



Transistors



● TO-92L Types

\* New Products ☆ Under Development

| Function               | Type     | V <sub>CEO</sub> (V) | I <sub>C</sub> (A) | P <sub>C</sub> (W) | f <sub>T</sub> (MHz) | h <sub>FE</sub> | Package |         |
|------------------------|----------|----------------------|--------------------|--------------------|----------------------|-----------------|---------|---------|
| Chroma Driver          | 2SC3269  | 300                  | 0.1                | 0.75               | 100                  | 39~180          | TO-92L  | Fig. 20 |
|                        | *2SB1256 | -100                 | 2                  | 1.20               | —                    | 1K~10K          | TO-92L  | Fig. 20 |
| Darlington Driver      | *2SD1809 | 60*                  | 1                  | 0.90               | —                    | 2K~             | TO-92L  | Fig. 20 |
|                        | *2SD1929 | 60±10                | 2                  | 1.20               | —                    | 1K~10K          | TO-92L  | Fig. 20 |
|                        | *2SD1930 | 100                  | 2                  | 1.20               | —                    | 1K~10K          | TO-92L  | Fig. 20 |
| High Voltage Switching | ☆2SC4166 | 400                  | 0.1                | 0.90               | 20                   | 56~270          | TO-92L  | Fig. 20 |

※V<sub>CEs</sub>

● TO-126, TO-126M Types

\* New Products

| Function          | Type          | V <sub>CEO</sub> (V) | I <sub>C</sub> (A)   | P <sub>C</sub> (W) | f <sub>T</sub> (MHz) | h <sub>FE</sub> | Package |         |
|-------------------|---------------|----------------------|----------------------|--------------------|----------------------|-----------------|---------|---------|
| Driver            | 2SB889        | -80                  | -0.7                 | 5                  | 100                  | 82~390          | TO-126M | Fig. 22 |
|                   | 2SB891        | -32                  | -2                   | 5                  | 100                  | 82~390          | TO-126M | Fig. 22 |
|                   | 2SB1007       | -80                  | -0.7                 | 10                 | 100                  | 82~390          | TO-126  | Fig. 21 |
|                   | 2SB1009       | -32                  | -2                   | 10                 | 100                  | 82~390          | TO-126  | Fig. 21 |
|                   | 2SB1065       | -50                  | -3                   | 10                 | 70                   | 56~390          | TO-126  | Fig. 21 |
|                   | 2SB1086       | -120                 | -1.5                 | 10                 | 50                   | 56~390          | TO-126  | Fig. 21 |
|                   | 2SB1086A      | -160                 | -1.5                 | 10                 | 50                   | 56~270          | TO-126  | Fig. 21 |
|                   | 2SD1189       | 32                   | 2                    | 5                  | 100                  | 82~390          | TO-126M | Fig. 22 |
|                   | 2SD1200       | 80                   | 0.7                  | 5                  | 120                  | 82~390          | TO-126M | Fig. 22 |
|                   | 2SD1378       | 80                   | 0.7                  | 10                 | 120                  | 82~390          | TO-126  | Fig. 21 |
|                   | 2SD1380       | 32                   | 2                    | 10                 | 100                  | 82~390          | TO-126  | Fig. 21 |
|                   | 2SD1381       | 80                   | 1(I <sub>CM2</sub> ) | 5                  | 100                  | 82~390          | TO-126M | Fig. 22 |
|                   | 2SD1382       | 80                   | 1(I <sub>CM2</sub> ) | 10                 | 100                  | 82~390          | TO-126  | Fig. 21 |
|                   | 2SD1506       | 50                   | 3                    | 10                 | 90                   | 56~390          | TO-126  | Fig. 21 |
|                   | 2SD1563       | 120                  | 1.5                  | 10                 | 80                   | 56~390          | TO-126  | Fig. 21 |
|                   | 2SD1563A      | 160                  | 1.5                  | 10                 | 80                   | 56~270          | TO-126  | Fig. 21 |
|                   | Chroma Driver | 2SC3271              | 300                  | 0.1                | 5                    | 100             | 39~180  | TO-126M |
| 2SC3272           |               | 300                  | 0.1                  | 10                 | 100                  | 39~180          | TO-126  | Fig. 21 |
| Darlington Driver | 2SB786        | -40**                | -2                   | 5                  | 150                  | 1K~             | TO-126M | Fig. 22 |
|                   | 2SB1008       | -40**                | -2                   | 10                 | 150                  | 1K~             | TO-126  | Fig. 21 |
|                   | *2SB1272      | -100                 | -2                   | 10                 | —                    | 1K~10K          | TO-126  | Fig. 21 |
|                   | 2SD947        | 40**                 | 2                    | 5                  | 150                  | 4K~             | TO-126M | Fig. 22 |
|                   | 2SD1379       | 40**                 | 2                    | 10                 | 150                  | 4K~             | TO-126  | Fig. 21 |
|                   | 2SD1637       | 60±10                | 2                    | 10                 | —                    | 1K~10K          | TO-126  | Fig. 21 |
| 2SD1638           | 100           | 2                    | 10                   | —                  | 1K~10K               | TO-126          | Fig. 21 |         |

