



SOLID STATE INC.

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www.solidstateinc.com

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.

NPN
D44C
Series

PNP
D45C
Series

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

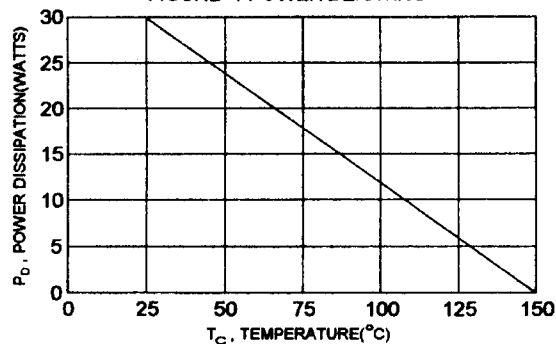
MAXIMUM RATINGS

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_{CE0}	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



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 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 0.5	V
($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	D44C1,4,7,10/D45C1,4,7,10				
Base-Emitter Saturation Voltage ($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	All Devices	$V_{BE(sat)}$		1.3	V

DYAMIC CHARATERISTICS

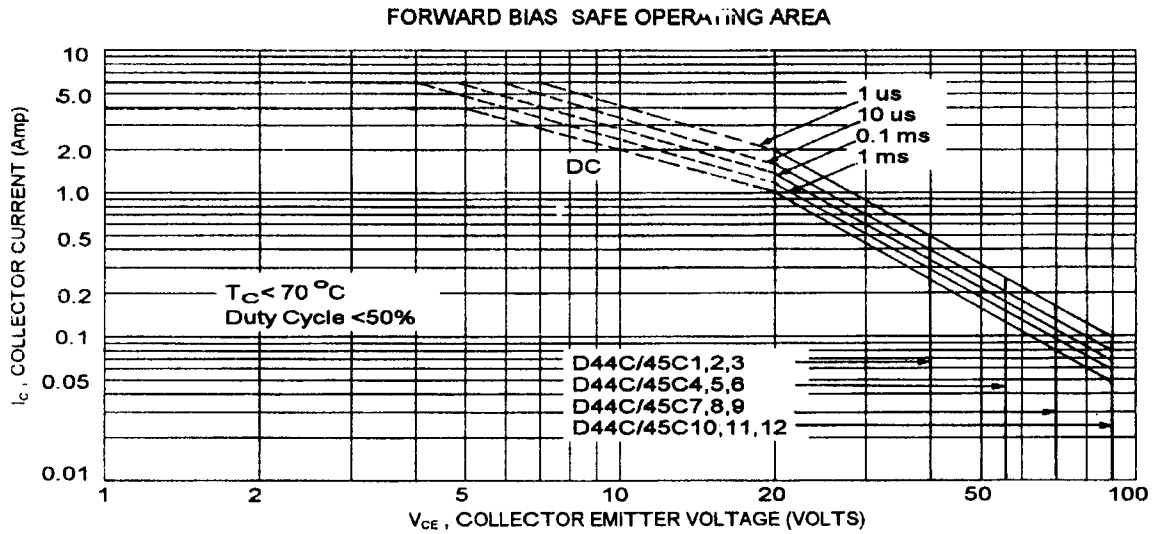
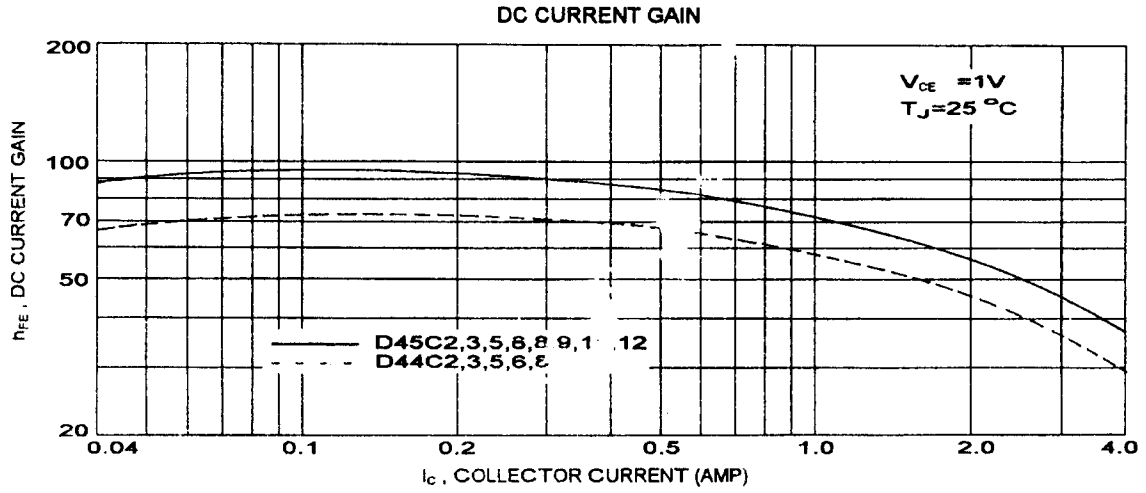
Current-Gain Bandwidth Product (2) ($I_C = 20\text{ mA}$, $V_{CE} = 4.0\text{ V}$, $f = 1.0\text{ MHz}$)	D44C Series D45C Series	f_T	50(typ) 40(typ)		MHz
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SWITCHING CHARATERISTICS

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

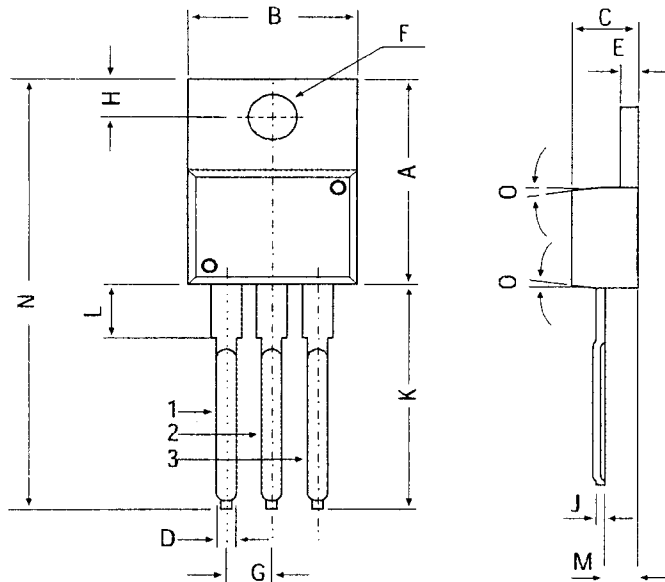
(1) Pulse Test: Pulse width = 300 μs , Duty Cycle $\leq 2.0\%$

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



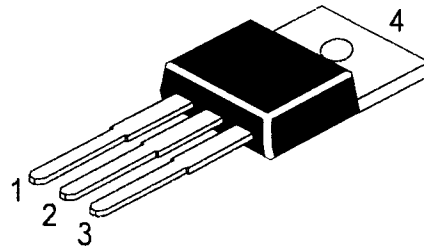
TO-220 Plastic Package

TO-220 Plastic Package



DIM	MIN	MAX
A	14.42	16.51
B	9.63	10.67
C	3.56	4.83
D	—	0.90
E	1.15	1.40
F	3.75	3.88
G	2.29	2.79
H	2.54	3.43
J	—	0.56
K	12.70	14.73
L	2.80	4.07
M	2.03	2.92
N	—	31.24
O	7 DEG	

All dimensions in mm.



Pin Configuration

1. Base
2. Collector
3. Emitter
4. Collector