

# COMPLEMENTARY SILICON PLASTIC POWER TRANSISTORS

... designed for use in general purpose power amplifier and switching applications.

## FEATURES:

- \* Collector-Emitter Sustaining Voltage -  
 $V_{CEO(MIN)} = 45V$ (Min)- BD241,BD242  
 60V(Min)- BD241A,BD242A  
 80V(Min)- BD241B,BD242B  
 100V(Min)- BD241C,BD242C

\* DC Current Gain  $hFE = 25$ (Min)@  $I_C = 1.0A$

\* Current Gain-Bandwidth Product  $fT = 3.0$  MHz (Min)@  $I_C = 500mA$

Boca Semiconductor Corp.  
BSC

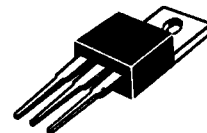
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NPN	PNP
BD241	BD242
BD241A	BD242A
BD241B	BD242B
BD241C	BD242C

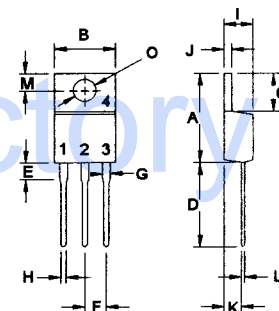
3 AMPERE  
COMPLEMENTARY SILICON  
POWER TRANSISTORS  
45 -100 VOLTS  
40 WATTS

## MAXIMUM RATINGS

Characteristic	Symbol	BD241	BD241A	BD241B	BD241C	Unit
		BD242	BD242A	BD242B	BD242C	
Collector-Emitter Voltage	$V_{CEO}$	45	60	80	100	V
Collector-Base Voltage	$V_{CBO}$	55	70	90	115	V
Emitter-Base Voltage	$V_{EBO}$	5.0				V
Collector Current - Continuous - Peak	$I_C$	3.0 5.0				A
Base Current	$I_B$	1.0				A
Total Power Dissipation@ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	40 0.32				W W/ $^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150				$^\circ C$



TO-220



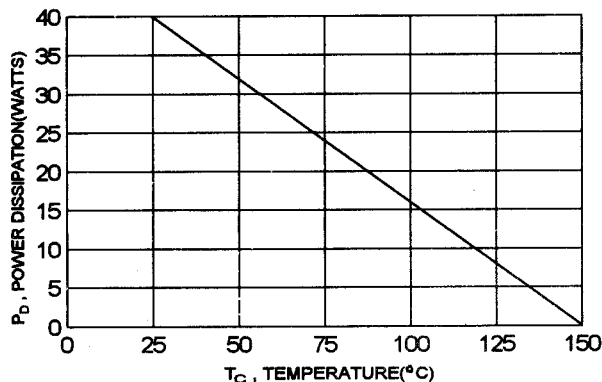
PIN 1.BASE  
2.COLLECTOR  
3.EMITTER  
4.COLLECTOR(CASE)

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	3.125	$^\circ C/W$

DIM	MILLIMETERS	
	MIN	MAX
A	14.98	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

FIGURE -1 POWER DERATING



**ELECTRICAL CHARACTERISTICS** (  $T_C = 25^\circ\text{C}$  unless otherwise noted )

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Sustaining Voltage(1) ( $I_C = 30\text{mA}, I_B = 0$ )	BD241,BD242 BD241A,BD242A BD241B,BD242B BD241C,BD242C	$V_{CEO(sus)}$	45 60 80 100	V
Collector Cutoff Current ( $V_{CE} = 30\text{V}, I_B = 0$ ) ( $V_{CE} = 60\text{V}, I_B = 0$ )	BD241/42/41A/42A BD241B/42B/41C/42C	$I_{CEO}$	0.3 0.3	mA
Collector Cutoff Current ( $V_{CE} = 45\text{V}, V_{EB} = 0$ ) ( $V_{CE} = 60\text{V}, V_{EB} = 0$ ) ( $V_{CE} = 80\text{V}, V_{EB} = 0$ ) ( $V_{CE} = 100\text{V}, V_{EB} = 0$ )	BD241/42 BD241A/42A BD241B/42B BD241C/42C	$I_{CES}$	0.2 0.2 0.2 0.2	mA
Emitter Cutoff Current ( $V_{EB} = 5\text{V}, I_C = 0$ )		$I_{EBO}$	1.0	mA

**ON CHARACTERISTICS (1)**

DC Current Gain ( $V_{CE} = 4.0\text{V}, I_C = 1.0\text{A}$ ) ( $V_{CE} = 4.0\text{V}, I_C = 3.0\text{A}$ )		hFE	25 10	
Collector-Emitter Saturation Voltage ( $I_C = 3.0\text{A}, I_B = 600\text{mA}$ )		$V_{CE(sat)}$	1.2	V
Base-Emitter On Voltage ( $I_C = 3.0\text{A}, V_{CE} = 4.0\text{V}$ )		$V_{BE(On)}$	1.8	V

**DYNAMIC CHARACTERISTICS**

Current Gain-Bandwidth Product (2) ( $I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$ )		$f_T$	3.0	MHz
Small-Signal Current Gain ( $I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{KHz}$ )		hfe	20	

