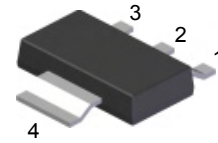




**Features**

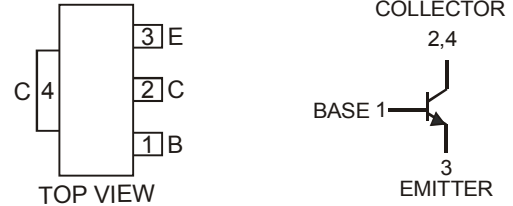
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



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 3
- Ordering Information: See Page 3
- 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	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	25	V
Emitter-Base Voltage	$V_{EBO}$	7.0	V
Collector Current	$I_C$	5.0	A
Base Current	$I_B$	1.0	A
Power Dissipation	$P_D$	1 (Note 3) 2 (Note 4)	W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	125 (Note 3) 62.5 (Note 4)	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	25	—	—	V	$I_C = 10\text{mA}, I_B = 0$
Collector Cutoff Current	$I_{CBO}$	—	—	1.0	$\mu\text{A}$	$V_{CB} = 50\text{V}, I_E = 0$
Emitter Cutoff Current	$I_{EBO}$	—	—	1.0	$\mu\text{A}$	$V_{EB} = 7.0\text{V}, I_C = 0$
<b>ON CHARACTERISTICS (Note 5)</b>						
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	0.35 0.50	V	$I_C = 3.0\text{A}, I_B = 150\text{mA}$ $I_C = 4.0\text{A}, I_B = 200\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	1.10 1.40	V	$I_C = 3.0\text{A}, I_B = 150\text{mA}$ $I_C = 4.0\text{A}, I_B = 200\text{mA}$
DC Current Gain	$h_{FE}$	250 150 50	—	500	—	$I_C = 500\text{mA}, V_{CE} = 2.0\text{V}$ $I_C = 2.0\text{A}, V_{CE} = 2.0\text{V}$ $I_C = 5.0\text{A}, V_{CE} = 2.0\text{V}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	$f_T$	—	150	—	MHz	$I_C = 50\text{mA}, V_{CE} = 6.0\text{V}, f = 200\text{MHz}$
Output Capacitance	$C_{obo}$	—	—	50	pF	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$

- Note:
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](http://www.diodes.com/products/lead_free/index.php).
  3. Device mounted on FR-4 PCB, pad layout as shown on page 3.
  4. Device mounted on Polyimide PCB with a copper area of  $1.8\text{cm}^2$ .
  5. Measured under pulsed conditions. Pulse width =  $300\mu\text{s}$ . Duty cycle  $\leq 2\%$

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

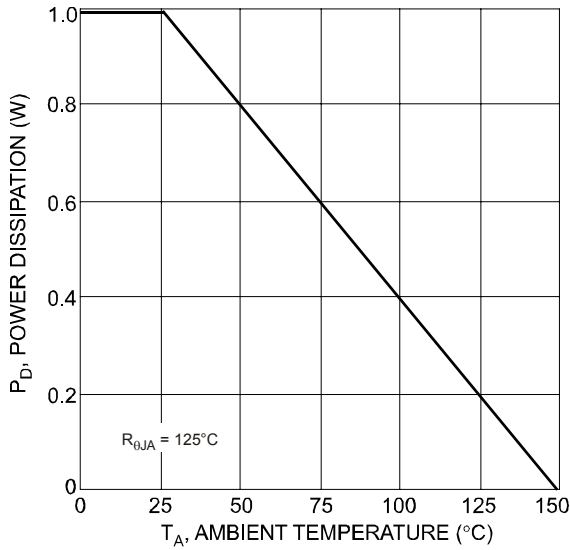


Fig. 1, Power Dissipation vs. Ambient Temperature (Note 3)

