

Features

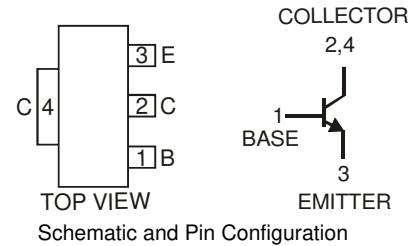
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DCX53)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



SOT89-3L

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-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 3
- Ordering Information: See Page 3
- Weight: 0.072 grams (approximate)



Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	100	V
Collector-Emitter Voltage	V _{CEO}	80	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _C	1	A
Peak Pulse Current	I _{CM}	1.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T _A = 25°C	P _D	1	W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Ambient Air (Note 3) @T _A = 25°C	R _{θJA}	125	°C/W

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions		
OFF CHARACTERISTICS (Note 4)								
Collector-Base Breakdown Voltage	V _{(BR)CBO}	100	—	—	V	I _C = 100μA, I _E = 0		
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	80	—	—	V	I _C = 10mA, I _B = 0		
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	5.0	—	—	V	I _E = 10μA, I _C = 0		
Collector-Base Cutoff Current	I _{CBO}	—	—	0.1 20	μA	V _{CB} = 30V, I _E = 0 V _{CB} = 30V, I _E = 0, T _A = 150°C		
Emitter-Base Cutoff Current	I _{EBO}	—	—	100	nA	V _{EB} = 5.0V, I _C = 0		
ON CHARACTERISTICS (Note 4)								
DC Current Gain	h _{FE}	DCX56, DCX56-16		63 40	—	—	I _C = 5.0mA, V _{CE} = 2.0V I _C = 500mA, V _{CE} = 2.0V	
		DCX56		63	—	250	—	I _C = 150mA, V _{CE} = 2.0V
		DCX56-16		100	—	250	—	I _C = 150mA, V _{CE} = 2.0V
				—	—	0.5	V	I _C = 500mA, I _B = 50mA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	—	0.5	V	I _C = 500mA, I _B = 50mA		
Base-Emitter Turn-On Voltage	V _{BE(ON)}	—	—	1.0	V	I _C = 500mA, V _{CE} = 2.0V		
SMALL SIGNAL CHARACTERISTICS								
Current Gain-Bandwidth Product	f _T	—	200	—	MHz	I _C = 50mA, V _{CE} = 5V, f = 100MHz		
Output Capacitance	C _{obo}	—	—	15	pF	V _{CB} = 10V, I _E = 0, f = 1MHz		

- 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 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>.
 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

