



BD439/BD440 BD441/BD442

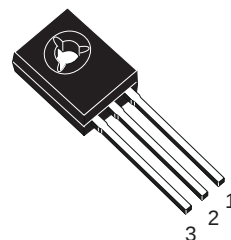
COMPLEMENTARY SILICON POWER TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES

DESCRIPTION

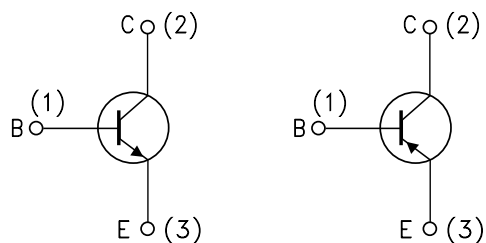
The BD439 and BD441 are silicon epitaxial-base NPN power transistors in Jedec SOT-32 plastic package, intended for use in power linear and switching applications.

The complementary PNP types are BD440, and BD442 respectively.



SOT-32

INTERNAL SCHEMATIC DIAGRAM



SC06960

SC08810

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	PNP	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	BD439	BD440	
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 Dissipation at $T_c \leq 25$ °C	36		W
T_{stg}	Storage Temperature	-65 to 150		°C
T_j	Max. Operating Junction Temperature	150		°C

For PNP types voltage and current values are negative.

BD439/BD440/BD441/BD442**THERMAL DATA**

R _{thj-case}	Thermal Resistance Junction-case	Max	3.5	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	100	°C/W

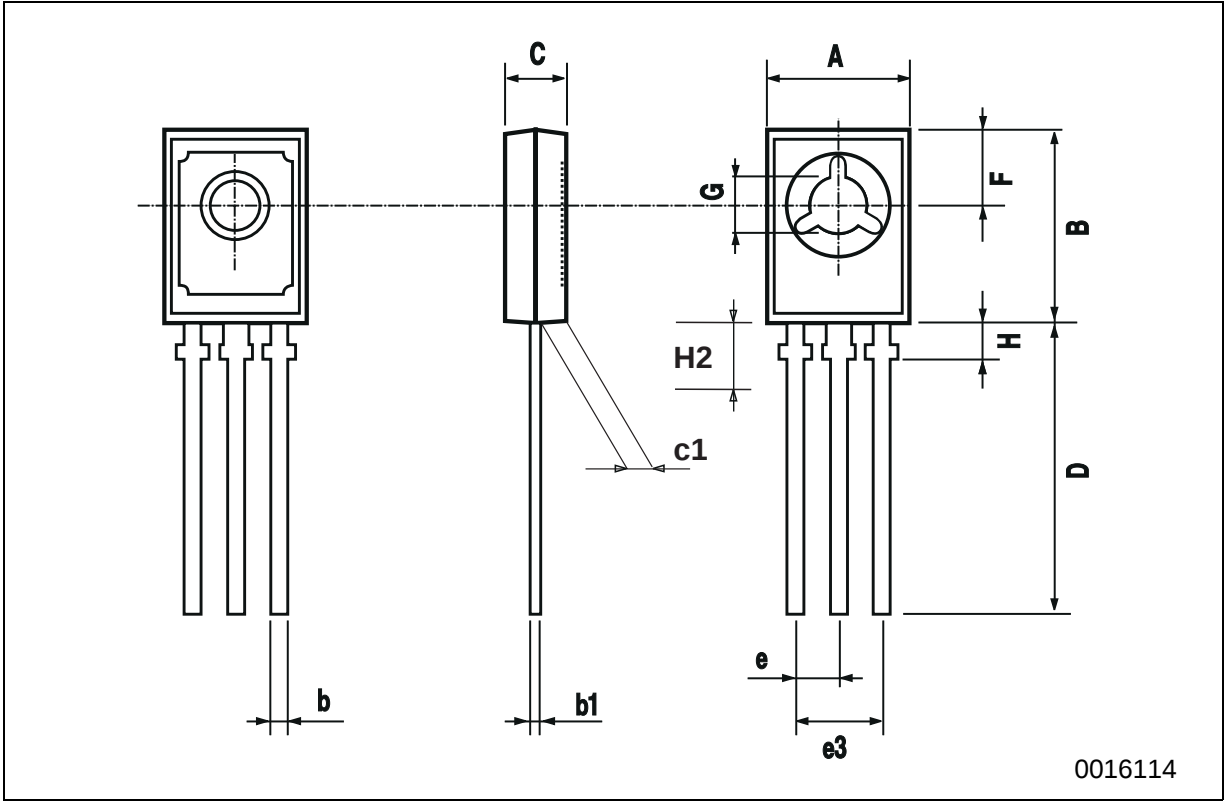
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cut-off Current (I _E = 0)	for BD439/440 for BD441/442	V _{CB} = 60 V V _{CB} = 80 V			100 100	μA μA
I _{CES}	Collector Cut-off Current (V _{BE} = 0)	for BD439/440 for BD441/442	V _{CB} = 60 V V _{CB} = 80 V			100 100	μA μA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V				1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 100 mA	for BD439/440 for BD441/442	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 I _C = 2 A	V _{CE} = 5 V V _{CE} = 1 V		0.58	1.5	V V
h _{FE*}	DC Current Gain	I _C = 10 mA I _C = 500 mA I _C = 2 A	V _{CE} = 5 V for BD439/440 for BD441/442 V _{CE} = 1 V for BD439/440 for BD441/442 V _{CE} = 1 V for BD439/440 for BD441/442	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 ms, duty cycle 1.5 %

SOT-32 (TO-126) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		10.8	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.040		0.106
c1	1.0		1.3	0.039		0.050
D	15.4		16.0	0.606		0.629
e		2.2			0.087	
e3	4.15		4.65	0.163		0.183
F		3.8			0.150	
G	3		3.2	0.118		0.126
H			2.54			0.100



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