

Features

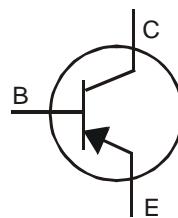
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DCP68)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Totally Lead-Free & Fully RoHS compliant (Note 1)**
- Halogen and Antimony Free. "Green" Device (Note 2)**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

Mechanical Data

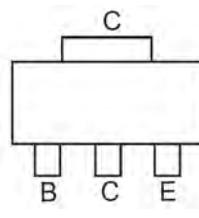
- Case: SOT223
- Case Material: Molded Plastic, "Green Molding" Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin
- Solderable per MIL-STD -202, Method 208
- Weight: 0.112 grams (approximate)



Top View



Device Schematic


 Top View
Pin Out Configuration

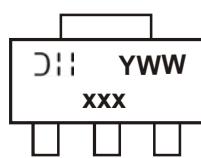
Ordering Information (Note 3)

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:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 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

DII = Manufacturer's code marking

YWW = Date Code Marking

Y = Last digit of year (ex: 1 = 2011)

WW = Week code (01 – 53)

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
Peak Pulse Current	I_{CM}	-2.0	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 4)	$R_{\theta JA}$	125	°C/W
Power Dissipation (Note 5)	P_D	2	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	62.5	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Collector-Base Breakdown Voltage	BV_{CBO}	-25	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$	
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-20	—	—	V	$I_C = -10\text{mA}, I_B = 0$	
Emitter-Base Breakdown Voltage	BV_{EBO}	-5.0	—	—	V	$I_E = -100\mu\text{A}, I_C = 0$	
Collector-Base Cutoff Current	I_{CBO}	—	—	-100 -10	nA μA	$V_{CB} = -25\text{V}, I_E = 0$ $V_{CB} = -25\text{V}, I_E = 0, T_A = 150^\circ\text{C}$	
Emitter-Base Cutoff Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -5.0\text{V}, I_C = 0$	
ON CHARACTERISTICS (Note 6)							
DC Current Gain	h_{FE}	50	—	—	—	$V_{CE} = -10\text{V}, I_C = -5.0\text{mA}$	
		60	—	—		$V_{CE} = -1.0\text{V}, I_C = -1.0\text{A}$	
		85	—	375		$V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$	
		100	—	250		$V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$	
		160	—	375		$V_{CE} = -1.0\text{V}, I_C = -500\text{mA}$	
Collector-Emitter Saturation Voltage	$V_{CE(\text{sat})}$	—	—	-0.5	V	$I_C = -1.0\text{A}, I_B = -100\text{mA}$	
Base-Emitter Turn-On Voltage	$V_{BE(\text{on})}$	—	—	-0.7 -1.0	V	$V_{CE} = -10\text{V}, I_C = -5.0\text{mA}$ $V_{CE} = -1.0\text{V}, I_C = -1.0\text{A}$	
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product	f_T	40	200	—	MHz	$V_{CE} = -5.0\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$	
Output Capacitance	C_{obo}	—	17	—	pF	$V_{CB} = -10\text{V}, f = 1\text{ MHz}$	

Notes:

4. 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>
5. Device mounted on FR-4 PCB with 1in.² copper pad layout
6. Measured under pulsed conditions. Pulse width = 300μS. Duty cycle ≤ 2%.