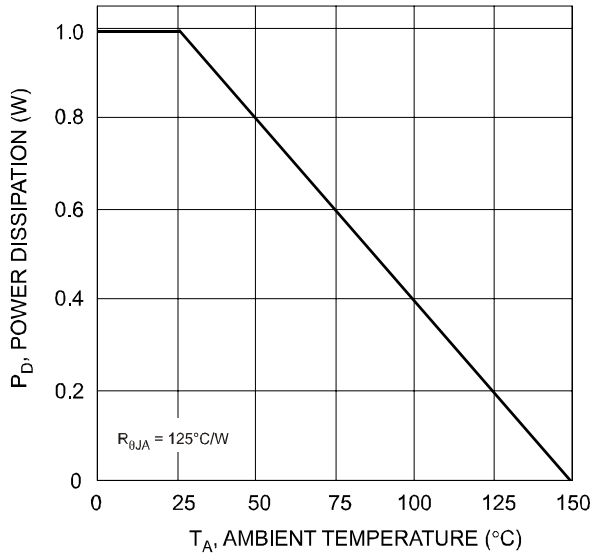


Fig. 1 Power Dissipation vs. Ambient Temperature

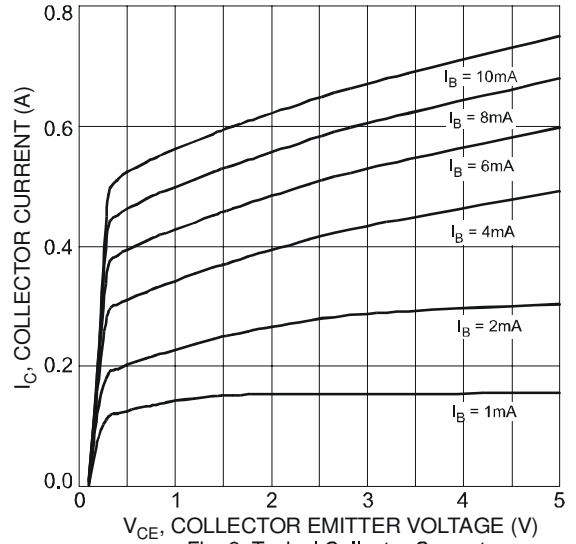


Fig. 2 Typical Collector Current vs. Collector Emitter Voltage

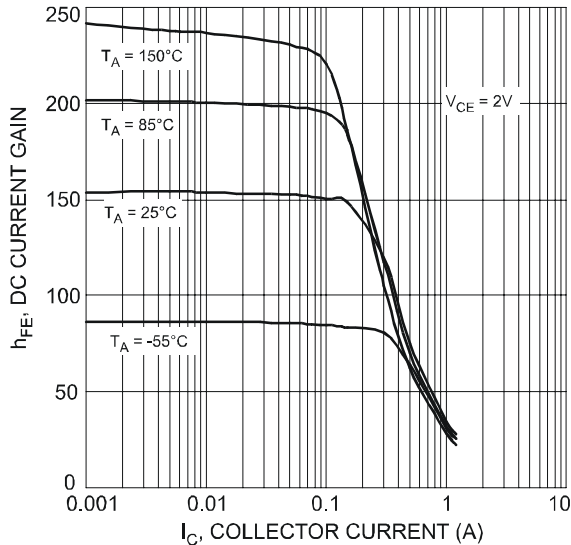


Fig. 3 Typical DC Current Gain vs. Collector Current

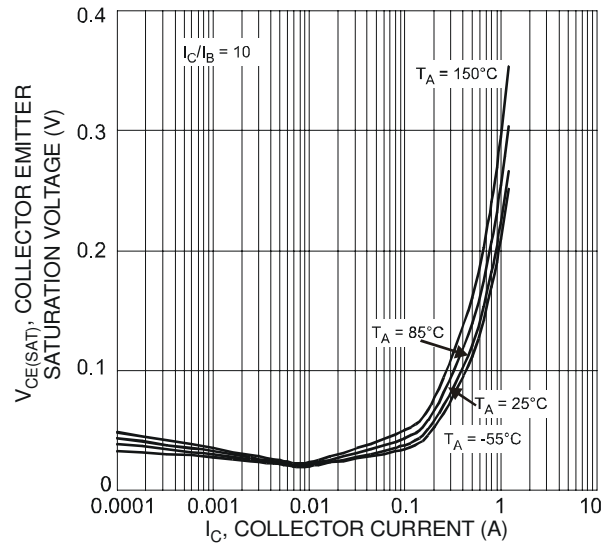


Fig. 4 Typical Collector Emitter Saturation Voltage vs. Collector Current

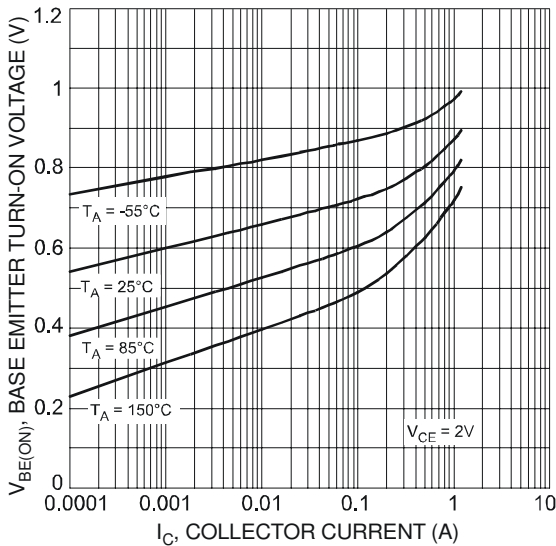


Fig. 5 Typical Base Emitter Turn-On Voltage vs. Collector Current

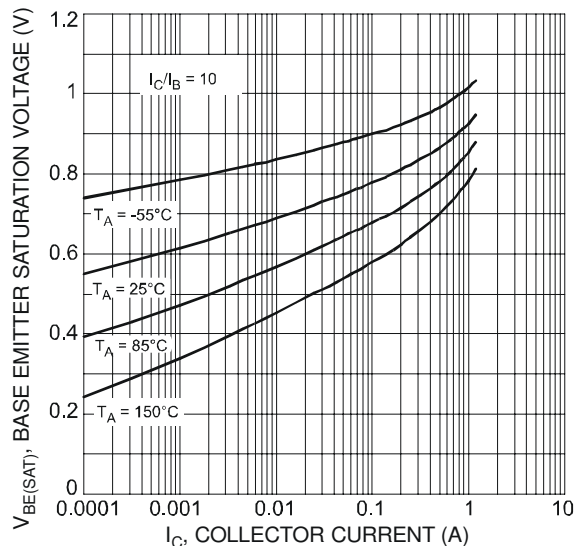


Fig. 6 Typical Base Emitter Saturation Voltage vs. Collector Current

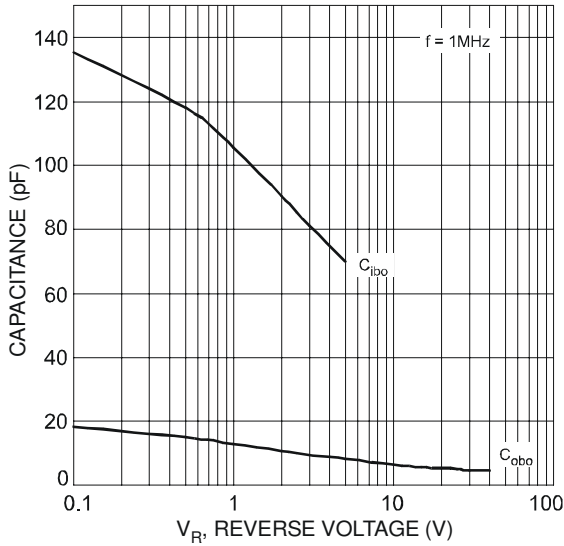


Fig. 7 Typical Capacitance Characteristics

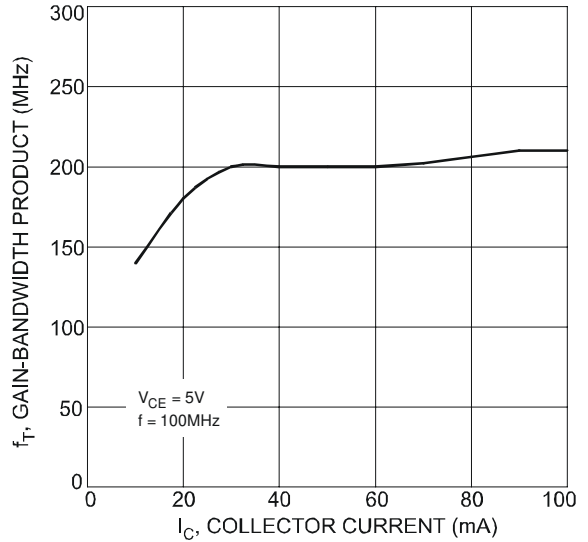


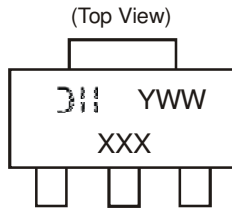
