

"BIG IDEAS IN  
BIG POWER"

# PowerTech

## 120 AMPERES

JAN TX2N5927

PT- 700

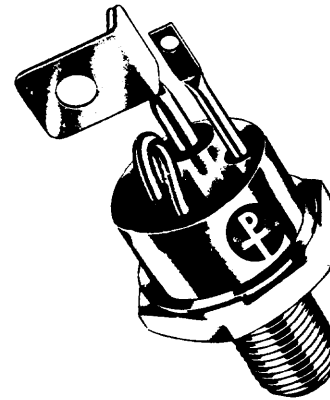
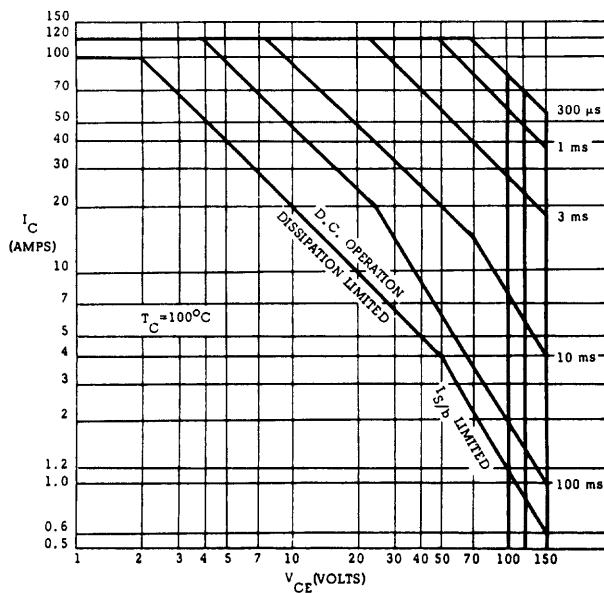
PT- 702

### SILICON NPN TRANSISTOR

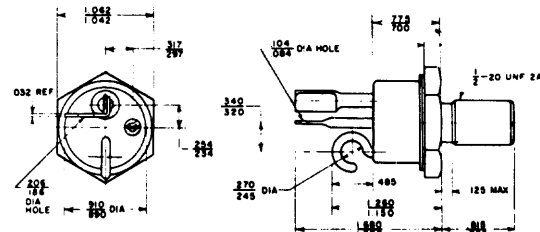
#### FEATURES:

|                     |               |                |               |                 |               |
|---------------------|---------------|----------------|---------------|-----------------|---------------|
| $V_{CE(sat)}$ ..... | 0.75 V @ 70 A | $h_{FE}$ ..... | 5 min @ 120 A | $I_{S/b}$ ..... | 1.2 A @ 100 V |
| $V_{BE}$ .....      | 1.5 V @ 70 A  | $t_f$ .....    | 2.5 $\mu$ sec | $E_{S/b}$ ..... | 6 Joules      |

#### SAFE OPERATING AREA



JEDEC TO-114 PKG.



PowerTech's transistors offer high current capability, high breakdown voltage and the lowest available saturation voltage. They have exceptional resistance to both forward and reverse second breakdown. This unique combination of device characteristics makes them particularly suited for a wide variety of high current applications, which include series and switching regulators, motor controls, servoamplifiers and power control circuits. The transistors will provide outstanding performance when used as replacements for paralleled lower current devices, resulting in considerable reductions in weight, space and circuit complexity. Their reliability is assured through 100% power testing at 50V, 4A @ 100°C case temperature. These transistors exceed the requirements of MIL-S-19500 and are well suited for the most severe military-aerospace applications.

