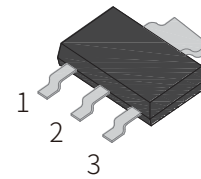


FEATURES

- | Low Collector-Emitter Saturation Voltage

- | Large Collector Power Dissipation and Current

- | Mini Power Type Package



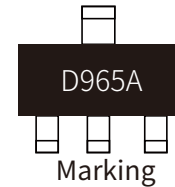
SOT-89

MECHANICAL DATA

- | SOT-89 small outline plastic package

- | Epoxy UL: 94V-0

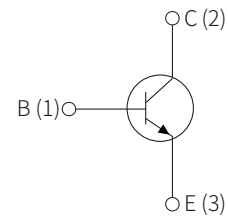
- | Mounting position: Any



Marking

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |



Schematic Symbol

MAXIMUM RATINGS (T_A=25°C)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|----------|------|
| Collector-Base Voltage | V _{CBO} | 40 | V |
| Collector-Emitter Voltage | V _{CEO} | 30 | |
| Emitter-Base Voltage | V _{EBO} | 7 | |
| Collector Current | I _C | 5 | A |
| Collector Power Dissipation | P _C | 500 | mW |
| Storage Operation Junction and Storage Temperature Range | T _J , T _{STG} | -55~+150 | °C |

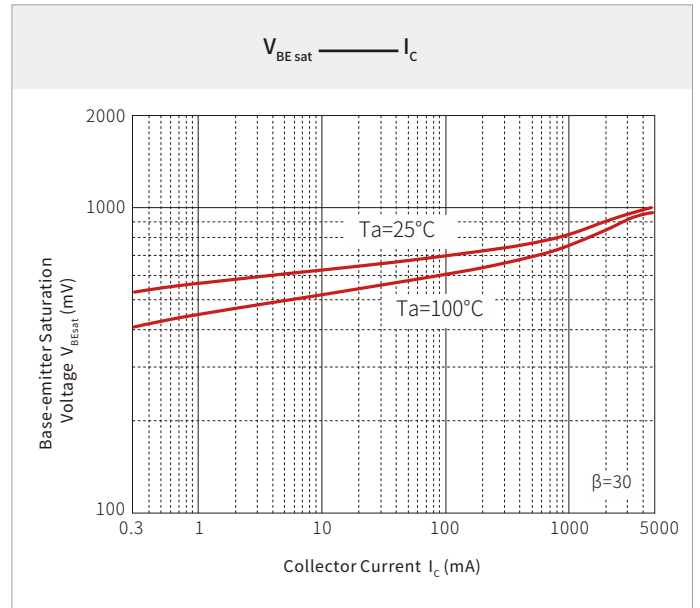
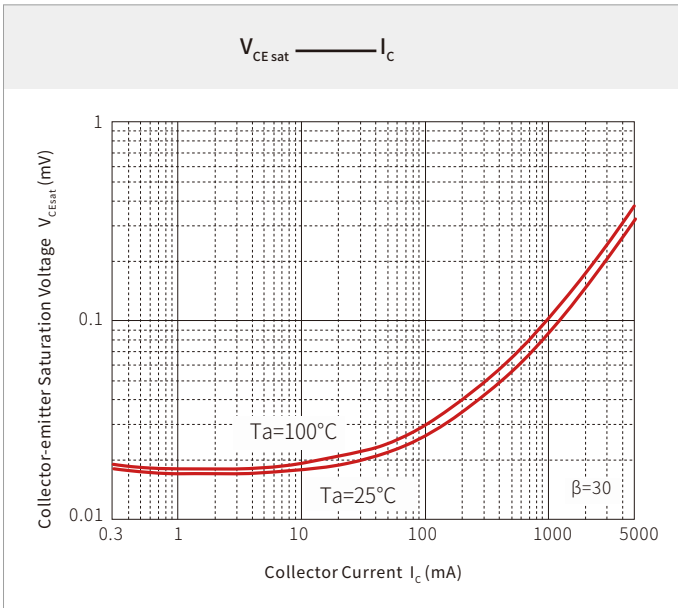
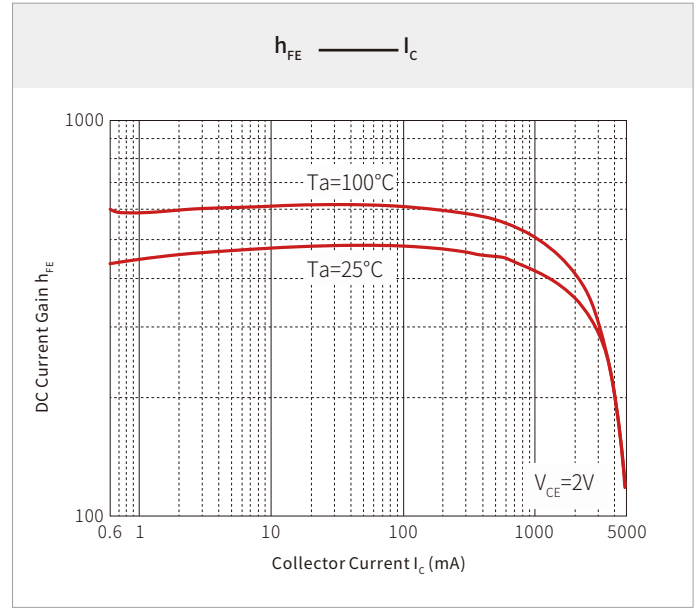
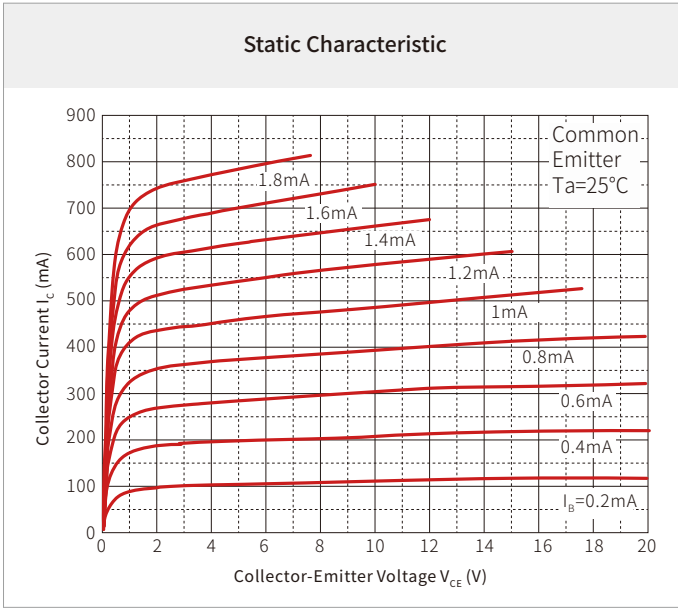
ELECTRICAL CHARACTERISTICS (T_A=25°C)