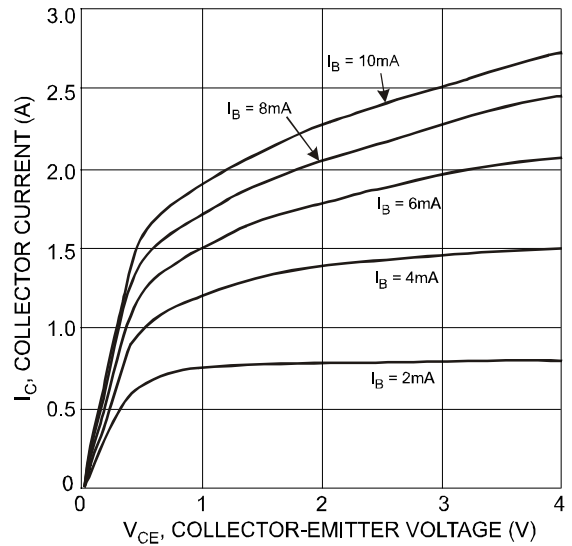


Fig. 2, Typical Collector Current vs. Collector-Emitter Voltage

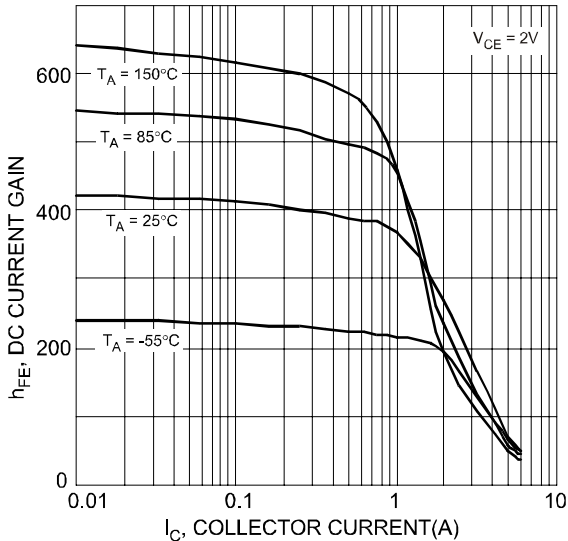


Fig. 3, Typical DC Current Gain vs. Collector Current

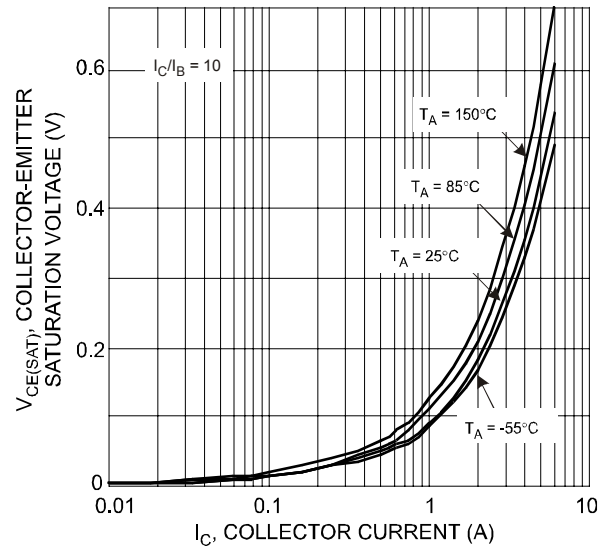


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

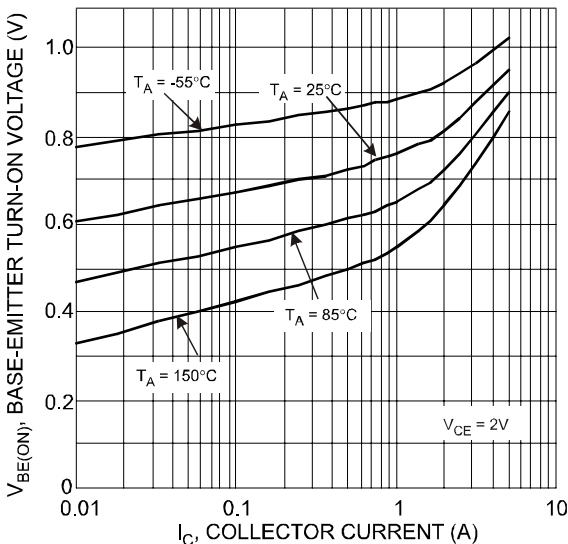


Fig. 5, Typical Base-Emitter Turn-On Voltage vs. Collector Current

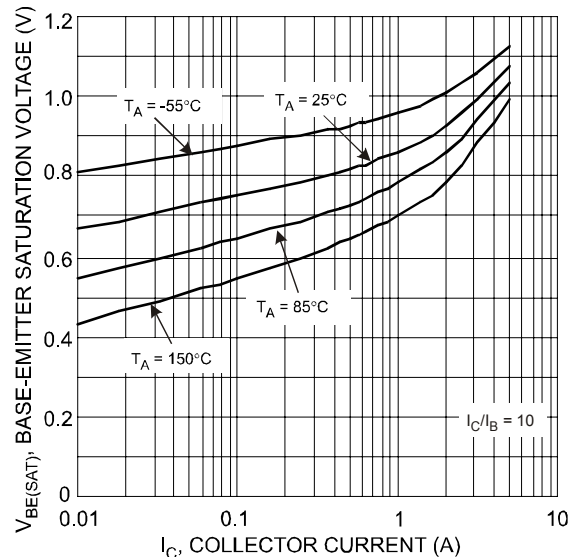


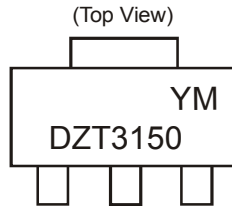
Fig. 6, Typical Base-Emitter Saturation Voltage vs. Collector Current

## Ordering Information (Note 6)

Device	Packaging	Shipping
DZT3150-13	SOT-223	2500/Tape & Reel

Note: 6. For Packaging Details, please visit our website at <http://www.diodes.com/ap02007.pdf>.

## Marking Information



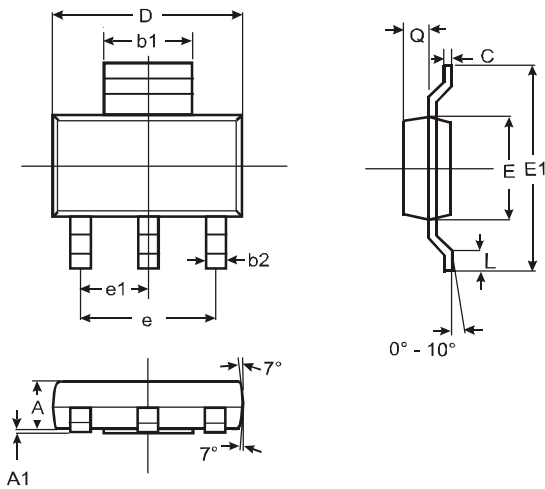
DZT3150 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

### Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

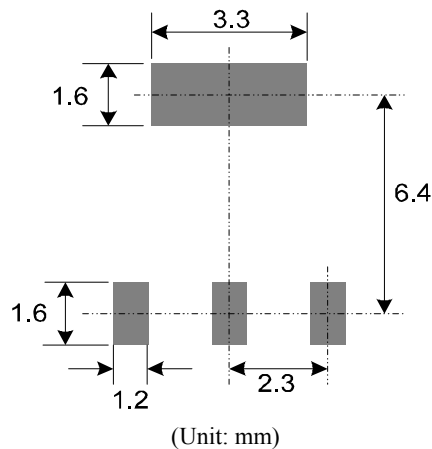
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

## 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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