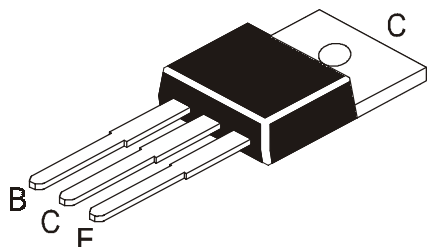


**PNP PLASTIC POWER TRANSISTOR**  
**NPN PLASTIC POWER TRANSISTOR**

**CSA 1012**  
**CSC 2562**

**TO-220**  
**Plastic Package**



**High Current Switching Applications.**

**ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise )**

| DESCRIPTION                           | SYMBOL    | VALUE       | UNIT |
|---------------------------------------|-----------|-------------|------|
| Collector -Base Voltage(open emitter) | $V_{CBO}$ | >60         | V    |
| Collector -Emitter Voltage(open base) | $V_{CEO}$ | >50         | V    |
| Emitter Base Voltage(open collector)  | $V_{EBO}$ | >5.0        | V    |
| Collector Current                     | $I_C$     | <5.0        | A    |
| Total Power Dissipation upto Tc=25°C  | $P_{tot}$ | <25         | W    |
| Junction Temperature                  | $T_j$     | <150        | °C   |
| Storage Temperature                   | $T_{stg}$ | -65 to +150 | °C   |

**ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)**

| DESCRIPTION               | SYMBOL        | TEST CONDITION           | MIN                         | TYP | MAX | UNIT    |
|---------------------------|---------------|--------------------------|-----------------------------|-----|-----|---------|
| Collector Cut off Current | $I_{CBO}$     | $V_{CB}=50V, I_E=0$      |                             |     | 1.0 | $\mu A$ |
| Emitter Cut off Current   | $I_{EBO}$     | $V_{EB}=5V, I_C=0$       |                             |     | 1.0 | $\mu A$ |
| Breakdown Voltages        | $V_{CEO}$     | $I_C=10mA, I_B=0$        | 50                          |     |     | V       |
|                           | $V_{CBO}$     | $I_C=1mA, I_E=0$         | 60                          |     |     | V       |
|                           | $V_{EBO}$     | $I_C=0, I_E=1mA$         | 5.0                         |     |     | V       |
| Saturation Voltages       | $V_{CE(sat)}$ | $I_C=3A, I_B=0.15A$      |                             |     | 0.4 | V       |
|                           | $V_{BE(sat)}$ |                          |                             |     | 1.2 | V       |
| DC Current Gain           | $h_{FE}$      | $I_C=1A, V_{CE}=1V^{**}$ | 70                          |     | 240 |         |
|                           |               | $I_C=3A, V_{CE}=1V$      | 30                          |     | 20  |         |
| Transition frequency      | PNP<br>NPN    | $f_T$                    | $I_C=1.0A, V_{CE}=4V$       | 60  |     | MHz     |
|                           |               |                          |                             | 120 |     | MHz     |
| Output Capacitance        | PNP<br>NPN    | $C_o$                    | $V_{CB}=10V, I_E=0, f=1MHz$ | 170 |     | pF      |
|                           |               |                          |                             | 80  |     | pF      |

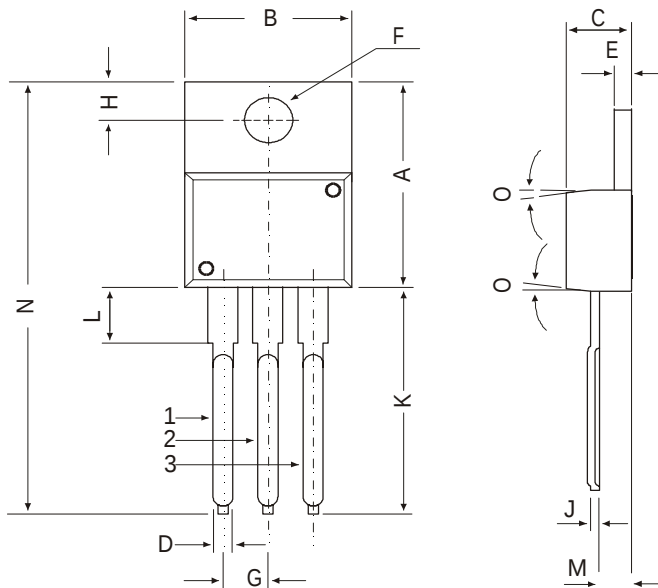
**Switching Time**

|                                                      |  |          |  |     |  |         |
|------------------------------------------------------|--|----------|--|-----|--|---------|
| $V_{CC}=30V, I_{B1}=-I_{B2}=0.15A$<br>Duty cycle =1% |  |          |  |     |  |         |
| Turn on time                                         |  | $t_{on}$ |  | 0.1 |  | $\mu s$ |
| Storage time                                         |  | $t_s$    |  | 0   |  | $\mu s$ |
| Fall time                                            |  | $t_f$    |  | 0.1 |  | $\mu s$ |

