# NIC9N05TS1, NIC9N05ATS1

# Protected Power MOSFET

## 2.6 A, 52 V, N−Channel, Logic Level, Clamped MOSFET w/ ESD Protection

**ON Semiconductor®**

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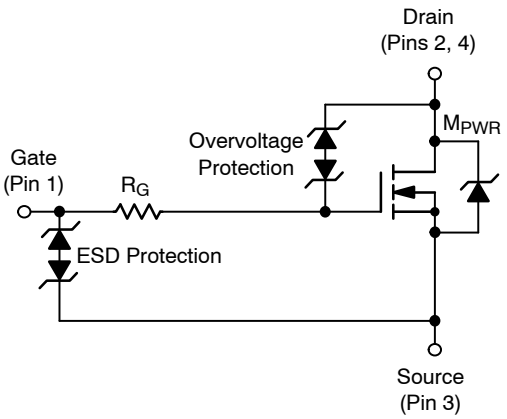
**MAXIMUM RATINGS** ($T_J$ = 25°C unless otherwise specified)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Drain−to−Source Voltage Internally Clamped | $V_{DSS}$ | 52−59 | V |
| Gate−to−Source Voltage − Continuous | $V_{GS}$ | ±15 | V |
| Operating and Storage Temperature Range | $T_J$, $T_{stg}$ | −55 to 150 | °C |
| Electro−Static Discharge Capability (HBM)<br>(MM) | ESD | 5000<br>500 | V |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.




### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

**MOSFET ELECTRICAL CHARACTERISTICS** ($T_J$ = 25°C unless otherwise specified) (Note 1)

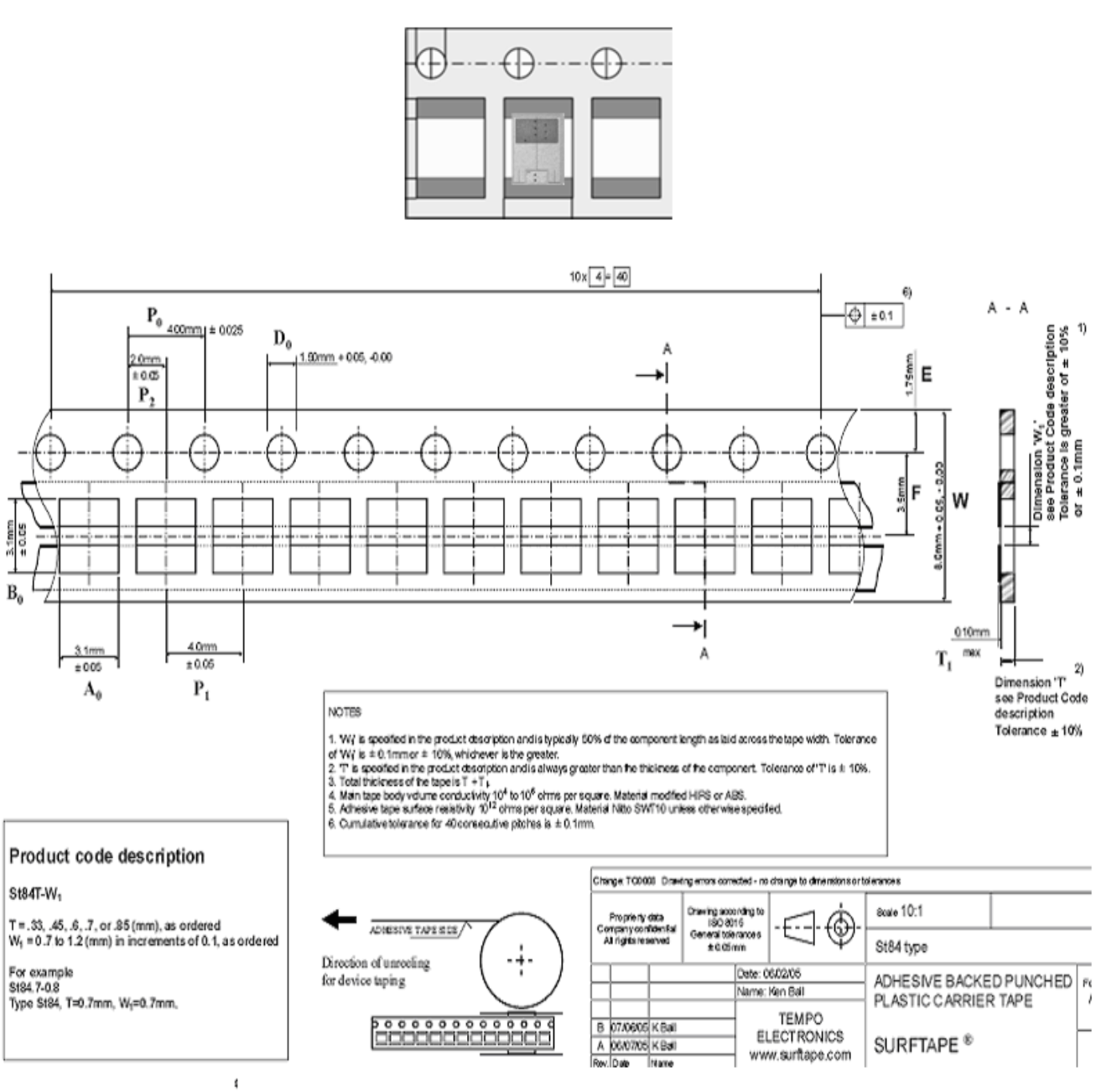
| Characteristic | | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Drain−to−Source Breakdown Voltage ($V_{GS}$ = 0 V, $I_D$ = 1.0 mA, $T_J$ = 25°C) | | $V_{(BR)DSS}$ | 52 | 55 | 59 | V |
| Zero Gate Voltage Drain Current ($V_{DS}$ = 40 V, $V_{GS}$ = 0 V) | | $I_{DSS}$ | | | 10 | μA |
| Gate−Body Leakage Current ($V_{GS}$ = ±8 V, $V_{DS}$ = 0 V)<br>($V_{GS}$ = ±14 V, $V_{DS}$ = 0 V) | | $I_{GSS}$ | | <br>±22 | ±10 | μA |
| **ON CHARACTERISTICS** | | | | | | |
| Gate Threshold Voltage ($V_{DS}$ = $V_{GS}$, $I_D$ = 100 μA) | | $V_{GS(th)}$ | 1.3 | 1.75 | 2.5 | V |
| Static Drain−to−Source On−Resistance ($V_{GS}$ = 3.5 V, $I_D$ = 0.6 A)<br>($V_{GS}$ = 4.0 V, $I_D$ = 1.5 A)<br>($V_{GS}$ = 10 V, $I_D$ = 2.6 A) | | $R_{DS(on)}$ | | 190<br>165<br>107 | 380<br>200<br>125 | mΩ |
| **SOURCE−DRAIN DIODE CHARACTERISTICS** | | | | | | |
| Forward On−Voltage | $I_S$ = 2.6 A, $V_{GS}$ = 0 V<br>$I_S$ = 2.6 A, $V_{GS}$ = 0 V, $T_J$ = 125°C | $V_{SD}$ | | 0.81<br>0.66 | 1.5 | V |

