

COMPLEMENTARY SILICON POWER TRANSISTORS

...designed for various specific and general purpose application such as; output and driver stages of amplifiers operating at frequencies from DC to greater than 1.0MHz series, shunt and switching regulators; low and high frequency inverters/converters and many others.

FEATURES:

- * Very Low Collector Saturation Voltage
- * Excellent Linearity
- * Fast Switching
- * PNP Values are Negative, Observe Proper Polarity.

Boca Semiconductor Corp.

BSC

<http://www.bocasemi.com>

NPN
D44C
Series

PNP
D45C
Series

4 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS
30-80 VOLTS
30 WATTS

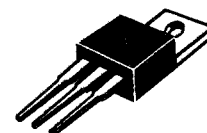
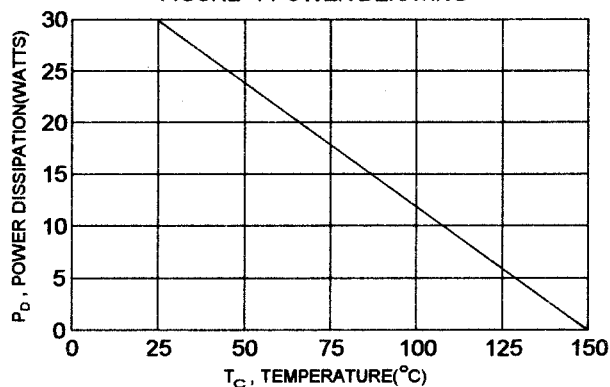
MAXIMUM RATINGS

Characteristic	Symbol	D44C1,2,3 D45C1,2,3	D44C4,5,6 D45C4,5,6	D44C7,8,9 D45C7,8,9	D44C10,11,12 D45C10,11,12	Unit
Collector-Emitter Voltage	V_{CEO}	30	45	60	80	V
Collector-Emitter Voltage	V_{CES}	40	55	70	90	V
Emitter-Base Voltage	V_{EBO}	5.0				V
Collector Current - Continuous Peak	I_C I_{CM}	4.0 6.0				A
Base Current	I_B	1.0				A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	30 0.24				W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150				$^\circ\text{C}$

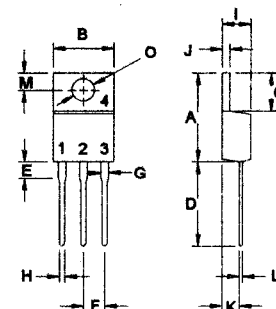
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta JC}$	4.2	$^\circ\text{C/W}$

FIGURE -1 POWER DERATING



TO-220



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

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	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

D44C Series NPN / D45C Series PNP
ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Base Cutoff Current ($V_{CE} = \text{Rated } V_{CES}$)	I_{CES}		10	μA
Emitter-Base Cutoff Current ($V_{EB} = 5.0\text{ V}$, $I_C = 0$)	I_{EBO}		100	μA

ON CHARACTERISTICS(1)

DC Current Gain ($I_C = 0.2\text{ A}$, $V_{CE} = 1.0\text{ V}$)	D44C3,6,9,12/ D45C3,6,9,12 D44C2,5,8,11 D45C2,5,8,11	h_{FE}	40 100 40	120 220 120	
($I_C = 1.0\text{ A}$, $V_{CE} = 1.0\text{ V}$)	D44C1,4,7,10/D45C1,4,7,10 D44C1,4,7,10/D45C1,4,7,10 D45C2,5,8,11		25 10 20		
($I_C = 2.0\text{ A}$, $V_{CE} = 1.0\text{ V}$)	D44C3,6,9,12/ D45C3,6,9,12 D44C2,5,8,11		20 20		
Collector-Emitter Saturation Voltage ($I_C = 1.0\text{ A}$, $I_B = 50\text{ mA}$)	D44C2,3,5,6,8,9,11,12 D45C2,3,5,6,8,9,11,12	$V_{CE(sat)}$		0.5 0.5	V
($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	D44C1,4,7,10/D45C1,4,7,10			0.5	
Base-Emitter Saturation Voltage ($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	All Devices	$V_{BE(sat)}$		1.3	V