**\*\*  $h_{FE}$  classification : O: 70-140 Y: 120-240**

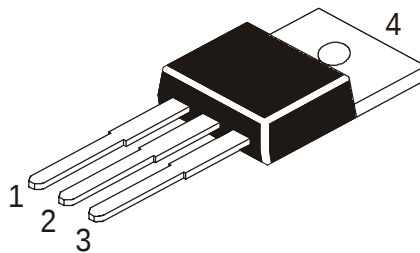
TO-220  
Plastic Package

TO-220 Plastic Package



| DIM | MIN   | MAX   |
|-----|-------|-------|
| A   | 14.42 | 16.51 |
| B   | 9.63  | 10.67 |
| C   | 3.56  | 4.83  |
| D   | —     | 0.90  |
| E   | 1.15  | 1.40  |
| F   | 3.75  | 3.88  |
| G   | 2.29  | 2.79  |
| H   | 2.54  | 3.43  |
| J   | —     | 0.56  |
| K   | 12.70 | 14.73 |
| L   | 2.80  | 4.07  |
| M   | 2.03  | 2.92  |
| N   | —     | 31.24 |
| O   | 7 DEG |       |

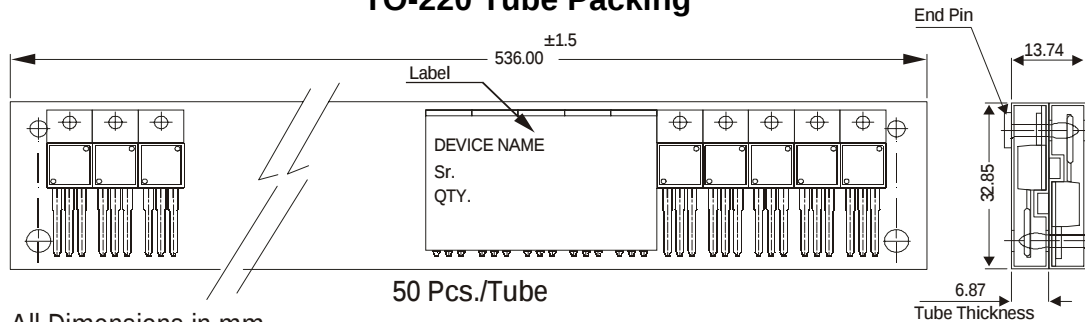
All dimensions in mm.



Pin Configuration

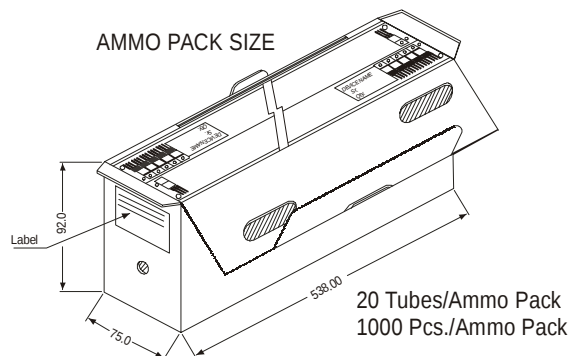
1. Base
2. Collector
3. Emitter
4. Collector

TO-220 Tube Packing



All Dimensions in mm

AMMO PACK SIZE



Packing Detail

| PACKAGE | STANDARD PACK   |                | INNER CARTON BOX    |     | OUTER CARTON BOX  |     |        |
|---------|-----------------|----------------|---------------------|-----|-------------------|-----|--------|
|         | Details         | Net Weight/Qty | Size                | Qty | Size              | Qty | Gr Wt  |
| TO-220  | 200 pcs/polybag | 396 gm/200 pcs | 3" x 7.5" x 7.5"    | 1K  | 17" x 15" x 13.5" | 16K | 36 kgs |
|         | 50 pcs/tube     | 135 gm/50 pcs  | 3.5" x 3.7" x 21.5" | 1K  | 19" x 19" x 19"   | 10K | 28 kgs |

### Disclaimer

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