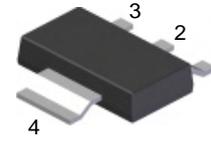


**NOT RECOMMENDED FOR NEW DESIGNS, USE DCP69/-16**

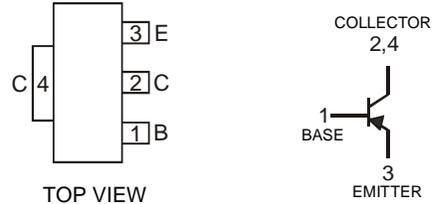
### Features

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

Characteristic	Symbol	Value	Units
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

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ (Note 3)	$P_d$	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 Condition		
<b>OFF CHARACTERISTICS (Note 4)</b>								
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	-25	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$		
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-20	—	—	V	$I_C = -1.0\text{mA}, I_B = 0$		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-25	—	—	V	$I_C = -10\mu\text{A}, I_E = 0$		
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	nA	$V_{CB} = -25\text{V}, I_E = 0$		
Emitter-Base Cutoff Current	$I_{EBO}$	—	—	-10	$\mu\text{A}$	$V_{EB} = -5.0\text{V}, I_C = 0$		
<b>ON CHARACTERISTICS (Note 4)</b>								
DC Current Gain	DCP69A, DCP69A-16	$h_{FE}$	50	—	—	—	$I_C = -5.0\text{mA}, V_{CE} = -10\text{V}$ $I_C = -500\text{mA}, V_{CE} = -1.0\text{V}$ $I_C = -1.0\text{A}, V_{CE} = -1.0\text{V}$ $I_C = -500\text{mA}, V_{CE} = -1.0\text{V}$	
			85	—	375			
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	$V_{BE(ON)}$	—	—	-1.0	V	$I_C = -5\text{mA}, V_{CE} = 10\text{V}$ $I_C = -1.0\text{A}, V_{CE} = -1.0\text{V}$		
							—	—
<b>SMALL SIGNAL CHARACTERISTICS</b>								
Current Gain-Bandwidth Product	$f_T$	—	250	—	MHz	$I_C = -100\text{mA}, V_{CE} = -5.0\text{V}$ $f = 100\text{MHz}$		

- 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](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 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

