



**THE DATASHEET OF
DCP69-16-13**

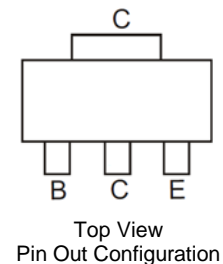
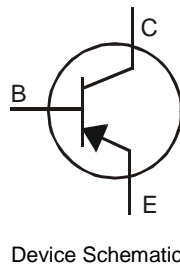


Features

- 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)

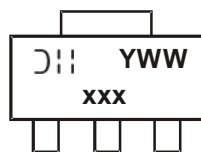


Ordering Information (Note 4)

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
- JII = Manufacturer's code marking
- YWW = Date Code Marking
 - Y = Last digit of year (ex: 8 = 2018)
 - WW = Week code (01 – 53)

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Collector-Base Voltage	V _{CB0}	-25	V
Collector-Emitter Voltage	V _{CE0}	-20	V
Emitter-Base Voltage	V _{EB0}	-5	V
Collector Current	I _C	-1	A
Peak Pulse Current	I _{CM}	-2	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

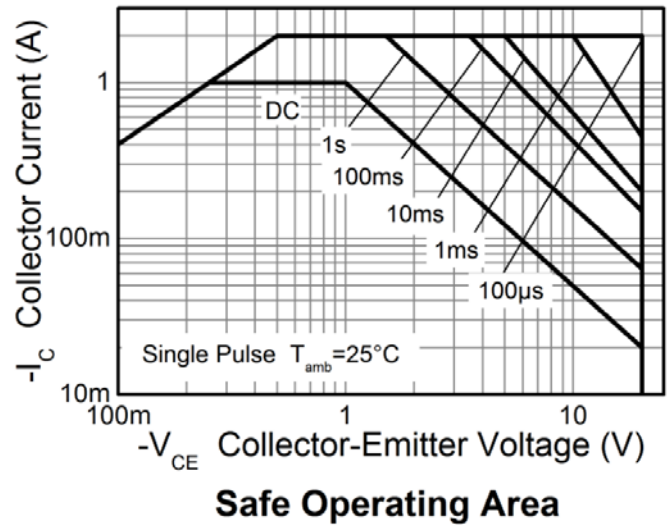
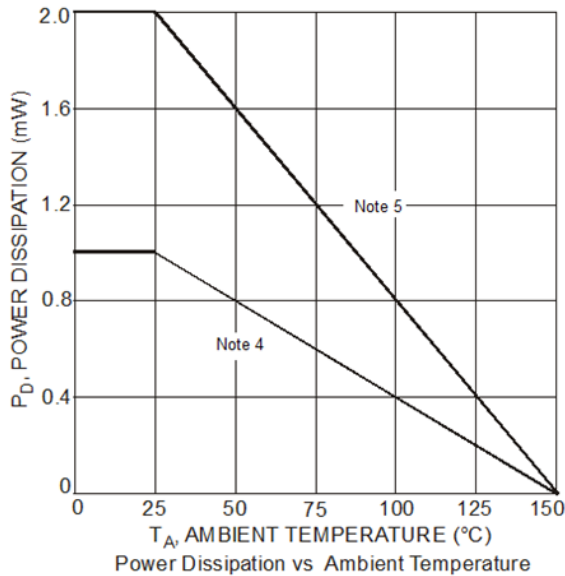
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	125	°C/W
Power Dissipation (Note 6)	P _D	2	W
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	62.5	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-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 1in² copper pad layout
 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