1. Wafers tested prior to sawing.

**ORDERING INFORMATION**

| Device | Shipping |
|---|---|
| NIC9N05TS1 | 5000 / Reel |
| NIC9N05ATS1 | 5000 / Reel |

**Layout view of the die in reel**




NOTES

1. $W_1$ is specified in the product description and is typically 50% of the component length as laid across the tape width. Tolerance of $W_1$ is ± 0.1mm or ± 10%, whichever is the greater.
2. 'T' is specified in the product description and is always greater than the thickness of the component. Tolerance of 'T' is ± 10%.
3. Total thickness of the tape is $T + T_1$.
4. Main tape body volume conductivity $10^4$ to $10^6$ ohms per square. Material modified HIPS or ABS.
5. Adhesive tape surface resistivity $10^{12}$ ohms per square. Material Nitto SWT10 unless otherwise specified.
6. Cumulative tolerance for 40 consecutive pitches is ± 0.1mm.

**Product code description**

St84T-$W_1$

T = .33, .45, .6, .7, or .85 (mm), as ordered
$W_1$ = 0.7 to 1.2 (mm) in increments of 0.1, as ordered

For example
St84.7-0.8
Type St84, T=0.7mm, $W_1$=0.7mm.




Change TC0003 Drawing errors corrected - no change to dimensions or tolerances

Property data
Company confidential
All rights reserved

Drawing according to ISO 8015
General tolerances ± 0.05mm

Scale 10:1

St84 type

| Rev. | Date | Name |
|---|---|---|
| B | 07/06/05 | K Ball |
| A | 06/07/05 | K Ball |

Date: 06/02/05
Name: Ken Ball

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