

Silicon NPN Transistor

BD439

Medium Power Linear and Switching

60V / 4A

DATASHEET

OEM –SGS Ates

Source: SGS Ates Databook 1977

EPITAXIAL-BASE NPN

BD 439
BD 441

MEDIUM POWER LINEAR AND SWITCHING APPLICATIONS

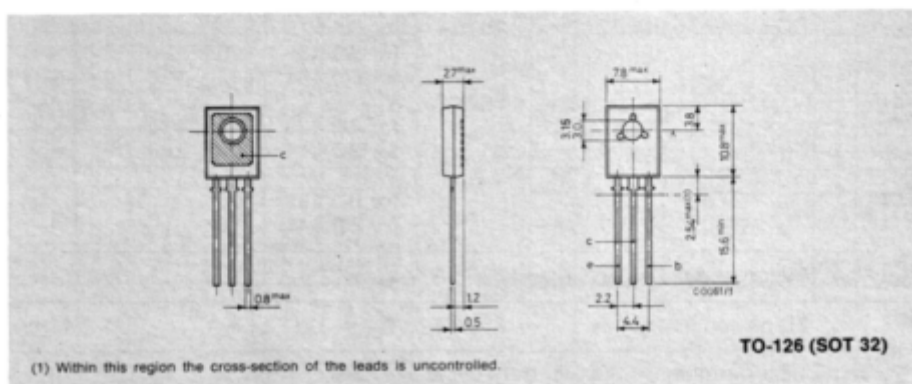
The BD 439 and BD 441 are silicon epitaxial-base NPN power transistors in Jedec TO-126 plastic package, intended for use in power linear and switching applications. The complementary PNP types are the BD 440 and BD 442 respectively.

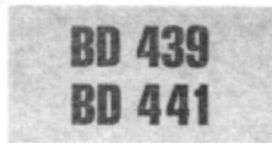
ABSOLUTE MAXIMUM RATINGS

		BD 439	BD 441
V_{CBO}	Collector-base voltage ($I_E = 0$)	60V	80V
V_{CES}	Collector-emitter voltage ($V_{BE} = 0$)	60V	80V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	60V	80V
V_{EBO}	Emitter-base voltage ($I_C = 0$)		5V
I_C	Collector current		4A
I_{CM}	Collector peak current ($t \leq 10ms$)		7A
I_B	Base current		1A
P_{tot}	Total power dissipation at $T_{case} \leq 25^\circ C$		36 W
T_{stg}	Storage temperature		-65 to $150^\circ C$
T_j	Junction temperature		$150^\circ C$

MECHANICAL DATA

Dimensions in mm





THERMAL DATA

$R_{th\ j-case}$	Thermal resistance junction-case	max	3.5	°C/W
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	100	°C/W

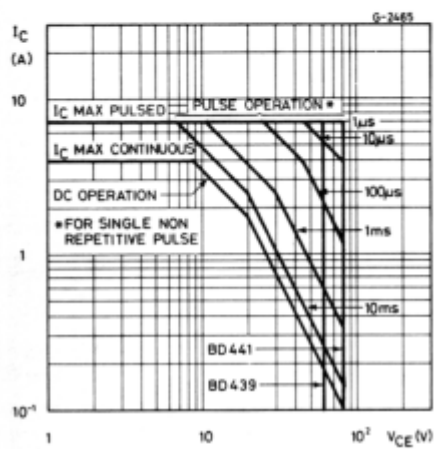
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current ($I_E = 0$)	for BD439 for BD441	$V_{CB} = 60V$ $V_{CB} = 80V$	100 100	μA μA
I_{CES}	Collector cutoff current ($V_{BE} = 0$)	for BD439 for BD441	$V_{CE} = 60V$ $V_{CE} = 80V$	100 100	μA μA
I_{EBO}	Emitter cutoff current ($I_C = 0$)	$V_{EB} = 5V$		1	mA
$V_{CEO(sus)}^*$	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 100mA$	for BD 439 for BD 441	60 80	V V
$V_{CE(sat)}^*$	Collector-emitter saturation voltage	$I_C = 2A$	$I_B = 0.2A$	0.8	V
V_{BE}^*	Base-emitter voltage	$I_C = 10\ mA$ $I_C = 2\ A$	$V_{CE} = 5V$ $V_{CE} = 1V$	0.58 1.5	V V
h_{FE}^*	DC current gain	$I_C = 10\ mA$ $I_C = 500mA$ $I_C = 2\ A$	$V_{CE} = 5V$ for BD 439 for BD 441 $V_{CE} = 1V$ for BD 439 for BD 441 $V_{CE} = 1V$ for BD 439 for BD 441	20 130 15 130 40 140 40 140 25 15	— — — — — —
h_{FE1}/h_{FE2}^*	Matched pair	$I_C = 500mA$	$V_{CE} = 1V$	1.4	—
f_T	Transition frequency	$I_C = 250mA$	$V_{CE} = 1V$	3	MHz

