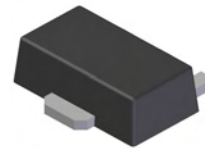


Features

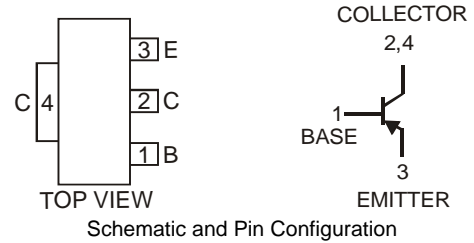
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DCX68)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**



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-020D
- 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: 0.072 grams (approximate)



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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-25	V
Collector-Emitter Voltage	V_{CEO}	-20	V
Emitter-Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-1.0	A
Peak Pulse Power	I_{CM}	-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 @ $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
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 Conditions	
OFF CHARACTERISTICS (Note 4)							
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-25	—	—	V	$I_C = -10\mu\text{A}, I_E = 0$	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-20	—	—	V	$I_C = -1\text{mA}, I_B = 0$	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0	—	—	V	$I_E = -10\mu\text{A}, I_C = 0$	
Collector-Base Cutoff Current	I_{CBO}	—	—	-100 -10	nA μA	$V_{CB} = -25\text{V}, I_E = 0$ $V_{CB} = -25\text{V}, I_E = 0, T_A = 150^\circ\text{C}$	
Emitter-Base Cutoff Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -5.0\text{V}, I_C = 0$	
ON CHARACTERISTICS (Note 4)							
DC Current Gain	DCX69, DCX69-16, DCX69-25	h_{FE}	50	—	—	—	$V_{CE} = -10\text{V}, I_C = -5.0\text{mA}$
			60	—	—	—	$V_{CE} = -1.0\text{V}, I_C = -1.0\text{A}$
			85	—	375	—	$V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$
			100	—	250	—	$V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$
Collector-Base Cutoff Current	DCX69-16	h_{FE}	160	—	375	—	$V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$
			DCX69-25	—	—	—	—
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	-0.5	V	$I_C = -1.0\text{A}, I_B = -100\text{mA}$	
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	—	—	-0.7 -1.0	V	$V_{CE} = -10\text{V}, I_C = -5\text{mA}$ $V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$	
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product	f_T	40	200	—	MHz	$V_{CE} = -5.0\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$	
Output Capacitance	C_{obo}	—	17	—	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$	

- 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 = 300 μs . Duty cycle $\leq 2\%$.

