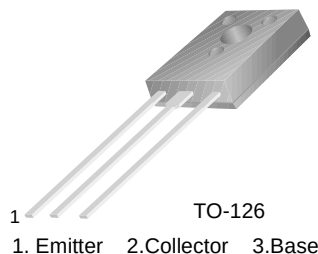


BD439/441

Medium Power Linear and Switching Applications

- Complement to BD440, BD442 respectively



NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage		
	: BD439	60	V
	: BD441	80	V
V_{CES}	Collector-Emitter Voltage		
	: BD439	60	V
	: BD441	80	V
V_{CEO}	Collector-Emitter Voltage		
	: BD439	60	V
	: BD441	80	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	4	A
I_{CP}	*Collector Current (Pulse)	7	A
I_B	Base Current	1	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	36	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	* Collector-Emitter Sustaining Voltage					
	: BD439	$I_C = 100\text{mA}, I_B = 0$	60			V
	: BD441		80			V
I_{CBO}	Collector Cut-off Current	: BD439			100	μA
	: BD441	$V_{CB} = 60\text{V}, I_E = 0$ $V_{CB} = 80\text{V}, I_E = 0$			100	μA
I_{CES}	Collector Cut-off Current	: BD439			100	μA
	: BD441	$V_{CE} = 60\text{V}, V_{BE} = 0$ $V_{CE} = 80\text{V}, V_{BE} = 0$			100	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			1	mA
h_{FE}	* DC Current Gain	: BD439	20	130		
	: BD441		15	130		
	: BD439	$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	40	140		
	: BD441		40	140		
	: BD439	$V_{CE} = 1\text{V}, I_C = 2\text{A}$	25			
	: BD441		15			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.2\text{A}$			0.8	V
$V_{BE(on)}$	* Base-Emitter ON Voltage	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$		0.58		V
		$V_{CE} = 1\text{V}, I_C = 2\text{A}$			1.5	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 1\text{V}, I_C = 250\text{mA}$	3			MHz

* Pulse Test: PW=300 μs , duty Cycle=1.5% Pulsed

Typical Characteristics

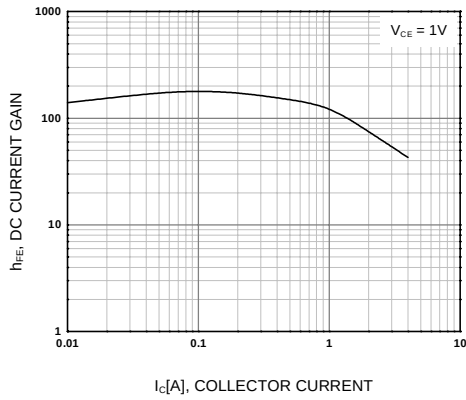


Figure 1. DC current Gain

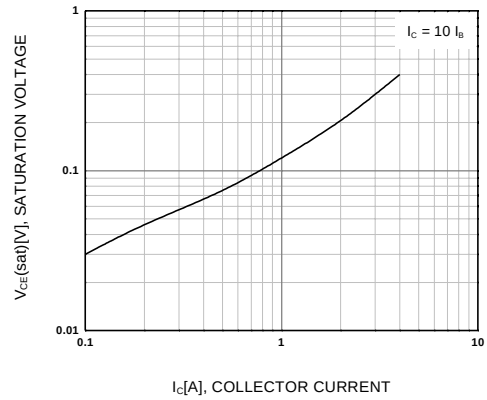


Figure 2. Collector-Emitter Saturation Voltage

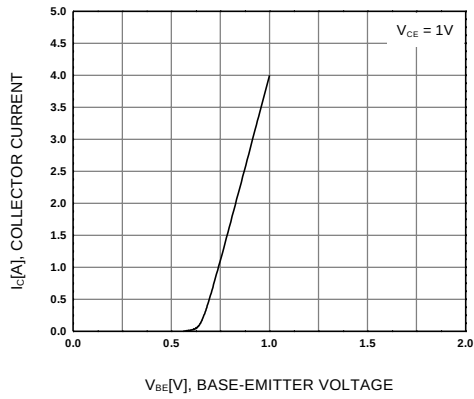


Figure 3. Base-Emitter On Voltage

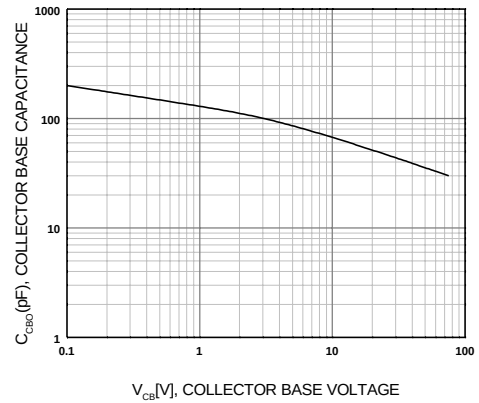


Figure 4. Collector-Base Capacitance

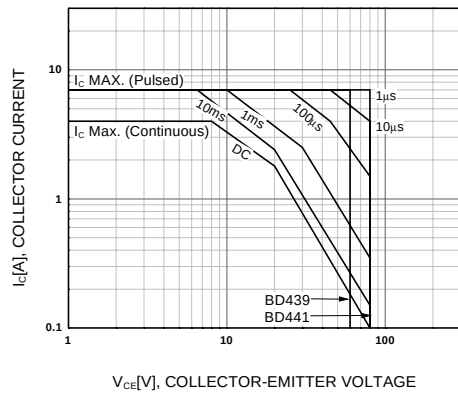


Figure 5. Safe Operating Area

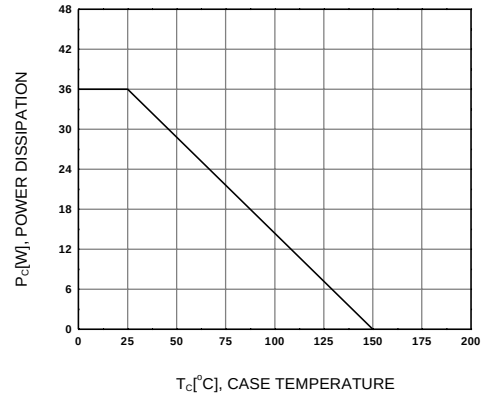


Figure 6. Power Derating

Technical drawing of a 10-pin D-sub connector, showing dimensions in millimeters (mm) with tolerances.

Front View (Top):

- Overall width: 8.00 ± 0.30
- Overall height: 14.20 MAX
- Pin diameter: $\phi 3.20 \pm 0.10$
- Pin length (from housing): 13.06 ± 0.30
- Pin diameter (from housing): 0.75 ± 0.10
- Pin diameter (from housing): 1.60 ± 0.10
- Pin diameter (from housing): 0.75 ± 0.10
- Pin diameter (from housing): 2.28 TYP [2.28 ± 0.20]

Side View (Right):

- Overall height: 11.00 ± 0.20
- Pin diameter: 1.75 ± 0.20
- Pin diameter (from housing): $0.50 +0.10/-0.05$

Detail View (Bottom):

- Pin diameter: $0.50 +0.10/-0.05$
- Pin length: 2.28 TYP [2.28 ± 0.20]

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