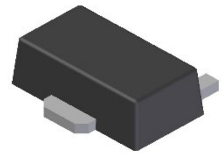
PART OBSOLETE - USE BCX5616TA

DCX54/-16

NPN SURFACE MOUNT TRANSISTOR

Features

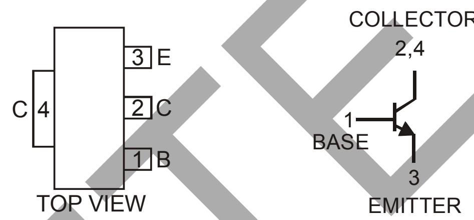
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DCX51)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



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)



Schematic and Pin Configuration

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	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	$R_{\theta JA}$	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 — DCX54, DCX54-16	h_{FE}	63 40	— —	— —	— —	I_C = 5mA, V_{CE} = 2V I_C = 500mA, V_{CE} = 2V
DC Current Gain — DCX54	h_{FE}	63	—	250	—	I_C = 150mA, V_{CE} = 2V
DC Current Gain — DCX54-16	h_{FE}	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%.

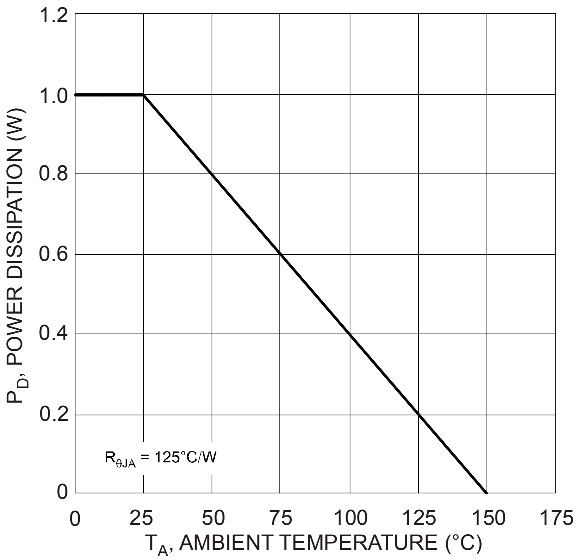


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

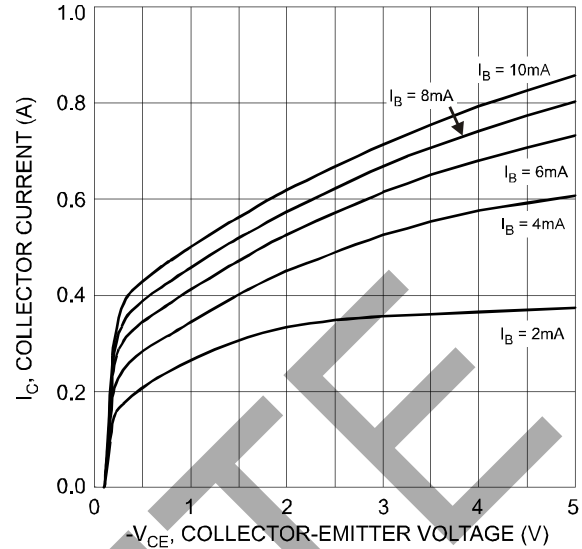


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

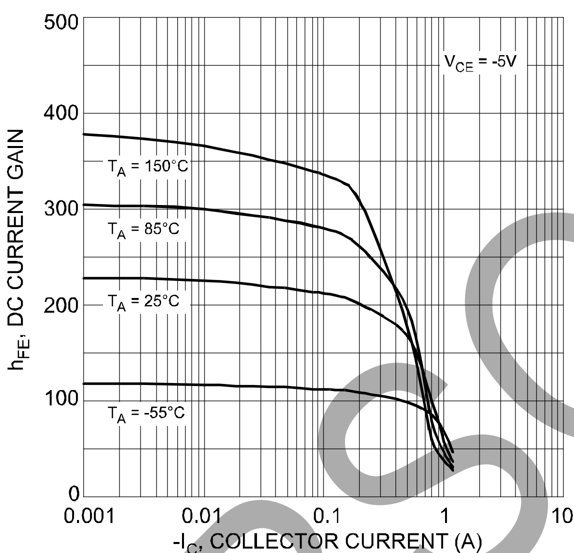


Fig. 3 Typical DC Current Gain vs. Collector Current

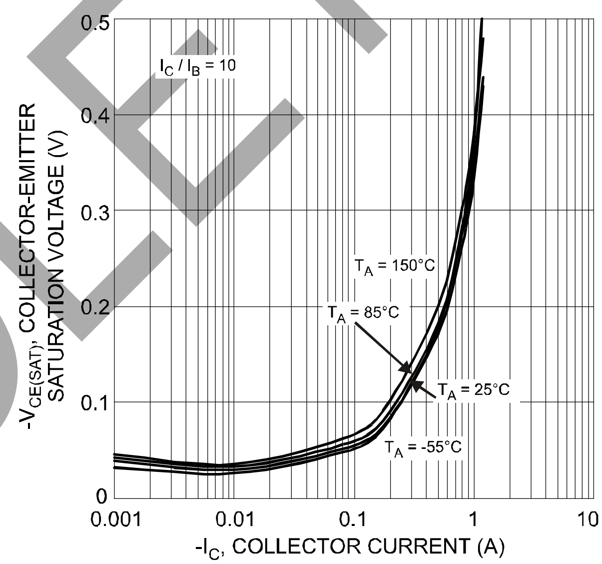


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

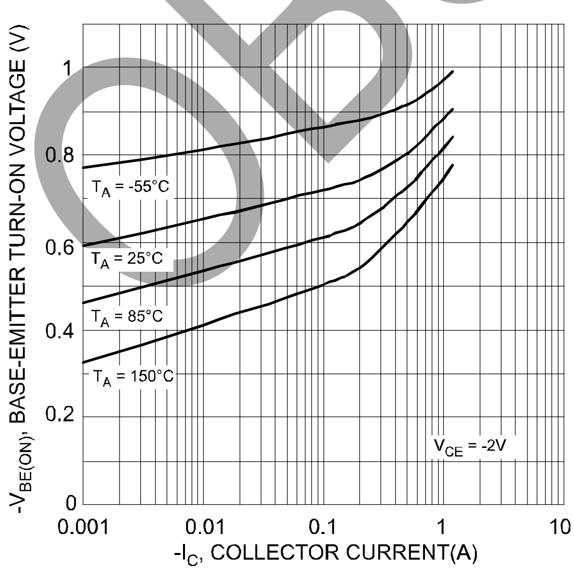


Fig 5. Typical Base-Emitter Turn-On Voltage vs. Collector Current

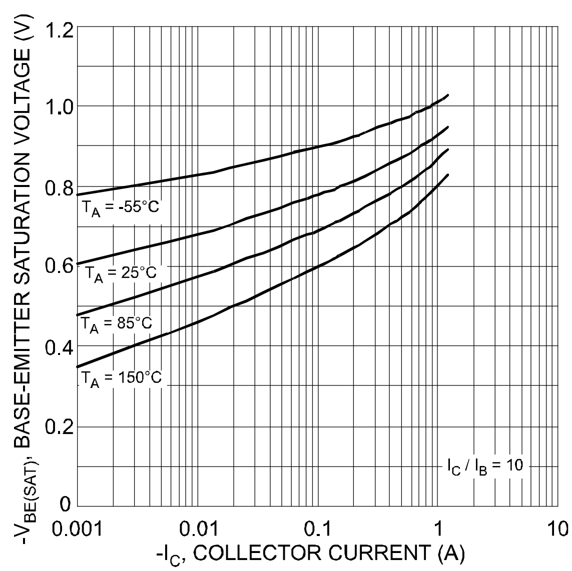


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

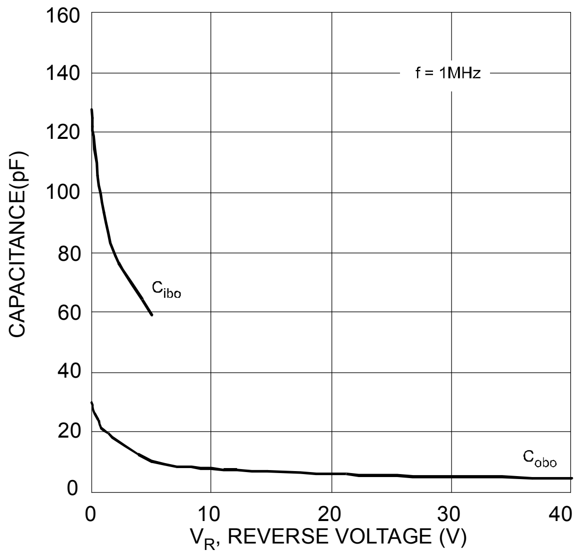


Fig. 7 Typical Capacitance Characteristics

