# 100V N-Channel Enhancement Mode MOSFET

## 1.Product Information

### 1.1 Features

- ◇ Surface-mounted package
- ◇ Low gate charge

### 1.2 Applications

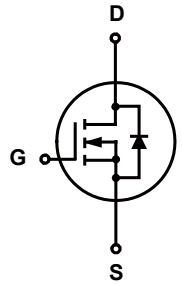
- ◇ Motor drivers
- ◇ Adapter appliances
- ◇ High power inverter system

### 1.3 Quick reference

- ◇ BV ≧ 100 V
- ◇ $P_{tot}$ ≦ 2 W
- ◇ $I_D$ ≦ 12 A
- ◇ $R_{DS(ON)}$ ≦ 12mΩ @ $V_{GS}$ = 10 V
- ◇ $R_{DS(ON)}$ ≦ 18mΩ @ $V_{GS}$ = 4.5V

## 2.Pin Description

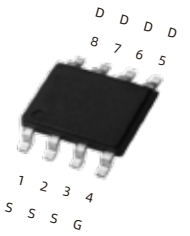
Symbol




Simplified Outline

Top View

SOP8




## 3.Marking Information

| Product Name | Marking |
|---|---|
| LN105N100S | LN105N100S<br>CYWWZZ<br>XXXXXX |

## 4.Limiting Values

| Symbol | Parameter | Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | $T_A$= 25 ℃ | - | 100 | V |
| $V_{GS}$ | Gate-Source Voltage | $T_A$= 25 ℃ | - | ± 20 | V |
| $I_D$* | Drain Current ( DC ) | $T_A$ = 25 ℃, $V_{GS}$ = 10 V | - | 12 | A |
| | | $T_A$ = 100 ℃, $V_{GS}$ = 10 V | - | 8.3 | A |
| $I_{DM}$*,** | Drain Current ( Pulsed ) | $T_A$ = 25 ℃, $V_{GS}$ = 10 V | - | 34.8 | A |
| $P_{tot}$ | Total Power Dissipation | $T_A$ = 25 ℃ | - | 2 | W |
| $T_{stg}$ | Storage Temperature | | - 55 | 150 | ℃ |
| $T_J$ | Junction Temperature | | - | 150 | ℃ |
| $I_S$ | Diode Forward Current | $T_A$ = 25 ℃ | - | 12 | A |
| $R_{\theta JA}$* | Thermal Resistance- Junction to Ambient | | - | 62.5 | ℃/W |

Notes：
* Surface Mounted on 1 in² pad area, t ≤ 10 sec
** Pulse width ≤ 300μs, duty cycle ≤ 2 %
*** limited by bonding wire

## 5.Ordering Code

| Product Name | Package | Reel Size | Tape width | Quantity | Note |
|---|---|---|---|---|---|
| LN105N100S | SOP8 | Ø330mm | 12mm | 3000 | |

Note: COMTECH defines “ Green ” as lead-free ( RoHS compliant ) and halogen free ( Br or Cl does not exceed900 ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500 ppm by weight;Follow IEC 61249-2-21 and IPC / JEDEC J-STD-020C )