**Typical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

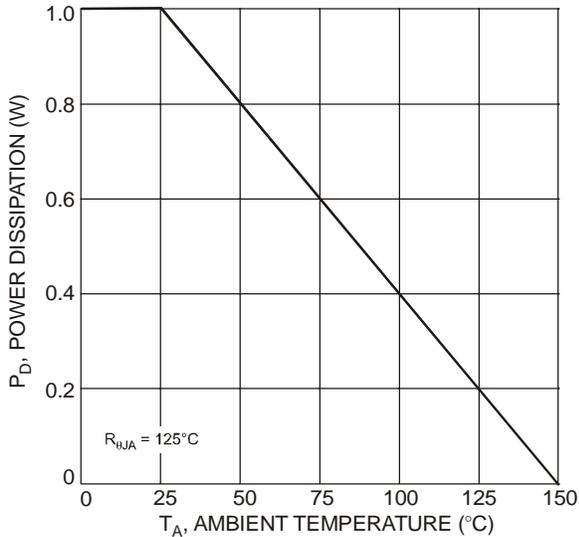


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

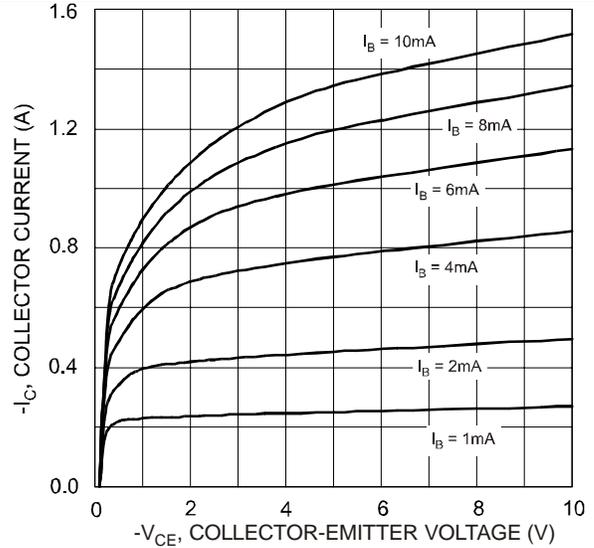


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

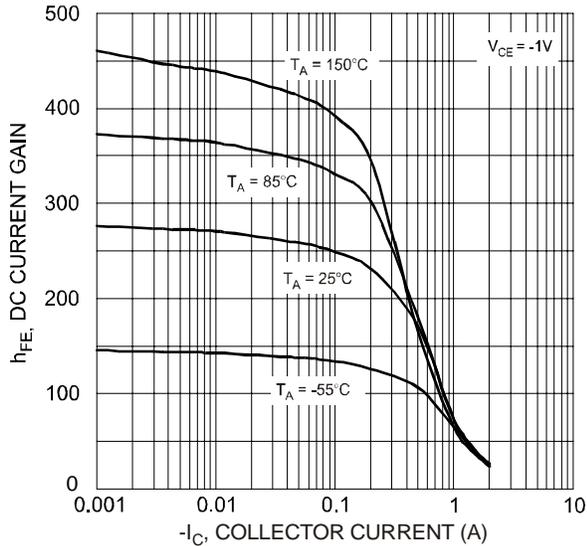


Fig. 3 Typical DC Current Gain vs. Collector Current

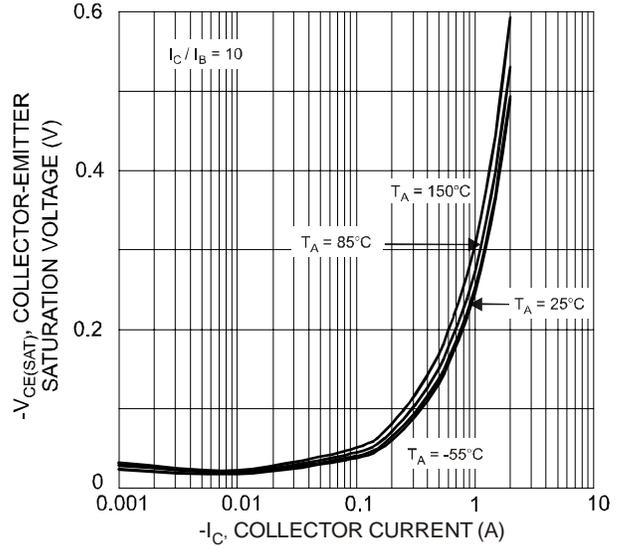


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

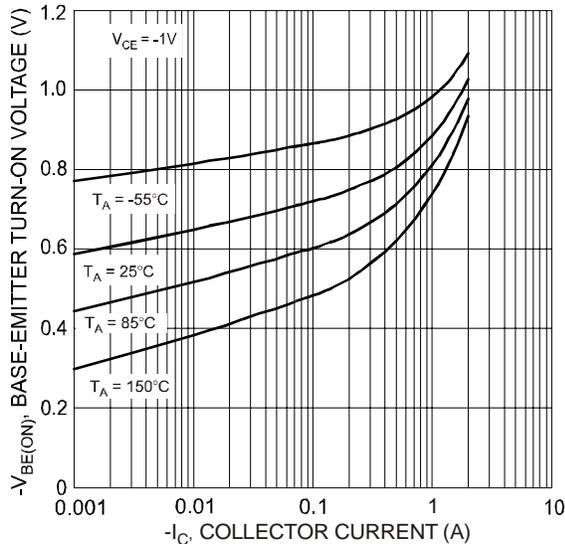


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

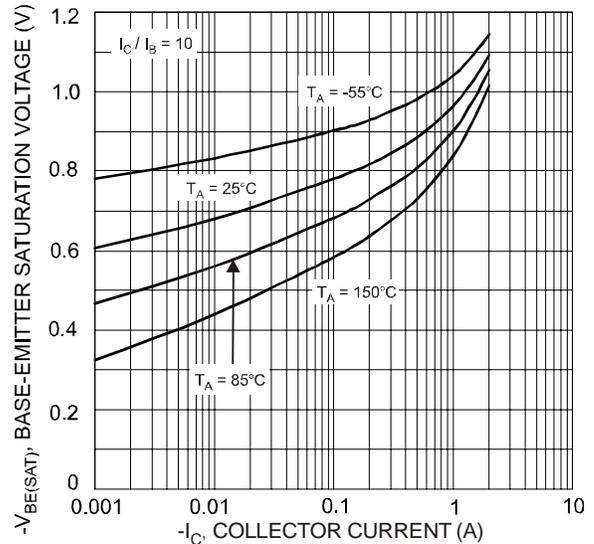


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

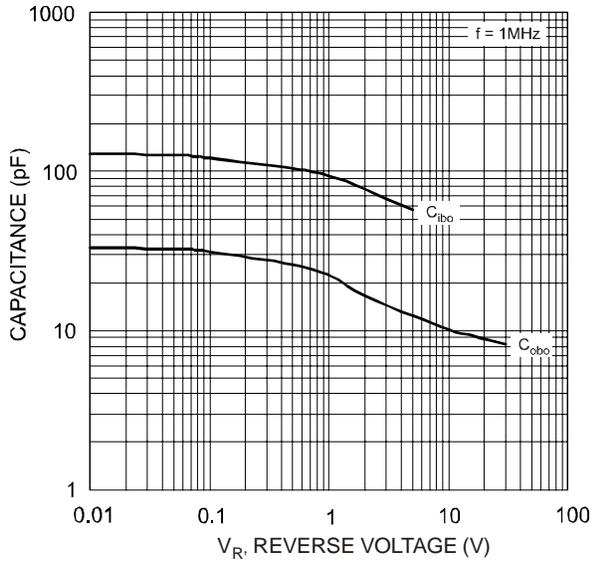


