



**THE DATASHEET OF
DCX54-13**



Features

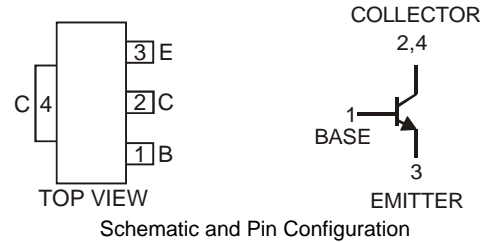
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DCX51)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



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}	45	V
Collector-Emitter Voltage	V _{CEO}	45	V
Emitter-Base Voltage	V _{EBO}	5	V
Peak Pulse Current	I _{CM}	1.5	A
Continuous Collector Current	I _C	1	A

Thermal Characteristics

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

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}	45	—	—	V	I _C = 100μA, I _E = 0A	
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	45	—	—	V	I _C = 10mA, I _B = 0A	
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	5	—	—	V	I _E = 10μA, I _C = 0A	
Collector Cut-off Current	I _{CBO}	—	—	100 20	nA μA	V _{CB} = 30V, I _E = 0 V _{CB} = 30V, I _E = 0, T _A = 150°C	
Emitter Cut-off Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V, I _C = 0A	
ON CHARACTERISTICS (Note 4)							
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} = 2V	
DC Current Gain	h _{FE}	DCX54, DCX54-16	63	—	—	—	I _C = 5mA, V _{CE} = 2V
			40	—	—	—	I _C = 500mA, V _{CE} = 2V
		DCX54	63	—	250	—	I _C = 150mA, V _{CE} = 2V
DCX54-16	100	—	250	—	I _C = 150mA, V _{CE} = 2V		
SMALL SIGNAL CHARACTERISTICS							
Transition Frequency	f _T	—	200	—	MHz	I _C = 50mA, V _{CE} = 5V, f = 100MHz	
Output Capacitance	C _{obo}	—	—	15	pF	V _{CB} = 10V, 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%.

