

## 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:

- \* NPN Complement to D45H PNP
- \* Very Low Collector Saturation Voltage
- \* Excellent Linearity
- \* Fast Switching
- \* PNP Values are Negative, Observe Proper Polarity.

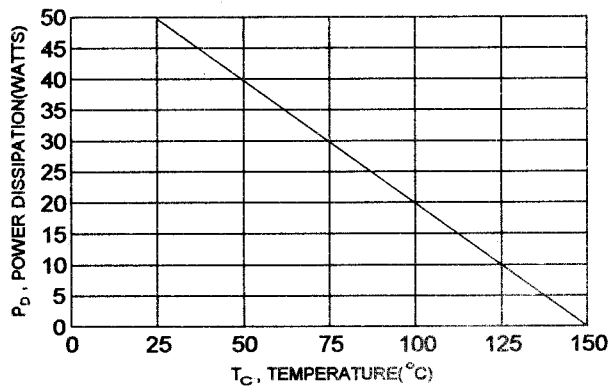
### MAXIMUM RATINGS

Characteristic	Symbol	D44H1,2 D45H1,2	D44H4,5 D45H4,5	D44H7,8 D45H7,8	D44H10,11 D45H10,11	Unit
Collector-Emitter Voltage	$V_{CEO}$	30	45	60	80	V
Collector-Emitter Voltage	$V_{CES}$	30	45	60	80	V
Emitter-Base Voltage	$V_{EBO}$	5				V
Collector Current - Continuous Peak	$I_C$ $I_{CM}$	10 20				A
Base Current	$I_B$	2				A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	50 0.4				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	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$

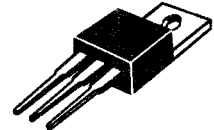
FIGURE -1 POWER DERATING



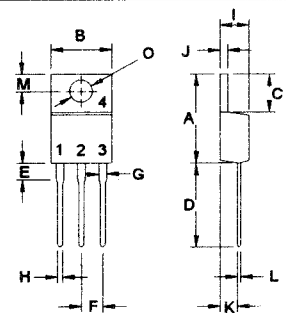
**NPN**  
**D44H**  
**Series**

**PNP**  
**D45H**  
**Series**

**10 AMPERE**  
**COMPLEMENTARY SILICON**  
**POWER TRANSISTORS**  
**30-80 VOLTS**  
**50 WATTS**



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

**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 ( $I_C = 30\text{mA}$ , $I_B = 0$ )	D44H1,2 D44H4,5 D44H7,8 D44H10,11	D45H1,2 D45H4,5 D45H7,8 D45H10,11	$V_{CE(sus)}$	30 45 60 80		V
Collector-Emitter Cutoff Current ( $V_{CE} = 30\text{V}$ , $V_{BE} = 0$ ) ( $V_{CE} = 45\text{V}$ , $V_{BE} = 0$ ) ( $V_{CE} = 60\text{V}$ , $V_{BE} = 0$ ) ( $V_{CE} = 80\text{V}$ , $V_{BE} = 0$ )	D44H1,2 D44H4,5 D44H7,8 D44H10,11	D45H1,2 D45H4,5 D45H7,8 D45H10,11	$I_{CES}$		10 10 10 10	$\mu\text{A}$
Emitter-Base Cutoff Current ( $V_{BE} = 5\text{V}$ , $I_C = 0$ )			$I_{EBO}$		100	$\mu\text{A}$

**ON CHARACTERISTICS(1)**

DC Current Gain ( $I_C = 2.0\text{A}$ , $V_{CE} = 1.0\text{V}$ ) ( $I_C = 4.0\text{A}$ , $V_{CE} = 1.0\text{V}$ )	D44H1,4,7,10 /D45H1,4,7,10 D44H2,5,8,11 /D45H2,5,8,11 D44H1,4,7,10 /D45H1,4,7,10 D44H2,5,8,11 /D45H2,5,8,11	$h_{FE}$	35 60 20 40		
Collector-Emitter Saturation Voltage ( $I_C = 8.0\text{A}$ , $I_B = 800\text{mA}$ ) ( $I_C = 8.0\text{A}$ , $I_B = 400\text{mA}$ )	D44H1,4,7,10 /D45H1,4,7,10 D44H2,5,8,11 /D45H2,5,8,11	$V_{CE(sat)}$		1.0 1.0	V
Base-Emitter Saturation Voltage ( $I_C = 8.0\text{A}$ , $I_B = 800\text{mA}$ )	ALL Devices	$V_{BE(sat)}$		1.5	V

