

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	V
Collector Current	I_C	-1	A
Peak Pulse Current	I_{CM}	-2	A

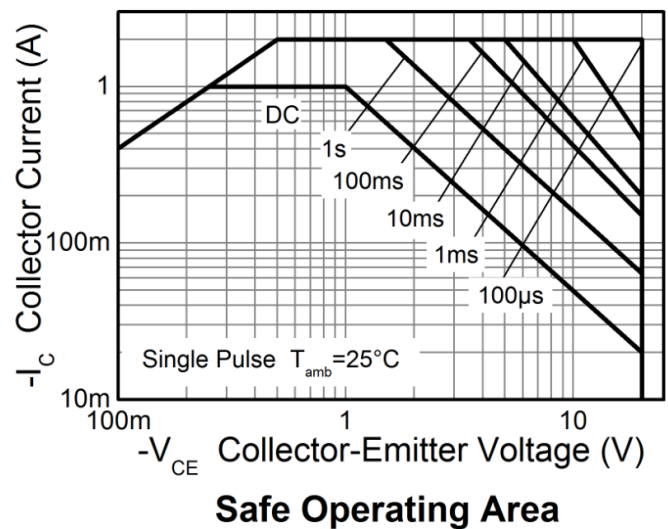
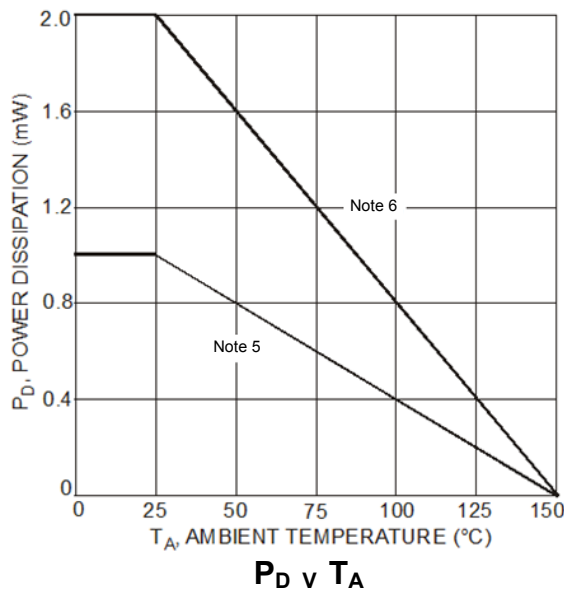
Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Power Dissipation (Note 6)	P_D	2	W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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:
- 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
 - Device mounted on FR-4 PCB with 1in^2 copper pad layout
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

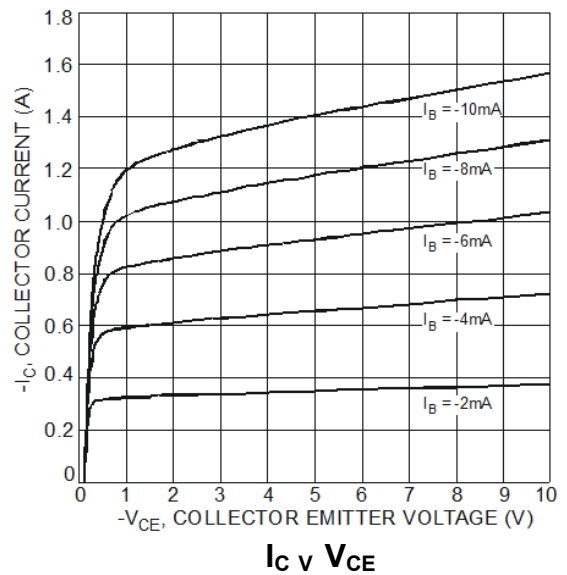
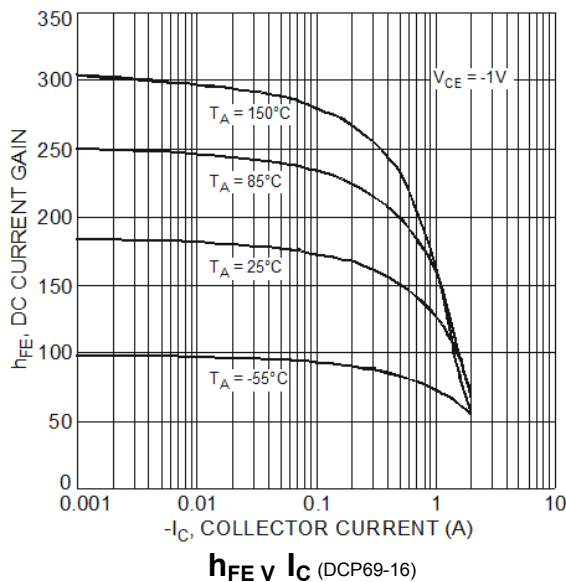
Thermal Characteristics and Derating Information