※※V<sub>CEr</sub>

● MRT Type (New Products)

| Function          | Type    | V <sub>CEO</sub> (V) | I <sub>C</sub> (A)     | P <sub>C</sub> (W) | f <sub>T</sub> (MHz) | h <sub>FE</sub> | Package |         |
|-------------------|---------|----------------------|------------------------|--------------------|----------------------|-----------------|---------|---------|
| Driver            | 2SB1328 | -160                 | -1.5                   | 1.2                | 50                   | 56~270          | MRT     | Fig. 23 |
|                   | 2SB1329 | -32                  | -1(I <sub>CM-2</sub> ) | 1.2                | 100                  | 82~390          | MRT     | Fig. 23 |
|                   | 2SB1330 | -80                  | -0.7                   | 1.2                | 100                  | 82~390          | MRT     | Fig. 23 |
|                   | 2SB1331 | -32                  | -2(I <sub>CM-3</sub> ) | 1.2                | 100                  | 82~390          | MRT     | Fig. 23 |
|                   | 2SB1332 | -80                  | -1                     | 1.2                | 100                  | 82~390          | MRT     | Fig. 23 |
|                   | 2SD2004 | 160                  | 1.5                    | 1.2                | 80                   | 56~270          | MRT     | Fig. 23 |
|                   | 2SD2005 | 32                   | 1(I <sub>CM2</sub> )   | 1.2                | 150                  | 82~390          | MRT     | Fig. 23 |
|                   | 2SD2006 | 80                   | 0.7(I <sub>CM1</sub> ) | 1.2                | 120                  | 82~390          | MRT     | Fig. 23 |
|                   | 2SD2008 | 80                   | 1(I <sub>CM2</sub> )   | 1.2                | 100                  | 82~390          | MRT     | Fig. 23 |
| Chroma Driver     | 2SD2007 | 32                   | 2(I <sub>CM2.5</sub> ) | 1.2                | 100                  | 82~390          | MRT     | Fig. 23 |
| Chroma Driver     | 2SC4243 | 300                  | 0.1                    | 1.2                | 100                  | 39~180          | MRT     | Fig. 23 |
| Darlington Driver | 2SB1333 | -100                 | 2                      | 1.2                | —                    | 1K~10K          | MRT     | Fig. 23 |
|                   | 2SD2009 | 60*                  | 1                      | 1.2                | —                    | 2K~             | MRT     | Fig. 23 |
|                   | 2SD2010 | 60±10                | 2                      | 1.2                | —                    | 1K~10K          | MRT     | Fig. 23 |
|                   | 2SD2011 | 100                  | 2                      | 1.2                | —                    | 1K~10K          | MRT     | Fig. 23 |

