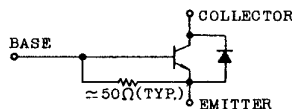


## HORIZONTAL DEFLECTION POWER TRANSISTORS

...specifically designed for use in larg screen color deflection circuits.

### FEATURES:

- \* High Voltage:  $V_{CBO}=1500V$
- \* Low Saturation Voltage :  $V_{CE(sat)}=5.0V(Max.) @ I_C = 5.0 A$
- \* High Speed :  $t_f=1.0 us(Max.) @ I_{CP}=5.0 A, I_{B1}=1.0A$
- \* Built-in Damper Type
- \* Glass Passivated Collector-Base Junction



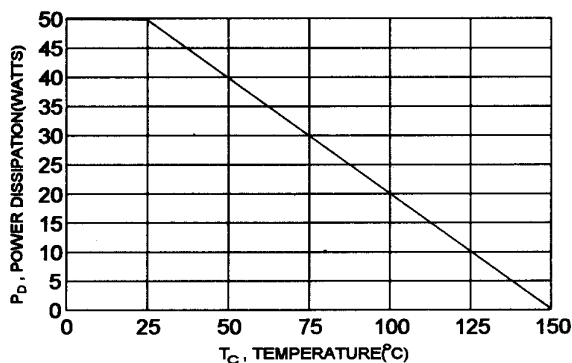
### MAXIMUM RATINGS

| Characteristic  | Symbol         | Rating       | Unit               |
|---|----------------|--------------|--------------------|
| Collector-Base Voltage  | $V_{CBO}$      | 1500         | V                  |
| Collector-Emitter Voltage   | $V_{CEO}$      | 600          | V                  |
| Emitter-Base Voltage  | $V_{EBO}$      | 5.0          | V                  |
| Collector Current-Continuous  | $I_C$          | 6.0          | A                  |
| Base Current  | $I_B$          | 3.0          | A                  |
| Total Power Dissipation @ $T_C=25^\circ C$<br>Derate above $25^\circ C$ | $P_D$          | 50<br>0.4    | W<br>W/ $^\circ C$ |
| Operating and Storage Junction<br>Temperature Range                     | $T_J, T_{STG}$ | - 65 to +150 | $^\circ C$         |

### THERMAL CHARACTERISTICS

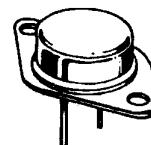
| Characteristic                      | Symbol          | Max | Unit         |
|-------------------------------------|-----------------|-----|--------------|
| Thermal Resistance Junction to Case | $R_{\theta jc}$ | 2.5 | $^\circ C/W$ |

FIGURE -1 POWER DERATING

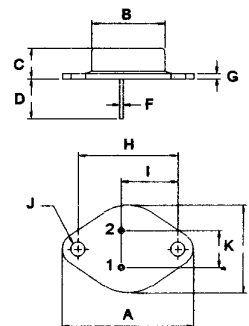


**NPN**  
**2SD871**

**6 AMPERE**  
**POWER**  
**TRANSISTORS**  
**1500 VOLTS**  
**50 WATTS**



**TO-3**



PIN 1.BASE  
2.EMITTER  
COLLECTOR(CASE)

| DIM | MILLIMETERS |       |
|-----|-------------|-------|
|     | MIN         | MAX   |
| A   | 38.75       | 39.96 |
| B   | 19.28       | 22.23 |
| C   | 7.96        | 9.28  |
| D   | 11.18       | 12.19 |
| E   | 25.20       | 26.67 |
| F   | 0.92        | 1.09  |
| G   | 1.38        | 1.62  |
| H   | 29.90       | 30.40 |
| I   | 16.64       | 17.30 |
| J   | 3.88        | 4.36  |
| K   | 10.67       | 11.18 |

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

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

**OFF CHARACTERISTICS**

|   |           |     |    |               |
|---|-----------|-----|----|---------------|
| Collector Cutoff Current<br>( $V_{CB} = 500\text{ V}$ , $I_E = 0$ ) | $I_{CBO}$ |     | 10 | $\mu\text{A}$ |
| Emitter-Base Voltage<br>( $I_E = 200\text{ mA}$ , $I_C = 0$ )       | $V_{EBO}$ | 5.0 |    | V             |

**ON CHARACTERISTICS (1)**

|   |               |     |     |   |
|---|---------------|-----|-----|---|
| DC Current Gain<br>( $I_C = 1.0\text{ A}$ , $V_{CE} = 5.0\text{ V}$ )                     | $h_{FE}$      | 8.0 |     |   |
| Collector - Emitter Saturation Voltage<br>( $I_C = 5.0\text{ A}$ , $I_B = 1.0\text{ A}$ ) | $V_{CE(sat)}$ |     | 5.0 | V |
| Base - Emitter Saturation Voltage<br>( $I_C = 5.0\text{ A}$ , $I_B = 1.0\text{ A}$ )      | $V_{BE(sat)}$ |     | 1.5 | V |
| Forward Voltage (Damper Diode)<br>( $I_F = 6.0\text{ A}$ )                                | $-V_F$        |     | 2.0 | V |