**DYNAMIC CHARACTERISTICS**

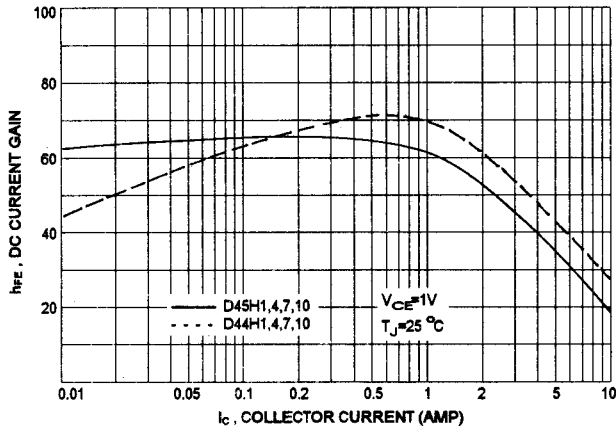
Current-Gain Bandwidth Product (2) ( $I_C = 500\text{mA}$ , $V_{CE} = 10\text{V}$ , $f = 0.5\text{MHz}$ )	D44H Series D45H Series	$f_T$	15 12		MHz
Output Capacitance ( $V_{CB} = 10\text{V}$ , $I_E = 0$ , $f = 1.0\text{MHz}$ )	D44H Series D45H Series	$C_{ob}$	220 400		PF

**SWITCHING CHARACTERISTICS**

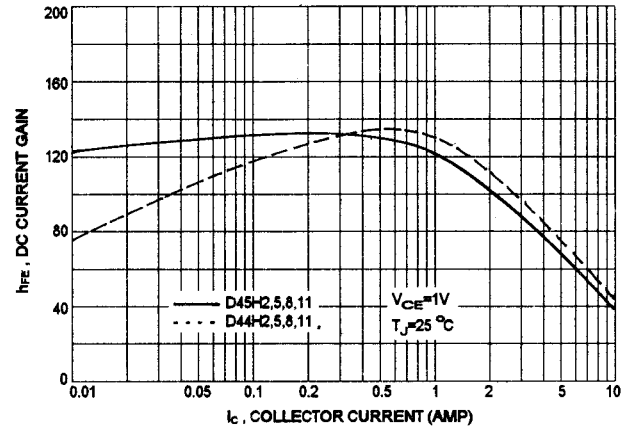
Rise Time	$I_C = 5\text{A}$ , $I_{B1} = -I_{B2} = 500\text{mA}$	D44H Series D45H Series	$t_r$		0.5 0.6	$\mu\text{s}$
Storage Time		D44H Series D45H Series	$t_s$		1.0 1.2	$\mu\text{s}$
Fall Time		D44H Series D45H Series	$t_f$		0.4 0.5	$\mu\text{s}$

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

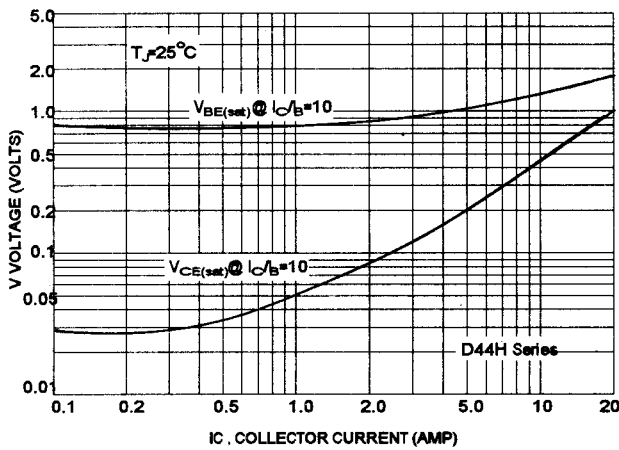
DC CURRENT GAIN



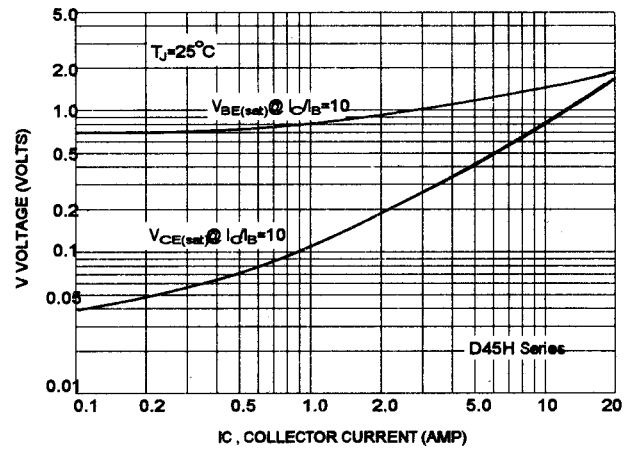
DC CURRENT GAIN



"ON" VOLTAGES



"ON" VOLTAGES



FORWARD BIAS SAFE OPERATING AREA

