



2SD965/A

NPN SILICON TRANSISTOR

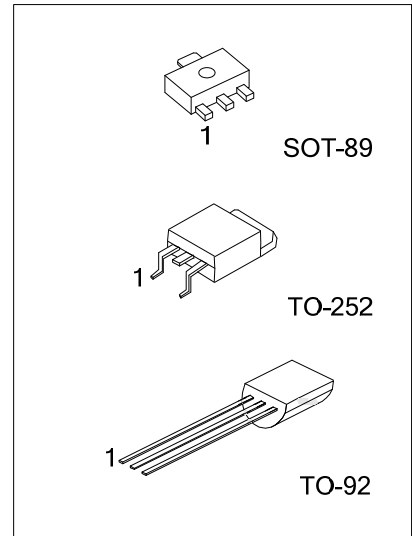
LOW VOLTAGE HIGH CURRENT TRANSISTOR

■ FEATURES

- * Collector current up to 5A
- * UTC **2SD965**: Collector-Emitter voltage up to 20 V
- * UTC **2SD965A**: Collector-Emitter voltage up to 30 V

■ APPLICATIONS

- * Audio amplifier
- * Flash unit of camera
- * Switching circuit



■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|------------------|------------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| - | 2SD965G-x-AB3-R | SOT-89 | B | C | E | Tape Reel |
| 2SD965L-x-T92-B | 2SD965G-x-T92-B | TO-92 | E | C | B | Tape Box |
| 2SD965L-x-T92-K | 2SD965G-x-T92-K | TO-92 | E | C | B | Bulk |
| 2SD965L-x-TN3-R | 2SD965G-x-TN3-R | TO-252 | B | C | E | Tape Reel |
| - | 2SD965AG-x-AB3-R | SOT-89 | B | C | E | Tape Reel |
| 2SD965AL-x-T92-B | 2SD965AG-x-T92-B | TO-92 | E | C | B | Tape Box |
| 2SD965AL-x-T92-K | 2SD965AG-x-T92-K | TO-92 | E | C | B | Bulk |
| 2SD965AL-x-TN3-R | 2SD965AG-x-TN3-R | TO-252 | B | C | E | Tape Reel |

Note: Pin Assignment: C: Collector B: Base E: Emitter

| | |
|--|---|
| <p>2SD965G-x-AB3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Green Package</p> | <p>(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AB3: SOT-89, T92: TO-92, TN3: TO-252 (3) x: refer to Classification of h_{FE2} (4) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--|---|

MARKING

| PACKAGE | MARKING | |
|---------|---------|---------|
| | 2SD965 | 2SD965A |
| SOT-89 | | |
| TO-252 | | |
| TO-92 | | |

■ ABSOLUTE MAXIMUM RATING (T_A=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------------|------------------|------------|------|
| Collector-Base Voltage | V _{CBO} | 40 | V |
| Collector-Emitter Voltage | V _{CEO} | 20 | V |
| | | 30 | V |
| Emitter-Base Voltage | V _{EBO} | 7 | V |
| Collector Dissipation | P _C | 500 | mW |
| | | 750 | mW |
| | | 1 | W |
| Collector Current | I _C | 5 | A |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature | T _{STG} | -65 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