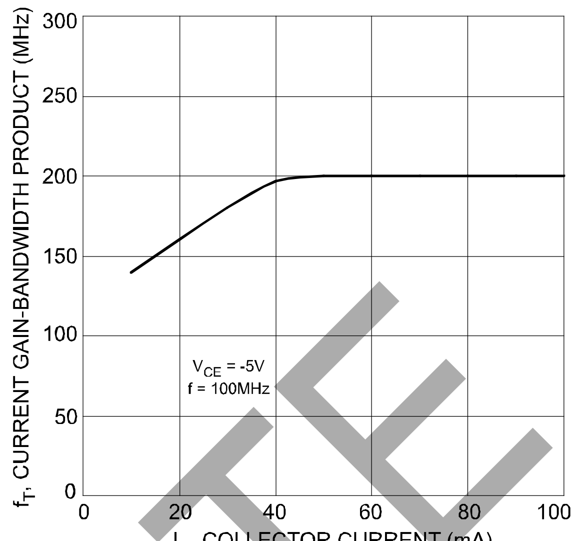


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

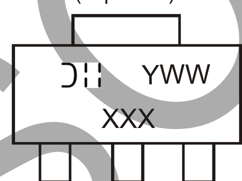
Ordering Information (Note 5)

Device	Packaging	Shipping
DCX54-13	SOT89-3L	2500/Tape & Reel
DCX54-16-13	SOT89-3L	2500/Tape & Reel

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

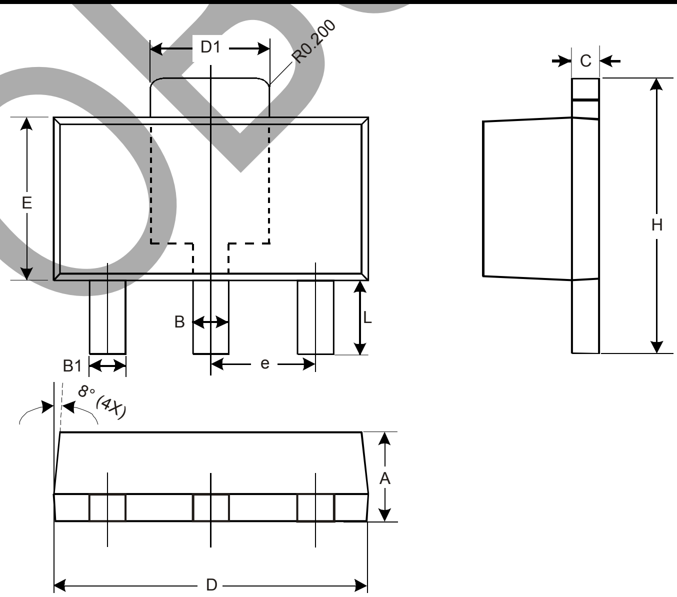
Marking Information

(Top View)



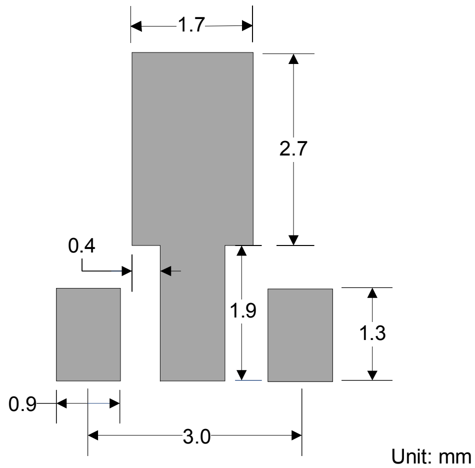
= Manufacturer's code marking
XXX = Product type marking code Ex: N14 = DCX54
N14-16 = DCX54 -16
YWW = Date code marking
Y = Last digit of year ex: 7 = 2007
WW = Week code 01 - 52

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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