

# D44H11, D45H11



## High Power Bipolar Transistors

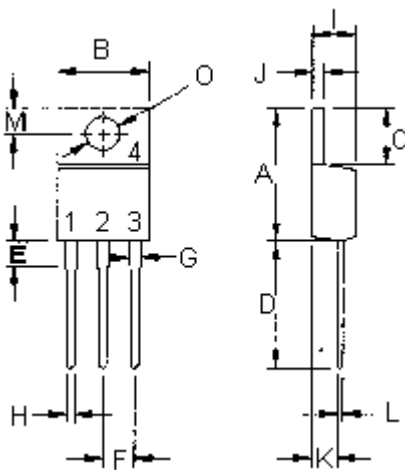


Designed for various specific and general purpose application such as; output and driver stages of amplifiers operating at frequencies from DC to greater than 1 MHz; series, shunt and switching regulators; low and high frequency inverters/converters and many others

### Features:

- Very low collector saturation voltage
- Excellent linearity
- Fast switching
- PNP values are negative, observe proper polarity

TO-220



- Pin**
1. Base
  2. Collector
  3. Emitter
  4. Collector (Case)

Dimensions	Minimum	Maximum
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	2.2	2.97
L	0.33	0.55
M	2.48	2.98
O	3.7	3.9

Dimensions : Millimetres

**NPN**  
**D44H11**

**PNP**  
**D45H11**

**10 Amperes**  
**Complementary Silicon**  
**Power Transistors**  
**80 Volts**  
**50 Watts**

### Maximum Ratings

Characteristic	Symbol	D44H11 D45H11	Unit
Collector - emitter voltage	$V_{CEO}$	80	V
Collector - base voltage	$V_{CES}$		
Emitter - base voltage	$V_{EBO}$	5	A
Collector current - continuous	$I_C$	10	
Collector current - peak	$I_{CM}$	20	
Base current	$I_B$	2	
Total power dissipation at $T_C = 25^\circ\text{C}$ 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	$^\circ\text{C}$

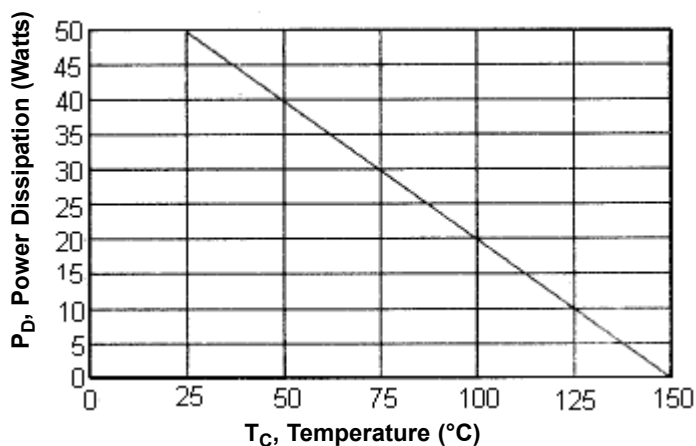
### Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal resistance junction to case	$R_{\theta jc}$	2.5	$^\circ\text{C}/\text{W}$

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Figure - 1 Power Derating



### Electrical Characteristics ( $T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

Characteristic	Symbol	Minimum	Maximum	Unit		
<b>OFF Characteristics</b>						
Collector - emitter sustaining voltage ( $I_C = 30\text{ mA}$ , $I_B = 0$ )	$V_{CEO(SUS)}$	80	-	V		
Collector - emitter cut off current ( $V_{CE} = 80\text{ V}$ , $V_{BE} = 0$ )	$I_{CES}$	-	10	$\mu\text{A}$		
Emitter - base cut off current ( $V_{EB} = 5\text{ V}$ , $I_C = 0$ )	$I_{EBO}$	-	100			
<b>ON Characteristics (1)</b>						
DC current gain ( $I_C = 2\text{ A}$ , $V_{CE} = 1\text{ V}$ ) ( $I_C = 4\text{ A}$ , $V_{CE} = 1\text{ V}$ )	$h_{FE}$	60 40	-	-		
Collector - emitter saturation voltage ( $I_C = 8\text{ A}$ , $I_B = 400\text{ mA}$ )	$V_{CE(sat)}$	-	1	V		
Base - emitter saturation voltage ( $I_C = 8\text{ A}$ , $I_B = 800\text{ mA}$ )	$V_{BE(sat)}$	-	1.5			
<b>Dynamic Characteristics</b>						
Current gain - bandwidth product (2) ( $I_C = 500\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 0.5\text{ MHz}$ )	D44H11 D45H11	$f_T$	15 12	-	MHz	
Small - signal current gain ( $V_{CB} = 200\text{ mA}$ , $I_E = 10\text{ V}$ , $f = 1\text{ MHz}$ )	D44H11 D45H11	$C_{ob}$	220 400	-	-	
<b>Switching Characteristics</b>						
Rise Time	$I_C = 5\text{ A}$ , $I_{B1} = -I_{B2} = 500\text{ mA}$	D44H11 D45H11	$t_r$	-	0.5 0.6	$\mu\text{s}$
Storage Time		D44H11 D45H11	$t_s$	-	1 1.2	$\mu\text{s}$
Fall Time		D44H11 D45H11	$t_f$	-	0.4 0.5	$\mu\text{s}$

