

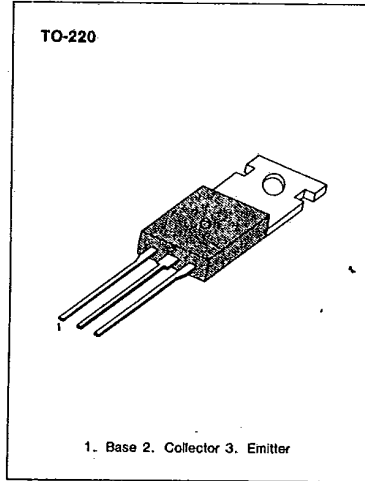
**MJE3055T****NPN SILICON TRANSISTOR**

**GENERAL PURPOSE AND SWITCHING APPLICATIONS**  
**DC CURRENT GAIN SPECIFIED TO 10 AMPERES**

High Current Gain-Bandwidth Product ( $f_T = 2\text{MHz (MIN)}$ )

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

| Characteristic                                     | Symbol    | Rating  | Unit             |
|--|-----------|---------|------------------|
| Collector-Base Voltage                             | $V_{CBO}$ | 70      | V                |
| Collector-Emitter Voltage                          | $V_{CEO}$ | 60      | V                |
| Emitter-Base Voltage                               | $V_{EBO}$ | 5       | V                |
| Collector Current                                  | $I_C$     | 10      | A                |
| Base Current                                       | $I_B$     | 6       | A                |
| Collector Dissipation ( $T_C = 25^\circ\text{C}$ ) | $P_C$     | 75      | W                |
| Collector Dissipation ( $T_a = 25^\circ\text{C}$ ) | $P_C$     | 0.8     | W                |
| Junction Temperature                               | $T_J$     | 150     | $^\circ\text{C}$ |
| Storage Temperature                                | $T_{stg}$ | -55~150 | $^\circ\text{C}$ |



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**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )**

| Characteristic                        | Symbol        | Test Condition   | Min | Max | Unit          |
|---------------------------------------|---------------|--|-----|-----|---------------|
| Collector Emitter Sustaining Voltage  | $V_{CE(sus)}$ | $I_C = 200\text{mA}, I_B = 0$                                | 60  |     | V             |
| Collector Cutoff Current              | $I_{CEO}$     | $V_{CE} = 30\text{V}, I_B = 0$                               |     | 700 | $\mu\text{A}$ |
| Collector Cutoff Current              | $I_{CEX}$     | $V_{CE} = 70\text{V}, V_{BE(off)} = -1.5\text{V}$            |     | 1   | mA            |
|                                       |               | $V_{CE} = 70\text{V}, V_{BE(off)} = -1.5\text{V}$            |     | 5   | mA            |
|                                       |               | $T_C = 150^\circ\text{C}$                                    |     |     |               |
| Emitter Cutoff Current                | $I_{EBO}$     | $V_{EB} = 5\text{V}, I_C = 0$                                |     | 5   | mA            |
| *DC Current Gain                      | $h_{FE}$      | $V_{CE} = 4\text{V}, I_C = 4\text{A}$                        | 20  | 100 |               |
|                                       |               | $V_{CE} = 4\text{V}, I_C = 10\text{A}$                       | 5   |     |               |
| *Collector Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 4\text{A}, I_B = 0.4\text{A}$                         |     | 1.1 | V             |
|                                       |               | $I_C = 10\text{A}, I_B = 3.3\text{A}$                        |     | 8   | V             |
| *Base Emitter On Voltage              | $V_{BE(on)}$  | $V_{CE} = 4\text{V}, I_C = 4\text{A}$                        |     | 1.8 | V             |
| Current Gain Bandwidth Product        | $f_T$         | $V_{CE} = 10\text{V}, I_C = 500\text{mA}, f = 500\text{KHz}$ | 2   |     | MHz           |