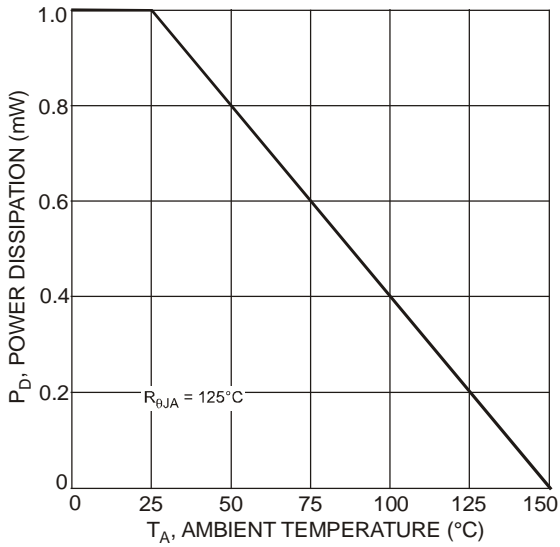


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

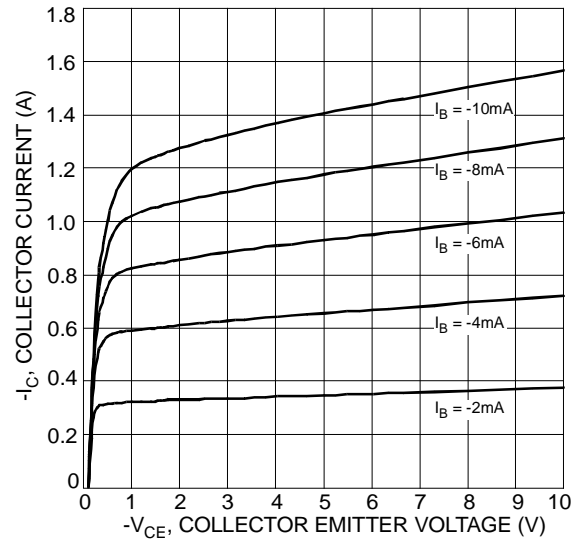


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

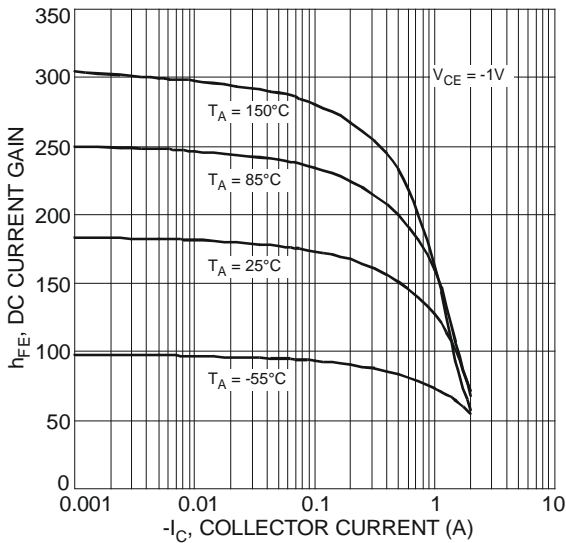


Fig. 3 Typical DC Current Gain vs. Collector Current (DCX69-16)