#### MAXIMUM RATINGS

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Peak Collector Current  
D.C. Collector Current  
Power Dissipation @ 25°C  
Power Dissipation @ 100°C  
Thermal Resistance  
Operating Temperature Range

#### SYMBOL

$V_{CBO}$   
 $V_{CEO}$  (sus)  
 $V_{EBO}$   
 $I_C$   
 $I_C$   
 $P_D$   
 $P_D$   
 $\theta_{J-C}$

#### PT-702

120V  
100V

#### 2N5927

150V  
120V  
10V  
120A  
100A  
350W  
200W  
0.5° C/W  
-65 to 200°C

#### PT-700

175V  
150V

# ELECTRICAL CHARACTERISTICS 25°C

| TEST                                               | SYMBOL         | LIMITS |      |        |      |       |      | UNITS     | TEST CONDITIONS                      |
|----------------------------------------------------|----------------|--------|------|--------|------|-------|------|-----------|--------------------------------------|
|                                                    |                | PT702  |      | 2N5927 |      | PT700 |      |           |                                      |
|                                                    |                | MIN.   | MAX. | MIN.   | MAX. | MIN.  | MAX. |           |                                      |
| D.C. Current Gain*                                 | $h_{FE}$       | 10     | 40   | 10     | 40   | 10    | 40   | —         | $I_C = 70A, V_{CE} = 2V$             |
| D.C. Current Gain*                                 | $h_{FE}$       | 5      | —    | 5      | —    | 5     | —    | —         | $I_C = 120A, V_{CE} = 4V$            |
| Collector Saturation Voltg.*                       | $V_{CE(sat)}$  | —      | 0.75 | —      | 0.75 | —     | 0.75 | V         | $I_C = 70A, I_B = 7A$                |
| Collector Saturation Voltg.*                       | $V_{CE(sat)}$  | —      | 2.0  | —      | 2.0  | —     | 2.0  | V         | $I_C = 120A, I_B = 24A$              |
| Base Emitter Voltage*                              | $V_{BE}$       | —      | 1.5  | —      | 1.5  | —     | 1.5  | V         | $I_C = 70A, V_{CE} = 2V$             |
| Base Emitter Voltage*                              | $V_{BE}$       | —      | 3.0  | —      | 3.0  | —     | 3.0  | V         | $I_C = 120A, V_{CE} = 4V$            |
| Collector-Emitter Voltage*                         | $V_{CEO(sus)}$ | 100    | —    | 120    | —    | 150   | —    | V         | $I_C = 200mA, I_B = 0$               |
| Collector Cutoff Current                           | $I_{CBO}$      | —      | 2    | —      | —    | —     | —    | mA        | $V_{CB} = 120V, I_{EB} = 0$          |
| Collector Cutoff Current                           | $I_{CBO}$      | —      | —    | —      | 2    | —     | —    | mA        | $V_{CB} = 150V, I_{EB} = 0$          |
| Collector Cutoff Current                           | $I_{CBO}$      | —      | —    | —      | —    | —     | 2    | mA        | $V_{CB} = 175V, I_{EB} = 0$          |
| Collector Cutoff Current<br>@ 150°C                | $I_{CBO}$      | —      | 10   | —      | 10   | —     | 10   | mA        | $V_{CB} = 100V, I_{EB} = 0$          |
| Emitter Cutoff Current                             | $I_{EBO}$      | —      | 1    | —      | 1    | —     | 1    | mA        | $V_{EB} = 10V, I_{CB} = 0$           |
| Gain Bandwidth Product<br>(Typ.)                   | $f_t$          | 1      | —    | 1      | —    | 1     | —    | MHz       | $I_C = 5A, V_{CE} = 10V, f = 100KHz$ |
| Collector Capacitance                              | $C_{obo}$      | —      | 1800 | —      | 1800 | —     | 1800 | pf.       | $V_{CB} = 10V, f = 100KHz$           |
| Switching Speed (Typ.)<br>(PowerTech Test Circuit) | $t_f$          | —      | 2.5  | —      | 2.5  | —     | 2.5  | $\mu sec$ | $I_C = 50A$                          |
|                                                    | $t_s$          | —      | 3    | —      | 3    | —     | 3    | $\mu sec$ |                                      |
|                                                    | $t_r$          | —      | 2.5  | —      | 2.5  | —     | 2.5  | $\mu sec$ | $I_{B1} = 10A, -I_{B2} = 5A$         |

\*  $\leq 300 \mu sec$  Pulse 2% Duty Cycle