Fig. 7 Typical Capacitance Characteristics

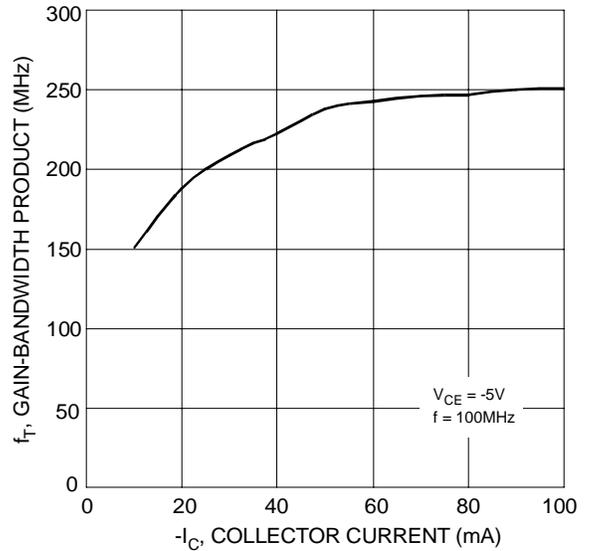


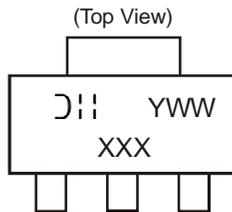
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

**Ordering Information** (Note 5)

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

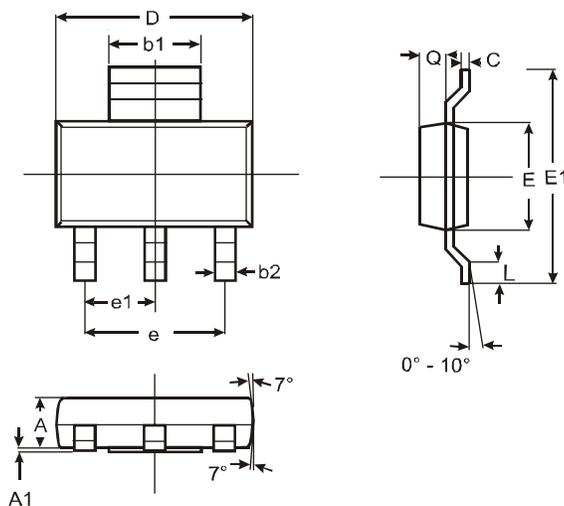
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



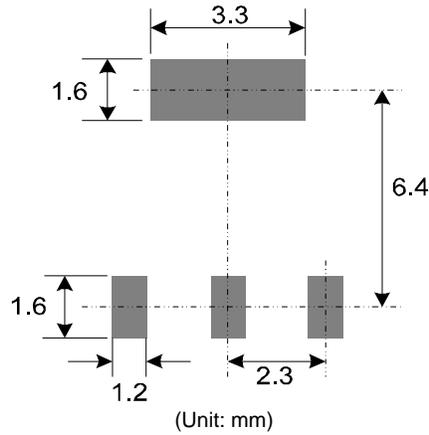
XXX = Product type marking code ex. P12A = DCP69A  
P12A-16 = DCP69A-16  
DII = Manufacturer's code marking  
YWW = Date code marking  
Y = Last digit of year ex: 7 = 2007  
WW = Week code 01 - 52

**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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