

General Purpose Transistor PNP, 45 V, 500 mA

NST807

The NST807CMTW is designed for general purpose amplifier applications. It is housed in DFN1010-3 offering superior thermal performance. The transistor is ideal for surface mount applications where board space and reliability are at a premium.

Specification Features

- Wettable Flank Package for Optimal Automated Optical Inspection (AOI)
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb–Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS (T_A = 25°C)

| Rating | Symbol | Max | Unit |
|---|------------------|------|------|
| Collector-Emitter Voltage | V_{CEO} | -45 | Vdc |
| Collector-Base Voltage | V _{CBO} | -45 | Vdc |
| Emitter-Base Voltage | V _{EBO} | -5.0 | Vdc |
| Collector Current – Continuous (Note 1) | Ic | 500 | mA |
| Collector Current - Peak (Note 1) | I _{CM} | 1.0 | Α |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

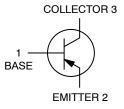
THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|-----------------------------------|----------------|-------------|
| Total Power Dissipation (Note 2) @ T _A = 25°C Derate above 25°C | P _D | 350 2.8 | mW mW/°C |
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 145 | °C/W |
| Junction and Storage Temperature Range | T _J , T _{stg} | -65 to +150 | °C |

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- 1. Reference SOA Curve
- 2. Per JESD51-7 with standard PCB footprint and 2 oz Cu.





MARKING DIAGRAM



R7 = Specific Device Code M = Date Code

ORDERING INFORMATION

| Device | Package | Shipping [†] |
|-----------------|-----------|-----------------------|
| NST807CMTWFTBG | XDFNW3 | 3000 / Tape & |
| NSVT807CMTWFTBG | (Pb-Free) | Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}C$ unless otherwise noted)

| Characteristics | Symbol | Min | Тур | Max | Unit |
|---|----------------------|-----|------|-------|--------------------|
| OFF CHARACTERISTICS | • | • | • | • | • |
| Collector-Emitter Breakdown Voltage (I _C = -10 mA, I _B = 0 A) | V _{(BR)CEO} | -45 | - | - | V |
| Collector-Base Breakdown Voltage ($I_C = -100 \mu A$, $I_E = 0 A$) | V _{(BR)CBO} | -45 | - | - | V |
| Emitter-Base Breakdown Voltage ($I_E = -100 \mu A$, $I_C = 0$) | V _{(BR)EBO} | -5 | - | - | V |
| Collector-Base Cutoff Current (V _{CB} = -20 V, I _E = 0) | I _{CBO} | - | - | -100 | nA |
| Emitter-Base Cutoff Current ($V_{EB} = -5 \text{ V}, I_C = 0$) | I _{EBO} | - | - | -100 | nA |
| ON CHARACTERISTICS (Note 3) | | | | | |
| DC Current Gain ($I_C = -100 \text{ mA}$, $V_{CE} = -1.0 \text{ V}$) | h _{FE} | 250 | - | 600 | |
| Collector-Emitter Saturation Voltage (I _C = -500 mA, I _B = -50 mA) | V _{CE(sat)} | - | - | -0.70 | V |
| Base-Emitter Saturation Voltage (I _C = -500 mA, I _B = -50 mA) | V _{BE(sat)} | - | - | -2.0 | V |
| Base-Emitter Turn-on Voltage (I _C = -500 mA, V _{CE} = -1.0 V) | V _{BE(on)} | - | - | -1.2 | V |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| Transition Frequency ($I_C = -50 \text{ mA}$, $V_{CE} = -5.0 \text{ V}$, $f = 100 \text{ MHz}$) | f _T | - | 360 | - | MHz |
| Output Capacitance (V _{CB} = 10 V, f = 1.0 MHz) | C _{obo} | - | 6 | - | pF |
| Input Capacitance (V _{EB} = -0.5 Vdc, I _C = 0, f = 1.0 MHz) | C _{ibo} | - | 58 | - | pF |
| Input Impedance ($I_C = -1.0 \text{ mAdc}$, $V_{CE} = -10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$) | h _{ie} | - | 16 | - | k |
| Voltage Feedback Ratio (I _C = -1.0 mAdc, V _{CE} = -10 Vdc, f = 1.0 kHz) | h _{re} | - | 41 | - | X 10 ⁻⁴ |
| Small-Signal Current Gain ($I_C = -1.0 \text{ mAdc}$, $V_{CE} = -10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$) | h _{fe} | - | 574 | _ | _ |
| Output Admittance ($I_C = -1.0 \text{ mAdc}$, $V_{CE} = -10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$) | H _{oe} | - | 50 | - | μmhos |
| Noise Figure (I _C = 0.2 mA, V _{CE} = 5.0 Vdc, R _S = 2.0 k Ω , f = 1.0 kHz, BW = 200 Hz) | NF | - | 0.79 | - | dB |
| SWITCHING CHARACTERISTICS | • | • | • | | • |
| Delay Time (V _{CC} = 30 Vdc, I _C = 150 mA, I _{B1} = 15 mA) | t _d | _ | 10 | - | ns |
| Rise Time (V_{CC} = 30 Vdc, I_{C} = 150 mA, I_{B1} = 15 mA) | t _r | - | 14 | - | ns |
| Storage Time (V_{CC} = 30 Vdc, I_{C} = 150 mA, I_{B1} = 15 mA, I_{B2} = 15 mA) | t _s | - | 300 | - | ns |
| Fall Time (V_{CC} = 30 Vdc, I_{C} = 150 mA, I_{B1} = 15 mA, I_{B2} = 15 mA) | t _f | _ | 51 | - | ns |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Pulse Condition: Pulse Width = 300 µs, Duty Cycle ≤ 2%.

