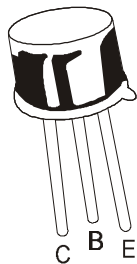


## SILICON POWER SWITCHING TRANSISTORS



2N5320, 2N5321 NPN  
2N5322, 2N5323 PNP

TO-39  
Metal Can Package

### Medium Power Amplifier and Switching Applications

#### ABSOLUTE MAXIMUM RATINGS

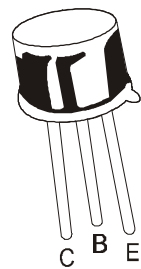
| DESCRIPTION                                                                  | SYMBOL         | 2N5320       | 2N5321 | 2N5322 | 2N5323 | UNITS                     |
|------------------------------------------------------------------------------|----------------|--------------|--------|--------|--------|---------------------------|
| Collector Emitter Voltage                                                    | $V_{CEO}$      | 75           | 50     | 75     | 50     | V                         |
| Collector Base Voltage                                                       | $V_{CBO}$      | 100          | 75     | 100    | 75     | V                         |
| Emitter Base Voltage                                                         | $V_{EBO}$      | 7            | 5      | 7      | 5      | V                         |
| Collector Current - Continuous                                               | $I_C$          | 2.0          |        |        |        | A                         |
| Base Current                                                                 | $I_B$          | 1.0          |        |        |        | A                         |
| Power Dissipation@ $T_a=25^\circ\text{C}$<br>Derate Above $25^\circ\text{C}$ | $P_D$          | 1<br>5.71    |        |        |        | W<br>mW/ $^\circ\text{C}$ |
| Power Dissipation@ $T_c=25^\circ\text{C}$<br>Derate Above $25^\circ\text{C}$ | $P_D$          | 10<br>57.14  |        |        |        | W<br>mW/ $^\circ\text{C}$ |
| Operating And Storage Junction<br>Temperature Range                          | $T_j, T_{stg}$ | - 65 to +200 |        |        |        | $^\circ\text{C}$          |

#### THERMAL CHARACTERISTICS

|                                 |               |      |                    |
|---------------------------------|---------------|------|--------------------|
| Junction to Ambient in free air | $R_{th(j-a)}$ | 175  | $^\circ\text{C/W}$ |
| Junction to Case                | $R_{th(j-c)}$ | 17.5 | $^\circ\text{C/W}$ |

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

| DESCRIPTION               | SYMBOL    | TEST CONDITION                                                                | MIN      | MAX | UNITS         |
|---------------------------|-----------|-------------------------------------------------------------------------------|----------|-----|---------------|
| Collector Emitter Voltage | $V_{CEO}$ | $I_C=100\text{mA}, I_B=0$<br>2N5320/5322<br>2N5321/5323                       | 75<br>50 |     | V<br>V        |
| Collector Cut Off Current | $I_{CEX}$ | $V_{CE}=70\text{V}, V_{BE}=1.5\text{V}, T_c=150^\circ\text{C}$<br>2N5320/5322 |          | 5   | mA            |
|                           |           | $V_{CE}=45\text{V}, V_{BE}=1.5\text{V}, T_c=150^\circ\text{C}$<br>2N5321/5323 |          | 5   | mA            |
|                           |           | $V_{CE}=100\text{V}, V_{BE}=1.5\text{V}$<br>2N5320/5322                       |          | 100 | $\mu\text{A}$ |
|                           |           | $V_{CE}=75\text{V}, V_{BE}=1.5\text{V}$<br>2N5321/5323                        |          | 100 | $\mu\text{A}$ |
| Emitter Cut Off Current   | $I_{EBO}$ | $V_{BE}=5\text{V}, I_C=0$<br>2N5321/5323                                      |          | 100 | $\mu\text{A}$ |
|                           |           | $V_{BE}=7\text{V}, I_C=0$<br>2N5320/5322                                      |          | 100 | $\mu\text{A}$ |



TO-39  
Metal Can Package

ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless specified otherwise)

| DESCRIPTION                          | SYMBOL         | TEST CONDITION                                                | MIN      | TYP | MAX                      | UNITS            |
|--------------------------------------|----------------|---------------------------------------------------------------|----------|-----|--------------------------|------------------|
| DC Current Gain                      | $*h_{FE}$      | $I_C=1A, V_{CE}=2V$<br>2N5320/5322                            | 10       |     |                          |                  |
|                                      |                | $I_C=0.5A, V_{CE}=4V$<br>2N5320/5322<br>2N5321/5323           | 30<br>40 |     | 130<br>250               |                  |
| Collector Emitter Saturation Voltage | $*V_{CE(sat)}$ | $I_C=500mA, I_B=50mA$<br>2N5320<br>2N5321<br>2N5322<br>2N5323 |          |     | 0.5<br>0.8<br>0.7<br>1.2 | V<br>V<br>V<br>V |
| Base Emitter On Voltage              | $*V_{BE(on)}$  | $I_C=500mA, V_{CE}=4V$<br>2N5320/5322<br>2N5321/5323          |          |     | 1.1<br>1.4               | V<br>V           |

