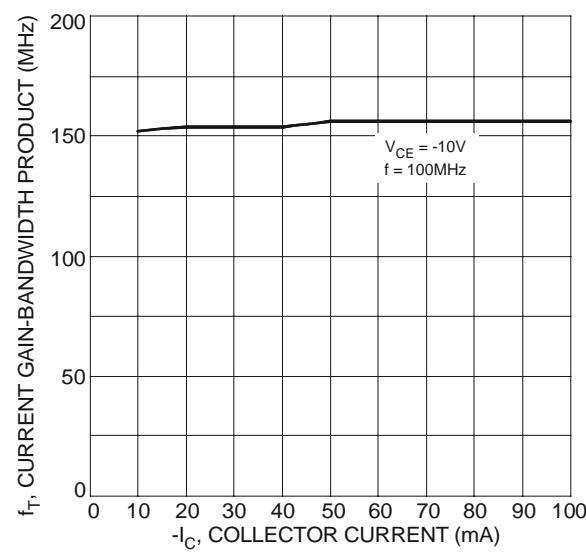


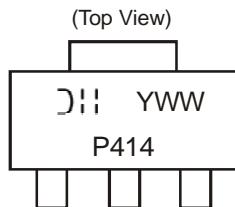
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DZT955-13	SOT-223	2500/Tape & Reel

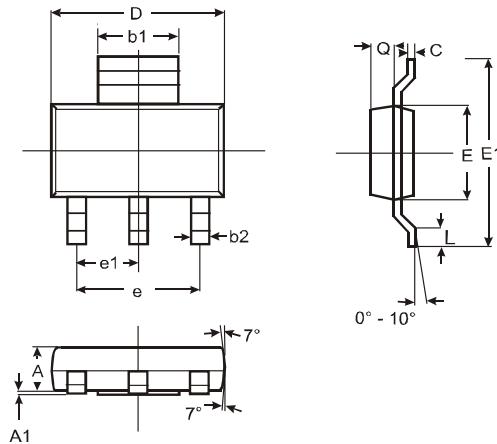
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/ap02007.pdf>.

Marking Information



P414 = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last digit of year ex: 7 = 2007
 WW = Week code 01 - 52

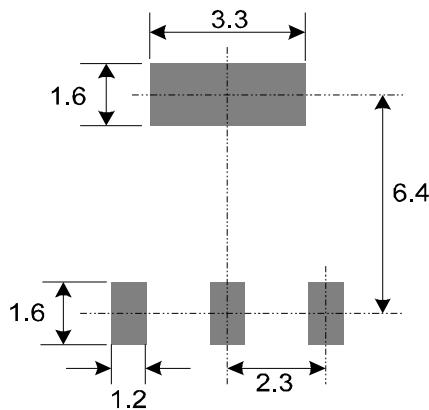
Package Outline Dimensions



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: (Dimensions in mm)



IMPORTANT NOTICE

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