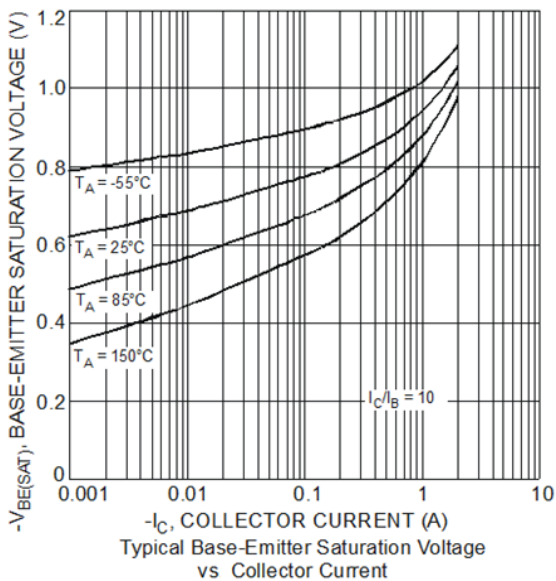
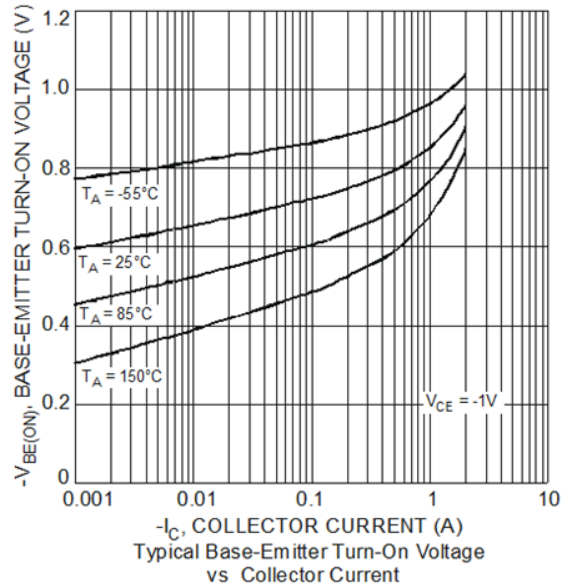
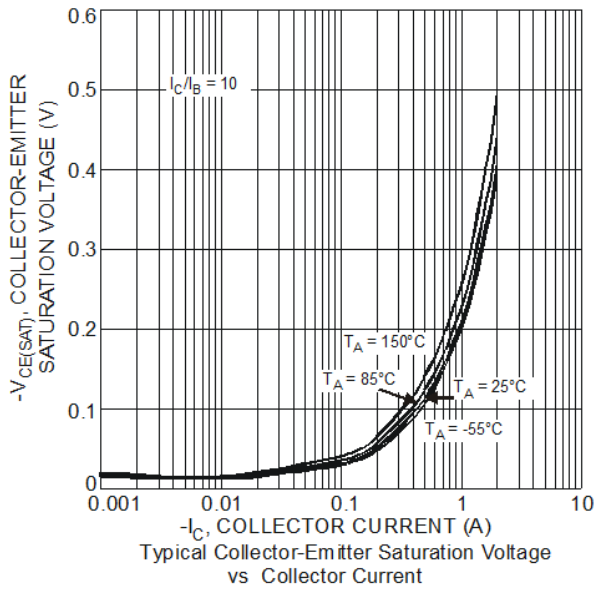
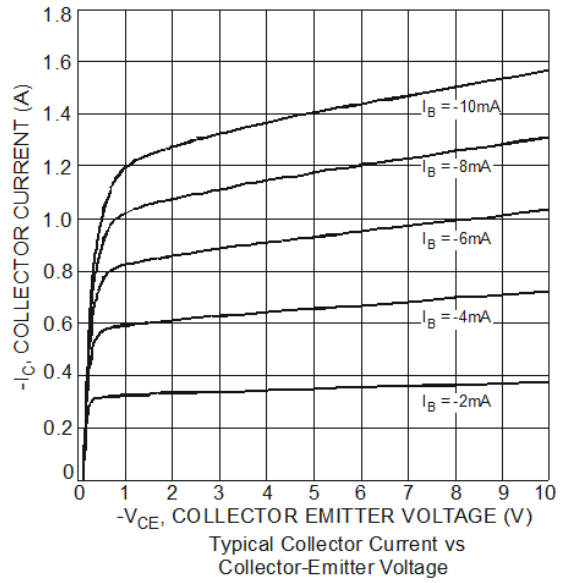
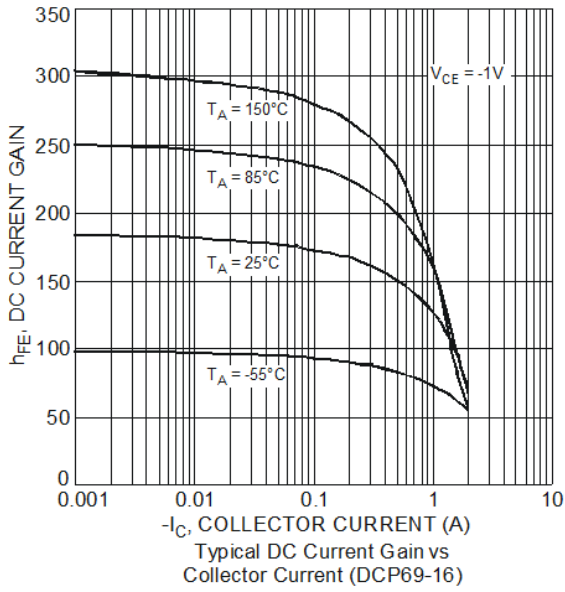