※V<sub>CEs</sub>

● TO-220, TO-220FP Types

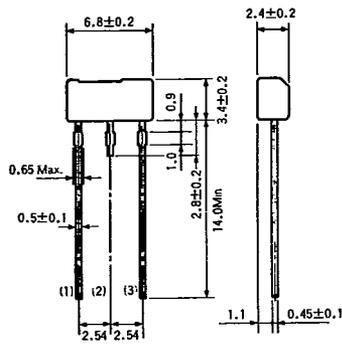
\* New Products ☆ Under Development

| Function | Type     | V <sub>CEO</sub> (V) | I <sub>C</sub> (A) | P <sub>C</sub> (W) | f <sub>T</sub> (MHz) | h <sub>FE</sub> | Package  |         |
|----------|----------|----------------------|--------------------|--------------------|----------------------|-----------------|----------|---------|
| Driver   | *2SB1033 | -60                  | -3                 | 40                 | 12                   | 60~320          | TO-220   | Fig. 24 |
|          | 2SB1064  | -50                  | -3                 | 30                 | 70                   | 60~320          | TO-220   | Fig. 24 |
|          | 2SB1085  | -120                 | -1.5               | 20                 | 50                   | 60~320          | TO-220   | Fig. 24 |
|          | 2SB1085A | -160                 | -1.5               | 20                 | 50                   | 60~200          | TO-220   | Fig. 24 |
|          | 2SB1185  | -50                  | -3                 | 25                 | 70                   | 60~320          | TO-220FP | Fig. 25 |
|          | 2SB1186  | -120                 | -1.5               | 20                 | 50                   | 60~320          | TO-220FP | Fig. 25 |
|          | 2SB1186A | -160                 | -1.5               | 20                 | 50                   | 60~200          | TO-220FP | Fig. 25 |
|          | *2SB1187 | -60                  | -3                 | 30                 | 12                   | 60~320          | TO-220FP | Fig. 25 |
|          | ☆2SB1289 | -80                  | -7                 | 40                 | 12                   | 60~320          | TO-220   | Fig. 24 |
|          | ☆2SB1290 | -80                  | -7                 | 30                 | 12                   | 60~320          | TO-220FP | Fig. 25 |
|          | ☆2SB1291 | -60                  | -5                 | 40                 | 12                   | 60~320          | TO-220   | Fig. 24 |
|          | ☆2SB1292 | -60                  | -5                 | 30                 | 12                   | 60~320          | TO-220FP | Fig. 25 |



Dimensions (Unit: mm)