TYPICAL CHARACTERISTICS

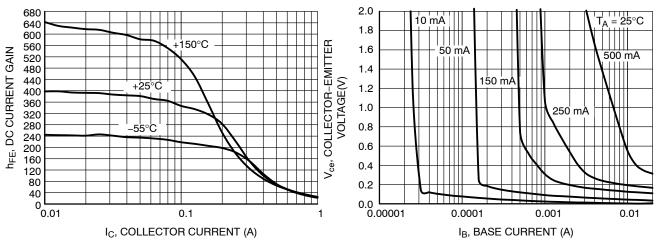


Figure 1. DC Current Gain

Figure 2. Saturation Region

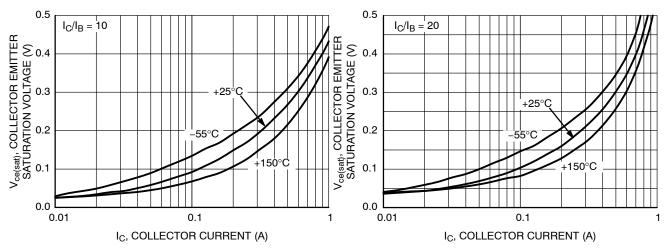


Figure 3. Collector-Emitter Saturation Voltage

Figure 4. Collector-Emitter Saturation Voltage

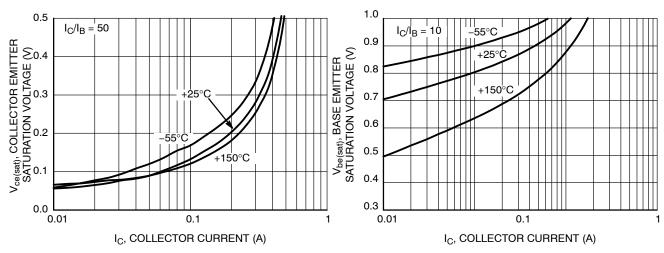


Figure 5. Collector-Emitter Saturation Voltage

Figure 6. Base-Emitter Saturation Voltage

TYPICAL CHARACTERISTICS

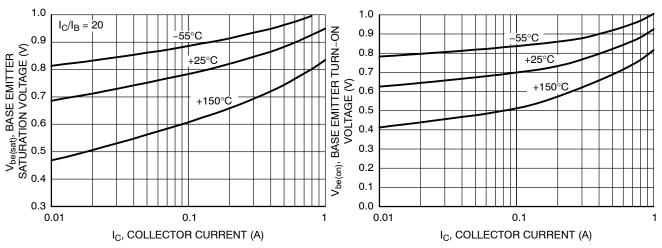


Figure 7. Base-Emitter Saturation Voltage

Figure 8. Base-Emitter "ON" Voltage

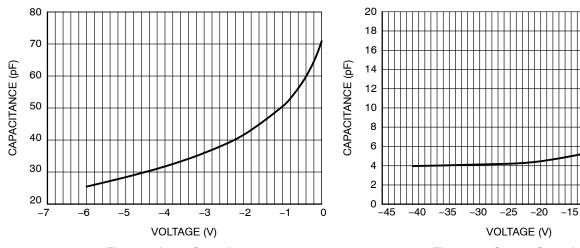


Figure 9. Input Capacitance

Figure 10. Output Capacitance

-10

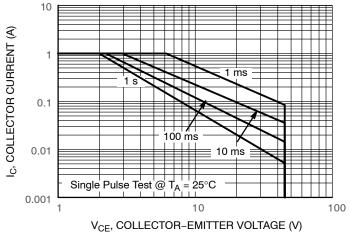
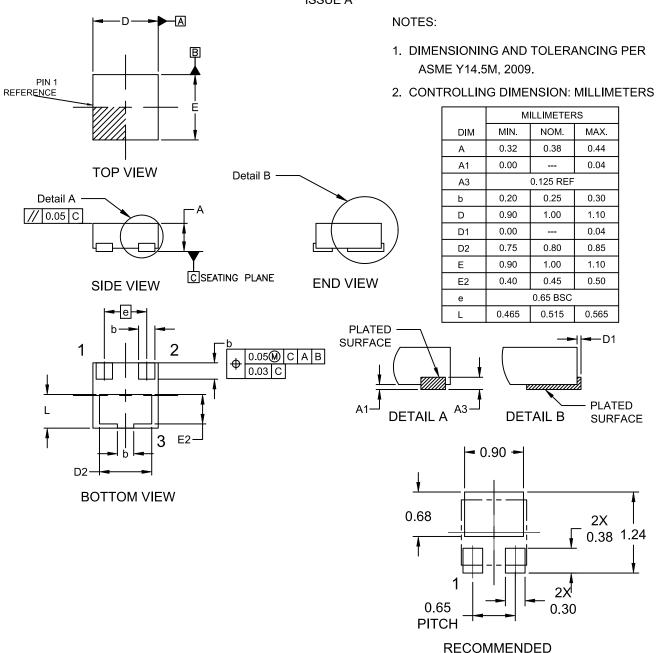


Figure 11. Safe Operating Area

PACKAGE DIMENSIONS

XDFNW3 1x1, 0.65P CASE 521AC ISSUE A



For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MOUNTING FOOTPRINT*

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