## 6. Electrical Characteristics ( $T_A$=25 ° Unless Otherwise Noted )

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$ = 0 V, $I_{DS}$ = 250 μA | 100 | - | - | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$, $I_{DS}$ = 250 μA | 1 | - | 3 | V |
| $I_{DSS}$ | Drain Leakage Current | $V_{DS}$ = 80 V, $V_{GS}$ = 0 V | - | - | 1 | μA |
| $I_{GSS}$ | Gate Leakage Current | $V_{DS}$ = 0 V, $V_{GS}$ = ± 20 V | - | - | ± 100 | nA |
| $R_{DS(ON)}$ [a] | Channel On-State Resistance | $V_{GS}$ = 10 V, $I_D$ = 8 A | - | 11 | 12 | mΩ |
| | Channel On-State Resistance | $V_{GS}$ = 4.5 V, $I_D$ = 4 A | - | 16 | 18 | |
| **Diode Characteristics** | | | | | | |
| $V_{SD}$ [a] | Diode Forward Voltage | $I_{SD}$ = 8 A, $V_{GS}$ = 0 V | - | - | 1.3 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_{sD}$ = 8 A | - | 45 | - | nS |
| $Q_{rr}$ | Reverse Recovery Charge | $dI_{SD}/dt$ = 100 A/μs | - | 44 | - | nC |
| **Dynamic Characteristics[b]** | | | | | | |
| $C_{iSS}$ | Input Capacitance | $V_{GS}$ = 0 V, $V_{DS}$ = 50 V Frequency = 1 MHz | - | 1188 | - | pF |
| $C_{OSS}$ | Output Capacitance | | - | 227 | - | |
| $C_{rSS}$ | Reverse Transfer Capacitance | | - | 40 | - | |
| $t_d$(on) | Turn-on Delay Time | $V_{DS}$ = 50 V, $V_{GEN}$ = 10 V, $R_G$ = 3.9 Ω, $R_L$ = 6.25 Ω, $I_{DS}$ = 8 A | - | 7.1 | - | nS |
| $t_r$ | Turn-on Rise Time | | - | 6.3 | - | |
| $t_d$(off) | Turn-off Delay Time | | - | 20 | - | |
| $t_f$ | Turn-off Fall Time | | - | 11 | - | |
| **Gate Charge Characteristics[b]** | | | | | | |
| $Q_g$ | Total Gate Charge | $V_{DS}$ = 50 V, $V_{GS}$ = 10 V, $I_{DS}$ = 8 A | - | 24 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 5.5 | - | |
| $Q_{gd}$ | Gate-Drain Charge | | - | 5.7 | - | |

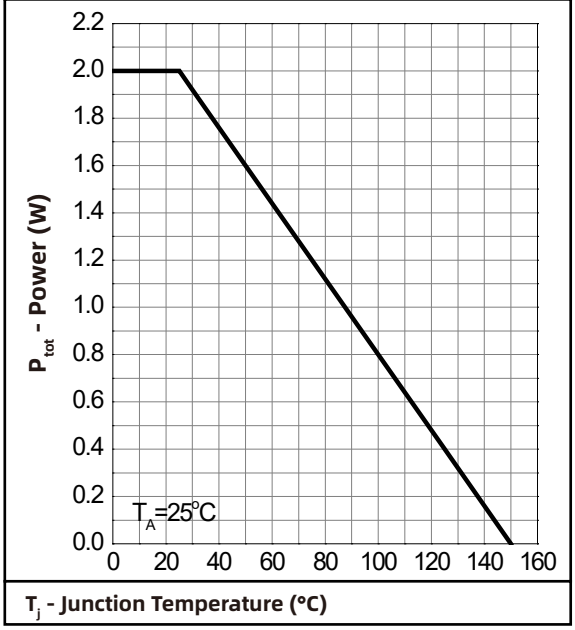
Notes：

a：Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

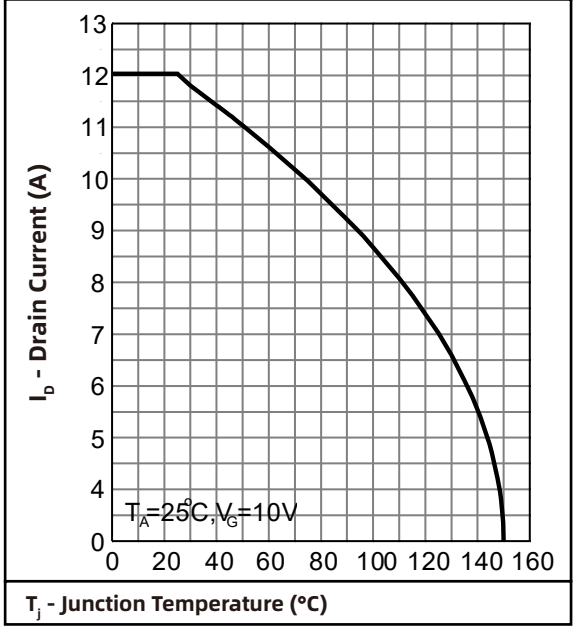
b：Guaranteed by design, not subject to production testing

