PNP SURFACE MOUNT TRANSISTOR

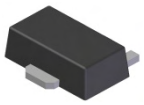
Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Totally Lead-Free & Fully RoHS compliant (Note 1)**
- **Halogen and Antimony Free. "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

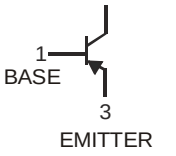
Mechanical Data

- Case: SOT89
- 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
- Weight: 0.055 grams (approximate)

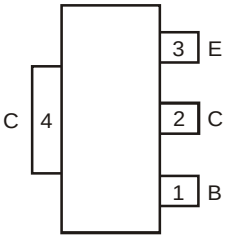
SOT89



Top View



Device Schematic



Top View

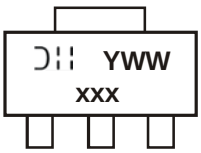
Pin Out Configuration

Ordering Information (Note 3)

Part Number	Case	Packaging
DCX69-13	SOT89	2500/Tape & Reel
DCX69-16-13	SOT89	2500/Tape & Reel
DCX69-25TA	SOT89	1000/Tape & Reel
DCX69-25-13	SOT89	2500/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
3. For packaging details, go to our website at http://www.diodes.com.

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 – 53)

Maximum Ratings @T_A = 25°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 4) @ T_A = 25°C	P_D	1	W
Thermal Resistance, Junction to Ambient Air @ T_A = 25°C (Note 4)	$R_{\theta JA}$	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 5)							
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	-25	—	—	V	I_C = -100μA, I_E = 0
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	-20	—	—	V	I_C = -10mA, I_B = 0
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	-5.0	—	—	V	I_E = -100μA, I_C = 0
Collector-Base Cutoff Current		I_{CBO}	—	—	-100 -10	nA μA	V_{CB} = -25V, I_E = 0 V_{CB} = -25V, 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 5)							
DC Current Gain	DCX69, DCX69-16, DCX69-25	h_{FE}	50 60	— —	— —	— —	V_{CE} = -10V, I_C = -5.0mA V_{CE} = -1.0V, I_C = -1.0A
	DCX69		85	—	375	—	V_{CE} = -1.0V, I_C = -500mA
	DCX69-16		100	—	250	—	V_{CE} = -1.0V, I_C = -500mA
	DCX69-25		160	—	375	—	V_{CE} = -1.0V, I_C = -500mA
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	—	-0.5	V	I_C = -1.0A, I_B = -100mA
Base-Emitter Turn-On Voltage		$V_{BE(ON)}$	—	— —	-0.7 -1.0	V	V_{CE} = -10V, I_C = -5mA V_{CE} = -1.0V, I_C = -500mA
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product		f_T	40	200	—	MHz	V_{CE} = -5.0V, I_C = -50mA, f = 100MHz
Output Capacitance		C_{obo}	—	17	—	pF	V_{CB} = -10V, f = 1MHz

Notes: 4. 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.
5. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