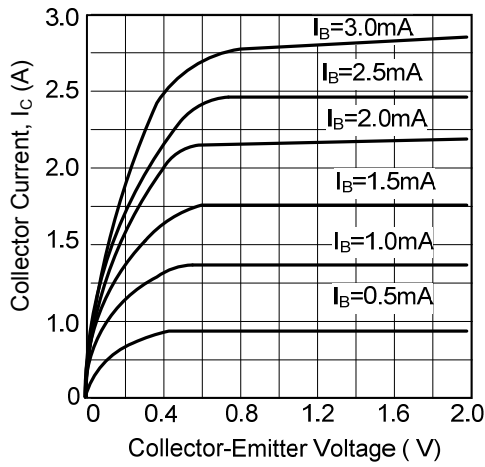
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|----------------------|---|-----|-----|-----|------|
| Collector-Base Breakdown Voltage | BV _{CBO} | I _C =100μA, I _E =0 | 40 | | | V |
| Collector-Emitter Breakdown Voltage | BV _{CEO} | I _C =1mA, I _B =0 | 20 | | | V |
| | | | 30 | | | V |
| Emitter-Base Breakdown Voltage | BV _{EBO} | I _E =10μA, I _C =0 | 7 | | | V |
| Collector Cut-off Current | I _{CBO} | V _{CB} =10V, I _E =0 | | | 100 | nA |
| Emitter Cut-off Current | I _{EBO} | V _{EB} =7V, I _C =0 | | | 100 | nA |
| DC Current Gain | h _{FE1} | V _{CE} =2V, I _C =1mA | | 200 | | |
| | h _{FE2} | V _{CE} =2V, I _C =0.5A | 230 | | 800 | |
| | h _{FE3} | V _{CE} =2V, I _C =2A | 150 | | | |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | I _C =3A, I _B =0.1A | | | 1 | V |
| Current Gain Bandwidth Product | f _T | V _{CE} =6V, I _C =50mA | | 150 | | MHz |
| Output Capacitance | C _{ob} | V _{CB} =20V, I _E =0, f=1MHz | | | 50 | pF |

■ CLASSIFICATION OF h_{FE2}

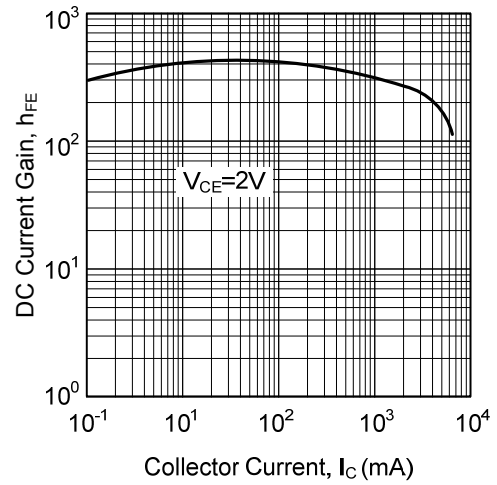
| RANK | Q | R | S |
|-------|---------|---------|---------|
| RANGE | 230-380 | 340-600 | 560-800 |

