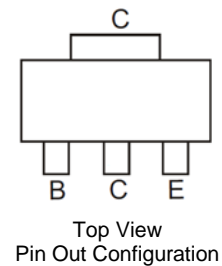
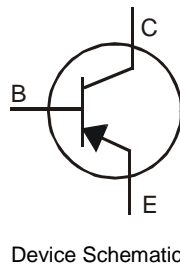


## Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DCP68)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: SOT223
- 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
- Solderable per MIL-STD -202, Method 208
- Weight: 0.112 grams (Approximate)



## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DCP69-13	P12	13	12	2500
DCP69-16-13	P12-16	13	12	2500
DCP69-25-13	P12-25	13	12	2500

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant..
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds
  4. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



- xxx = Product Type Marking Code  
 P12 = DCP69  
 P12-16 = DCP69-16  
 P12-25 = DCP69-25  
 ≡ = Manufacturer's code marking  
 YWW = Date Code Marking  
 Y = Last digit of year (ex: 8 = 2018)  
 WW = Week code (01 – 53)

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

Characteristic	Symbol	Value	Units
Collector-Base Voltage	V <sub>CB0</sub>	-25	V
Collector-Emitter Voltage	V <sub>CE0</sub>	-20	V
Emitter-Base Voltage	V <sub>EB0</sub>	-5	V
Collector Current	I <sub>C</sub>	-1	A
Peak Pulse Current	I <sub>CM</sub>	-2	A

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

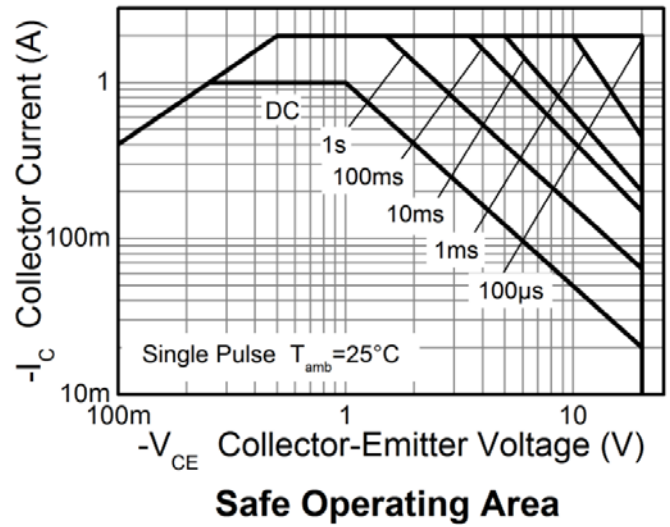
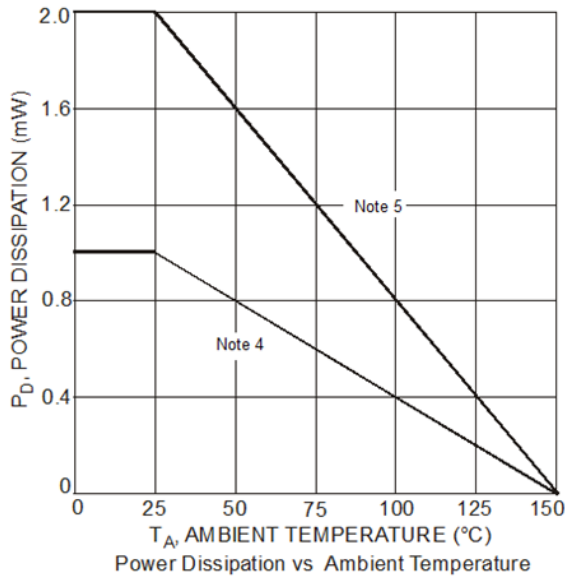
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	R <sub>θJA</sub>	125	°C/W
Power Dissipation (Note 6)	P <sub>D</sub>	2	W
Thermal Resistance, Junction to Ambient Air (Note 6)	R <sub>θJA</sub>	62.5	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge—Machine Model	ESD MM	400	V	C

