

Features

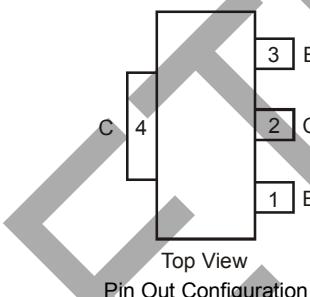
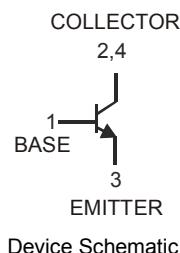
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)**

Mechanical Data

- Case: SOT89-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- 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: 0.055 grams (approximate)



Top View

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	2.0	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:

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>.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	$V_{(\text{BR})\text{CBO}}$	30	—	—	V	$I_C = 10\mu\text{A}$, $I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(\text{BR})\text{CEO}}$	25	—	—	V	$I_C = 1\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	6.0	—	—	V	$I_C = 10\mu\text{A}$, $I_C = 0$
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	$V_{\text{CB}} = 20\text{V}$, $I_E = 0$
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	$V_{\text{EB}} = 4.0\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 4)						
DC Current Gain	h_{FE}	200 65	— —	400 —	—	$V_{\text{CE}} = 2.0\text{V}$, $I_C = 0.1\text{A}$ $V_{\text{CE}} = 2.0\text{V}$, $I_C = 1.5\text{A}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	—	0.12	0.4	V	$I_C = 1.5\text{A}$, $I_B = 75\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	0.9	1.2	V	$I_C = 1.5\text{A}$, $I_B = 75\text{mA}$
SMALL SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	—	300	—	MHz	$V_{\text{CE}} = 10\text{V}$, $I_C = 50\text{mA}$, $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	16	—	pF	$V_{\text{CB}} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$
SWITCHING CHARACTERISTICS						
Turn On Time	t_{on}	—	70	—	ns	$V_{\text{CE}} = 12\text{V}$, $V_{\text{BE}} = 5\text{V}$, $I_{B1} = I_{B2} = 25\text{mA}$, $I_C = 500\text{mA}$
Storage Time	t_{stg}	—	170	—	ns	
Fall Time	t_f	—	25	—	ns	

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

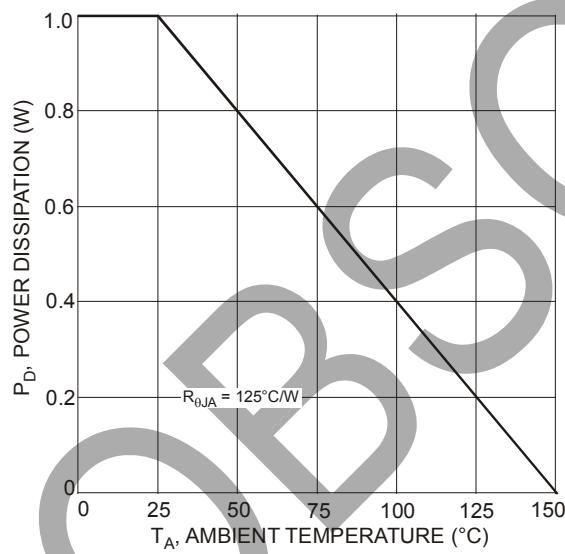


Fig. 1 Power Dissipation vs.
Ambient Temperature (Note 3)