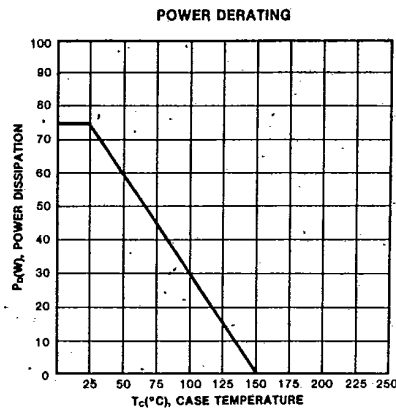
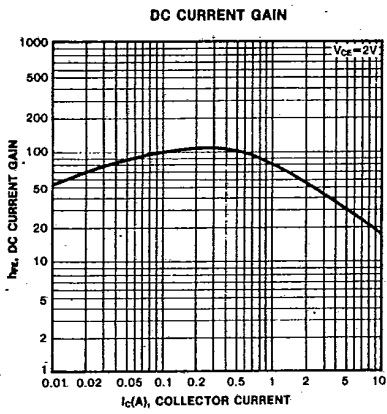
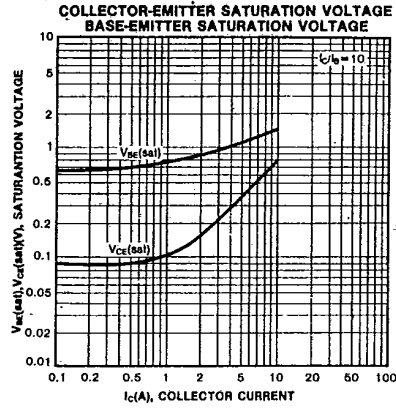
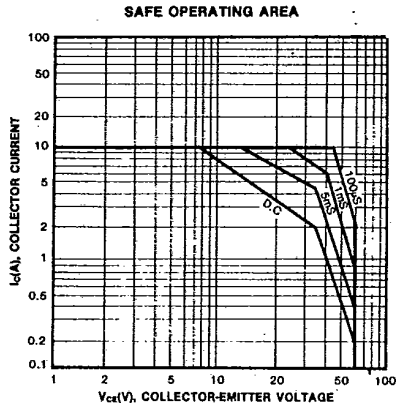
\* Pulse test:  $PW \leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$  Pulse



MJE3055T

NPN SILICON TRANSISTOR

T-33-13



**TIP29 SERIES**  
**(TIP29/29A/29B/29C) NPN EXITAXIAL SILICON TRANSISTOR**

SAMSUNG SEMICONDUCTOR INC

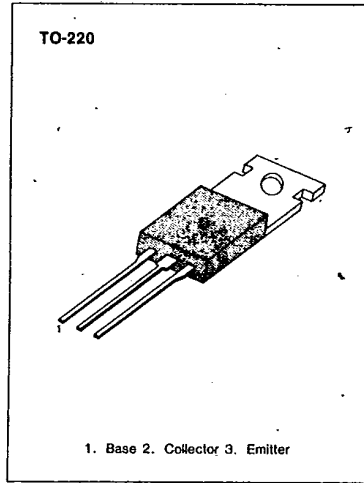
T-33-09

**MEDIUM POWER LINEAR**  
**SWITCHING APPLICATIONS**

• Complementary to TIP30/30A/30B/30C

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)**

| Characteristic                               | Symbol           | Rating  | Unit  |
|--|------------------|---------|-------|
| Collector-Base Voltage                       | V <sub>CB0</sub> | TIP29   | 40 V  |
|  |                  | TIP29A  | 60 V  |
|  |                  | TIP29B  | 80 V  |
|  |                  | TIP29C  | 100 V |
| Collector-Emitter Voltage                    | V <sub>CE0</sub> | TIP29   | 40 V  |
|  |                  | TIP29A  | 60 V  |
|  |                  | TIP29B  | 80 V  |
|  |                  | TIP29C  | 100 V |
| Emitter-Base Voltage                         | V <sub>EB0</sub> | 5       | V     |
| Collector Current (DC)                       | I <sub>C</sub>   | 1       | A     |
| Collector Current (Pulse)                    | I <sub>C</sub>   | 3       | A     |
| Base Current                                 | I <sub>B</sub>   | 0.4     | A     |
| Collector Dissipation (T <sub>c</sub> =25°C) | P <sub>C</sub>   | 30      | W     |
| Collector Dissipation (T <sub>a</sub> =25°C) | P <sub>C</sub>   | 2       | W     |
| Junction Temperature                         | T <sub>J</sub>   | 150     | °C    |
| Storage Temperature                          | T <sub>stg</sub> | -65~150 | °C    |



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**ELECTRICAL CHARACTERISTICS (T<sub>c</sub>=25°C)**

