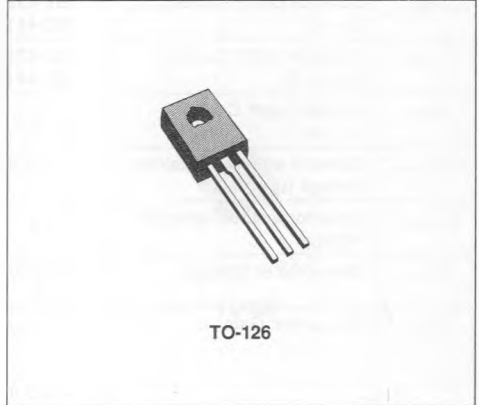


MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

DESCRIPTION

The BD439 and BD441 are silicon epitaxial-base NPN power transistors in Jedec TO-126 plastic package, intended for use in power linear and switching applications.

The complementary PNP types are the BD440 and BD442 respectively.



INTERNAL SCHEMATIC DIAGRAMS



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	Value		Unit
			BD439 BD440	BD441 BD442	
V_{CBO}	Collector-base Voltage ($I_E = 0$)		60	80	V
V_{CES}	Collector-emitter Voltage ($V_{BE} = 0$)		60	80	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)		60	80	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)		5		V
I_C	Collector Current		4		A
I_{CM}	Collector Peak Current ($t \leq 10$ ms)		7		A
I_B	Base Current		1		A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C		36		W
T_{stg}	Storage Temperature		- 65 to 150		°C
T_j	Junction Temperature		150		°C

* For PNP types voltage and current values are negative.

THERMAL DATA

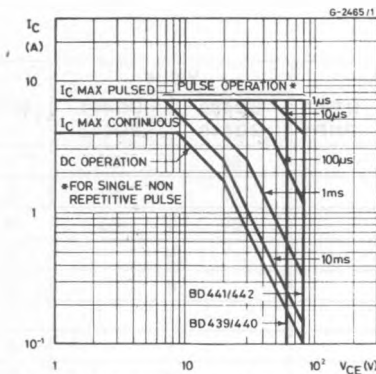
$R_{th j-case}$	Thermal Resistance Junction-case	Max	3.5	$^{\circ}C/W$
$R_{th j-amb}$	Thermal Resistance Junction-ambient	Max	100	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current ($I_E = 0$)	for BD439/40 $V_{CB} = 60 V$ for BD441/42 $V_{CB} = 80 V$			100 100	μA μA
I_{CES}	Collector Cutoff Current ($V_{BE} = 0$)	for BD439/40 $V_{CE} = 60 V$ for BD441/42 $V_{CE} = 80 V$			100 100	μA μA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5 V$			1	mA
$V_{CE0(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 100 mA$ for BD439/40 for BD441/42	60 80			V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 2 A$ $I_B = 0.2 A$			0.8	V
V_{BE}^*	Base-emitter Voltage	$I_C = 10 mA$ $V_{CE} = 5 V$ $I_C = 2 A$ $V_{CE} = 1 V$		0.58	1.5	V V
h_{FE}^*	DC current Gain	$I_C = 10 mA$ $V_{CE} = 5 V$ for BD439/40 for BD441/42 $V_{CE} = 1 V$ $I_C = 500 mA$ $V_{CE} = 1 V$ for BD439/40 for BD441/42 $V_{CE} = 1 V$ $I_C = 2 A$ $V_{CE} = 1 V$ for BD439/40 for BD441/42	20 15 40 40 25 15	130 130 140 140		
h_{FE1}/h_{FE2}^*	Matched Pair	$I_C = 500 mA$ $V_{CE} = 1 V$			1.4	
f_T	Transition Frequency	$I_C = 250 mA$ $V_{CE} = 1 V$	3			MHZ

* Pulsed : pulse duration = 300 μs , duty cycle $\leq 1.5\%$.
For PNP types voltage and current values are negative.

Safe Operating Areas.



For the others characteristics curve see the BD433/BD434 series.