# PAN76TD98DA

**N-Ch 100V Fast Switching MOSFET**

**$V_{DS}$=100V, $I_D$=11A, $R_{DS(ON)}$=120mΩ**

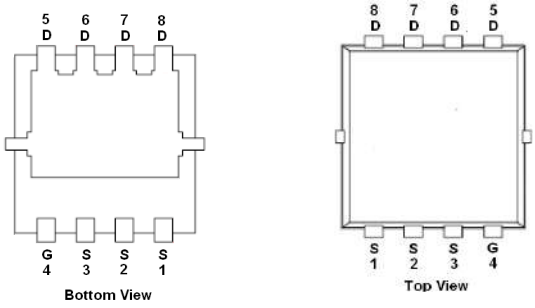
## ➢ General Description

This PAN76TD98DA N-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent Rds(On) performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

## ➢ Feature

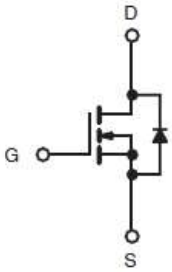
- ●Green Device Available
- ●Super Low Gate Charge
- ●100% EAS Guaranteed
- ●Excellent CdV/dt effect decline
- ●Advanced high cell density Trench technology
- ●DFN3.3x3.3-8L package design

## ➢ DFN3.3x3.3-8L




## ➢ Application

- ●DC/DC Primary Side Switch
- ●Industrial Synchronous
- ●Rectification Load Switch
- ●DC/DC Converters



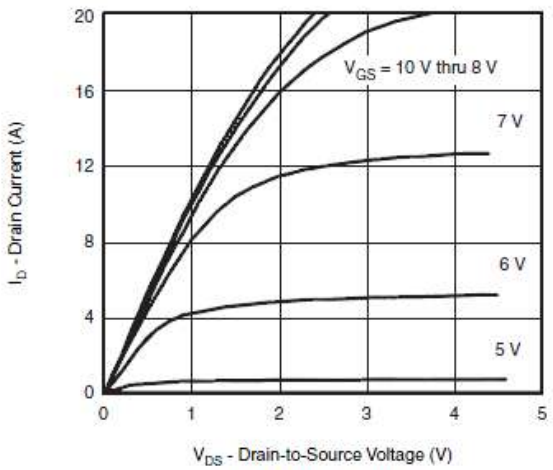

## ➢ Absolute Maximum Ratings

| Parameter | | | Symbol | Rating | | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Voltage | | | $V_{DSS}$ | 100 | | V |
| Gate –Source Voltage | | | $V_{GSS}$ | ±20 | | V |
| Continuous Drain Current($T_J$=150℃) | | $T_A$=25℃ | $I_D$ | 11 | | A |
| | | $T_A$=70℃ | | 6 | | |
| Pulsed Drain Current | | | $I_{DM}$ | 25 | | A |
| Continuous Source Current(Diode Conduction) | | $T_C$=25℃ | $I_S$ | 11 | | A |
| Power Dissipation | $T_C$=25℃ | $T_C$=70℃ | $P_D$ | 28 | 15 | W |
| | $T_A$=25℃ | $T_A$=70℃ | | 3.1 | 2.0 | |
| Operating Junction Temperature | | | $T_J$ | 150 | | ℃ |
| Storage Temperature Range | | | $T_{STG}$ | -55/150 | | ℃ |
| Thermal Resistance Junction-to-Case (Drain) | | | $R_{\theta JC}$ | 5 | | ℃/W |
| Thermal Resistance-Junction to Ambient | | | $R_{\theta JA}$ | 40 | | |