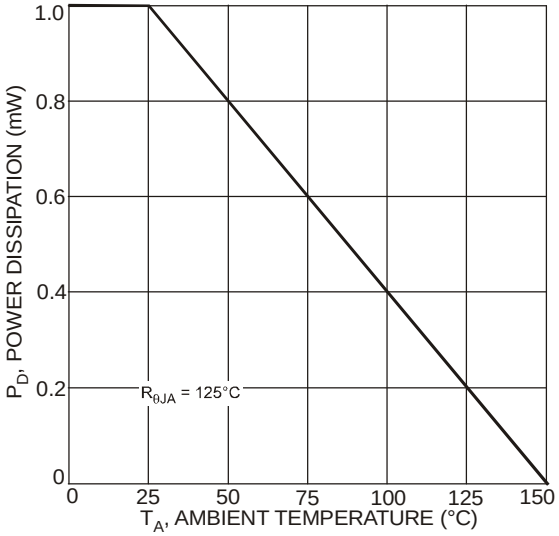


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

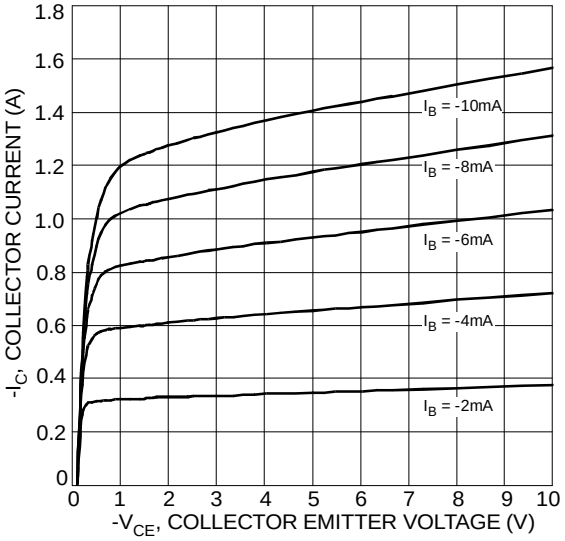


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

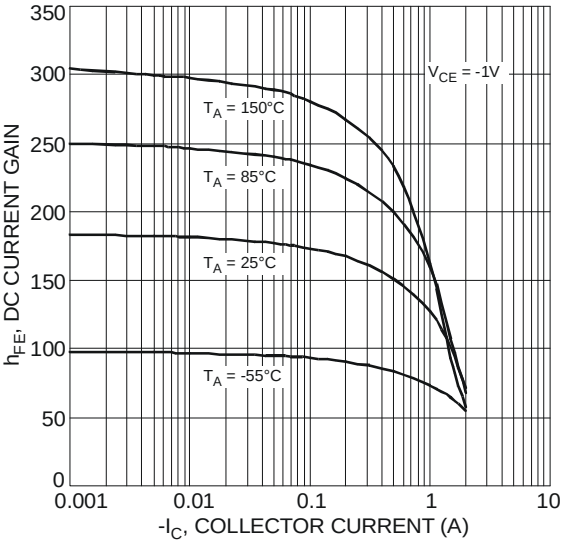


Fig. 3 Typical DC Current Gain vs. Collector Current (DCX69-16)