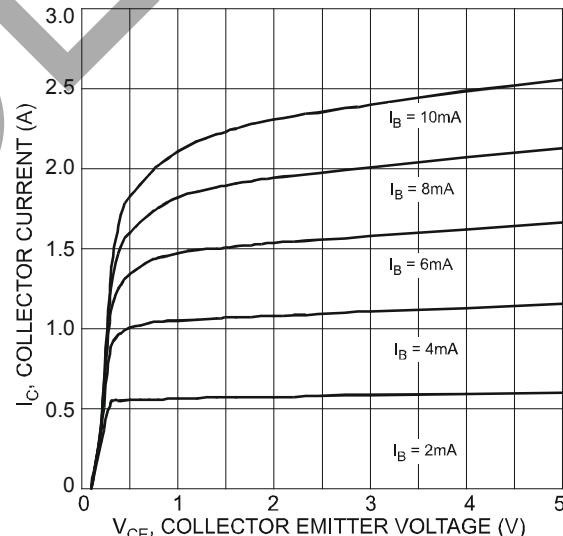


Fig. 2 Typical Collector Current
vs. Collector-Emitter Voltage

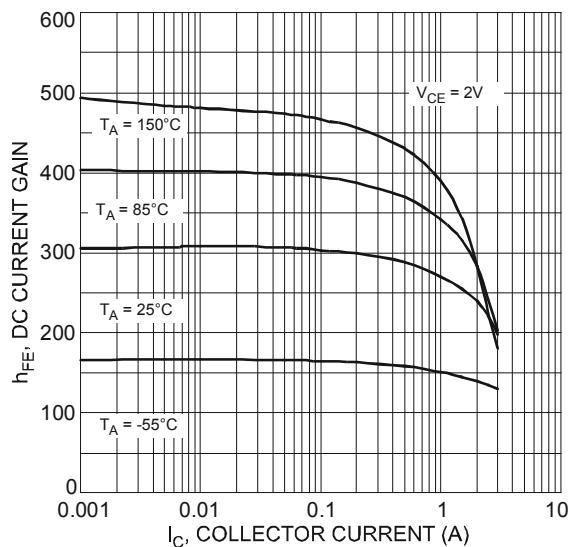


Fig. 3 Typical DC Current Gain vs. Collector Current

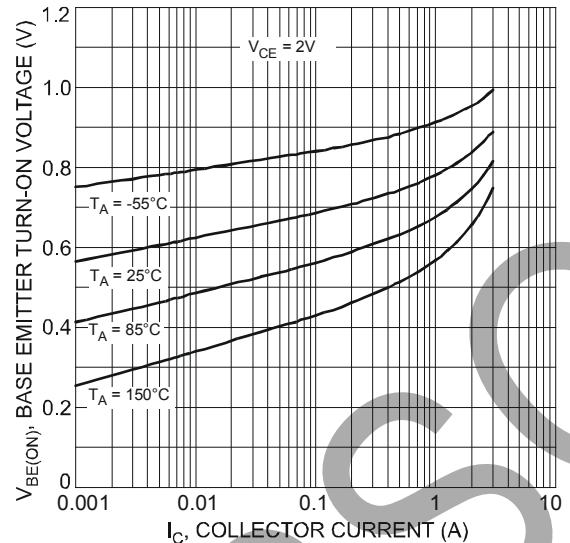


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

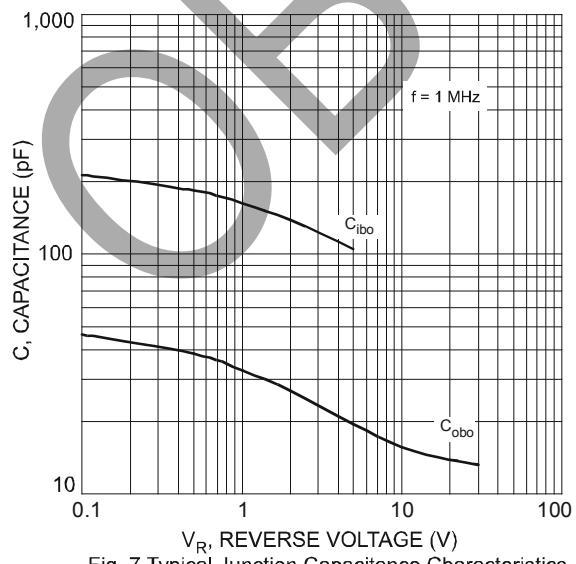


Fig. 7 Typical Junction Capacitance Characteristics

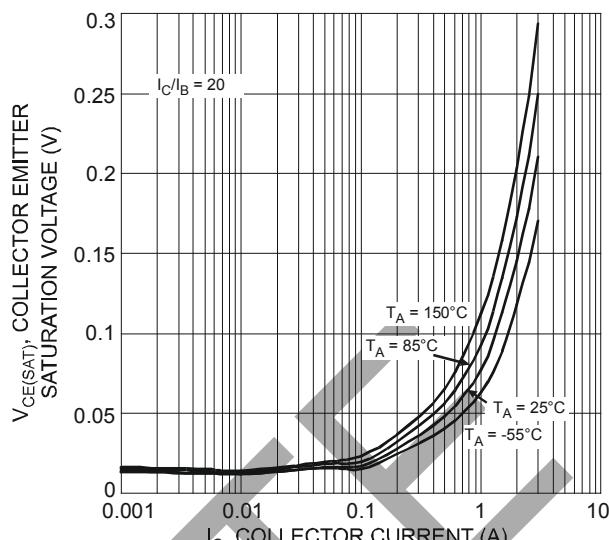


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

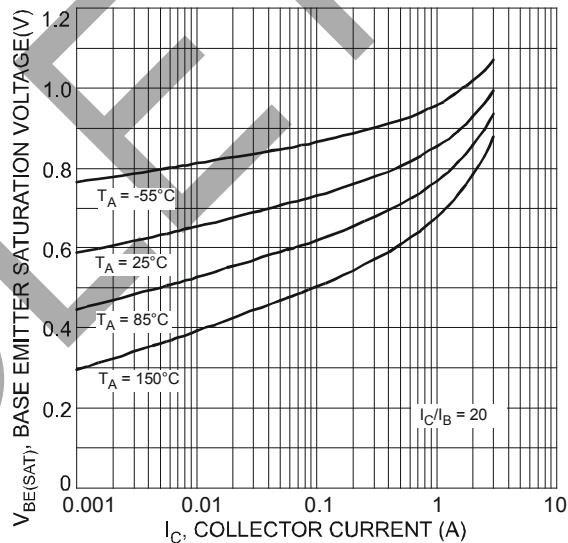


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

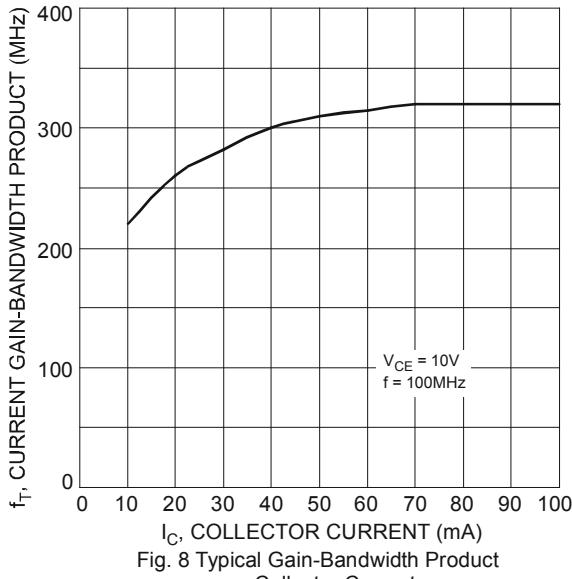


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

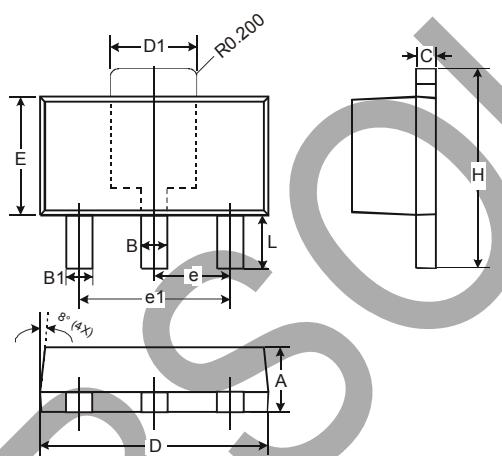
Ordering Information (Note 5)

Part Number	Case	Packaging
2DD1621T-13	SOT89-3L	2500/Tape & Reel

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

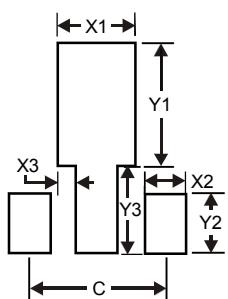
Marking Information


N22T = Product Type Marking Code
 YWW = Date Code Marking
 Y = Last digit of year (ex: 7 = 2007)
 WW = Week code (01 – 53)

Package Outline Dimensions


SOT89-3L		
Dim	Min	Max
A	1.40	1.60
B	0.44	0.62
B1	0.35	0.54
C	0.35	0.43
D	4.40	4.60
D1	1.52	1.83
E	2.29	2.60
e	1.50 Typ	
e1	3.00 Typ	
H	3.94	4.25
L	0.89	1.20

All Dimensions in mm

Suggested Pad Layout


Dimensions	Value (in mm)
X1	1.7
X2	0.9
X3	0.4
Y1	2.7
Y2	1.3
Y3	1.9
C	3.0

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