



BD439/BD440 BD441/BD442

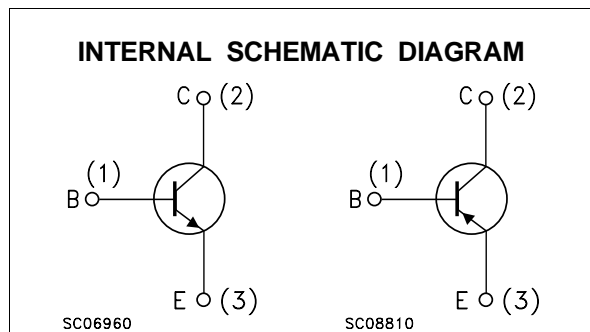
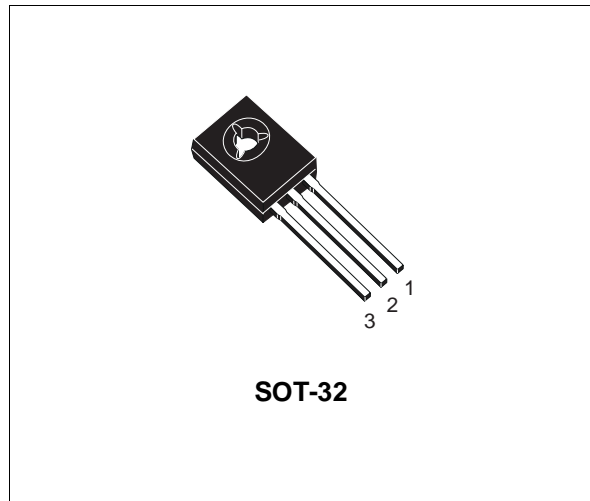
COMPLEMENTARY SILICON POWER TRANSISTORS

- 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.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit	
		NPN	BD439		BD441
		PNP	BD440	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 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

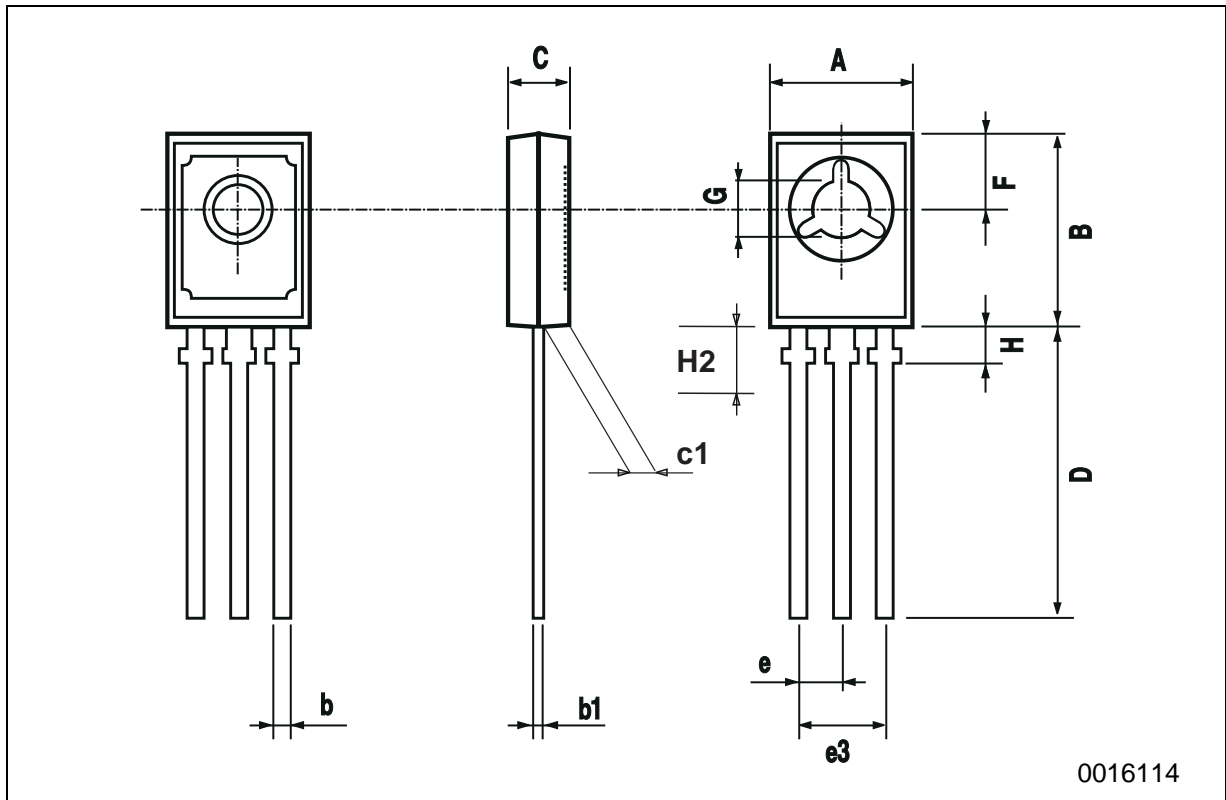
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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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