- Notes:
5. Device mounted on FR-4 PCB; pad layout as shown on in Diodes Inc. suggested pad layout document, which can be found on our website at <http://www.diodes.com>.
  6. Device mounted on FR-4 PCB with 1in<sup>2</sup> copper pad layout
  7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

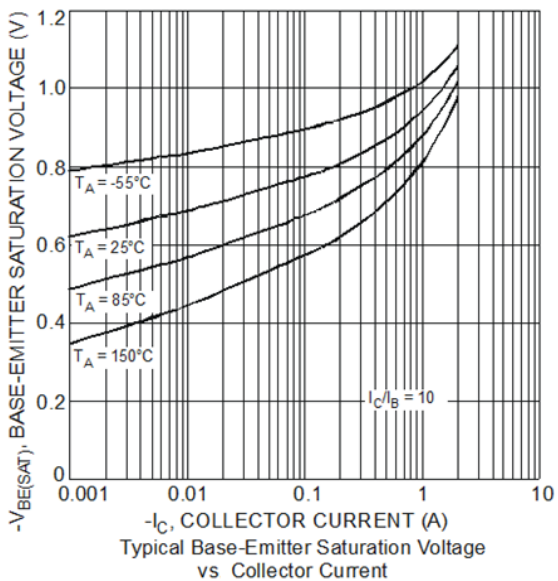
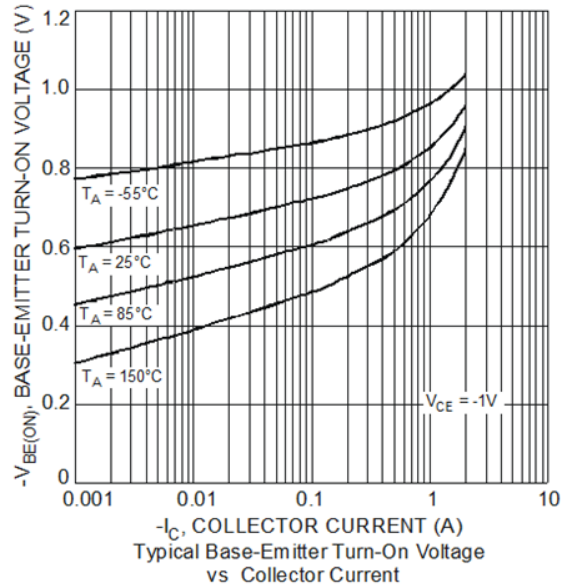
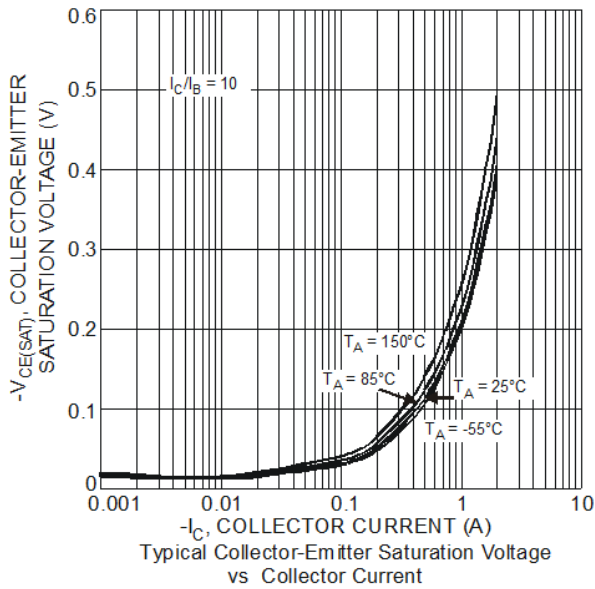
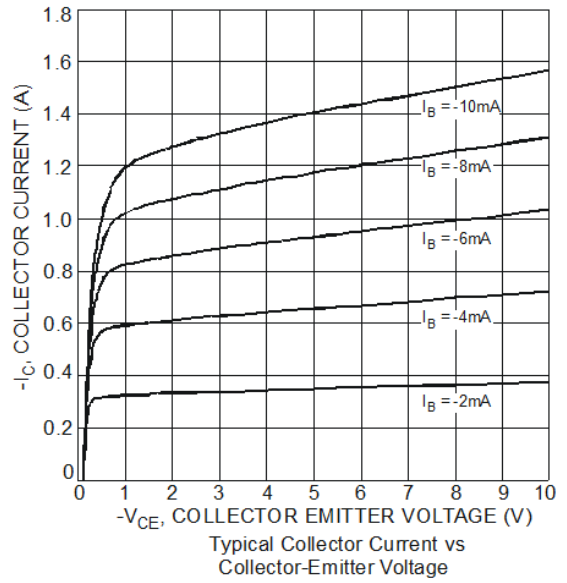
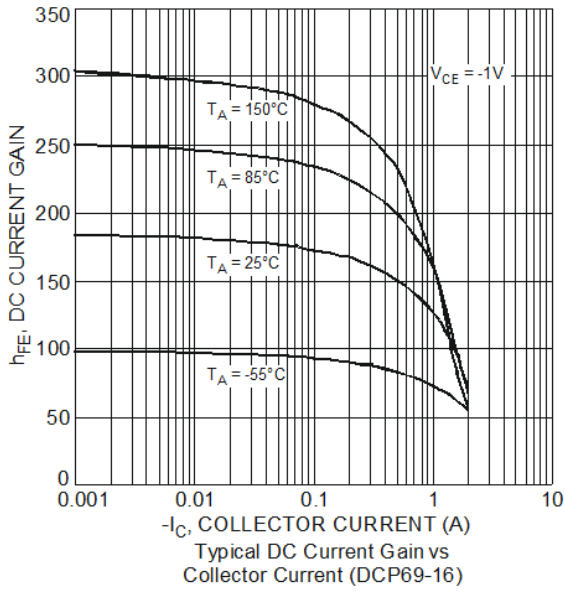