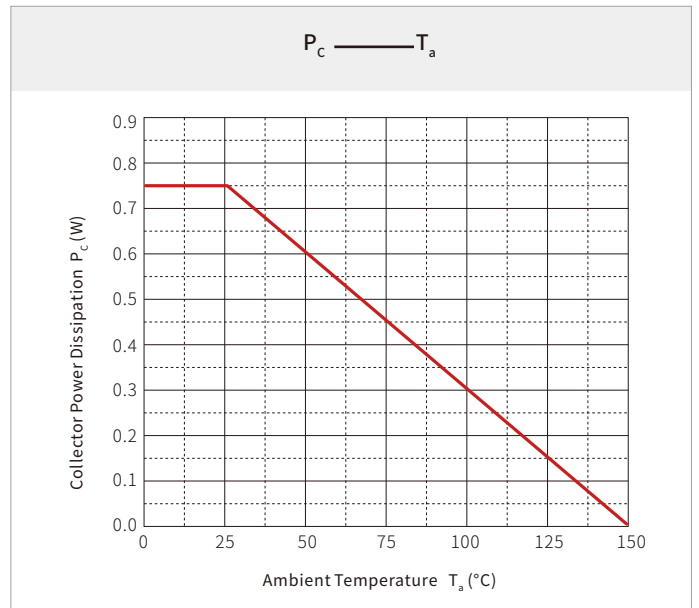
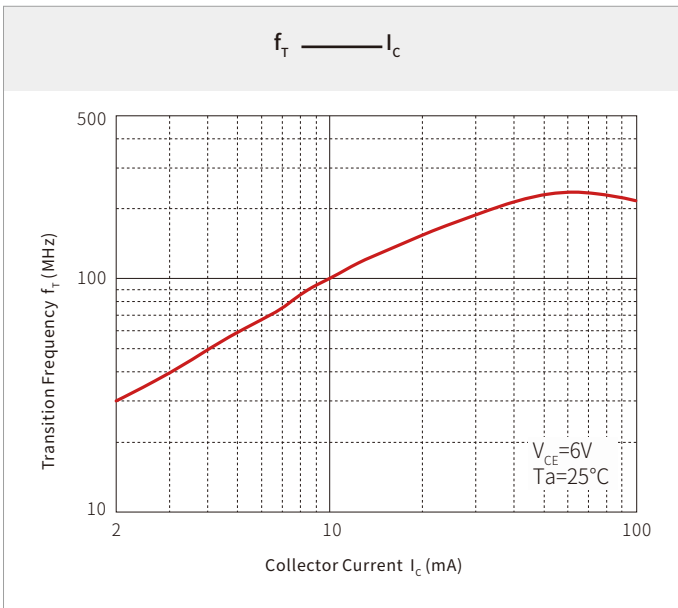
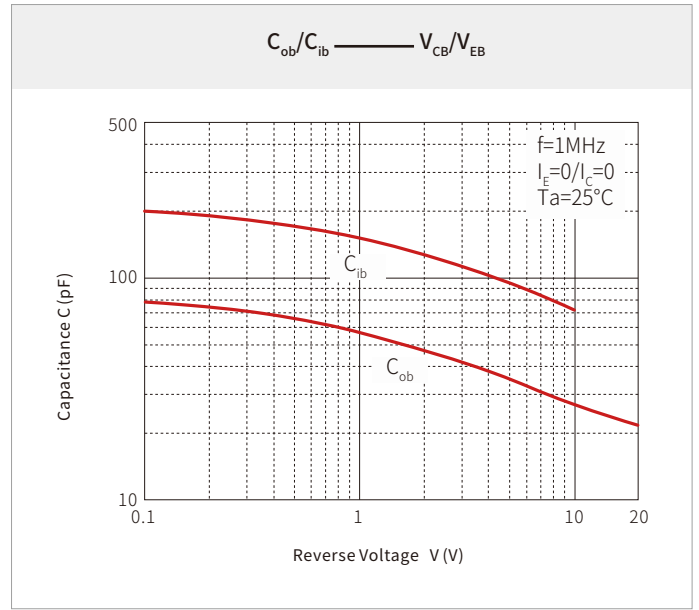
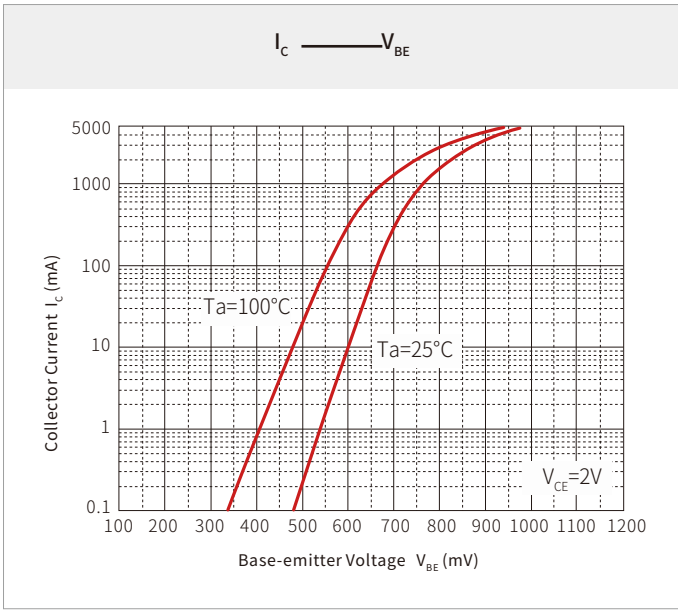
| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|----------------------|---|------|------|------|------|
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | I _C =100μA, I _E =0 | 40 | | | V |
| Collector-Emitter Breakdown Voltage | V _{(BR)CEO} | I _C =1mA, I _B =0 | 30 | | | |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | I _E =10μA, I _C =0 | 7 | | | |
| Collector cut-off current | I _{CBO} | V _{CB} =10V, I _E =0 | | | 0.1 | μA |
| Emitter cut-off current | I _{EBO} | V _{EB} =7V, I _C =0 | | | 0.1 | |
| DC Current Gain | h _{FE(1)} | V _{CE} =2V, I _C =1mA | | 200 | | |
| | h _{FE(2)} | V _{CE} =2V, I _C =500mA | 230 | | 800 | |
| | h _{FE(3)} | V _{CE} =2V, I _C =2A | 150 | | | |
| Collector-emitter saturation voltage | V _{CE(sat)} | I _C =3A, I _B =0.1A | | | 1 | V |
| Transition frequency | f _T | V _{CE} =6V, I _C =50mA | | 150 | | MHz |
| Collector output capacitance | C _{ob} | V _{CB} =20V, I _E =0, f=1MHz | | | 50 | pF |