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

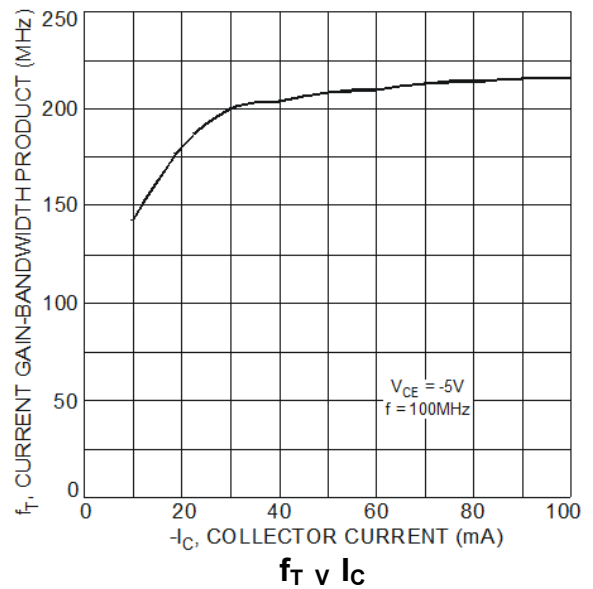
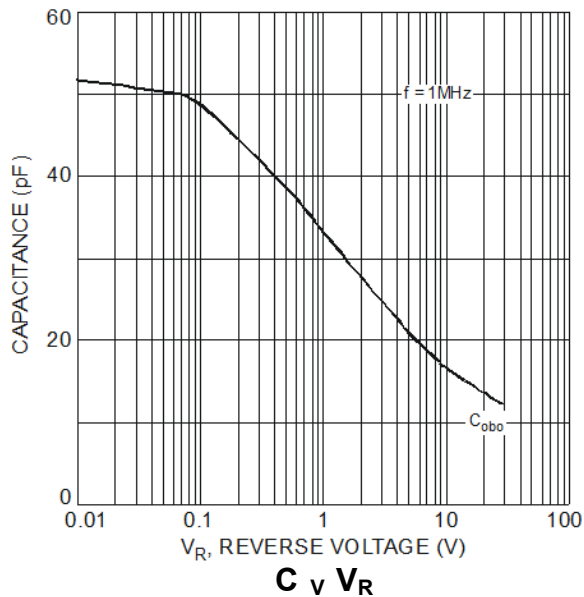
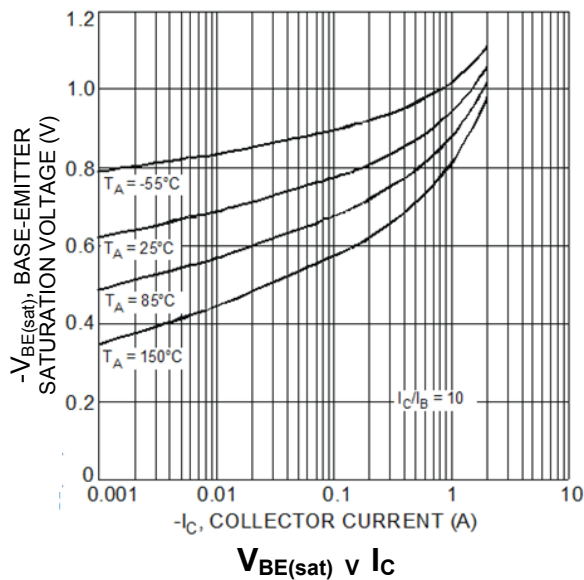
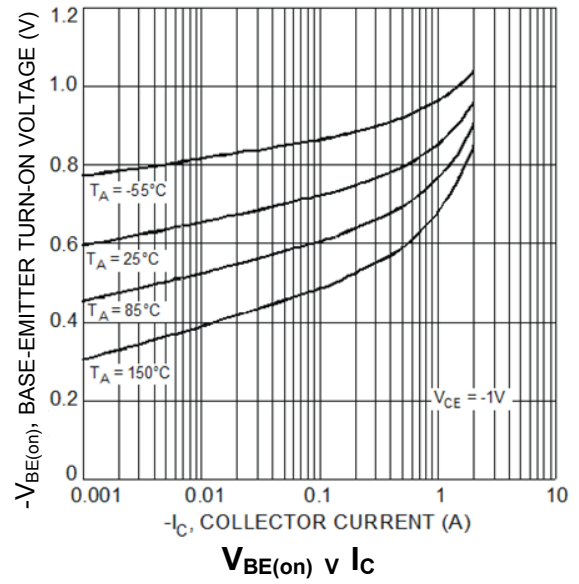
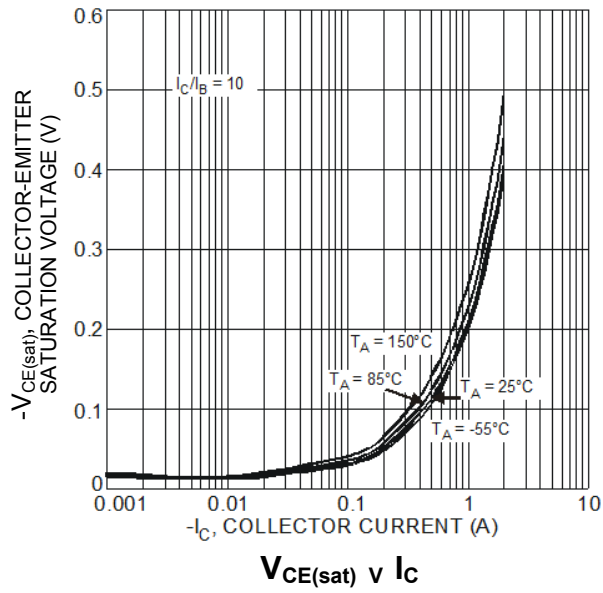
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS							
Collector-Base Breakdown Voltage		BV_{CBO}	-25	—	—	V	$I_C = -100\mu\text{A}$, $I_E = 0$
Collector-Emitter Breakdown Voltage (Note 8)		BV_{CEO}	-20	—	—	V	$I_C = -10\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage		BV_{EBO}	-5	—	—	V	$I_E = -100\mu\text{A}$, $I_C = 0$
Collector-Base Cut-Off 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 Cut-Off Current		I_{EBO}	—	—	-100	nA	$V_{EB} = -5.0\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 8)							
DC Current Gain	DCP69, DCP69-16, DCP69-25	h_{FE}	50 60	— —	— —	—	$V_{CE} = -10\text{V}$, $I_C = -5.0\text{mA}$ $V_{CE} = -1\text{V}$, $I_C = -1\text{A}$
	DCP69		85	—	375		$V_{CE} = -1\text{V}$, $I_C = -500\text{mA}$
	DCP69-16		100	—	250		$V_{CE} = -1\text{V}$, $I_C = -500\text{mA}$
	DCP69-25		160	—	375		$V_{CE} = -1\text{V}$, $I_C = -500\text{mA}$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	-0.5	V	$I_C = -1\text{A}$, $I_B = -100\text{mA}$
Base-Emitter Turn-On Voltage		$V_{BE(on)}$	—	—	-0.7 -1	V	$V_{CE} = -10\text{V}$, $I_C = -5.0\text{mA}$ $V_{CE} = -1\text{V}$, $I_C = -1\text{A}$
SMALL SIGNAL CHARACTERISTICS							
Transition frequency		f_T	40	200	—	MHz	$V_{CE} = -5\text{V}$, $I_C = -50\text{mA}$, $f = 100\text{MHz}$
Output Capacitance		C_{obo}	—	17	—	pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}$

