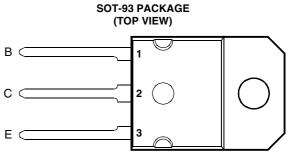
# BD246, BD246A, BD246B, BD246C PNP SILICON POWER TRANSISTORS

# BOURNS®

- Designed for Complementary Use with the BD245 Series
- 80 W at 25°C Case Temperature
- 10 A Continuous Collector Current
- 15 A Peak Collector Current
- Customer-Specified Selections Available



Pin 2 is in electrical contact with the mounting base.

#### absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING	SYMBOL	VALUE	UNIT	
	BD246		-55	
Collector-emitter voltage ( $R_{BE} = 100 \Omega$ )	BD246A	V	-70	v
	BD246B	VCER	-90	v
	BD246C		-115	
	BD246		-45	
Collector-emitter voltage ( $I_C = -30$ mA)	BD246A	V	-60	V
	BD246B	V <sub>CEO</sub>	-80	
	BD246C		-100	
Emitter-base voltage		V <sub>EBO</sub>	-5	V
Continuous collector current		۱ <sub>C</sub>	-10	A
Peak collector current (see Note 1)		I <sub>CM</sub>	-15	A
Continuous base current		I <sub>B</sub>	-3	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)	P <sub>tot</sub>	80	W	
Continuous device dissipation at (or below) 25°C free air temperature (see Note	P <sub>tot</sub>	3	W	
Unclamped inductive load energy (see Note 4)		½LI <sub>C</sub> ²	62.5	mJ
Operating junction temperature range		Тj	-65 to +150	°C
Storage temperature range		T <sub>stg</sub>	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds		TL	250	°C

NOTES: 1. This value applies for  $t_p \leq 0.3$  ms, duty cycle  $\leq 10\%.$ 

2. Derate linearly to 150°C case temperature at the rate of 0.64 W/°C.

3. Derate linearly to 150°C free air temperature at the rate of 24 mW/°C.

4. This rating is based on the capability of the transistor to operate safely in a circuit of: L = 20 mH,  $I_{B(on)}$  = -0.4 A,  $R_{BE}$  = 100  $\Omega$ ,  $V_{BE(off)}$  = 0,  $R_S$  = 0.1  $\Omega$ ,  $V_{CC}$  = -20 V.

### PRODUCT INFORMATION

# BD246, BD246A, BD246B, BD246C PNP SILICON POWER TRANSISTORS



#### electrical characteristics at 25°C case temperature

PARAMETER			TEST CONDITION	IS	MIN			UNIT
V <sub>(BR)CEO</sub>	Collector-emitter breakdown voltage	I <sub>C</sub> = -30 mA (see Note 5)	I <sub>B</sub> = 0	BD246 BD246A BD246B	-45 -60 -80			V
I <sub>CES</sub>	Collector-emitter cut-off current	$V_{CE} = -55 V$ $V_{CE} = -70 V$ $V_{CE} = -90 V$ $V_{CE} = -115 V$		BD246C BD246 BD246A BD246B BD246B BD246C	-100		-0.4 -0.4 -0.4 -0.4	mA
I <sub>CEO</sub>	Collector cut-off current	$V_{CE} = -30 V$ $V_{CE} = -60 V$	I <sub>B</sub> = 0 I <sub>B</sub> = 0	BD246/246A BD246B/246C			-0.7 -0.7	mA
I <sub>EBO</sub>	Emitter cut-off current	V <sub>EB</sub> = -5 V	I <sub>C</sub> = 0				-1	mA
h <sub>FE</sub>	Forward current transfer ratio	$V_{CE} = -4 V$ $V_{CE} = -4 V$ $V_{CE} = -4 V$		(see Notes 5 and 6)	40 20 4			
V <sub>CE(sat)</sub>	Collector-emitter saturation voltage	I <sub>B</sub> = -0.3 A I <sub>B</sub> = -2.5 A	0	(see Notes 5 and 6)			-1 -4	V
V <sub>BE</sub>	Base-emitter voltage	$V_{CE} = -4 V$ $V_{CE} = -4 V$	I <sub>C</sub> = -3 A I <sub>C</sub> = -10 A	(see Notes 5 and 6)			-1.6 -3	V
h <sub>fe</sub>	Small signal forward current transfer ratio	V <sub>CE</sub> = -10 V	I <sub>C</sub> = -0.5 A	f = 1 kHz	20			
h <sub>fe</sub>	Small signal forward current transfer ratio	V <sub>CE</sub> = -10 V	I <sub>C</sub> = -0.5 A	f = 1 MHz	3			

NOTES: 5. These parameters must be measured using pulse techniques,  $t_p = 300 \ \mu s$ , duty cycle  $\leq 2\%$ .