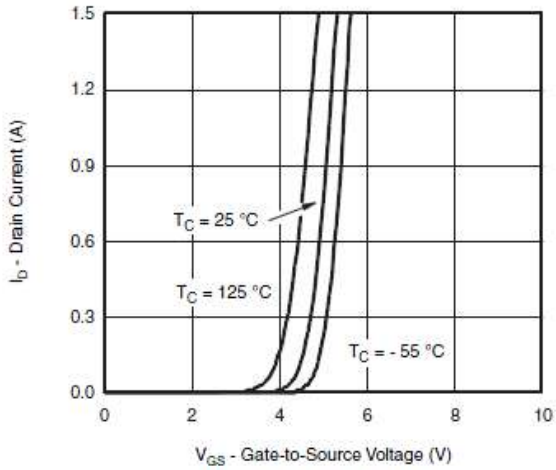
## ➢ Electrical Characteristics ($T_J$=25°C Unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V, $I_D$=250uA | 100 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 1.0 | | 2.0 | |
| Gate Leakage Current | $I_{GSS}$ | $V_{DS}$=0V, $V_{GS}$=±20V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=80V, $V_{GS}$=0V | | | 1 | uA |
| | | $V_{DS}$=80V, $V_{GS}$=0V $T_J$=85°C | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}$≧5V, $V_{GS}$=10V | 25 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=10V, $I_D$=6A | | 105 | 120 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=6A | | 120 | 140 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=15V, $I_D$=5.3A | | 24 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=2.0A, $V_{GS}$=0V | | 0.8 | 1.2 | V |
| **Dynamic** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=50V, $V_{GS}$=10V $I_D$≡8A | | 10 | 15 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 2.0 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 6.0 | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=50V, $V_{GS}$=0V f=1MHz | | 450 | | pF |
| Output Capacitance | $C_{oss}$ | | | 50 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 25 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}$=50V, $R_L$=5Ω $I_D$≡5.0A, $V_{GEN}$=10V $R_G$=3.3Ω | | 6 | 15 | ns |
| | $t_r$ | | | 8 | 15 | |
| Turn-Off Time | $t_{d(off)}$ | | | 15 | 20 | |
| | $t_f$ | | | 5 | 15 | |