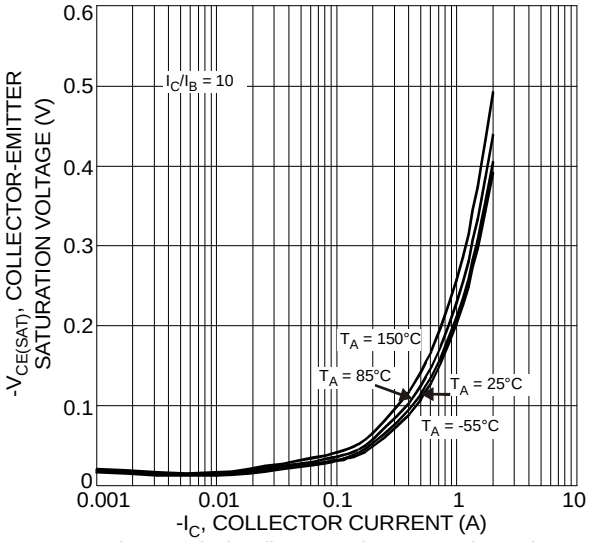


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

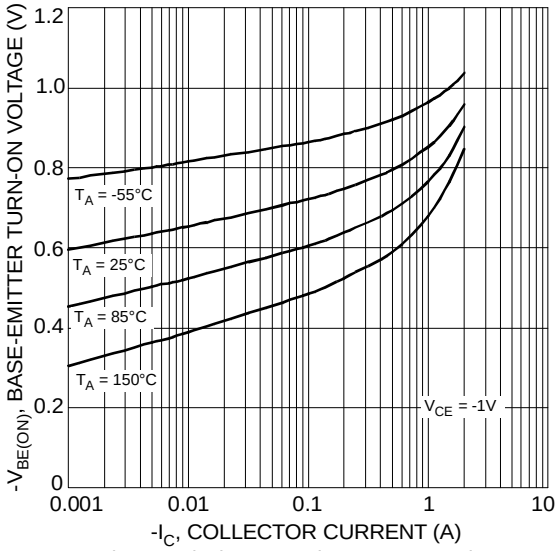


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

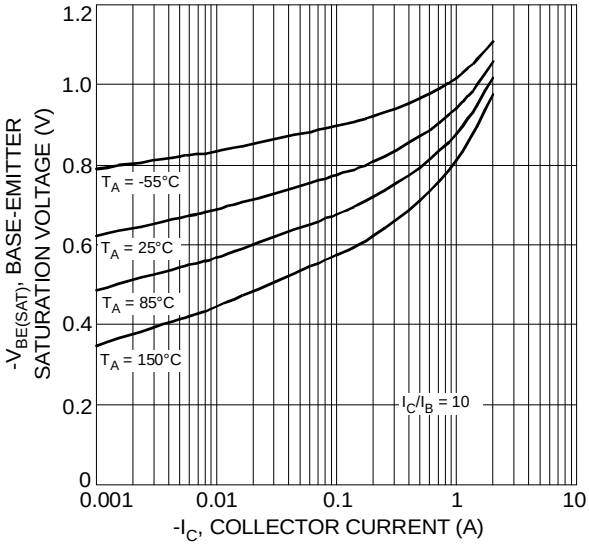


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

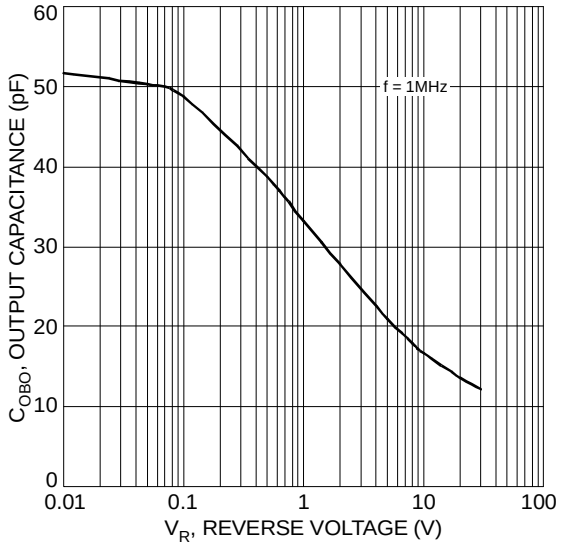


Fig. 7 Typical Output Capacitance Characteristics

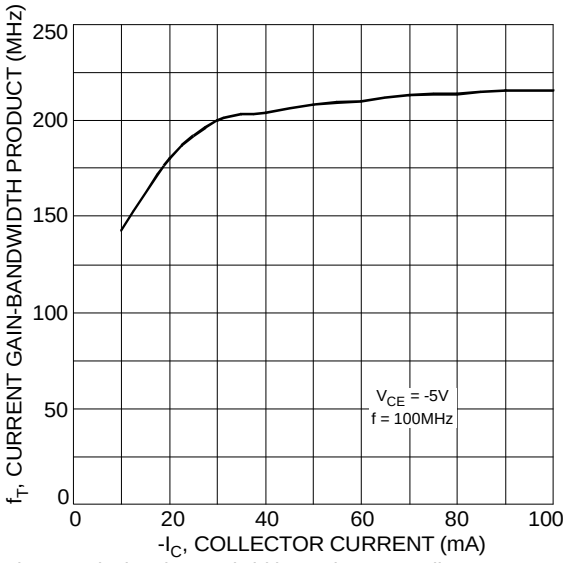
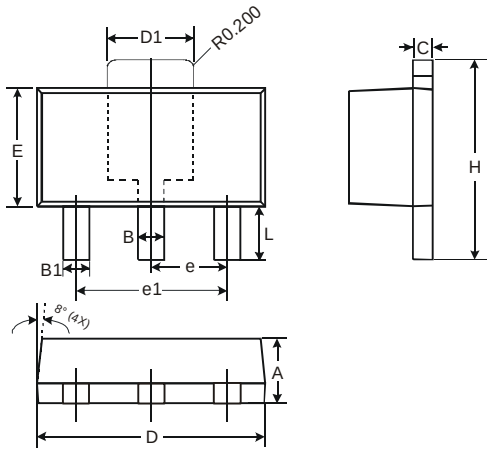


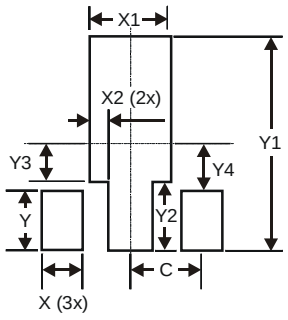
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions



SOT89		
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)
X	0.900
X1	1.733
X2	0.416
Y	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
C	1.500

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