



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				100	μA
	: BD439	$V_{CB} = 60\text{V}, I_E = 0$			100	μA
	: BD441	$V_{CB} = 80\text{V}, I_E = 0$			100	μA
I_{CES}	Collector Cut-off Current				100	μA
	: BD439	$V_{CE} = 60\text{V}, V_{BE} = 0$			100	μA
	: BD441	$V_{CE} = 80\text{V}, V_{BE} = 0$			100	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			1	mA
h_{FE}	* DC Current Gain					
	: BD439	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	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			0.58		V
		$V_{CE} = 5\text{V}, I_C = 10\text{mA}$			1.5	V
		$V_{CE} = 1\text{V}, I_C = 2\text{A}$				
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

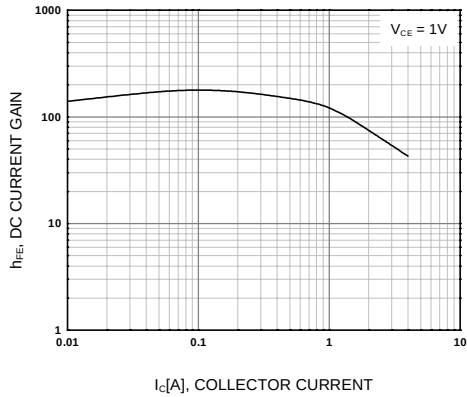


Figure 1. DC current Gain

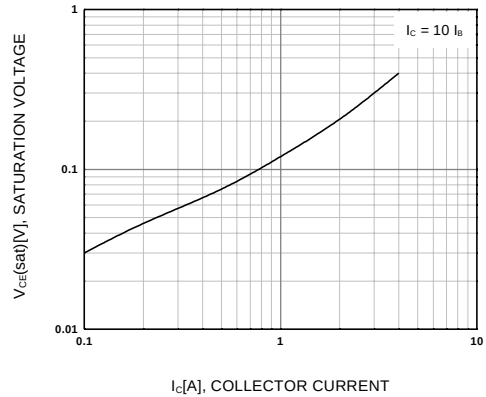


Figure 2. Collector-Emitter Saturation Voltage

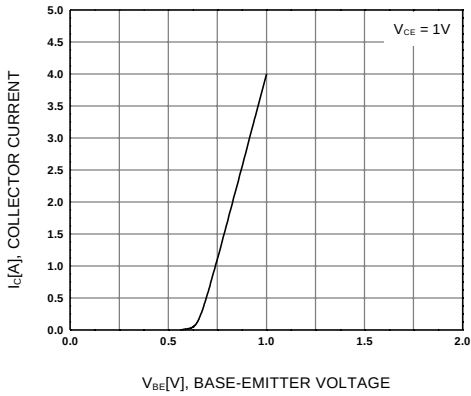


Figure 3. Base-Emitter On Voltage

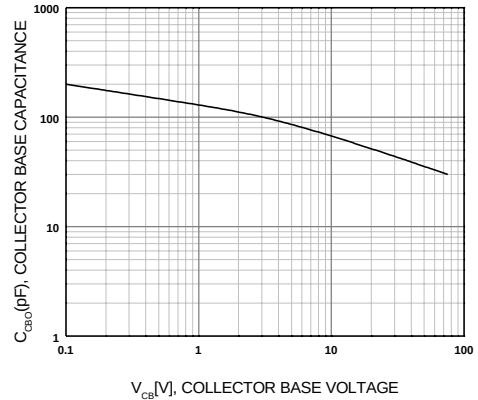


Figure 4. Collector-Base Capacitance

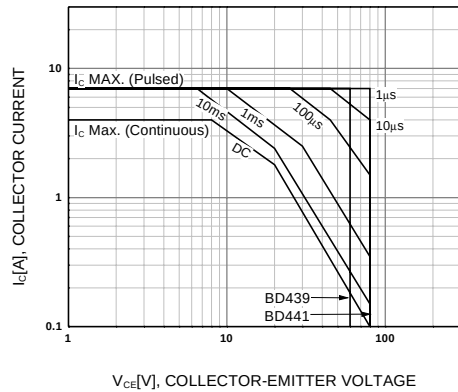


Figure 5. Safe Operating Area

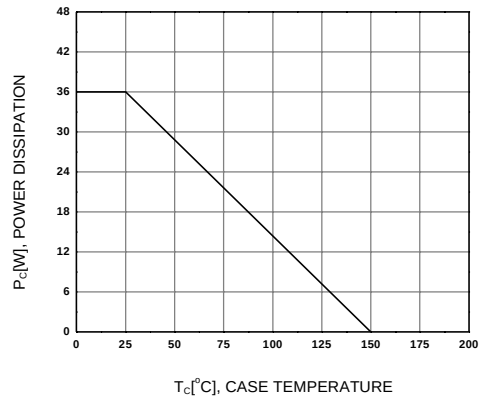
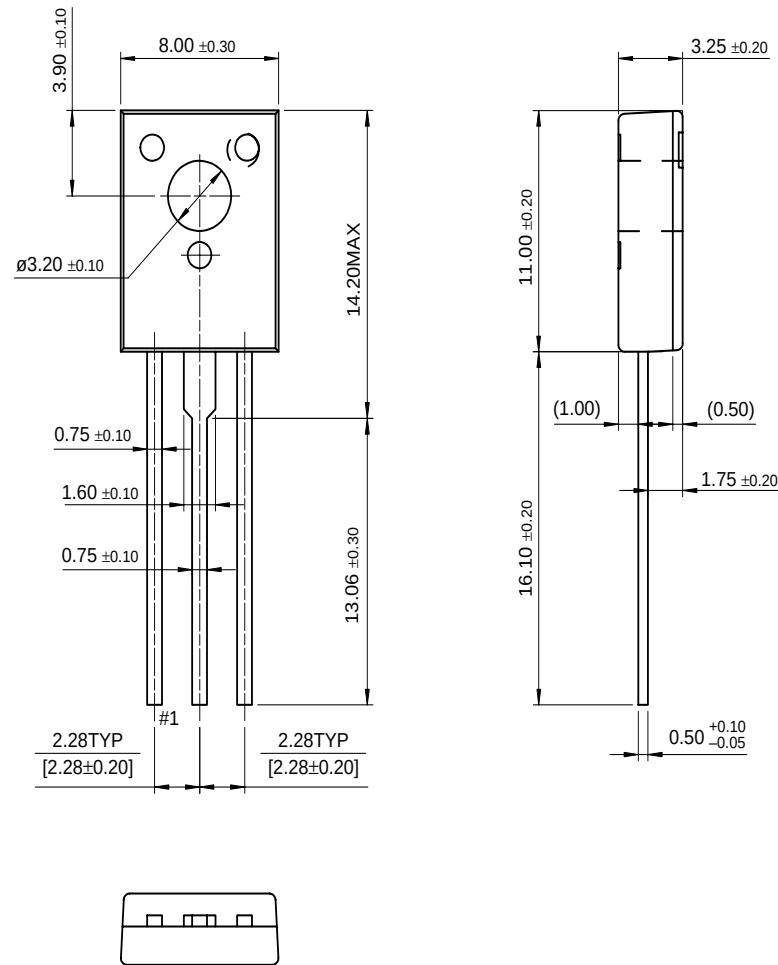


Figure 6. Power Derating

Package Dimensions

TO-126



Dimensions in Millimeters

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