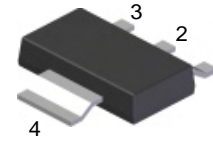


NOT RECOMMENDED FOR NEW  
DESIGNS, USE DCP69/-16

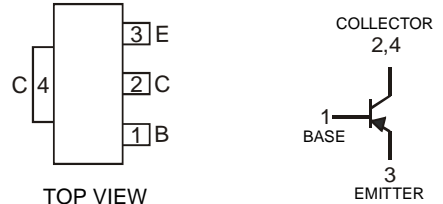
**Features**

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DCP68)
- 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)**



**Mechanical Data**

- Case: SOT-223
- 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: 0.115 grams (approximate)



Schematic and Pin Configuration

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Collector-Base Voltage	V <sub>CBO</sub>	-25	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-20	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5.0	V
Collector Current	I <sub>C</sub>	-1.0	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Total Power Dissipation @ T <sub>A</sub> = 25°C (Note 3)	P <sub>d</sub>	1	W
Thermal Resistance, Junction to Ambient Air @ T <sub>A</sub> = 25°C (Note 3)	R <sub>θJA</sub>	125	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Collector-Emitter Breakdown Voltage	V <sub>(BR)CES</sub>	-25	—	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-20	—	—	V	I <sub>C</sub> = -1.0mA, I <sub>B</sub> = 0
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-25	—	—	V	I <sub>C</sub> = -10μA, I <sub>E</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5.0	—	—	V	I <sub>E</sub> = -10μA, I <sub>C</sub> = 0
Collector-Base Cutoff Current	I <sub>CBO</sub>	—	—	-100	nA	V <sub>CB</sub> = -25V, I <sub>E</sub> = 0
Emitter-Base Cutoff Current	I <sub>EBO</sub>	—	—	-10	μA	V <sub>EB</sub> = -5.0V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 4)</b>						
DC Current Gain	h <sub>FE</sub>	50	—	—	—	I <sub>C</sub> = -5.0mA, V <sub>CE</sub> = -10V I <sub>C</sub> = -500mA, V <sub>CE</sub> = -1.0V I <sub>C</sub> = -1.0A, V <sub>CE</sub> = -1.0V
		85	—	375		
		40	—	—		I <sub>C</sub> = -500mA, V <sub>CE</sub> = -1.0V
		100	—	250		I <sub>C</sub> = -500mA, V <sub>CE</sub> = -1.0V
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	—	-0.5	V	I <sub>C</sub> = -1.0A, I <sub>B</sub> = -100mA
Base-Emitter Turn-On Voltage	V <sub>BE (ON)</sub>	—	-0.6	—	V	I <sub>C</sub> = -5mA, V <sub>CE</sub> = 10V I <sub>C</sub> = -1.0A, V <sub>CE</sub> = -1.0V
		—	—	-1.0		
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	f <sub>T</sub>	—	250	—	MHz	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -5.0V f = 100MHz

- 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](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%.

