

# BD439/BD440 BD441/BD442

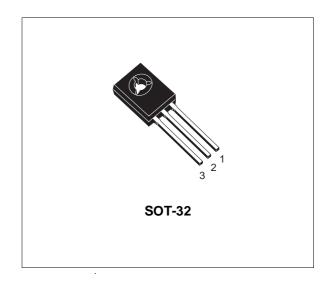
## COMPLEMENTARY SILICON POWER TRANSISTORS

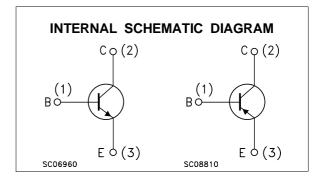
- SGS-THOMSON PREFERRED SALESTYPES
- COMPLEMENTARY PNP NPN DEVICES

#### **DESCRIPTION**

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

The complementary PNP types are BD440, and BD442 respectively.





#### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter		Value		
		NPN	BD439	BD441	
		PNP	BD440	BD442	
$V_{CBO}$	Collector-Base Voltage (I <sub>E</sub> = 0)		60	80	V
$V_{CES}$	Collector-Emitter Voltage (V <sub>BE</sub> = 0)		60	80	V
$V_{CEO}$	Collector-Emitter Voltage (I <sub>B</sub> = 0)		60	80	V
$V_{EBO}$	Emitter-Base Voltage (I <sub>C</sub> = 0)		5		V
Ic	Collector Current		4	4	Α
I <sub>CM</sub>	Collector Peak Current (t ≤ 10 ms)		7		Α
$I_{B}$	Base Current		1		Α
$P_{tot}$	Total Dissipation at T <sub>c</sub> ≤ 25 °C	36		W	
$T_{stg}$	Storage Temperature	-65 to 150		o 150	°C
Tj	Max. Operating Junction Temperature		15	°C	

For PNP types voltage and current values are negative.

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#### THERMAL DATA

R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	3.5	°C/W	l
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W	l

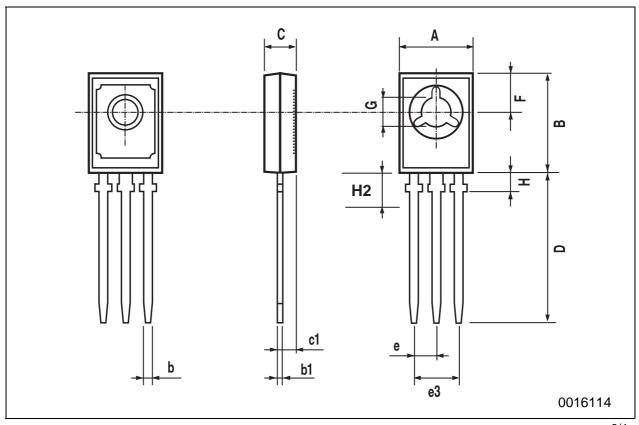
### **ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25$ $^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test	Conditions	Min.	Тур.	Max.	Unit
Ісво	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>BD439/440</b> for <b>BD441/442</b>	05			100 100	μA μA
Ices	Collector Cut-off Current (V <sub>BE</sub> = 0)	for <b>BD439/440</b> for <b>BD441/442</b>	05			100 100	μA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V				1	mA
V <sub>CEO(sus)</sub> *	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA	for <b>DB439/440</b> for <b>BD441/442</b>	60 80			V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 2 A	$I_B = 0.2 A$			0.8	V
V <sub>BE</sub> *	Base-Emitter Voltage	I <sub>C</sub> = 10 mA I <sub>C</sub> = 2 A	$V_{CE} = 5 V$ $V_{CE} = 1 V$		0.58	1.5	V
h <sub>FE</sub> *	DC Current Gain	$I_C = 10 \text{ mA}$ $I_C = 500 \text{ mA}$ $I_C = 2 \text{ A}$	V <sub>CE</sub> = 5 V for BD439/440 for BD441/442 V <sub>CE</sub> = 1 V for BD439/440 for BD441/442 V <sub>CE</sub> = 1 V for BD439/440 for BD441/442	20 15 40 40 25 15	130 130 140 140		
h <sub>FE1</sub> /h <sub>FE2</sub> *	Matched Pair	IC = 500 mA	V <sub>CE</sub> = 1 V			1.4	
f <sub>T</sub>	Transition frequency	I <sub>C</sub> = 250 mA	V <sub>CE</sub> = 1 V	3			MHz

<sup>\*</sup> Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

# SOT-32 (TO-126) MECHANICAL DATA

DIM.	mm			inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А	7.4		7.8	0.291		0.307	
В	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	
С	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	
е		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	
Н			2.54			0.100	
H2		2.15			0.084		



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