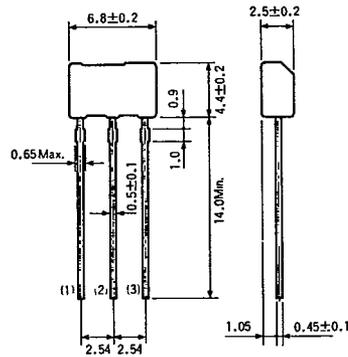
FTL TL4\*



- (1) Emitter / GND
- (2) Collector / OUT
- (3) Base / IN

Fig. 13

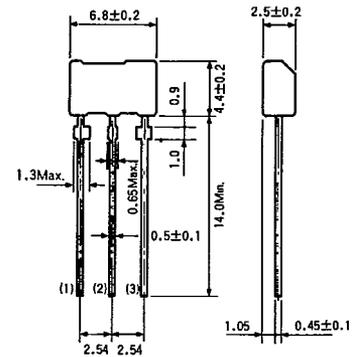
ATV TV2\*



- (1) Emitter / GND
- (2) Collector / OUT
- (3) Base / IN

Fig. 14

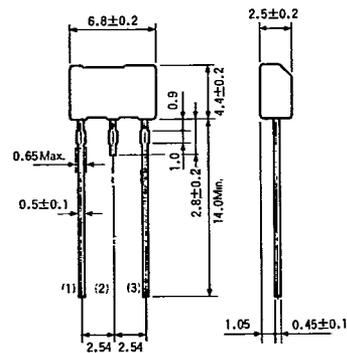
ATV TV3\*



- (1) Emitter / GND
- (2) Collector / OUT
- (3) Base / IN

Fig. 15

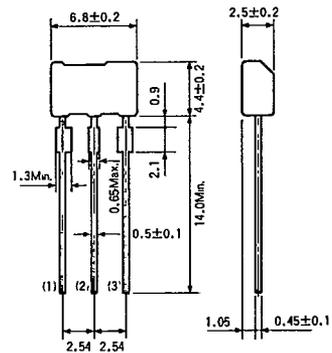
ATV TV4\*



- (1) Emitter / GND
- (2) Collector / OUT
- (3) Base / IN

Fig. 16

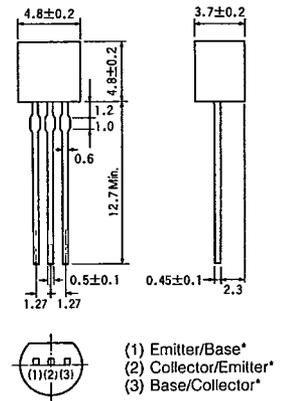
ATV TV6\*



- (1) Emitter / GND
- (2) Collector / OUT
- (3) Base / IN

Fig. 17

TO-92

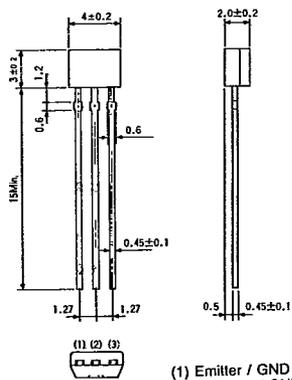


- (1) Emitter/Base\*
- (2) Collector/Emitter\*
- (3) Base/Collector\*

Fig. 18

\* Taping specifications can be adjusted for types ATV and FTL. Both types are available in three or four different external dimensions as shown in Figs. 11, 12 and 13 (FTL) and Figs. 14, 15, 16 and 17 (ATV). For taping specifications see packaging forms on the page 113.

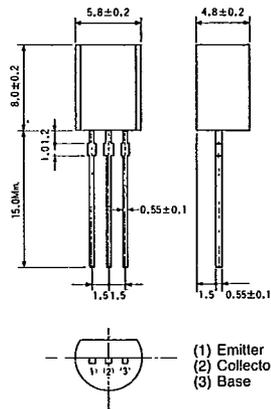
SPT



- (1) Emitter / GND
- (2) Collector / OUT
- (3) Base / IN

Fig. 19

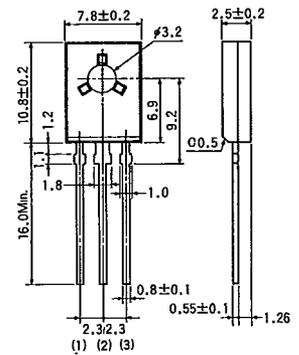
TO-92L



- (1) Emitter
- (2) Collector
- (3) Base

Fig. 20

TO-126



- (1) Emitter
- (2) Collector
- (3) Base

Fig. 21

Transistors



Dimensions (Unit: mm)