TYPICAL CHARACTERISTICS

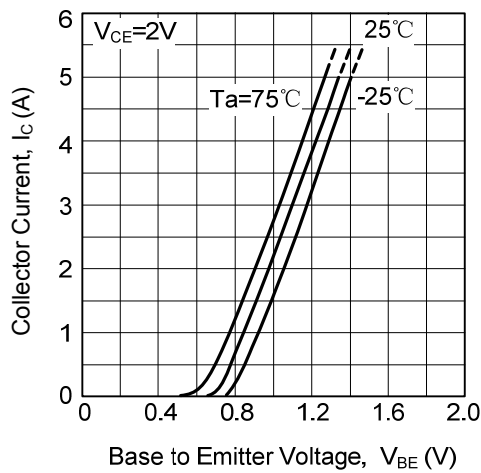
Static Characteristics



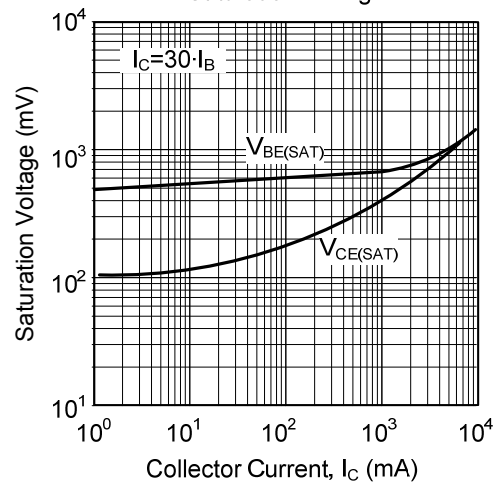
DC Current Gain



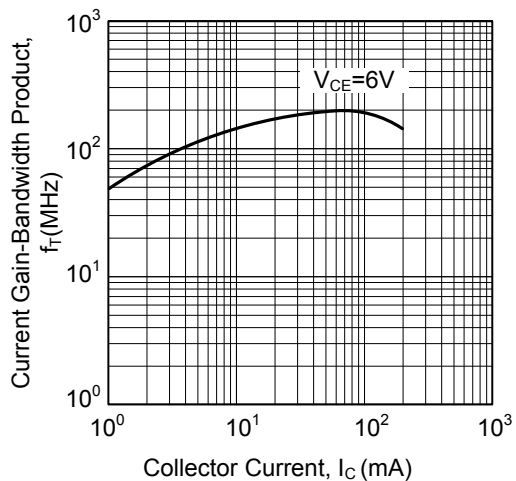
Base-Emitter on Voltage



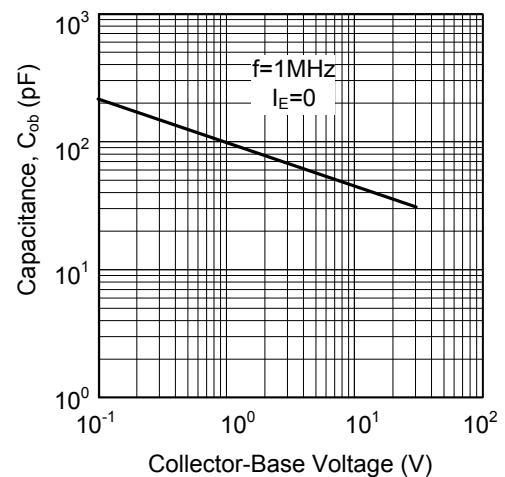
Saturation Voltage



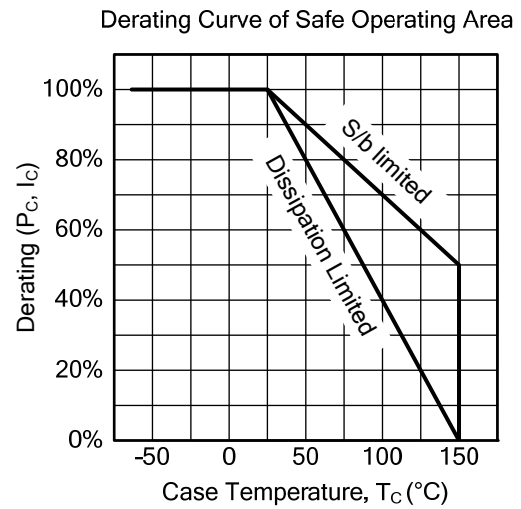
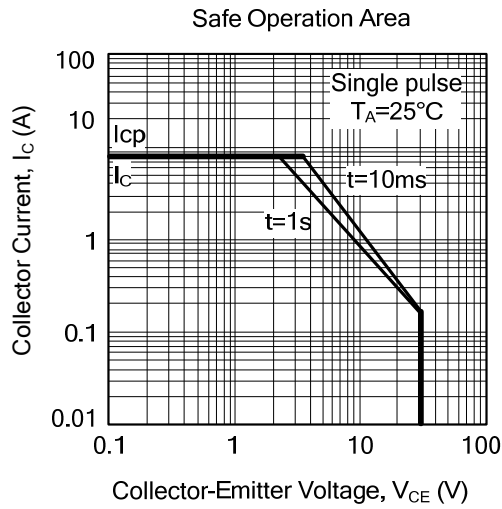
Current Gain-Bandwidth Product



Collector Output Capacitance



TYPICAL CHARACTERISTICS



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