**Typical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

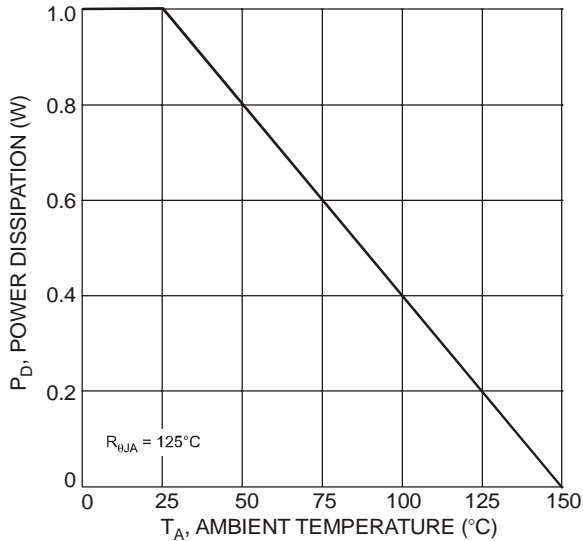


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

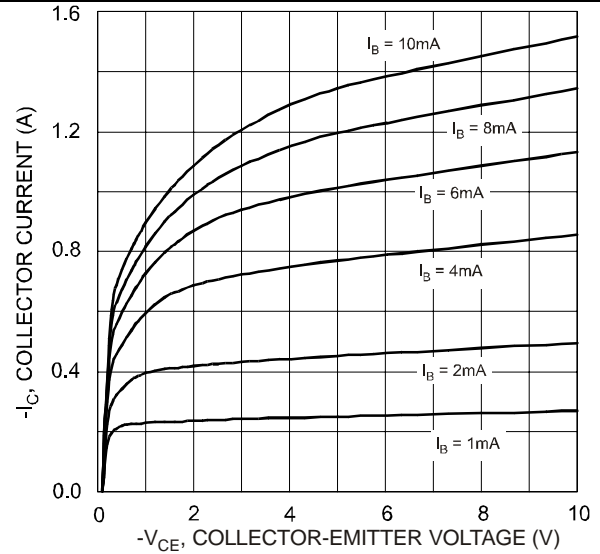


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

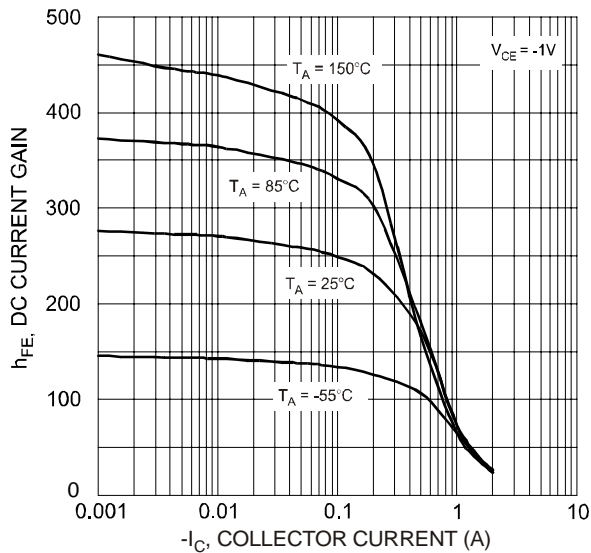


Fig. 3 Typical DC Current Gain vs. Collector Current

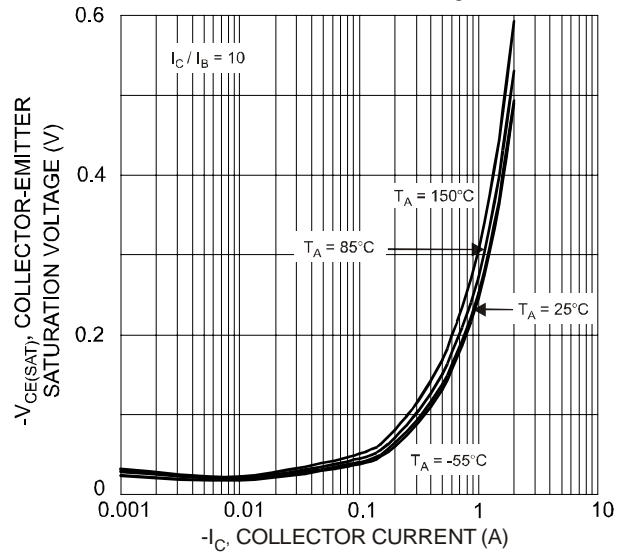


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

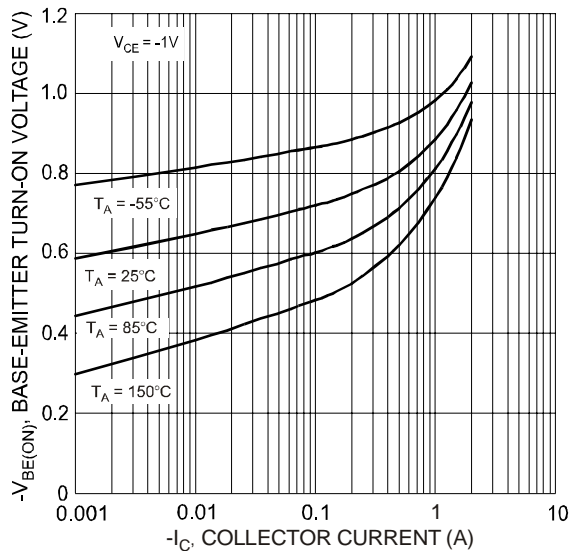


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

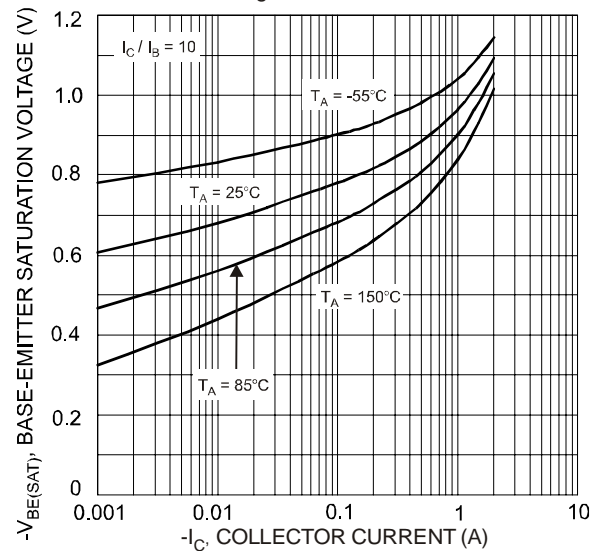


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

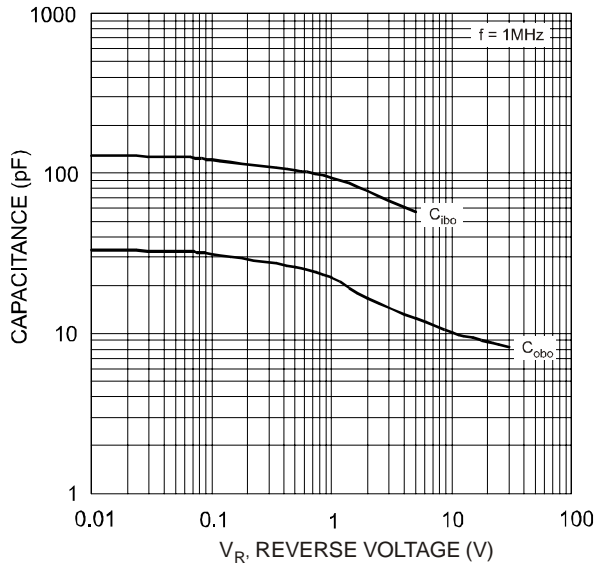


Fig. 7 Typical Capacitance Characteristics

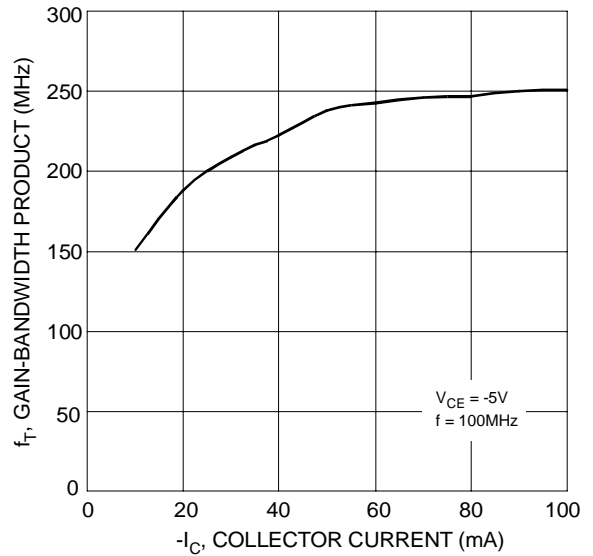