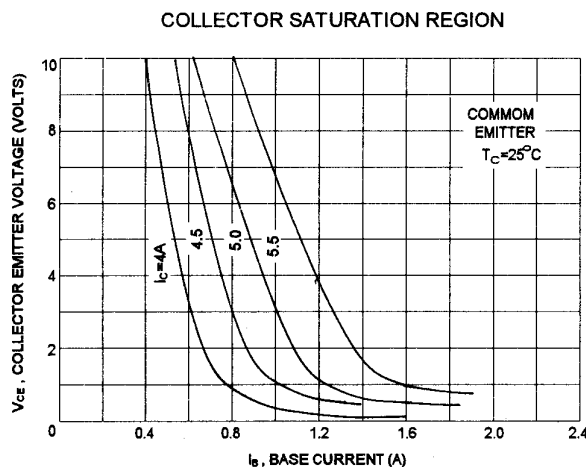
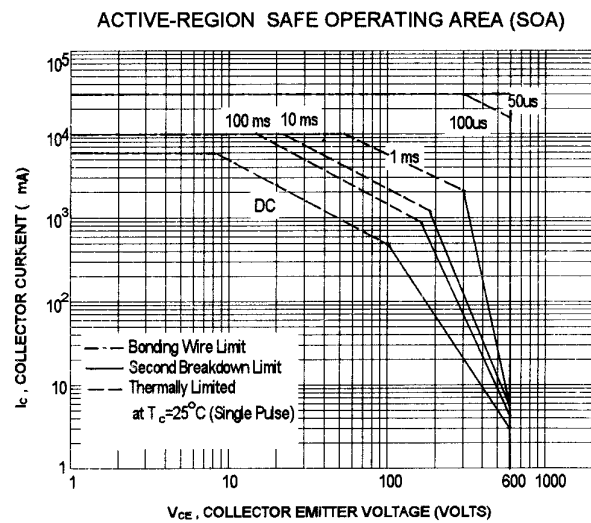
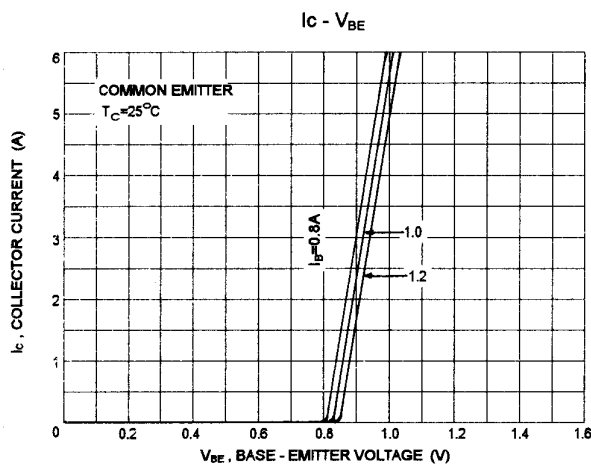
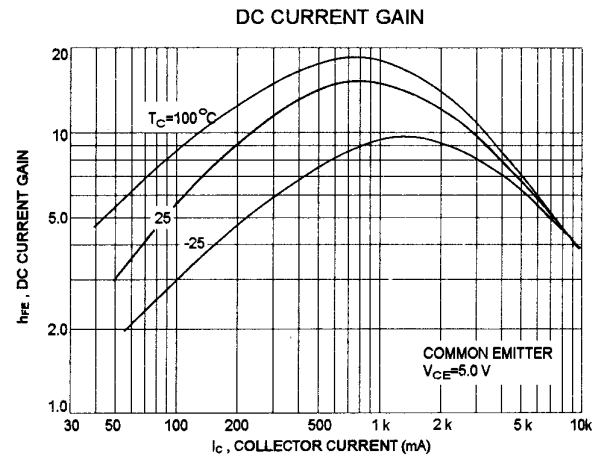
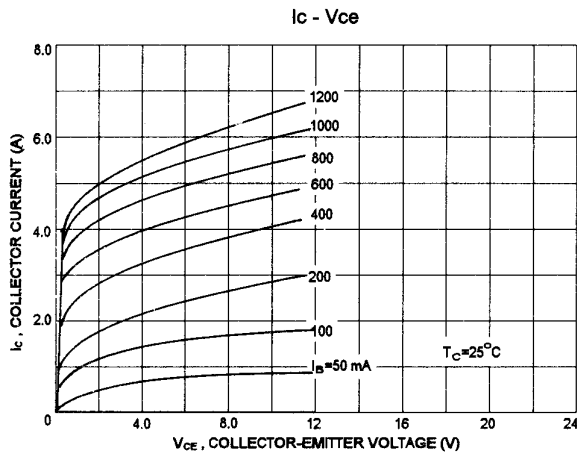
**DYNAMIC CHARACTERISTICS**

|  |          |          |  |     |
|--|----------|----------|--|-----|
| Current Gain - Bandwidth Product<br>( $I_C = 0.1\text{ A}$ , $V_{CE} = 10\text{ V}$ , $f = 1.0\text{ MHz}$ ) | $f_T$    | 3.0(Typ) |  | MHz |
| Collector Output Capacitance<br>( $V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )                | $C_{ob}$ | 170(Typ) |  | pF  |

**SWITCHING CHARACTERISTICS**

|           |   |       |     |               |
|-----------|---|-------|-----|---------------|
| Fall Time | $I_C = 5.0\text{ A}$ , $I_{B1(end)} = 1.0\text{ A}$ | $t_f$ | 1.0 | $\mu\text{s}$ |
|-----------|---|-------|-----|---------------|

(1) Pulse Test: Pulse width  $\leq 300\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$



There are two limitation on the power handling ability of a transistor: average junction temperature and second breakdown safe operating area curves indicate  $I_C - V_{CE}$  limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than curves indicate.

The data of SOA curve is base on  $T_{J(PK)} = 150^\circ\text{C}$ ;  $T_C$  is variable depending on conditions. second breakdown pulse limits are valid for duty cycles to 10% provided  $T_{J(PK)} \leq 150^\circ\text{C}$ . At high case temperatures, thermal limitation will reduce the power that can be handled to values less than the limitations imposed by second breakdown.