

## NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/455

### DEVICES

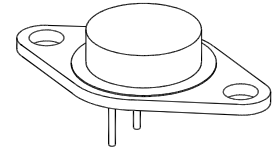
2N5664      2N5666      2N5667  
 2N5665      2N5666S      2N5667S  
                  2N5666U3

### LEVELS

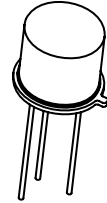
JAN  
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### ABSOLUTE MAXIMUM RATINGS ( $T_C = +25^\circ\text{C}$ unless otherwise noted)

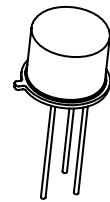
| Parameters / Test Conditions  | Symbol         | 2N5664<br>2N5666, S | 2N5665<br>2N5667, S    | Unit             |   |
|---|----------------|---------------------|------------------------|------------------|---|
| Collector-Emitter Voltage   | $V_{CEO}$      | 200                 | 300                    | Vdc              |   |
| Collector-Base Voltage  | $V_{CBO}$      | 250                 | 400                    | Vdc              |   |
| Emitter-Base Voltage  | $V_{EBO}$      | 6.0                 |                        | Vdc              |   |
| Base Current  | $I_B$          | 1.0                 |                        | Adc              |   |
| Collector Current   | $I_C$          | 5.0                 |                        | Adc              |   |
|   |                | 2N5664<br>2N5665    | 2N5666, S<br>2N5667, S | 2N5666U3         |   |
| Total Power Dissipation<br>1/ @ $T_A = +25^\circ\text{C}$<br>@ $T_C = +100^\circ\text{C}$ | $P_T$          | 2.5<br>30           | 1.2<br>15              | 1.5<br>35        | W |
| Operating & Storage Junction Temperature Range  | $T_J, T_{stg}$ | -65 to +200         |                        | $^\circ\text{C}$ |   |



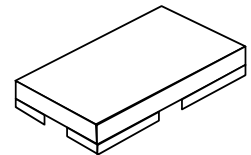
TO-66 (TO-213AA)  
2N5664, 2N5665



TO-5  
2N5666, 2N5667



TO-39 (TO-205AD)  
2N5666S, 2N5667S



U-3  
2N5666U3

Note: 1) Consult 19500/455 for thermal derating curves.

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

| Parameters / Test Conditions  | Symbol        | Min.       | Max.                     | Unit                |
|---|---------------|------------|--------------------------|---------------------|
| <b>OFF CHARACTERISTICS</b>  |               |            |                          |                     |
| Collector-Emitter Breakdown Voltage<br>$I_C = 10\text{mA}$  | $V_{(BR)CER}$ | 250<br>400 |                          | Vdc                 |
| Emitter-Base Breakdown Voltage<br>$I_E = 10\mu\text{A}$   | $V_{(BR)EBO}$ | 6.0        |                          | Vdc                 |
| Collector-Emitter Cutoff Current<br>$V_{CE} = 200\text{Vdc}$<br>$V_{CE} = 300\text{Vdc}$  | $I_{CES}$     |            | 0.2<br>0.2               | $\mu\text{A}$       |
| Collector-Base Cutoff Current<br>$V_{CB} = 200\text{Vdc}$<br>$V_{CB} = 250\text{Vdc}$<br>$V_{CB} = 300\text{Vdc}$<br>$V_{CB} = 400\text{Vdc}$ | $I_{CBO}$     |            | 0.1<br>1.0<br>0.1<br>1.0 | $\mu\text{A}$<br>mA |



# TECHNICAL DATA SHEET

6 Lake Street, Lawrence, MA 01841  
 1-800-446-1158 / (978) 620-2600 / Fax: (978) 689-0803  
 Website: <http://www.microsemi.com>

## NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/455

### ELECTRICAL CHARACTERISTICS (con't)

| Parameters / Test Conditions   | Symbol                           | Min.     | Max.      | Unit |
|--|----------------------------------|----------|-----------|------|
| <b>ON CHARACTERISTICS</b>  |                                  |          |           |      |
| Forward-Current Transfer Ratio<br>$I_C = 0.5A_{dc}, V_{CE} = 2.0V_{dc}$    |                                  | 40<br>25 |           |      |
|  | 2N5664, 2N5666<br>2N5665, 2N5667 |          |           |      |
| $I_C = 1.0A_{dc}, V_{CE} = 5.0V_{dc}$                                      |                                  | 40<br>25 | 120<br>75 |      |
|  | 2N5664, 2N5666<br>2N5665, 2N5667 |          |           |      |
| $I_C = 3.0A_{dc}, V_{CE} = 5.0V_{dc}$                                      |                                  | 15<br>10 |           |      |
|  | 2N5664, 2N5666<br>2N5665, 2N5667 |          |           |      |
| $I_C = 5.0A_{dc}, V_{CE} = 5.0V_{dc}$                                      |                                  | 5.0      |           |      |
|  | All Types                        |          |           |      |
| Collector-Emitter Saturation Voltage<br>$I_C = 3.0A_{dc}, I_B = 0.3A_{dc}$ |                                  |          | 0.4       | Vdc  |
| $I_C = 3.0A_{dc}, I_B = 0.6A_{dc}$   | 2N5664, 2N5666<br>2N5665, 2N5667 |          | 0.4       |      |
| $I_C = 5.0A_{dc}, I_B = 1.0A_{dc}$   | All Types                        |          | 1.0       |      |
| Base-Emitter Saturation Voltage<br>$I_C = 3.0A_{dc}, I_B = 0.3A_{dc}$      |                                  |          | 1.2       | Vdc  |
| $I_C = 3.0A_{dc}, I_B = 0.6A_{dc}$   | 2N5664, 2N5666<br>2N5665, 2N5667 |          | 1.2       |      |
| $I_C = 5.0A_{dc}, I_B = 1.0A_{dc}$   | All Types                        |          | 1.5       |      |

### DYNAMIC CHARACTERISTICS

|  |            |     |     |    |
|--|------------|-----|-----|----|
| Forward Current Transfer Ratio<br>$I_C = 0.5A_{dc}, V_{CE} = 5.0V_{dc}, f = 10MHz$ | $ h_{fe} $ | 2.0 | 7.0 |    |
| Output Capacitance<br>$V_{CB} = 10V_{dc}, I_E = 0, 100kHz \leq f \leq 1.0MHz$      | $C_{obo}$  |     | 120 | pF |

### SWITCHING CHARACTERISTICS

| Parameters / Test Conditions   | Symbol                           | Min. | Max.       | Unit    |
|--|----------------------------------|------|------------|---------|
| Turn-On Time<br>$V_{CC} = 100V_{dc}; I_C = 1.0A_{dc}; I_{B1} = 30mA_{dc}$            | $t_{on}$                         |      | 0.25       | $\mu s$ |
| Turn-Off Time<br>$V_{CC} = 100V_{dc}; I_C = 1.0A_{dc}; I_{B1} = -I_{B2} = 50mA_{dc}$ | $t_{off}$                        |      | 1.5<br>2.0 | $\mu s$ |
|  | 2N5664, 2N5666<br>2N5665, 2N5667 |      |            |         |