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

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



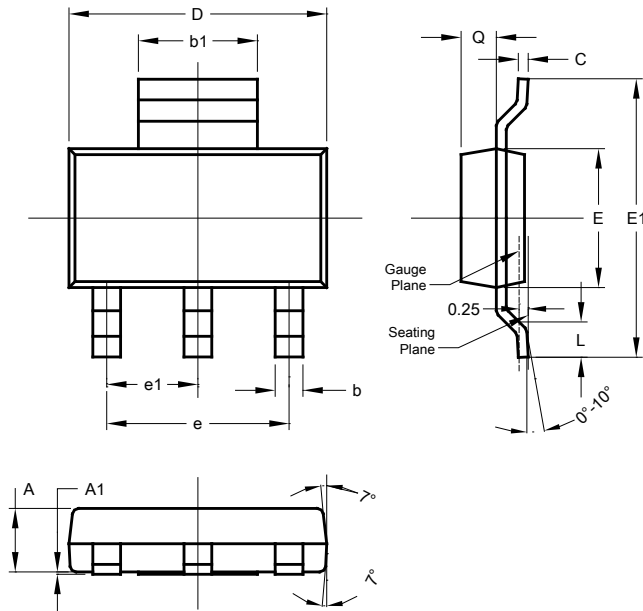
Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.) (continued)



Package Outline Dimensions

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

SOT223

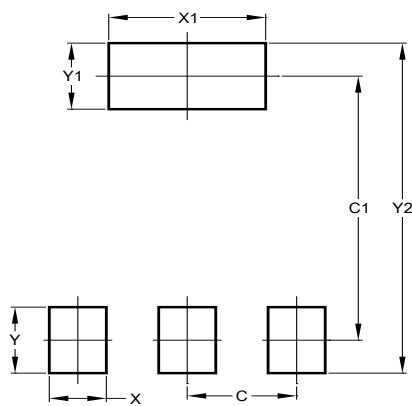


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

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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