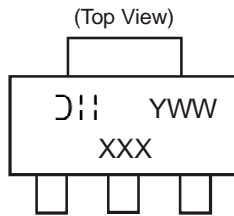
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

**Ordering Information** (Note 5)

Device	Packaging	Shipping
DCP69A-13	SOT-223	2500/Tape & Reel
DCP69A-16-13	SOT-223	2500/Tape & Reel

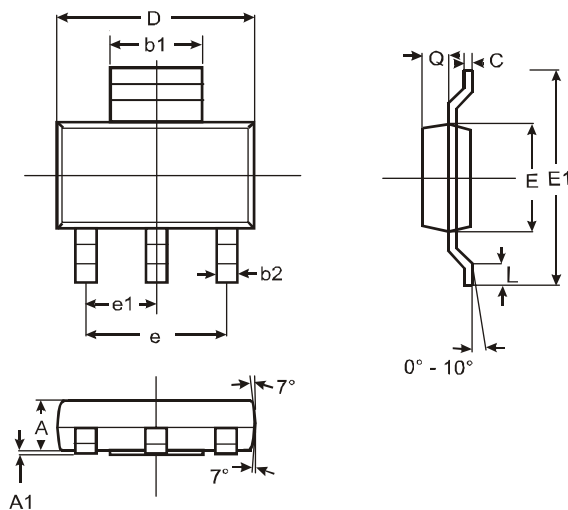
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



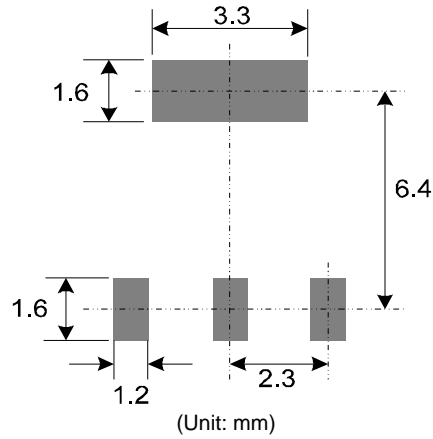
XXX = Product type marking code ex. P12A = DCP69A  
P12A-16 = DCP69A-16  
DII = Manufacturer's code marking  
YWW = Date code marking  
Y = Last digit of year ex: 7 = 2007  
WW = Week code 01 - 52

**Package Outline Dimensions**



SOT-223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

**Suggested Pad Layout (Based on IPC-SM-782)**



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