DYNAMIC CHARACTERISTICS

|                           |          |                                |   |  |  |  |
|---------------------------|----------|--------------------------------|---|--|--|--|
| Small Signal Current Gain | $h_{fe}$ | $I_C=50mA, V_{CE}=4V, f=10MHz$ | 5 |  |  |  |
|---------------------------|----------|--------------------------------|---|--|--|--|

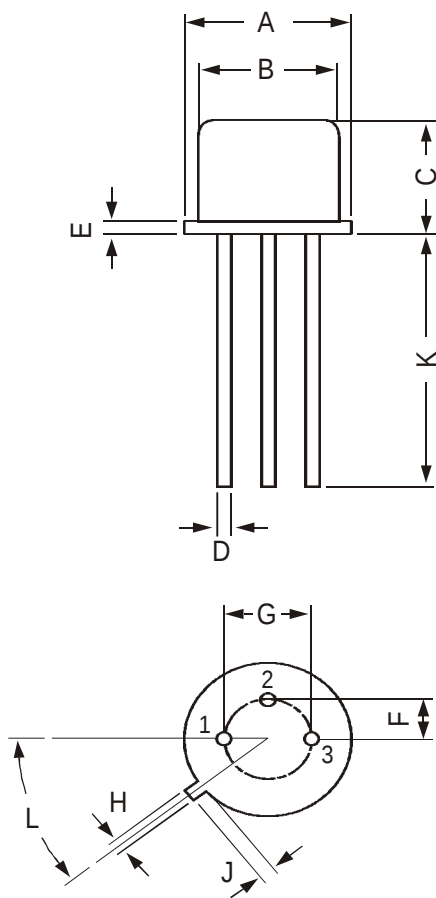
SWITCHING CHARACTERISTICS

|               |           |                                                                           |  |  |             |          |
|---------------|-----------|---------------------------------------------------------------------------|--|--|-------------|----------|
| Turn On time  | $t_{on}$  | $V_{CC}=30V, I_C=500mA, I_{B1}=50mA$<br>2N5320/5321<br>2N5322/5323        |  |  | 80<br>100   | ns<br>ns |
| Turn Off time | $t_{off}$ | $V_{CC}=30V, I_C=500mA, I_{B1}=I_{B2}=50mA$<br>2N5320/5321<br>2N5322/5323 |  |  | 800<br>1000 | ns<br>ns |

\*Pulsed: Pulse width  $\leq 300ms$ , duty cycle  $\leq 2\%$

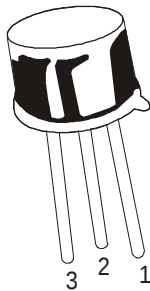
TO-39  
Metal Can Package

TO-39 Metal Can Package



All dimensions are in mm

| DIM | MIN    | MAX    |
|-----|--------|--------|
| A   | 8.50   | 9.39   |
| B   | 7.74   | 8.50   |
| C   | 6.09   | 6.60   |
| D   | 0.40   | 0.53   |
| E   | —      | 0.88   |
| F   | 2.41   | 2.66   |
| G   | 4.82   | 5.33   |
| H   | 0.71   | 0.86   |
| J   | 0.73   | 1.02   |
| K   | 12.70  | —      |
| L   | 42 DEG | 48 DEG |



PIN CONFIGURATION  
1. EMITTER  
2. BASE  
3. COLLECTOR

Packing Details

| PACKAGE | STANDARD PACK   |                | INNER CARTON BOX |     | OUTER CARTON BOX  |     |        |
|---------|-----------------|----------------|------------------|-----|-------------------|-----|--------|
|         | Details         | Net Weight/Qty | Size             | Qty | Size              | Qty | Gr Wt  |
| TO-39   | 500 pcs/polybag | 540 gm/500 pcs | 3" x 7.5" x 7.5" | 20K | 17" x 15" x 13.5" | 32K | 40 kgs |

### **Disclaimer**

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