| Characteristic                        | Symbol                  | Test Condition                              | Min | Max | Unit |
|---------------------------------------|-------------------------|---|-----|-----|------|
| *Collector Emitter Sustaining Voltage | BV <sub>CEO</sub> (sus) | I <sub>C</sub> =30mA, I <sub>B</sub> =0     | 40  |     | V    |
|                                       |                         |   | 60  |     | V    |
|                                       |                         |   | 80  |     | V    |
|                                       |                         |   | 100 |     | V    |
| Collector Cutoff Current              | I <sub>CEO</sub>        | V <sub>CE</sub> =30V, I <sub>B</sub> =0     |     | 0.3 | mA   |
|                                       |                         | V <sub>CE</sub> =60V, I <sub>B</sub> =0     |     | 0.3 | mA   |
| Collector Cutoff Current              | I <sub>CES</sub>        | V <sub>CE</sub> =40V, V <sub>EB</sub> =0    |     | 200 | μA   |
|                                       |                         | V <sub>CE</sub> =60V, V <sub>EB</sub> =0    |     | 200 | μA   |
|                                       |                         | V <sub>CE</sub> =80V, V <sub>EB</sub> =0    |     | 200 | μA   |
|                                       |                         | V <sub>CE</sub> =100V, V <sub>EB</sub> =0   |     | 200 | μA   |
| Emitter Cutoff Current                | I <sub>EBO</sub>        | V <sub>BE</sub> =5V, I <sub>C</sub> =0      |     | 1.0 | mA   |
| *DC Current Gain                      | h <sub>FE</sub>         | V <sub>CE</sub> =4V, I <sub>C</sub> =0.2A   | 40  |     |      |
|                                       |                         | V <sub>CE</sub> =4V, I <sub>C</sub> =1A     | 15  | 75  |      |
| *Collector-Emitter Saturation Voltage | V <sub>CE</sub> (sat)   | I <sub>C</sub> =1A, I <sub>B</sub> =125mA   |     | 0.7 | V    |
| *Base-Emitter On Voltage              | V <sub>BE</sub> (on)    | V <sub>CE</sub> =4V, I <sub>C</sub> =1A     |     | 1.3 | V    |
| Current Gain Bandwidth Product        | f <sub>T</sub>          | V <sub>CE</sub> =10V, I <sub>C</sub> =200mA | 3.0 |     | MHz  |
|                                       |                         | f=1MHz                                      |     |     |      |

\* Pulse Test: PW≤300μs, Duty Cycle≤2%

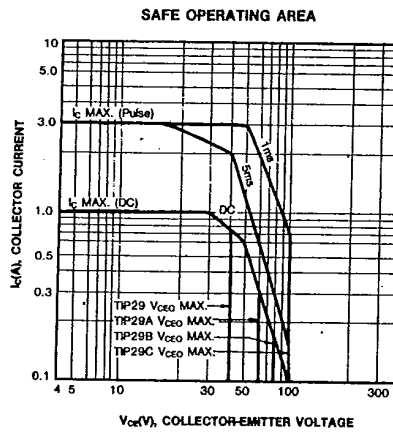
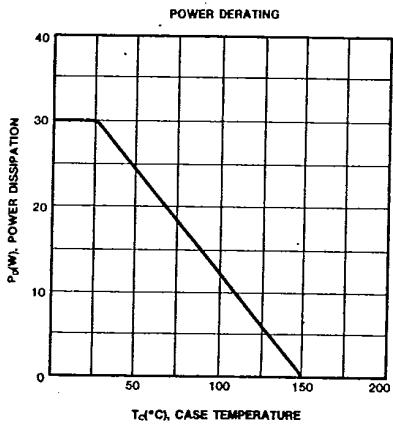
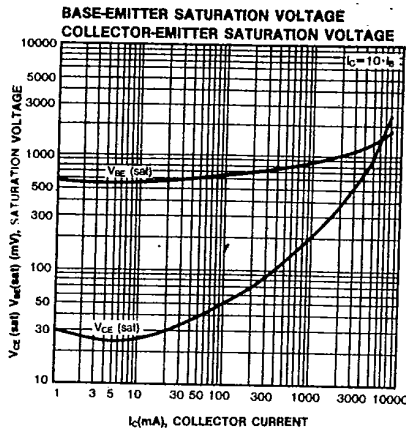
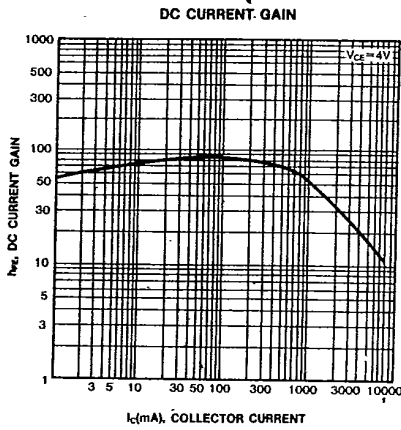
TIP29 SERIES

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(TIP29/29A/29B/29C) NPN EXITAXIAL SILICON TRANSISTOR