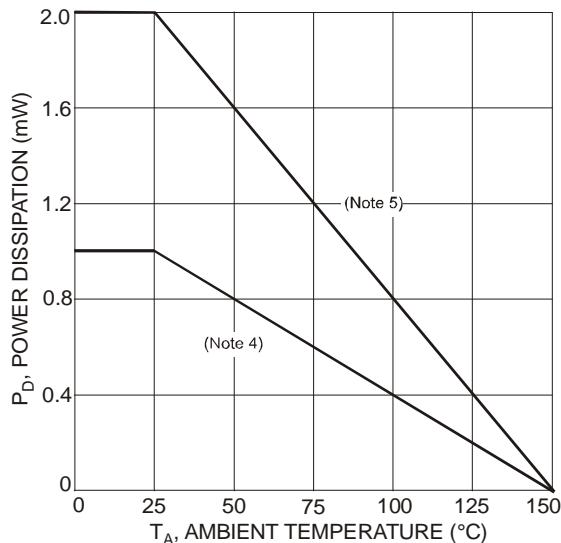


Fig. 1 Power Dissipation vs. Ambient Temperature

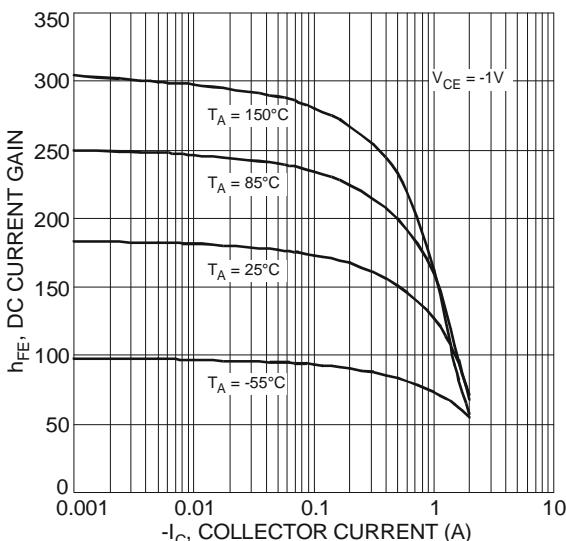


Fig. 3 Typical DC Current Gain vs. Collector Current (DCP69-16)