## 7. Typical Characteristics

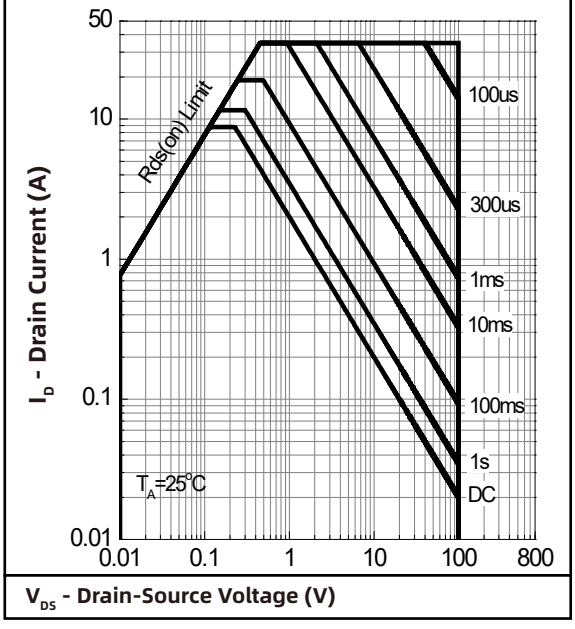
**Power Capability**



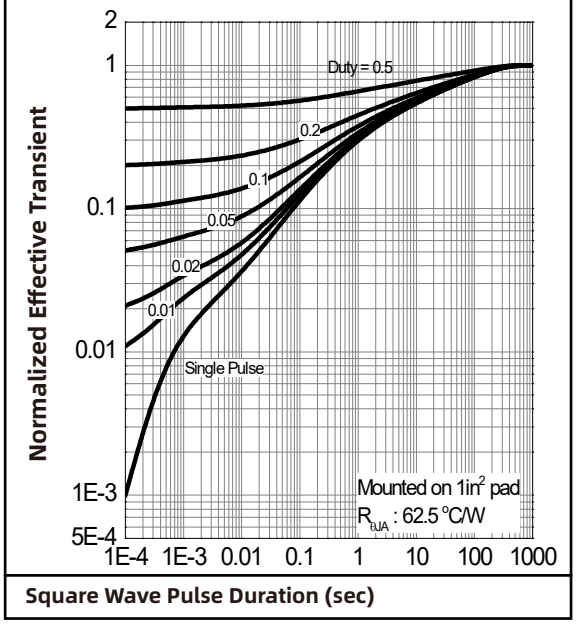

**Drain Current**




**Safe Operation Area**

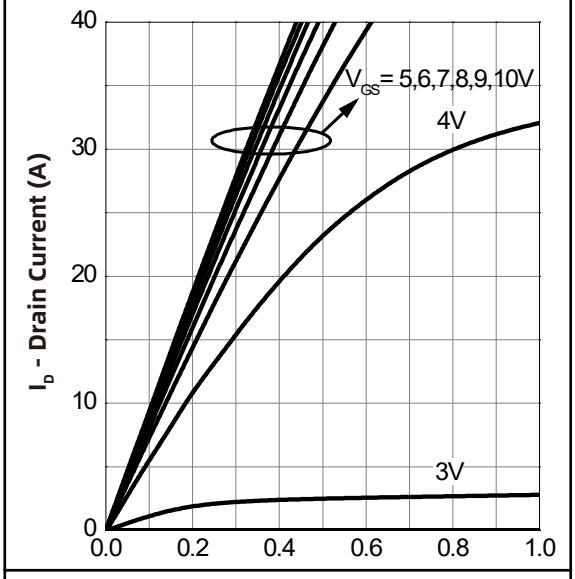



**Thermal Transient Impedance**

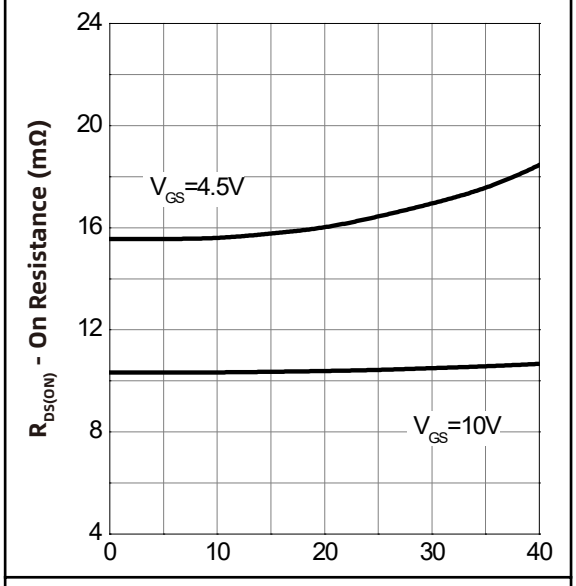


## 7. Typical Characteristics (cont.)

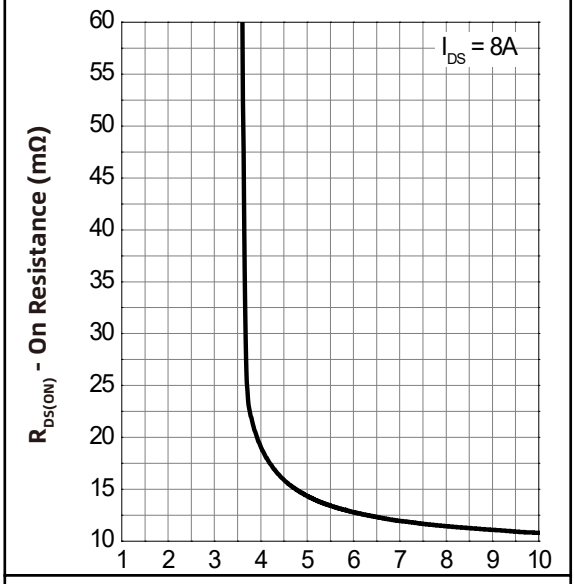