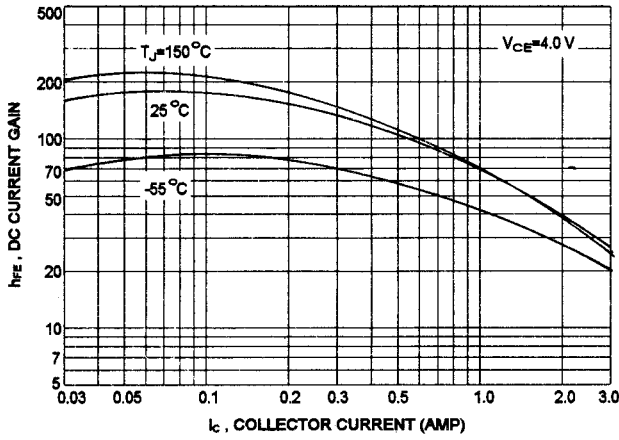
(1) Pulse Test: Pulse width =  $300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ (2)  $f_T = |h_{fe}| \cdot f_{test}$ 

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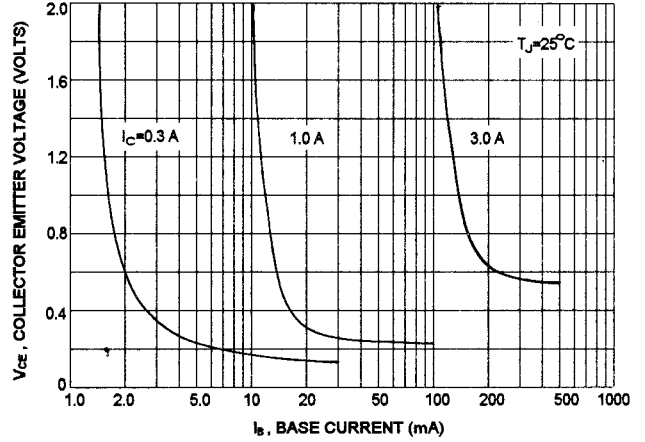
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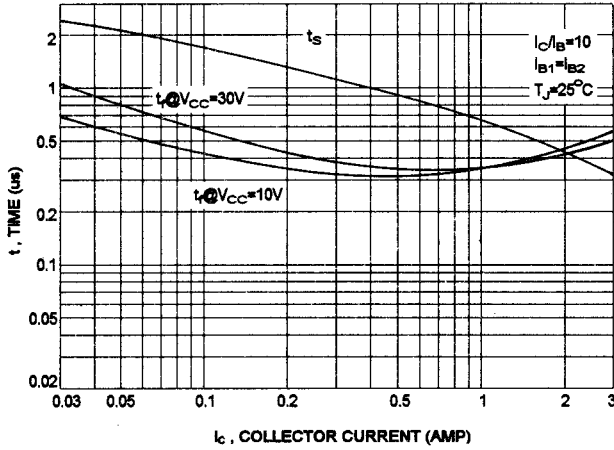
DC CURRENT GAIN



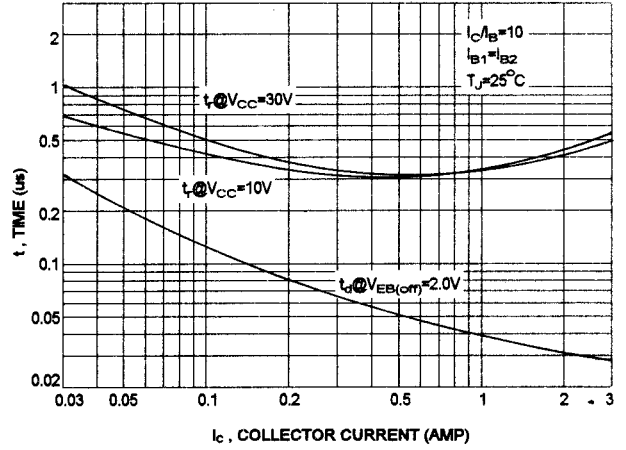
COLLECTOR SATURATION REGION



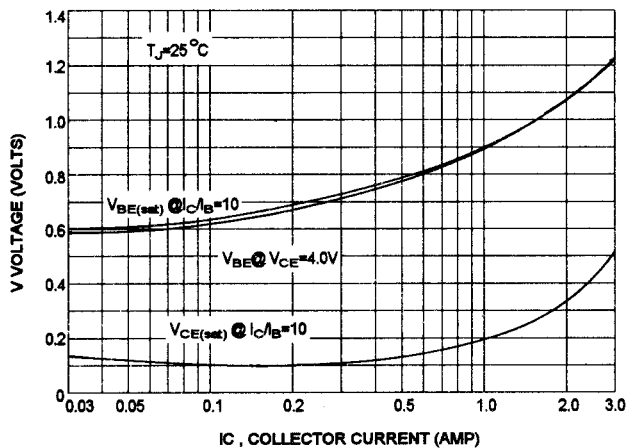
TURN-OFF TIME



TURN-ON TIME



"ON" VOLTAGES



ACTIVE REGION SAFE OPERATING AREA