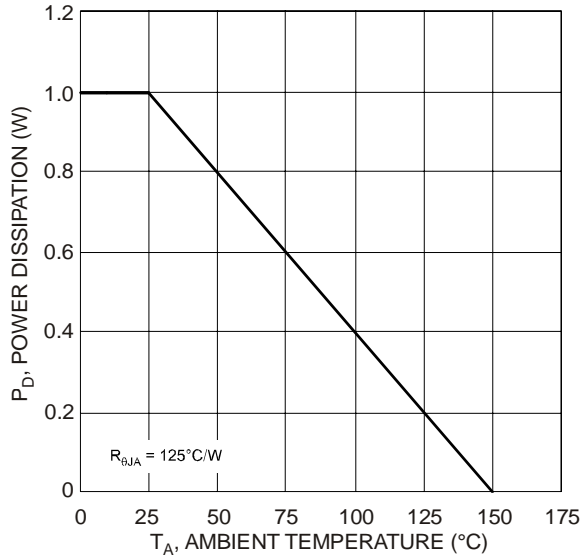


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

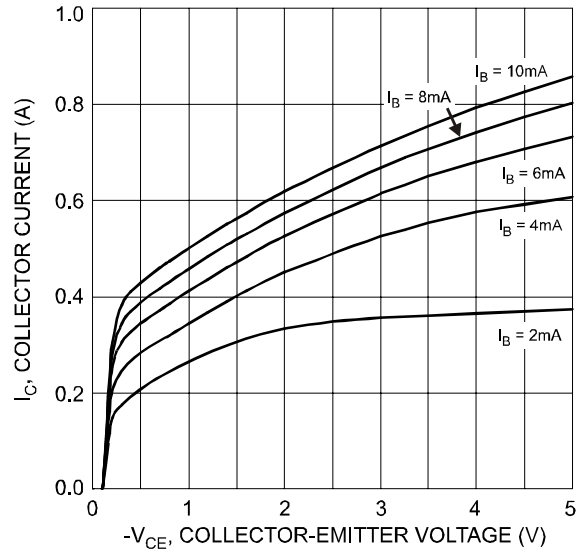


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

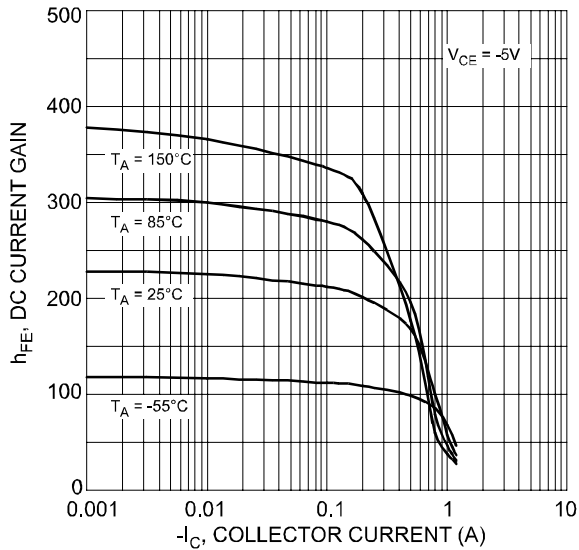


Fig. 3 Typical DC Current Gain vs. Collector Current

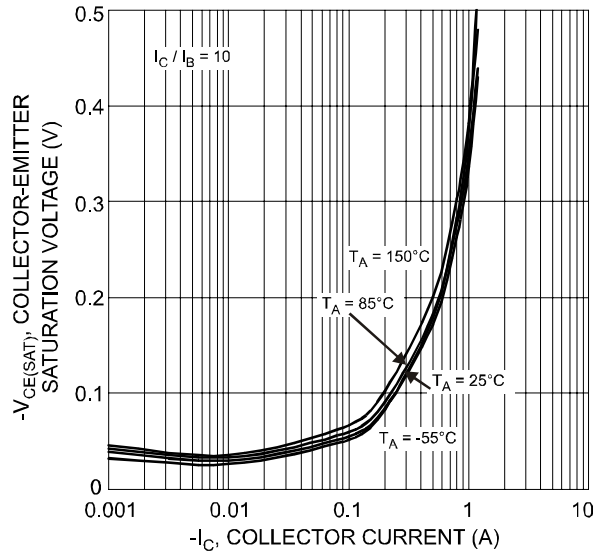


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

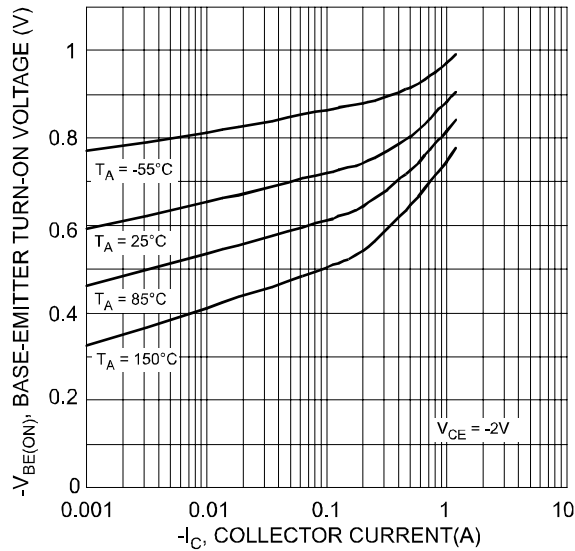


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

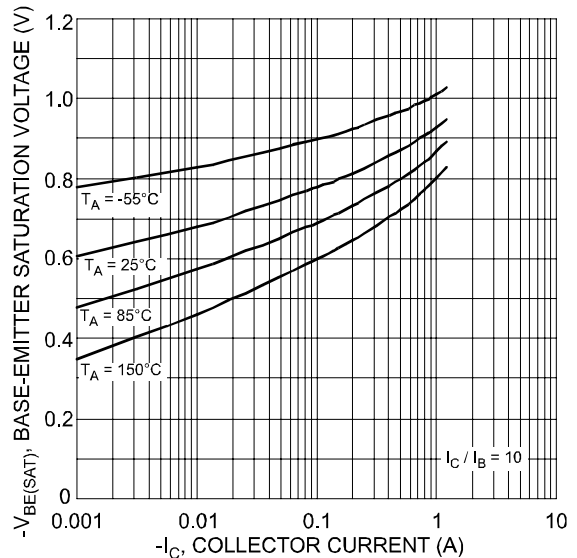
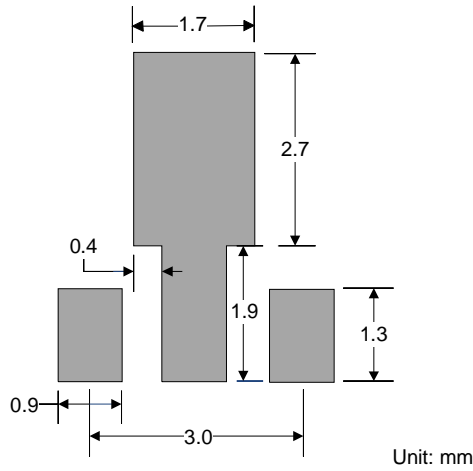


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

Suggested Pad Layout



Unit: mm

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