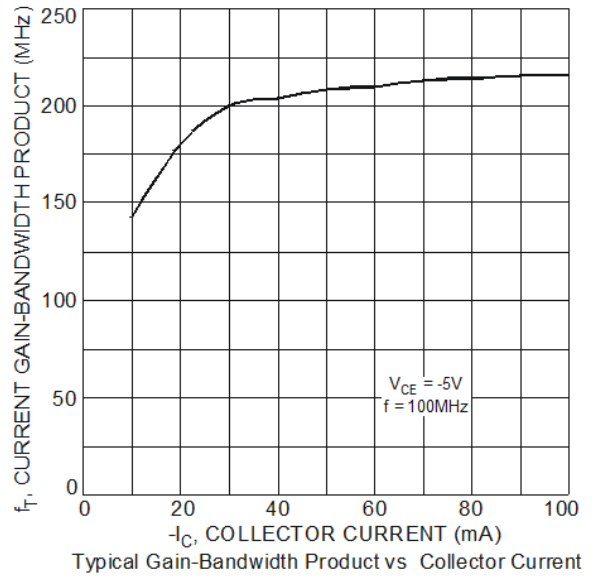
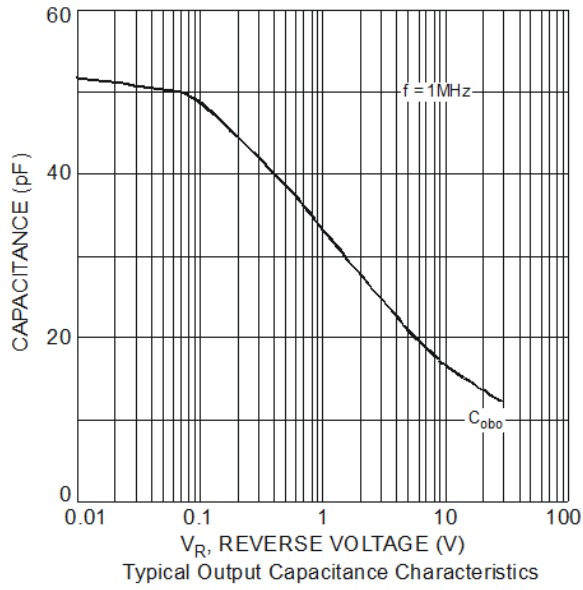
**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>							
Collector-Base Breakdown Voltage		BV <sub>CB0</sub>	-25	—	—	V	I <sub>C</sub> = -100µA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage (Note 8)		BV <sub>CEO</sub>	-20	—	—	V	I <sub>C</sub> = -10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage		BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -100µA, I <sub>C</sub> = 0
Collector-Base Cutoff Current		I <sub>CB0</sub>	—	—	-100 -10	nA µA	V <sub>CB</sub> = -25V, I <sub>E</sub> = 0 V <sub>CB</sub> = -25V, I <sub>E</sub> = 0, T <sub>A</sub> = 150°C
Emitter-Base Cutoff Current		I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -5.0V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 8)</b>							
DC Current Gain	DCP69, DCP69-16, DCP69-25	h <sub>FE</sub>	50	—	—	—	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5.0mA
	DCP69		60	—	—		V <sub>CE</sub> = -1V, I <sub>C</sub> = -1A
	DCP69-16		85	—	375		V <sub>CE</sub> = -1V, I <sub>C</sub> = -500mA
	DCP69-25		100	—	250		V <sub>CE</sub> = -1V, I <sub>C</sub> = -500mA
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	—	—	-0.5	V	I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA
Base-Emitter Turn-On Voltage		V <sub>BE(on)</sub>	—	—	-0.7 -1	V	V <sub>CE</sub> = -10V, I <sub>C</sub> = -5.0mA V <sub>CE</sub> = -1V, I <sub>C</sub> = -1A
<b>SMALL SIGNAL CHARACTERISTICS</b>							
Current Gain-Bandwidth Product		f <sub>T</sub>	40	200	—	MHz	V <sub>CE</sub> = -5V, I <sub>C</sub> = -50mA, f = 100MHz
Output Capacitance		C <sub>obo</sub>	—	17	—	pF	V <sub>CB</sub> = -10V, f = 1 MHz