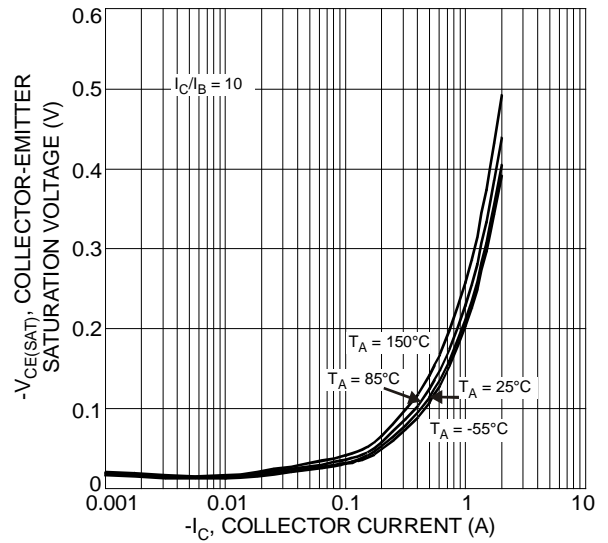


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

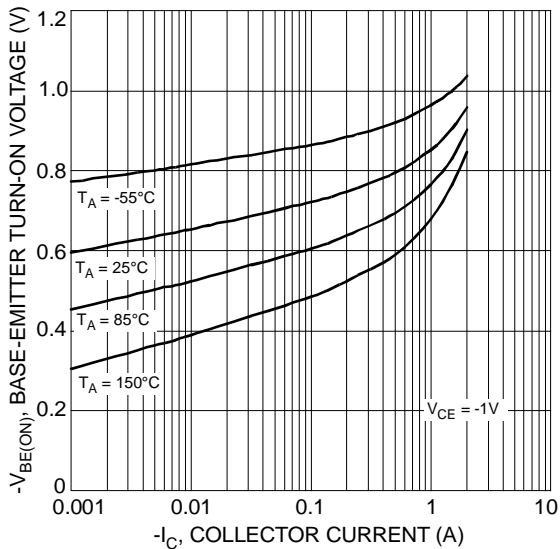


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

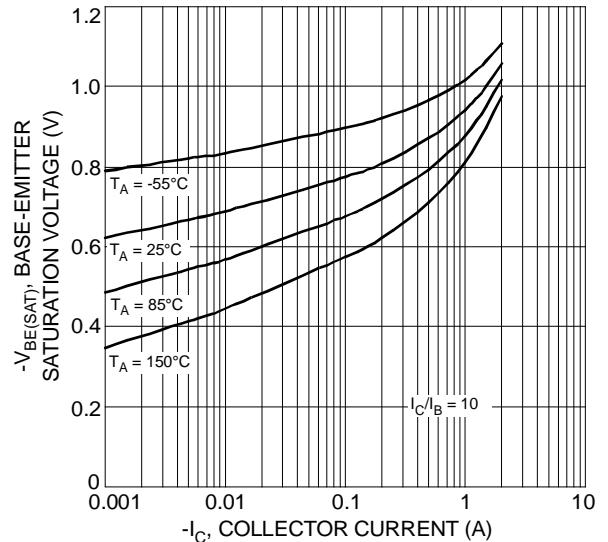


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

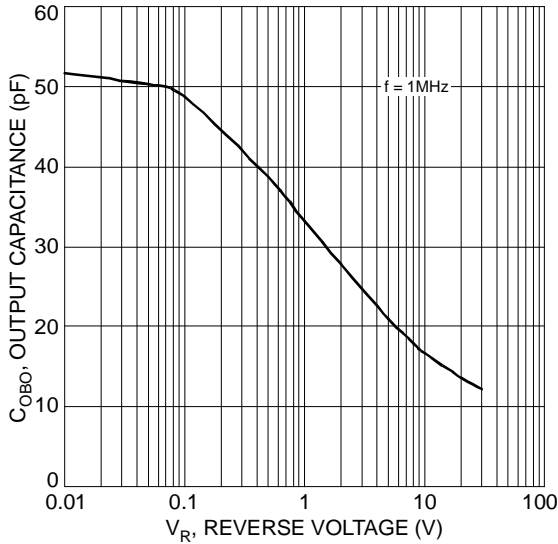


Fig. 7 Typical Output Capacitance Characteristics

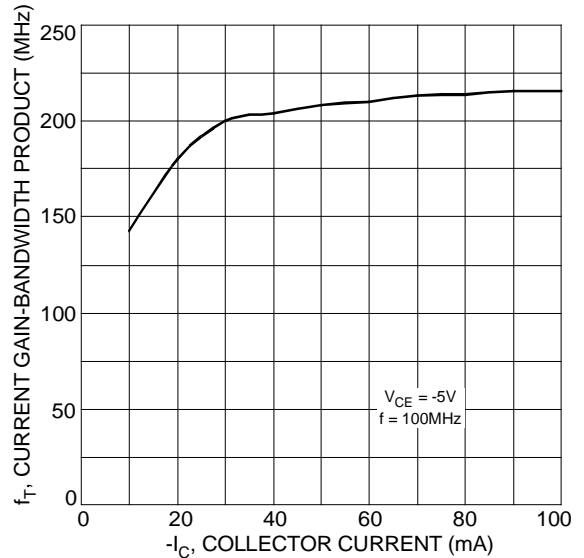


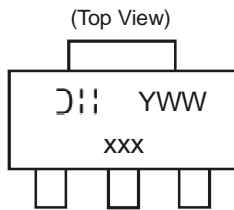
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DCX69-13	SOT89-3L	2500/Tape & Reel
DCX69-16-13	SOT89-3L	2500/Tape & Reel
DCX69-25-13	SOT89-3L	2500/Tape & Reel

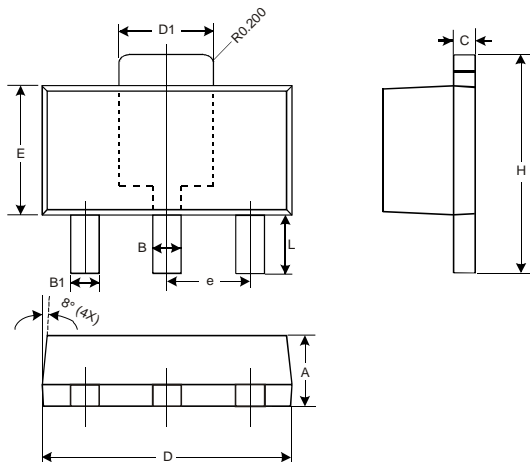
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/ap02007.pdf>.

Marking Information



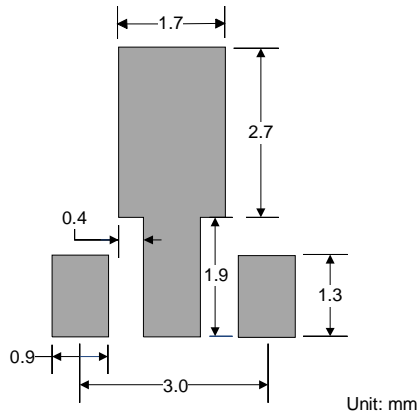
xxx = Product Type Marking Code:
 P12 = DCX69
 P12-16 = DCX69-16
 P12-25 = DCX69-25
 YWW = Date Code Marking
 Y = Last digit of year ex: 7 = 2007
 WW = Week code 01 - 52

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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