DYNAMIC CHARACTERISTICS

Current-Gain Bandwidth Product (2) ($I_C = 20\text{ mA}$, $V_{CE} = 4.0\text{ V}$, $f = 1.0\text{ MHz}$)	D44C Series D45C Series	f_T	50(typ) 40(typ)		MHz
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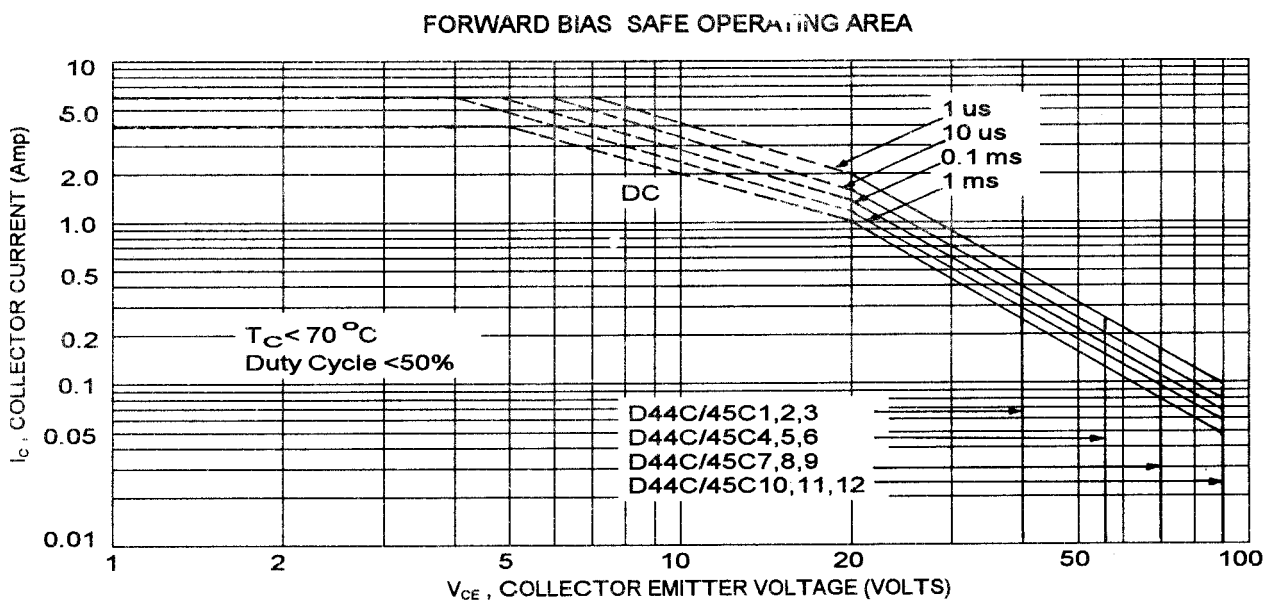
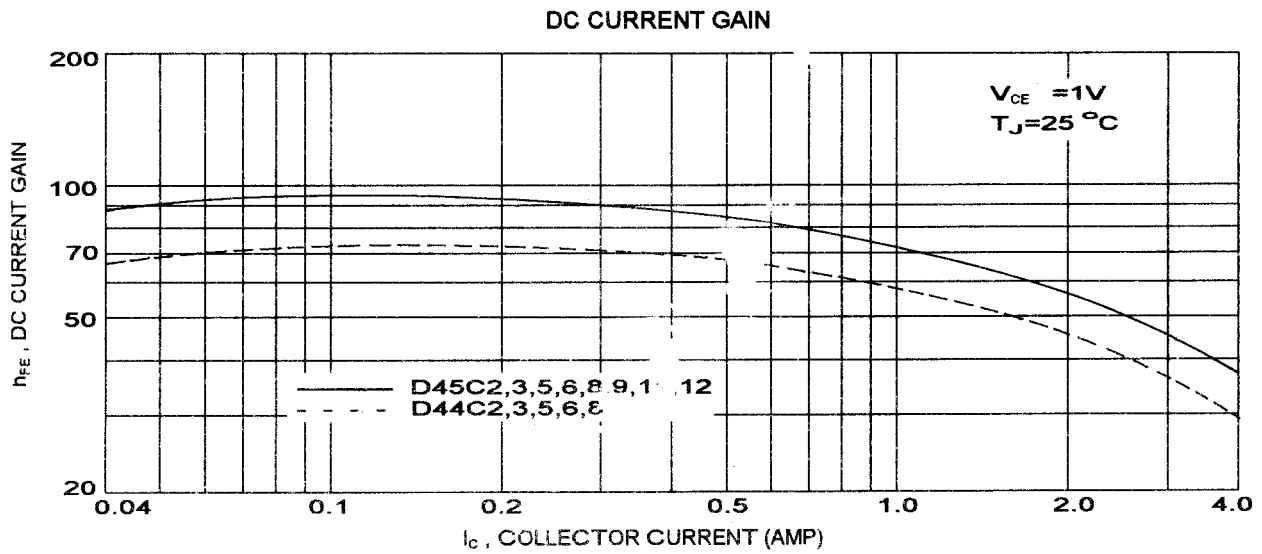
SWITCHING CHARACTERISTICS

Rise Time	$V_{CC} = 20\text{ V}$	D44C Series D45C Series	t_r		0.3 0.2	μs
Storage Time	$I_C = 1.0\text{ A}$,	D44C Series D45C Series	t_s		0.7 0.6	μs
Fall Time	$I_{B1} = -I_{B2} = 100\text{ mA}$	D44C Series D45C Series	t_f		0.4 0.3	μs

(1) Pulse Test: Pulse width = 300 μs , Duty Cycle $\leq 2.0\%$

(2) $f_T = |h_{fe}| \cdot f_{test}$

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