6. These parameters must be measured using voltage-sensing contacts separate from the current carrying contacts.

#### thermal characteristics

PARAMETER	MIN	ТҮР	MAX	UNIT
R <sub>0JC</sub> Junction to case thermal resistance			1.56	°C/W
R <sub>eJA</sub> Junction to free air thermal resistance			42	°C/W

#### resistive-load-switching characteristics at 25°C case temperature

	PARAMETER	TEST CONDITIONS <sup>†</sup>			MIN	ТҮР	MAX	UNIT
t <sub>on</sub>	Turn-on time	I <sub>C</sub> = -1 A	I <sub>B(on)</sub> = -0.1 A	$I_{B(off)} = 0.1 A$		0.2		μs
t <sub>off</sub>	Turn-off time	$V_{BE(off)} = 3.7 V$	$R_L = 20 \Omega$	$t_p$ = 20 µs, dc $\leq$ 2%		0.8		μs

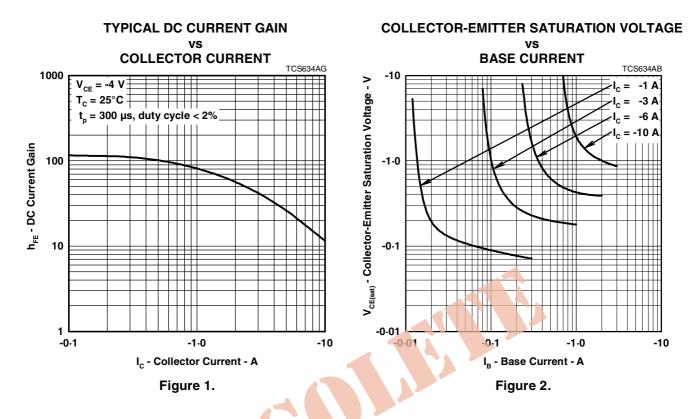
<sup>†</sup> Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

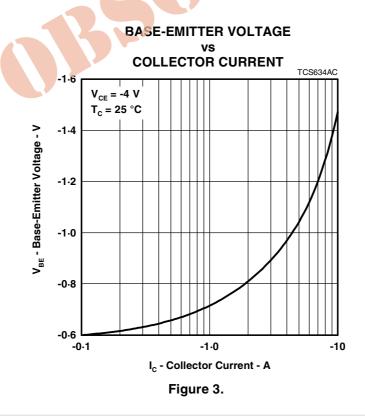




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### **TYPICAL CHARACTERISTICS**

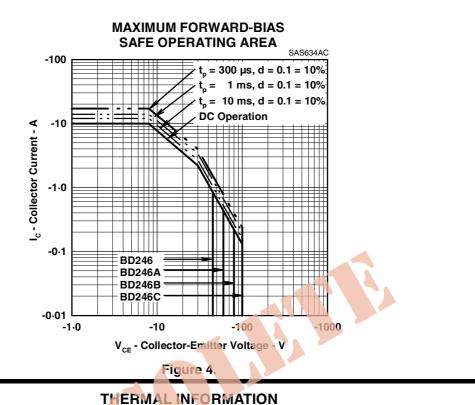




### PRODUCT INFORMATION

JUNE 1973 - REVISED SEPTEMBER 2002 Specifications are subject to change without notice.

#### MAXIMUM SAFE OPERATING REGIONS



MAXIMUM POWER DISSIPATION VS **CASE TEMPERATURE** TIS633AA 100  $\mathbf{P}_{tot}$  - Maximum Power Dissipation - W 80 60 40 20 0 0 25 50 75 100 150 125 T<sub>c</sub> - Case Temperature - °C

