SGS-THOMSON MICROELECTRONICS

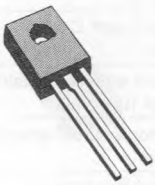
BD439-BD440
BD441-BD442

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.



TO-126

INTERNAL SCHEMATIC DIAGRAMS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP*	Value BD439 BD440	Value BD441 BD442	Unit
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 ≤ 10 ms)		7		A
I_B	Base Current		1		A
P_{tot}	Total Power Dissipation at T_{case} ≤ 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

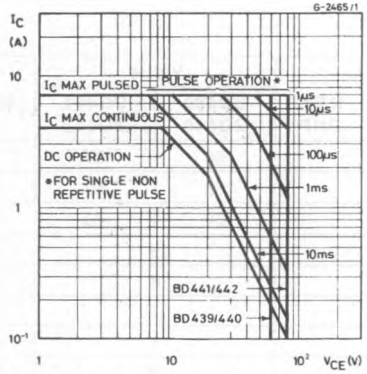
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	3.5	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	100	°C/W

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

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	for **BD439/40**	V_{CB} = 60 V			100	µA
		for **BD441/42**	V_{CB} = 80 V			100	µA
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	for **BD439/40**	V_{CE} = 60 V			100	µA
		for **BD441/42**	V_{CE} = 80 V			100	µA
I_{EBO}	Emitter Cutoff 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 **BD439/40**	60			V
			for **BD441/42**	80			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		0.58		V
		I_C = 2 A	V_{CE} = 1 V			1.5	V
h_{FE}*	DC current Gain	I_C = 10 mA	V_{CE} = 5 V				
			for **BD439/40**	20	130		
			for **BD441/42**	15	130		
		I_C = 500 mA	V_{CE} = 1 V				
			for **BD439/40**	40	140		
			for **BD441/42**	40	140		
		I_C = 2 A	V_{CE} = 1 V				
			for **BD439/40**	25			
			for **BD441/42**	15			
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 ≤ 1.5 %.
For PNP types voltage and current values are negative.

Safe Operating Areas.



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