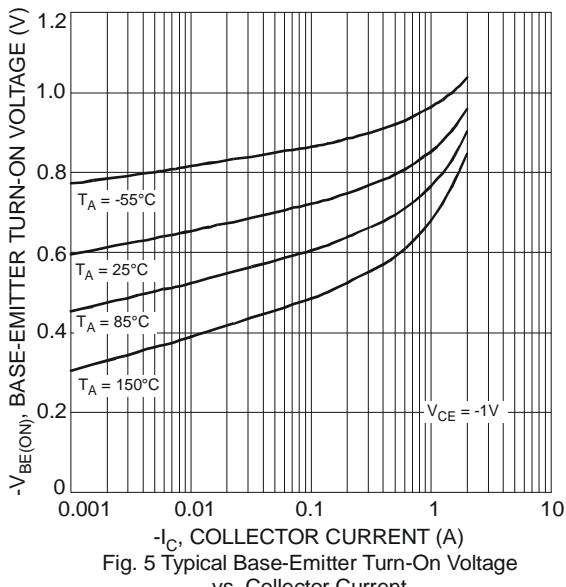


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

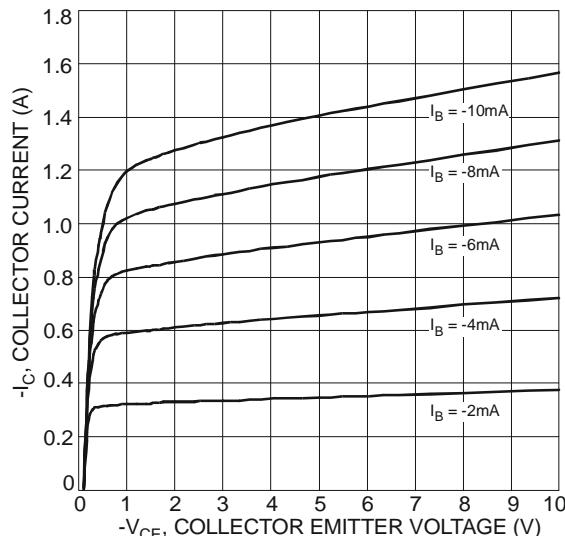


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

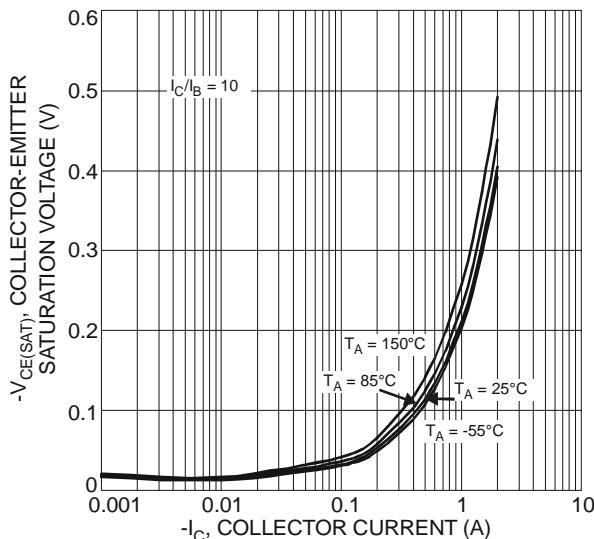


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

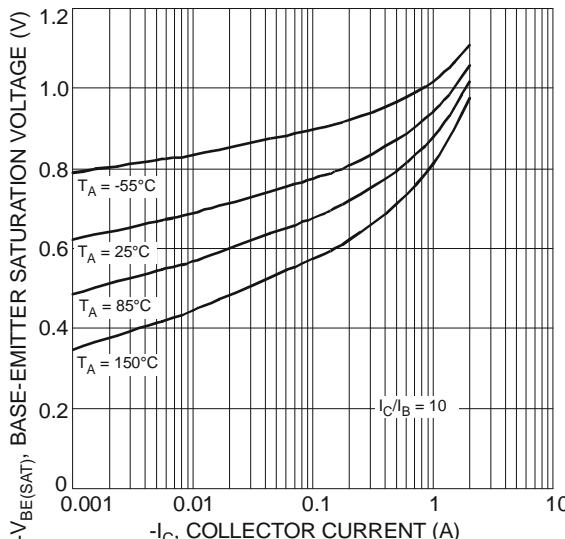


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

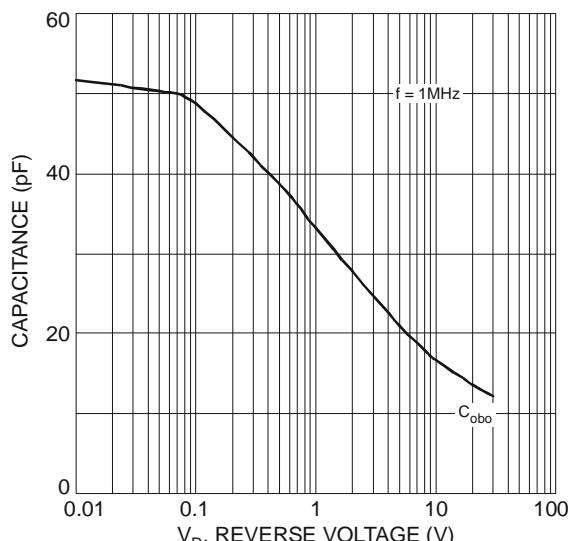


Fig. 7 Typical Output Capacitance Characteristics

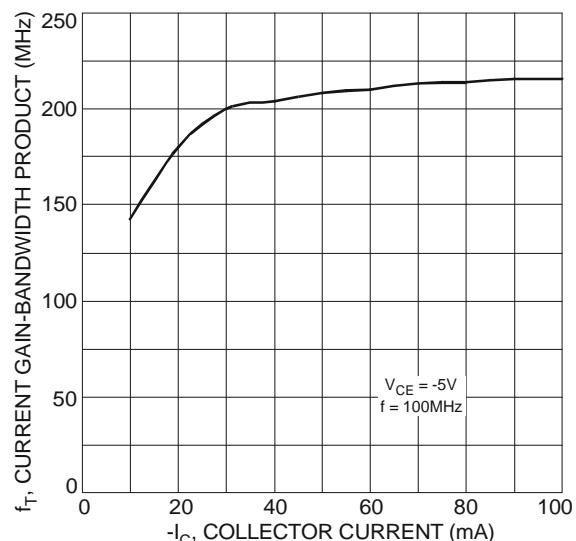
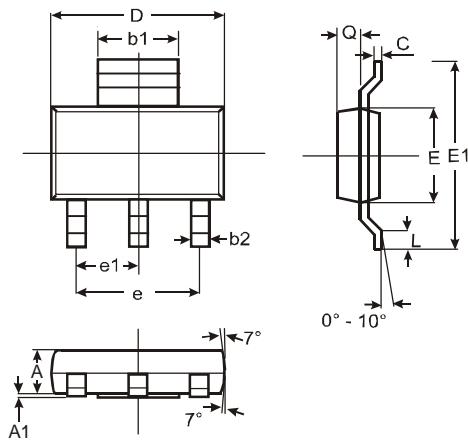


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

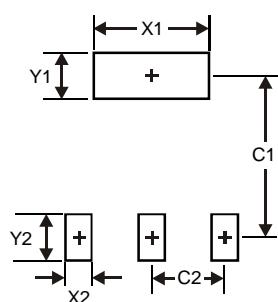
Package Outline Dimensions



SOT223			
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



Dimensions	Value (in mm)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

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