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DCX56-13	SOT89-3L	2500/Tape & Reel
DCX56-16-13	SOT89-3L	2500/Tape & Reel

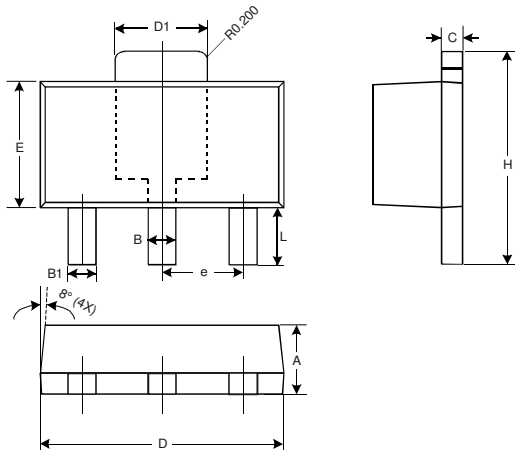
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/ap02007.pdf>.

Marking Information



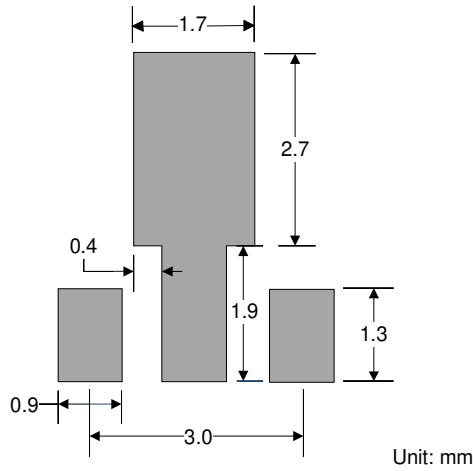
XXX = Product Type Marking Code ex. N18 = DCX56
 N18-16 = DCX56-16
 D = Manufacturer's code marking
 YWW = Date Code Marking
 Y = Last digit of year ex: 7 = 2007
 WW = Week code 01 - 52

Package Outline Dimensions



SOT89-3L			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.45	0.55	0.50
B1	0.37	0.47	0.42
C	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.50	1.70	1.60
E	2.40	2.60	2.50
e	—	—	1.50
H	3.95	4.25	4.10
L	0.90	1.20	1.05
All Dimensions in mm			

Suggested Pad Layout



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