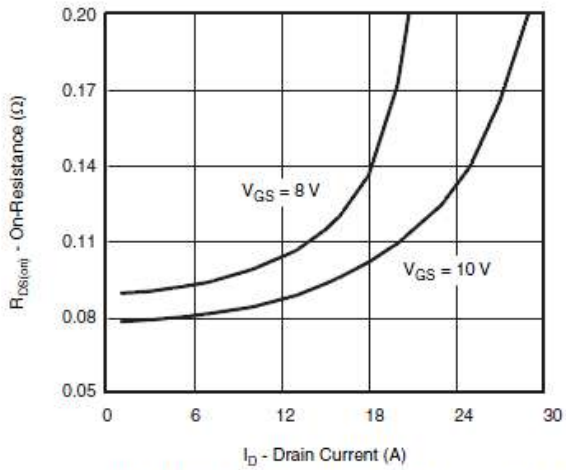
## ➢ Typical Characteristics



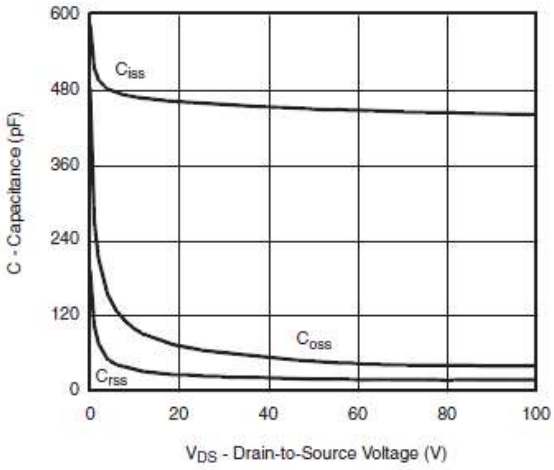

**Output Characteristics**



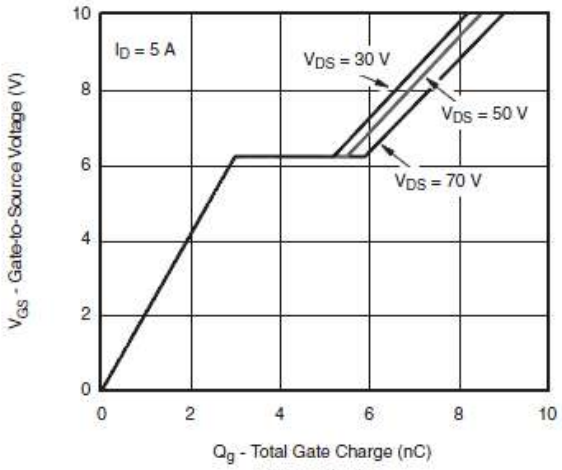

**Transfer Characteristics**



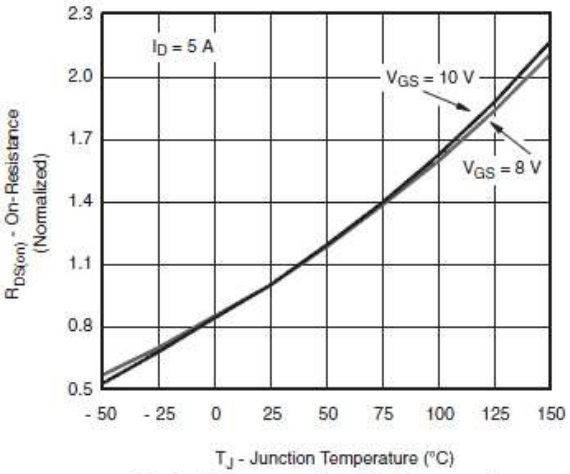

**On-Resistance vs. Drain Current and Gate Voltage**



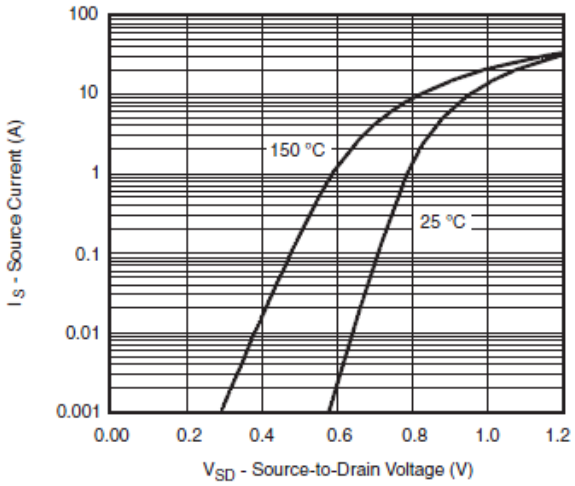

**Capacitance**



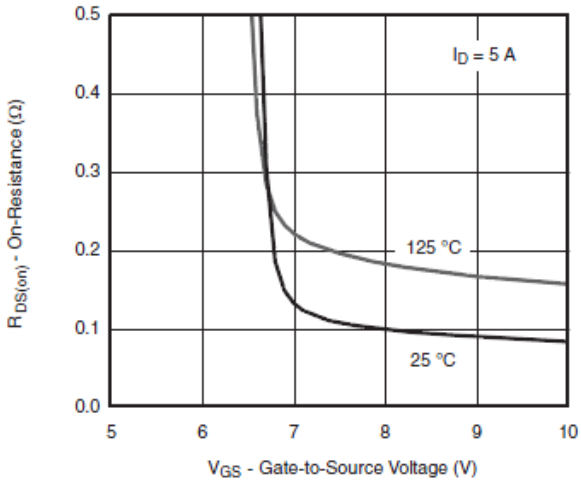

**Gate Charge**



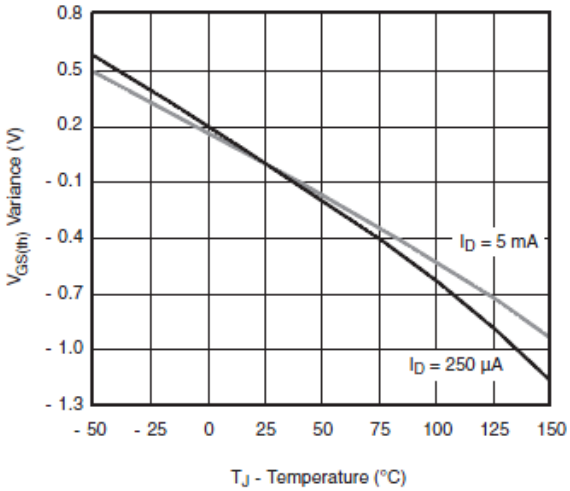

**On-Resistance vs. Junction Temperature**



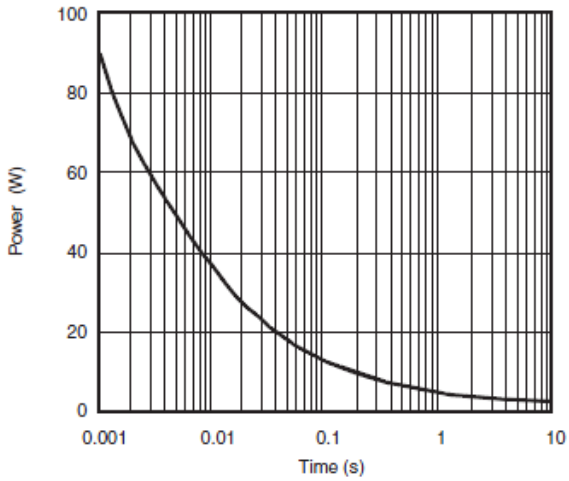

**Source-Drain Diode Forward Voltage**



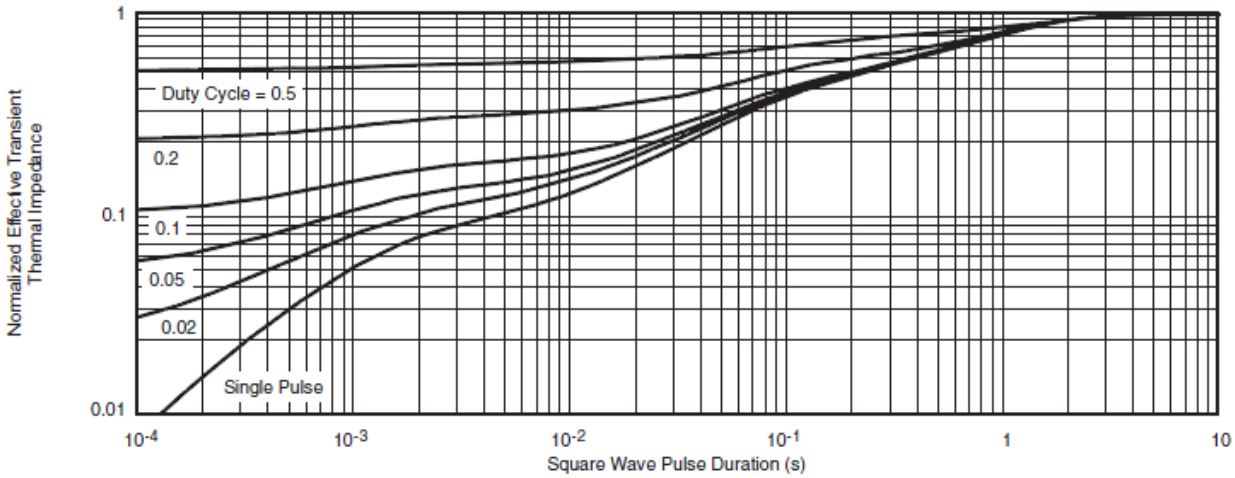

**On-Resistance vs. Gate-to-Source Voltage**




**Threshold Voltage**

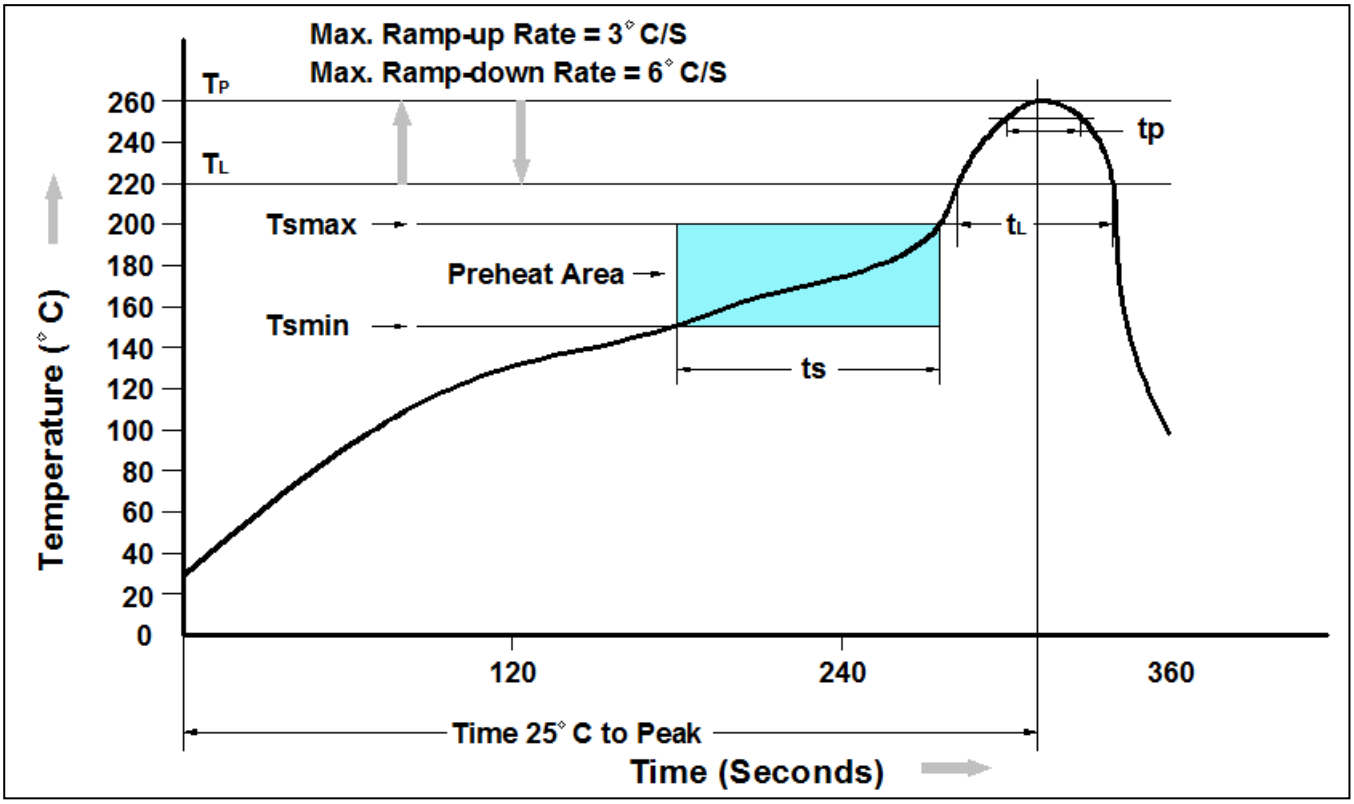