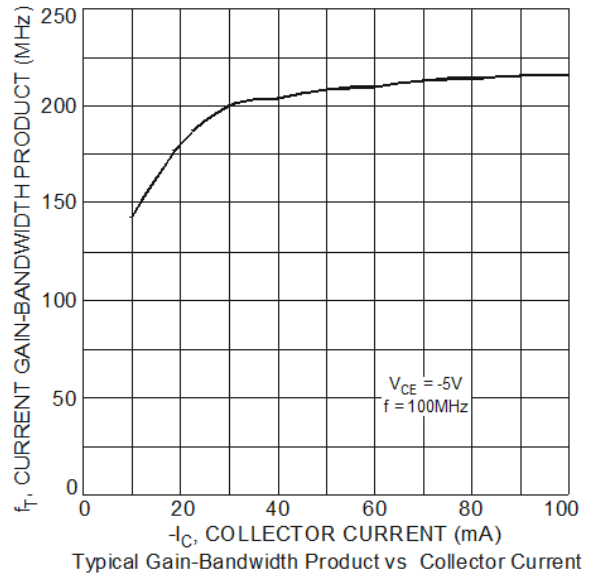
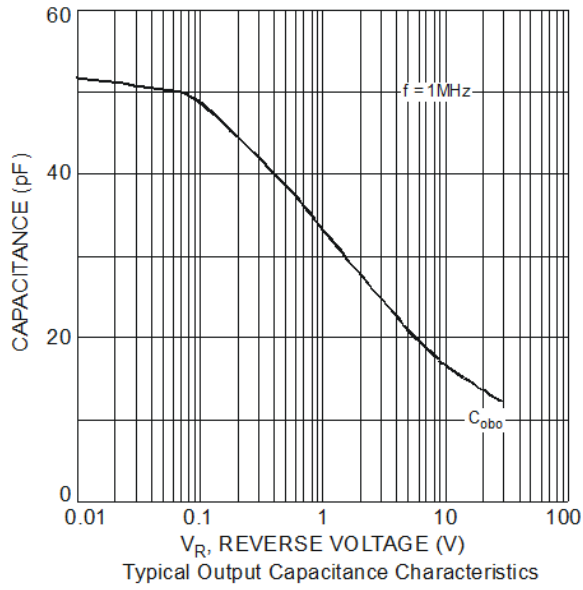
Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS							
Collector-Base Breakdown Voltage		BV_{CBO}	-25	—	—	V	$I_C = -100\mu A, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 8)		BV_{CEO}	-20	—	—	V	$I_C = -10mA, I_B = 0$
Emitter-Base Breakdown Voltage		BV_{EBO}	-5	—	—	V	$I_E = -100\mu A, I_C = 0$
Collector-Base Cutoff Current		I_{CBO}	—	—	-100 -10	nA µA	$V_{CB} = -25V, I_E = 0$ $V_{CB} = -25V, I_E = 0, T_A = 150^\circ C$
Emitter-Base Cutoff Current		I_{EBO}	—	—	-100	nA	$V_{EB} = -5.0V, I_C = 0$
ON CHARACTERISTICS (Note 8)							
DC Current Gain	DCP69, DCP69-16, DCP69-25	h_{FE}	50	—	—	—	$V_{CE} = -10V, I_C = -5.0mA$
	DCP69		60	—	—		$V_{CE} = -1V, I_C = -1A$
	DCP69-16		85	—	375		$V_{CE} = -1V, I_C = -500mA$
	DCP69-25		100	—	250		$V_{CE} = -1V, I_C = -500mA$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	-0.5	V	$I_C = -1A, I_B = -100mA$
Base-Emitter Turn-On Voltage		$V_{BE(on)}$	—	—	-0.7 -1	V	$V_{CE} = -10V, I_C = -5.0mA$ $V_{CE} = -1V, I_C = -1A$
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product		f_T	40	200	—	MHz	$V_{CE} = -5V, I_C = -50mA, f = 100MHz$
Output Capacitance		C_{obo}	—	17	—	pF	$V_{CB} = -10V, f = 1MHz$

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

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

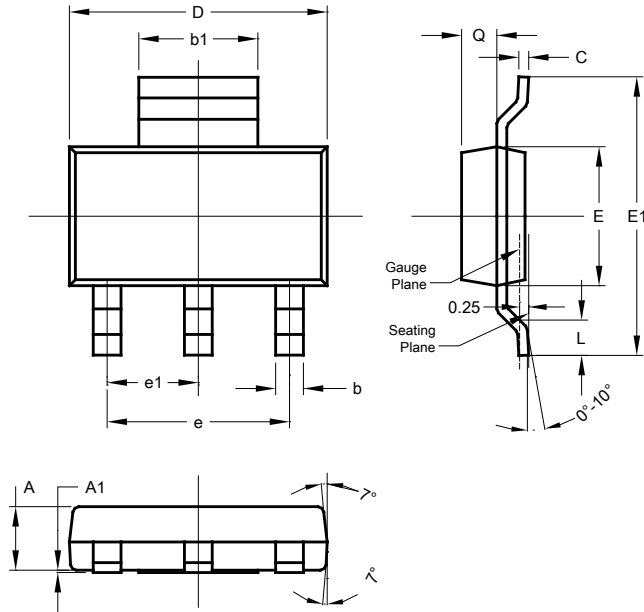




Package Outline Dimensions

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

SOT223

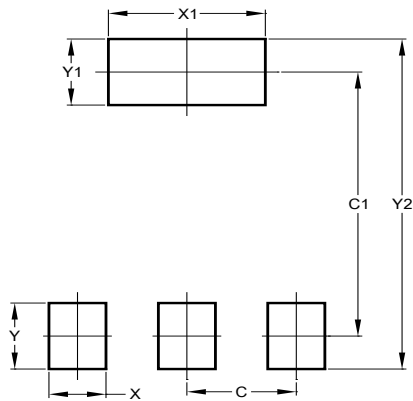


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

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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