TO-126M

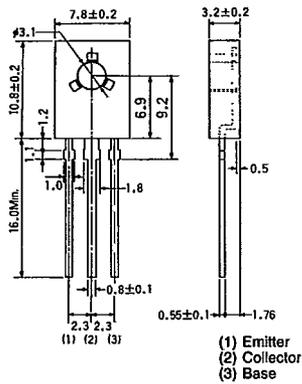


Fig. 22

MRT

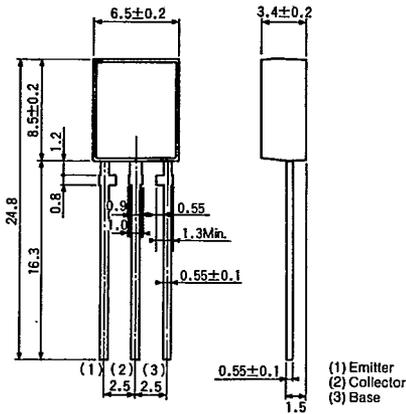
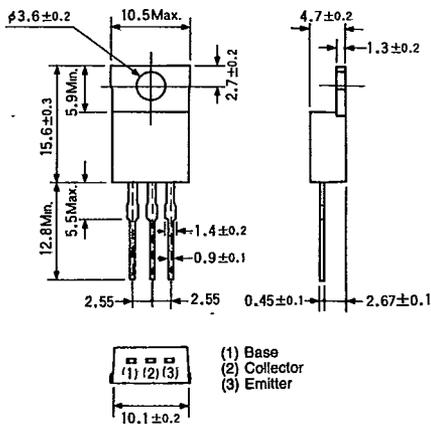
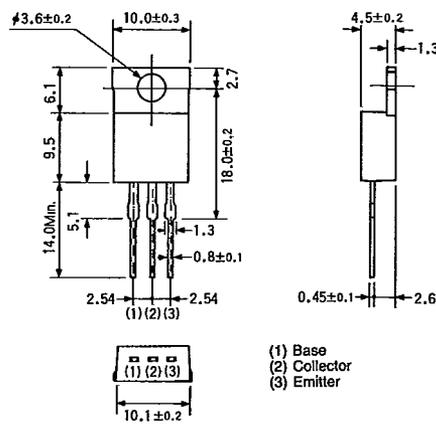


Fig. 23

TO-220



※As of December 1986, these dimensions supercede the previous ones.



TO-220FP

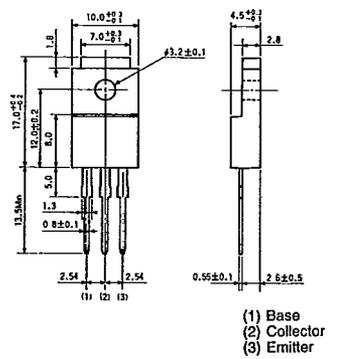


Fig. 24

Fig. 25

HRT

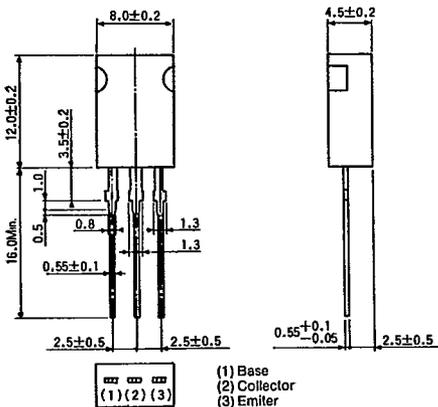


Fig. 26

LF12pin

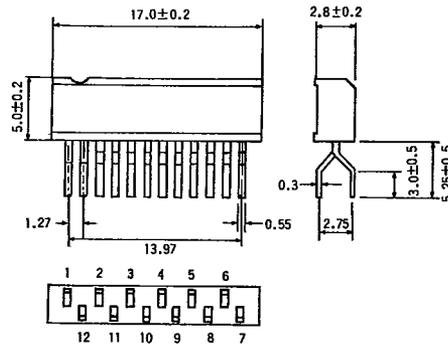


Fig. 27

SIP10pin

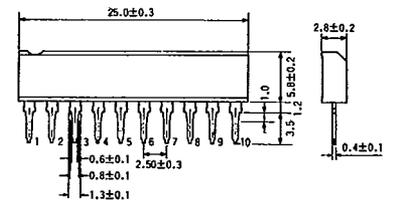


Fig. 28