

# Central<sup>TM</sup> Semiconductor Corp.

145 Adams Avenue, Hauppauge, NY 11788 USA  
Tel: (631) 435-1110 • Fax: (631) 435-1824

Manufacturers of World Class Discrete Semiconductors

TIP29  
TIP29A  
TIP29B  
TIP29C

SILICON NPN POWER TRANSISTOR  
1 AMP, 30 WATTS

JEDEC TO-220 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR TIP29 Series is a NPN Epitaxial-Base Silicon Power Transistor designed for power amplifier and high-speed switching applications.

## MAXIMUM RATINGS ( $T_C=25^{\circ}\text{C}$ unless otherwise noted)

|                                                | SYMBOL         | TIP29       | TIP29A | TIP29B      | TIP29C | UNIT               |
|------------------------------------------------|----------------|-------------|--------|-------------|--------|--------------------|
| Collector-Base Voltage                         | $V_{CB0}$      | 40          | 60     | 80          | 100    | V                  |
| Emitter-Base Voltage                           | $V_{EB0}$      | 5.0         | 5.0    | 5.0         | 5.0    | V                  |
| Collector-Emitter Voltage                      | $V_{CE0}$      | 40          | 60     | 80          | 100    | V                  |
| Collector Current, Continuous                  | $I_C$          | 1.0         | 1.0    | 1.0         | 1.0    | A                  |
| Collector Current, Peak                        | $I_{CM}$       | 3.0         | 3.0    | 3.0         | 3.0    | A                  |
| Base Current                                   | $I_B$          | 0.4         | 0.4    | 0.4         | 0.4    | A                  |
| Power Dissipation                              | $P_D$          | 30          | 30     | 30          | 30     | W                  |
| Power Dissipation ( $T_A=25^{\circ}\text{C}$ ) | $P_D$          | 2.0         | 2.0    | 2.0         | 2.0    | W                  |
| Operating and Storage<br>Junction Temperature  | $T_J, T_{stg}$ | -65 TO +150 |        | -65 TO +150 |        | $^{\circ}\text{C}$ |

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

| SYMBOL               | TEST CONDITIONS                                                         | MIN     | MAX | UNIT          |
|----------------------|-------------------------------------------------------------------------|---------|-----|---------------|
| $I_{CE0}$            | $V_{CE}=30\text{V}$ (TIP29, TIP29A)                                     |         | 0.3 | mA            |
| $I_{CE0}$            | $V_{CE}=60\text{V}$ (TIP29B, TIP29C)                                    |         | 0.3 | mA            |
| $I_{CES}$            | $V_{CE}=\text{Rated } V_{CE0}$                                          |         | 0.2 | mA            |
| $I_{EB0}$            | $V_{EB}=5.0\text{V}$                                                    |         | 1.0 | mA            |
| $BV_{CE0}$           | $I_C=30\text{mA}$ , (TIP29)                                             | 40      |     | V             |
| $BV_{CE0}$           | $I_C=30\text{mA}$ , (TIP29A)                                            | 60      |     | V             |
| $BV_{CE0}$           | $I_C=30\text{mA}$ , (TIP29B)                                            | 80      |     | V             |
| $BV_{CE0}$           | $I_C=30\text{mA}$ , (TIP29C)                                            | 100     |     | V             |
| $V_{CE}(\text{SAT})$ | $I_C=1.0\text{A}$ , $I_B=125\text{mA}$                                  |         | 0.7 | V             |
| $V_{BE}(\text{on})$  | $V_{CE}=4.0\text{V}$ , $I_C=1.0\text{A}$                                |         | 1.3 | V             |
| $h_{FE}$             | $V_{CE}=4.0\text{V}$ , $I_C=0.2\text{A}$                                | 40      |     | -             |
| $h_{FE}$             | $V_{CE}=4.0\text{V}$ , $I_C=1.0\text{A}$                                | 15      | 75  | -             |
| $h_{fe}$             | $V_{CE}=10\text{V}$ , $I_C=0.2\text{A}$ , $f=1\text{ kHz}$              | 20      |     | -             |
| $f_T$                | $V_{CE}=10\text{V}$ , $I_C=0.2\text{A}$ , $f=1\text{ MHz}$              | 3       |     | MHz           |
| $t_{on}$             | $I_C=1.0\text{A}$ , $I_{B1}=I_{B2}=100\text{mA}$ , $R_L=30\text{ OHMS}$ | 0.5 TYP |     | $\mu\text{S}$ |
| $t_{off}$            | $I_C=1.0\text{A}$ , $I_{B1}=I_{B2}=100\text{mA}$ , $R_L=30\text{ OHMS}$ | 2.0 TYP |     | $\mu\text{S}$ |

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Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd  
Minhang District, Shanghai , China

➤ Sales :

Direct     +86 (21) 6401-6692  
Email      amall@ameya360.com  
QQ         800077892  
Skype      ameyasales1 ameyasales2

➤ Customer Service :

Email      service@ameya360.com

➤ Partnership :

Tel         +86 (21) 64016692-8333  
Email      mkt@ameya360.com