**Output Characteristics**



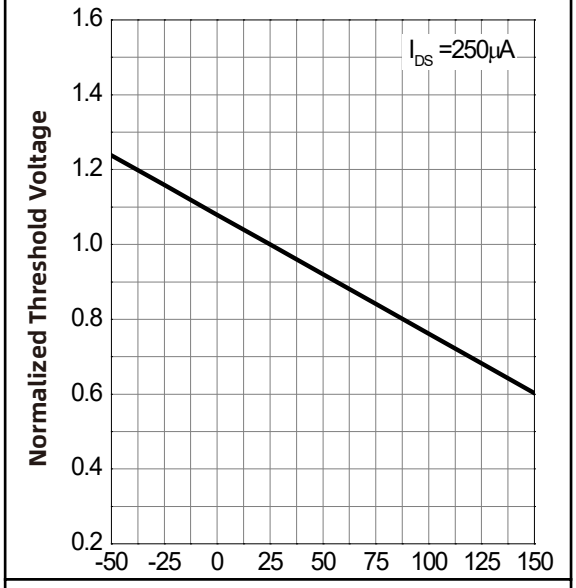

**Drain-Source On Resistance**




**Transfer Characteristics**

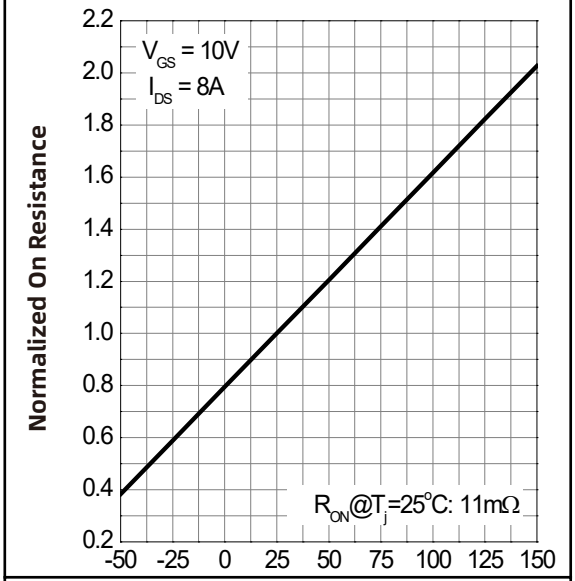



**Gate Threshold Voltage**

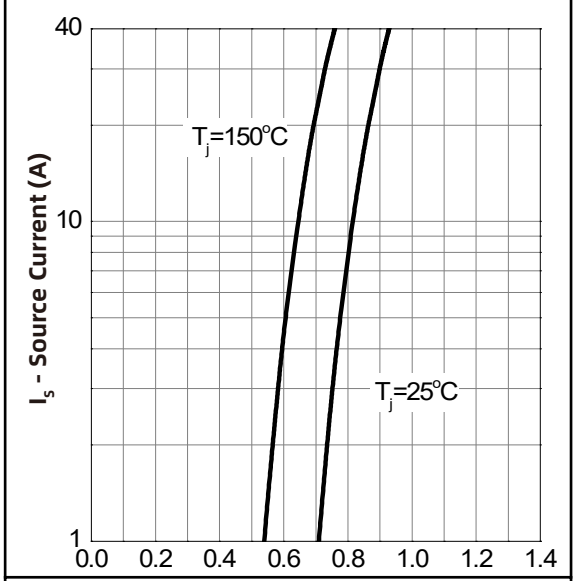


## 7. Typical Characteristics (cont.)

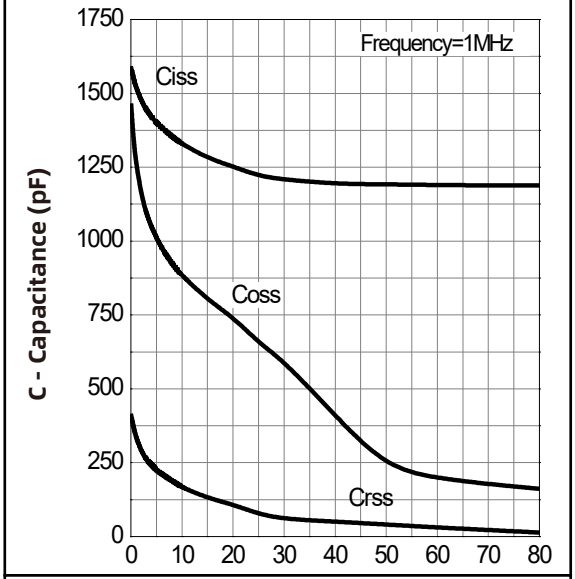