SAMSUNG SEMICONDUCTOR INC

T-33-09



**TIP30 SERIES****(TIP30/30A/30B/30C) PNP EXITAXIAL SILICON TRANSISTOR**

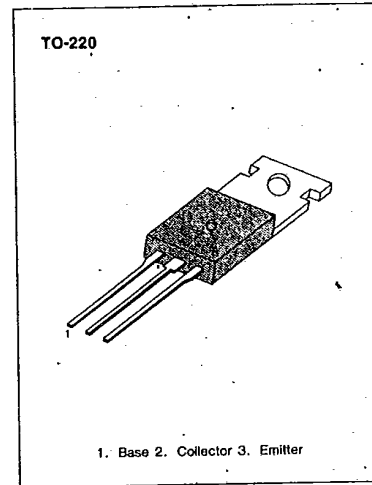
T-33-19

**MEDIUM POWER LINEAR  
SWITCHING APPLICATIONS**

- Complement to TIP29/29A/29B/29C

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)**

| Characteristic                               | Symbol           | Rating     | Unit   |
|--|------------------|------------|--------|
| Collector-Base Voltage                       | V <sub>CB0</sub> | TIP30      | -40 V  |
|  |                  | TIP30A     | -60 V  |
|  |                  | TIP30B     | -80 V  |
|  |                  | TIP30C     | -100 V |
|  |                  | TIP30C     | -100 V |
| Collector-Emitter Voltage                    | V <sub>CE0</sub> | TIP30      | -40 V  |
|  |                  | TIP30A     | -60 V  |
|  |                  | TIP30B     | -80 V  |
|  |                  | TIP30C     | -100 V |
|  |                  | TIP30C     | -100 V |
| Emitter-Base Voltage                         | V <sub>EB0</sub> | -5 V       | V      |
| Collector Current (DC)                       | I <sub>C</sub>   | -1 A       | A      |
| Collector Current (Pulse)                    | I <sub>C</sub>   | -3 A       | A      |
| Base Current                                 | I <sub>B</sub>   | -0.4 A     | A      |
| Collector Dissipation (T <sub>c</sub> =25°C) | P <sub>C</sub>   | 30 W       | W      |
| Collector Dissipation (T <sub>a</sub> =25°C) | P <sub>C</sub>   | 2 W        | W      |
| Junction Temperature                         | T <sub>J</sub>   | 150 °C     | °C     |
| Storage Temperature                          | T <sub>stg</sub> | -65~150 °C | °C     |



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**ELECTRICAL CHARACTERISTICS (T<sub>c</sub>=25°C)**

| Characteristic                         | Symbol                  | Test Condition  | Min                       | Max  | Unit |
|--|-------------------------|---|---------------------------|------|------|
| * Collector Emitter Sustaining Voltage | BV <sub>CEO</sub> (SUS) | I <sub>C</sub> =-30mA, I <sub>B</sub> =0                | -40<br>-60<br>-80<br>-100 |      | V    |
| Collector Cutoff Current               | I <sub>CEO</sub>        | V <sub>CE</sub> =-30V, I <sub>B</sub> =0                |                           | -0.3 | mA   |
|  |                         | V <sub>CE</sub> =-60V, I <sub>B</sub> =0                |                           | -0.3 | mA   |
| Collector Cutoff Current               | I <sub>CES</sub>        | V <sub>CE</sub> =-40V, V <sub>EB</sub> =0               |                           | -200 | μA   |
|  |                         | V <sub>CE</sub> =-60V, V <sub>EB</sub> =0               |                           | -200 | μA   |
|  |                         | V <sub>CE</sub> =-80V, V <sub>EB</sub> =0               |                           | -200 | μA   |
|  |                         | V <sub>CE</sub> =-100V, V <sub>EB</sub> =0              |                           | -200 | μA   |
|  |                         | V <sub>BE</sub> =-5V, I <sub>C</sub> =0                 |                           | -1.0 | mA   |
| Emitter Cutoff Current                 | I <sub>EBO</sub>        | V <sub>CE</sub> =-4V, I <sub>C</sub> =-0.2A             | 40                        |      | mA   |
| * DC Current Gain                      | h <sub>FE</sub>         | V <sub>CE</sub> =-4V, I <sub>C</sub> =-1A               | 15                        | 75   |      |
| * Collector-Emitter Saturation Voltage | V <sub>CE</sub> (sat)   | I <sub>C</sub> =-1A, I <sub>B</sub> =-125mA             |                           | -0.7 | V    |
| * Base-Emitter On Voltage              | V <sub>BE</sub> (on)    | V <sub>CE</sub> =-4V, I <sub>C</sub> =-1A               |                           | -1.3 | V    |
| Current Gain Bandwidth Product         | f <sub>T</sub>          | V <sub>CE</sub> =-10V, I <sub>C</sub> =-200mA<br>f=1MHz | 3.0                       |      | MHz  |

\* Pulse Test: PW≤300μs, Duty Cycle≤2%

**TIP30 SERIES**

**(TIP30/30A/30B/30C) PNP EXITAXIAL SILICON TRANSISTOR**

T-33-19

