

## NPN Silicon Power Transistors

### D PAK Surface Mount Power Package

The D PAK Power transistor is used by general purpose amplifiers, relay drives, lamp drives, motor drivers, and high speed switching applications.

#### Features:

- \* 150 °C operation junction Temperature
- \* Short Heat Sink Tab Manufactured- Not Sheared!
- \* Similar in Size to the Industry Standard TO-251 package

#### Mechanical Characteristic

- \* Case: Epoxy, Molded
- \* Weight: 0.295 grams (approximately)
- \* Finish : All External Surface Corrosion Resistant and Terminal

#### MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	50	V
Collector-Base Voltage	$V_{CBO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	6.0	V
Collector Current-Continuous	$I_C$	5.0	A
Base Current	$I_B$	1.2	A
Total Power Dissipation @ $T_c=25^\circ\text{C}$ Derate above 25 °C	$P_D$	15 0.12	W W/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	- 65 to + 150	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R\theta_{jc}$	8.04	°C/W

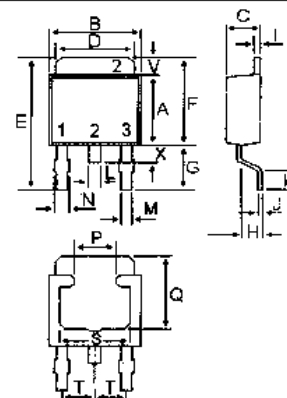
**NPN**  
**2SC5706**

**5 AMPERE**  
**NPN SILICON**  
**POWER TRANSISTOR**

**50 VOLTS**  
**15 WATTS**



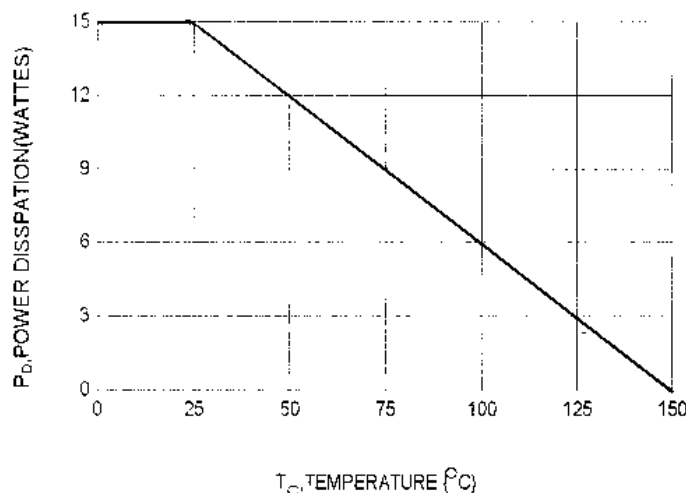
**TO-252AA (DPAK)**



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

DIM	MILLMETERS	
	MIN	MAX
A	5.40	5.60
B	6.30	6.70
C	2.20	2.40
D	5.20	5.50
E	9.00	10.00
G	2.40	3.00
H	0.90	1.50
I	0.45	0.55
J	0.45	0.60
K	0.90	1.50
L	0.70	0.80
M	0.50	0.70
N	0.60	0.90
P	2.70	3.10
Q	5.10	5.30
S	4.80	5.00
T	-----	2.30
V	1.20	1.40
X	0.80	1.20

**FIGURE -1 POWER DERATING**



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

Characteristic	Symbol	Min	typ	Max	Unit
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**OFF CHARACTERISTICS (1)**

Collector - Emitter Breakdown Voltage ( $I_c = 1 \text{ mA}, I_B = 0$ )	$V_{CEO(BR)}$	50			V
Collector - Base Breakdown Voltage ( $I_c = 10 \text{ uA}, I_E = 0$ )	$V_{CBO(BR)}$	80			V
Collector Cutoff Current ( $V_{CB} = 40 \text{ V}, I_E = 0$ )	$I_{CBO}$			1.0	uA
Emitter Cutoff Current ( $V_{EB} = 4.0 \text{ V}, I_c = 0$ )	$I_{EBO}$			1.0	uA

**ON CHARACTERISTICS**

DC Current Gain ( $I_c = 500 \text{ mA}, V_{CE} = 2.0 \text{ V}$ )	hFE	200		560	
Collector - Emitter Saturation Voltage ( $I_c = 1.0 \text{ A}, I_B = 50 \text{ mA}$ ) ( $I_c = 2.0 \text{ A}, I_B = 100 \text{ mA}$ )	$V_{CE(SAT)}$			135 240	mV
Base - Emitter Saturation Voltage ( $I_c = 2.0 \text{ A}, I_B = 100 \text{ mA}$ )	$V_{BE(SAT)}$			1.2	V

**DYNAMIC CHARACTERISTICS**

Gain-Bandwidth Product ( $I_c = 500\text{mA}, V_{CE} = 10 \text{ V}$ )	$f_T$		400		
Output Capacitance ( $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ )	Cob		20		pF

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