**Drain-Source On Resistance**



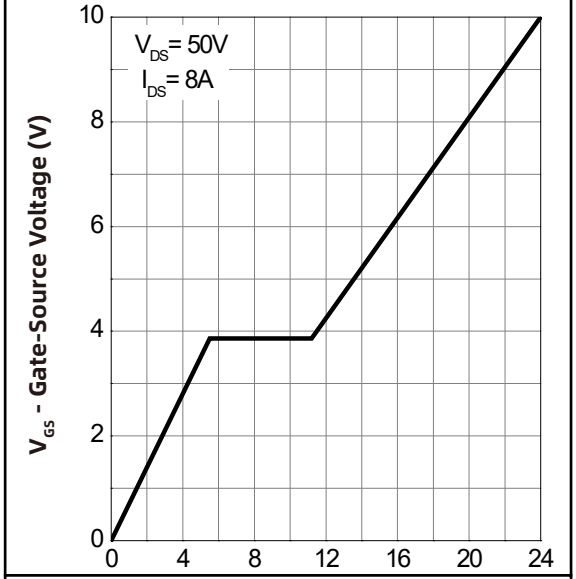

**Source-Drain Diode Forward**




**Capacitance**

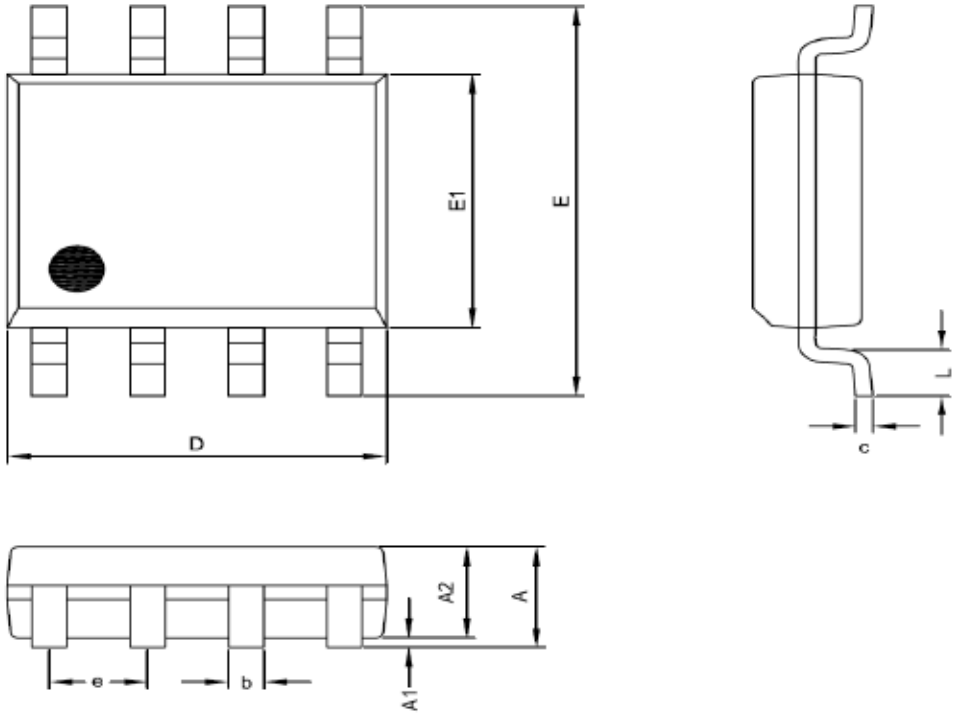



**Gate Charge**



## 8. Package Dimensions

**SOP8**




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 1.35 | 1.75 |
| A1 | 0.00 | 0.25 |
| A2 | 1.15 | 1.50 |
| D | 4.80 | 5.00 |
| E | 5.80 | 6.20 |
| E1 | 3.80 | 4.00 |
| c | 0.19 | 0.27 |
| b | 0.33 | 0.53 |
| e | 1.27 BSC | |
| L | 0.40 | 1.27 |

Notes：
a : Jedec outline:MS-012AA
b : Dimensions ” D ” does not include mold flash, protrusions and gate burrs shall not exceed .15 mm (.006 in) per side.
c : Dimensions “ E1 ” does not include inter-lead flash, or protrusions. Inter-lead flash and protrusions shall not exceed .25 mm (.010 in) per side.