Notes: 8. Measured under pulsed conditions. Pulse width = 300µs. Duty cycle ≤ 2%.

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

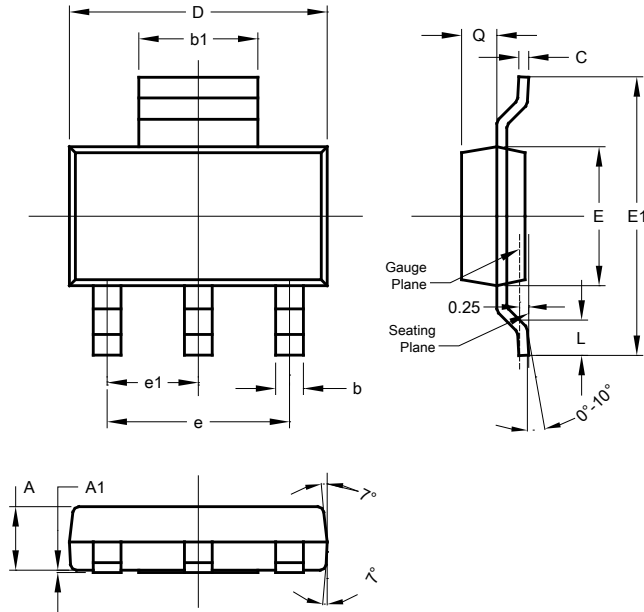




## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOT223

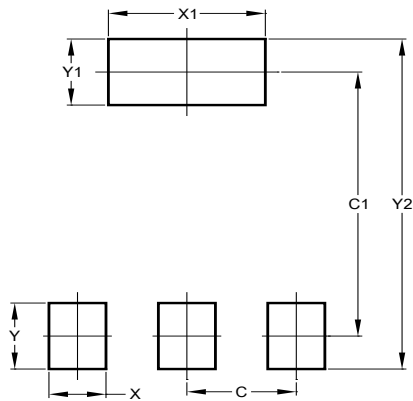


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### SOT223



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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