CLASSIFICATION OF H_{FE(2)}

| Rank | Q | R | S |
|-------|---------|---------|---------|
| Range | 230-380 | 340-600 | 560-800 |

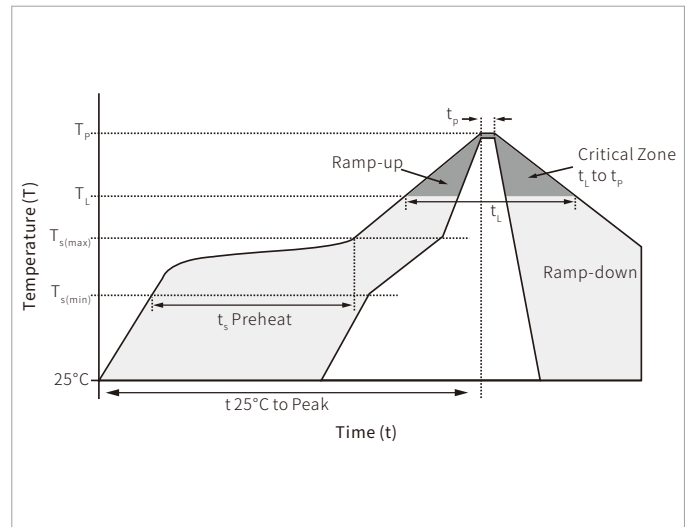
TYPICAL CHARACTERISTICS



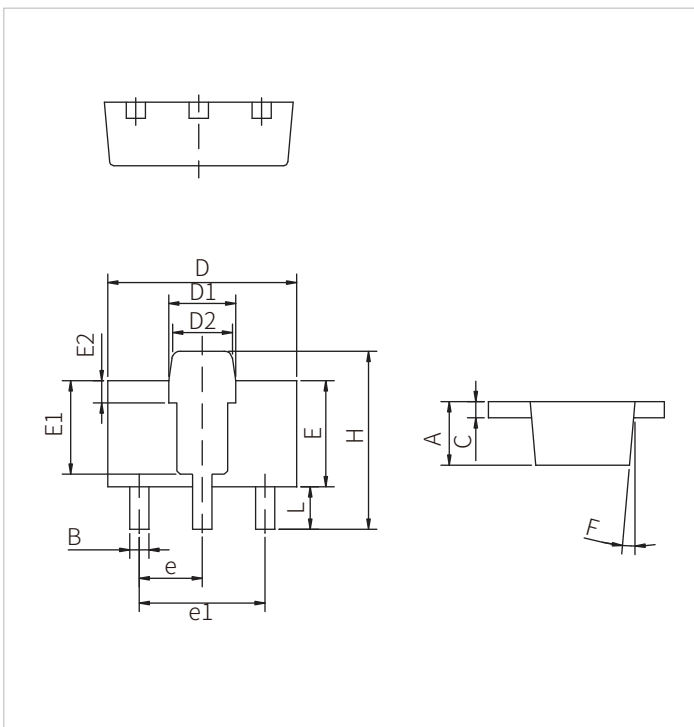


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_L) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |



SOT-89 PACKAGE DIMENSIONS



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 1.40 | | 1.60 | 0.055 | | 0.063 |
| B | 0.40 | | 0.52 | 0.016 | | 0.020 |
| C | 0.35 | | 0.41 | 0.014 | | 0.016 |
| D | 4.40 | | 4.60 | 0.173 | | 0.181 |
| D1 | 1.50 | | 1.70 | 0.059 | | 0.067 |
| D2 | 1.30 | | 1.50 | 0.051 | | 0.059 |
| E | 2.40 | | 2.60 | 0.094 | | 0.102 |
| E1 | | 2.20 | | | 0.087 | |
| E2 | | 0.52 | | | 0.020 | |
| e | | 1.50 | | | 0.059 | |
| e1 | | 3.00 | | | 0.118 | |
| F | | 5.00 | | | 5.000 | |
| H | 4.05 | | 4.25 | 0.159 | | 0.167 |
| L | 0.89 | | 1.20 | 0.035 | | 0.047 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size | Box | Carton |
|-------------|-------------------|----------|-----------|---------|----------|
| 2SD965A | SOT-89 | 1000PCS | 7" | 6000PCS | 30000PCS |

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