**Single Pulse Power, Junction-to-Ambient**




**Normalized Thermal Transient Impedance, Junction-to-Foot**

## ➢ Recommand IR Reflow Soldering Thermal Profile

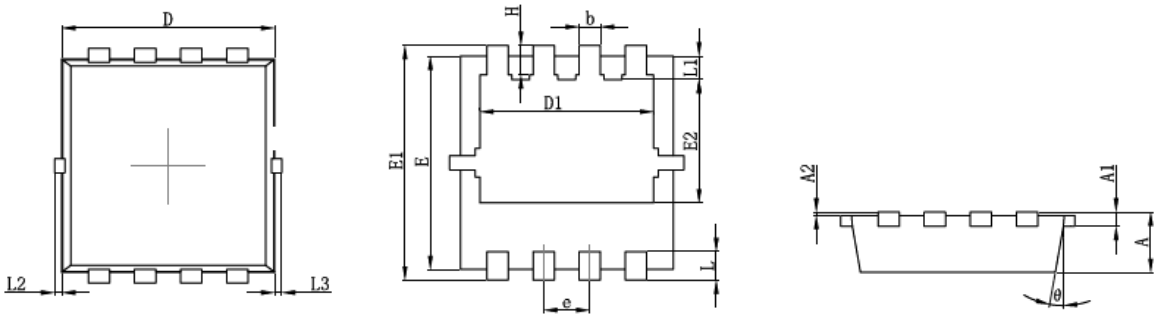



| Profile Feature | Pb-Free Assembly Profile |
|---|---|
| Temperature Min. (Tsmin) | 150°C |
| Temperature Max. (Tsmax) | 200°C |
| Time (ts) from (Tsmin to Tsmax) | 60-120 seconds |
| Average Ramp-up Rate (tL to tP) | 3°C/second max. |
| Liquidous Temperature (TL) | 217°C |
| Time (tL) Maintained Above (TL) | 60 – 150 seconds |
| Peak Temperature | 260°C +0°C / -5°C |
| Time (tP) within 5°C of actual Peak Temperature | 30 seconds |
| Ramp-down Rate (TP to TL) | 6°C/second max |
| Time 25°C to Peak Temperature | 8 minutes max. |

## ➢ Ordering Information

| Part Number | Description | Quantity |
|---|---|---|