(1) Pulse Test : Pulse width = 300  $\mu\text{s}$ , duty cycle  $\leq 2\%$

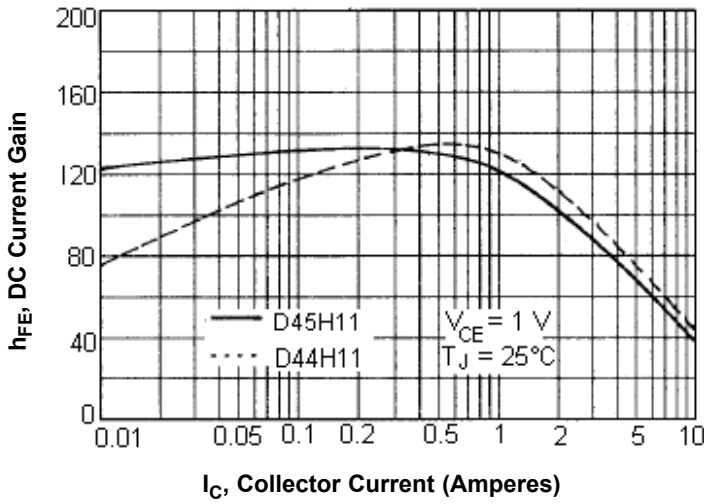
(2)  $f_T = |h_{fe}| \cdot f_{test}$

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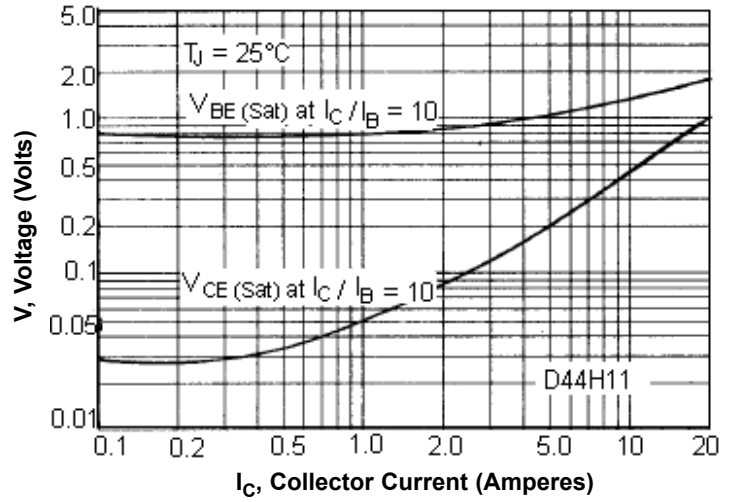


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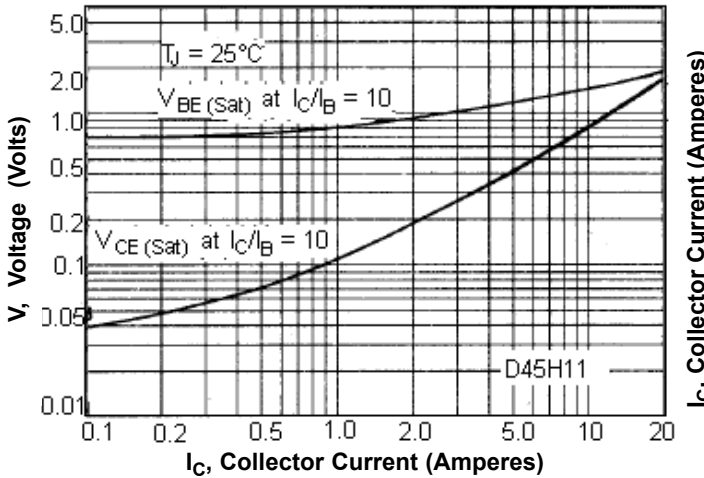
DC Current Gain



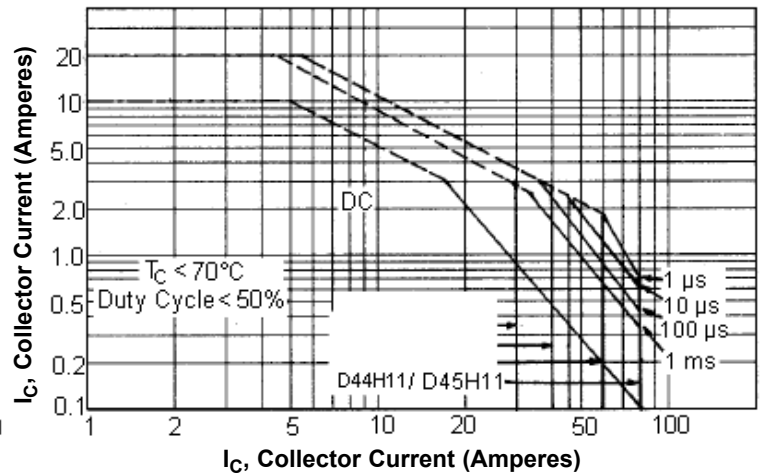
"ON" Voltages



"ON" Voltages



Forward Bias Safe Operating Area



### Specification Table

Description	$I_{C(av)}$ Maximum (A)	$V_{CE0}$ Maximum (V)	$h_{FE}$ Minimum at at $I_C = 2\text{ A}$	$P_{tot}$ at $25^\circ\text{C}$ (W)	Type	Part Number
High Power Bipolar Transistor	10	80	60	50	NPN	D44H11
High Power Bipolar Transistor					PNP	D45H11

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