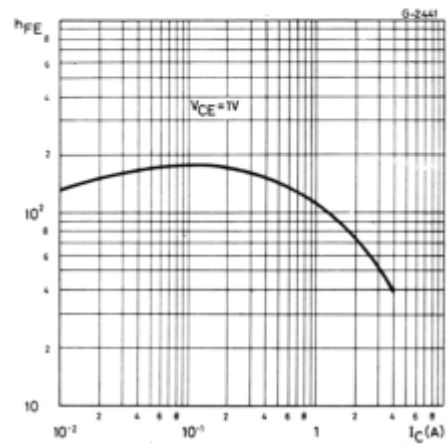
* Pulsed: pulse duration = 300 μs , duty cycle = 1.5%

BD 439
BD 441

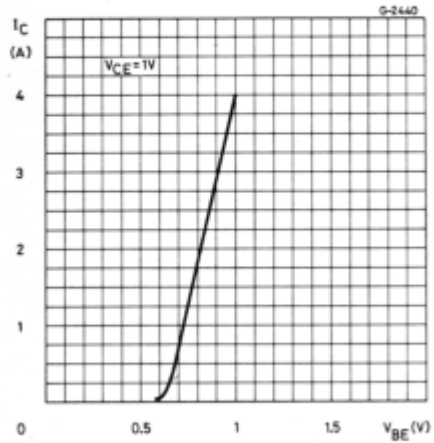
Safe operating areas



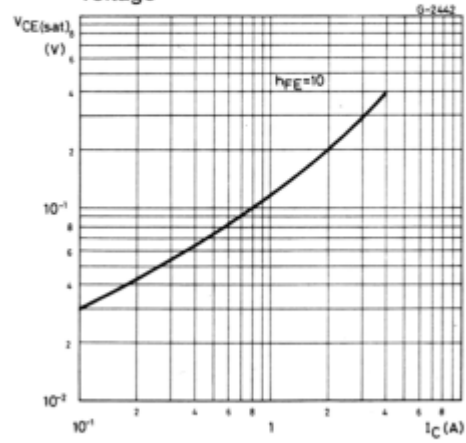
DC current gain



DC transconductance

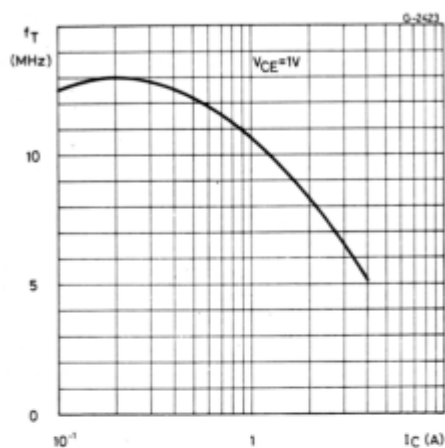


Collector-emitter saturation voltage

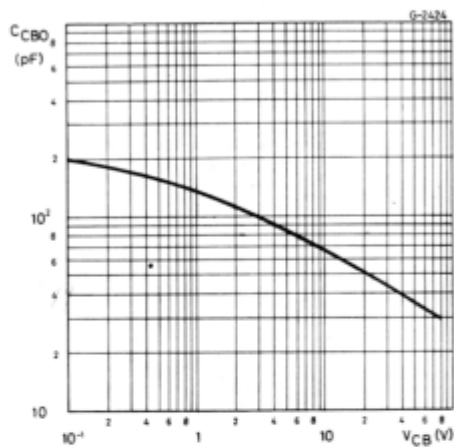


BD 439
BD 441

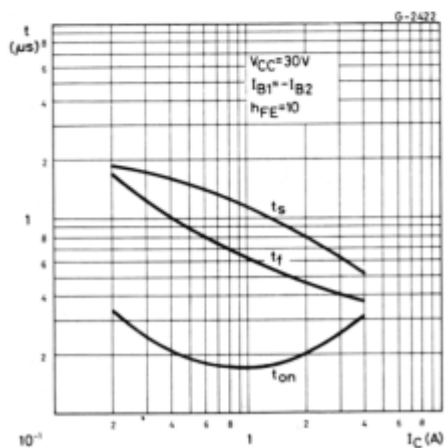
Transition frequency



Collector-base capacitance



Saturated switching characteristics



Power rating chart