| PAN76TD98DA | DFN3.3x3.3-8L Reel | 5000 pcs |

## ➢ Package Information (DFN3.3X3.3-8L)




Top View　　Bottom View　　Side View

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 0.650 | 0.850 | 0.026 | 0.033 |
| A1 | 0.152 REF. | | 0.006 REF. | |
| A2 | 0~0.05 | | 0~0.002 | |
| D | 2.900 | 3.100 | 0.114 | 0.122 |
| D1 | 2.300 | 2.600 | 0.091 | 0.102 |
| E | 2.900 | 3.100 | 0.114 | 0.122 |
| E1 | 3.150 | 3.450 | 0.124 | 0.136 |
| E2 | 1.535 | 1.935 | 0.060 | 0.076 |
| b | 0.200 | 0.400 | 0.008 | 0.016 |
| e | 0.550 | 0.750 | 0.022 | 0.030 |
| L | 0.300 | 0.500 | 0.012 | 0.020 |
| L1 | 0.180 | 0.480 | 0.007 | 0.019 |
| L2 | 0~0.100 | | 0~0.004 | |
| L3 | 0~0.100 | | 0~0.004 | |
| H | 0.315 | 0.515 | 0.012 | 0.020 |
| θ | 9° | 13° | 9° | 13° |

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