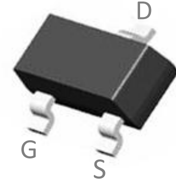
## Description:

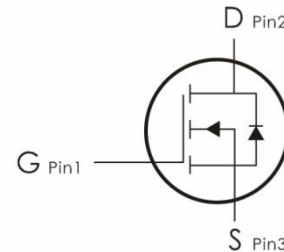
This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.




## Features:

1) $V_{DS}$=100V,$I_D$=3A,$R_{DS(ON)}$<280mΩ @$V_{GS}$=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.




## Package Marking and Ordering Information:

| Part NO. | Marking | Package | Packing |
| --- | --- | --- | --- |
| DO3N10B | 3N10B | SOT-23 | 3000pcs/Reel |

## Absolute Maximum Ratings: (TA=25℃ unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
| --- | --- | --- | --- |
| $V_{DS}$ | Drain-Source Voltage | 100 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$ | Continuous Drain Curren | 3 | A |
| $I_{DM}$ | Pulsed Drain Current | 8 | |
| $P_D$ | Power Dissipation | 1.2 | W |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55-+150 | ℃ |

## Thermal Characteristics:

| Symbol | Parameter | Max | Units |
| --- | --- | --- | --- |
| $R_{θJA}$ | Thermal Resistance,Junction to Ambient[2] | 105 | ℃/W |

## Electrical Characteristics: (T$_A$=25℃ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $BV_{DSS}$ | Drain-Sourtce Breakdown Voltage | $V_{GS}$=0V,$I_D$=250 μ A | 100 | --- | --- | V |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$=0V, $V_{DS}$=100V | --- | --- | 1 | μ A |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V, $V_{DS}$=0A | --- | --- | ±100 | nA |
| **On Characteristics** | | | | | | |
| $V_{GS(th)}$ | GATE-Source Threshold Voltage | $V_{GS}$=$V_{DS}$, $I_D$=250 μ A | 1.1 | 1.5 | 2.5 | V |
| $R_{DS(ON)}$ | Drain-Source On Resistance[3] | $V_{GS}$=10V,$I_D$=2A | --- | 220 | 280 | m Ω |
| | | $V_{GS}$=4.5V,$I_D$=1.5A | --- | 240 | 310 | m Ω |
| **Dynamic Characteristics** | | | | | | |
| $C_{iss}$ | Input Capacitance[4] | $V_{DS}$=50V, $V_{GS}$=0V, f=1MHz | --- | 439 | --- | pF |
| $C_{oss}$ | Output Capacitance[4] | | --- | 13 | -- | |
| $C_{rss}$ | Reverse Transfer Capacitance[4] | | --- | 9 | --- | |
| **Switching Characteristics** | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time[4] | $V_{DS}$=50V, $I_D$=2A, $R_{ENG}$=1 Ω ,$V_{GS}$=10V | --- | 13 | --- | ns |
| $t_r$ | Rise Time[4] | | --- | 53 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time[4] | | --- | 17 | --- | ns |
| $t_f$ | Fall Time[4] | | --- | 10 | --- | ns |
| $Q_g$ | Total Gate Charge[4] | $V_{GS}$=10V, $V_{DS}$=50V, $I_D$=2A | --- | 5.2 | --- | nc |
| $Q_{gs}$ | Gate-Source Charge[4] | | --- | 1.3 | --- | nc |
| $Q_{gd}$ | Gate-Drain “Miller” Charge[4] | | --- | 1.7 | --- | nc |
| **Drain-Source Diode Characteristics** | | | | | | |
| $V_{SD}$ | Diode Forward Voltage[3] | $V_{GS}$=0V, $I_{SD}$=1A | --- | --- | 1.2 | V |
| $I_S$ | Continuous Drain Curren | VD=VG=0V | --- | --- | 3 | A |
| $I_{SM}$ | Pulsed Drain Current | | --- | --- | 8 | A |

## Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. This value is guaranteed by design hence it is not included in the production test.

## Typical Characteristics: (TA=25℃ unless otherwise noted)

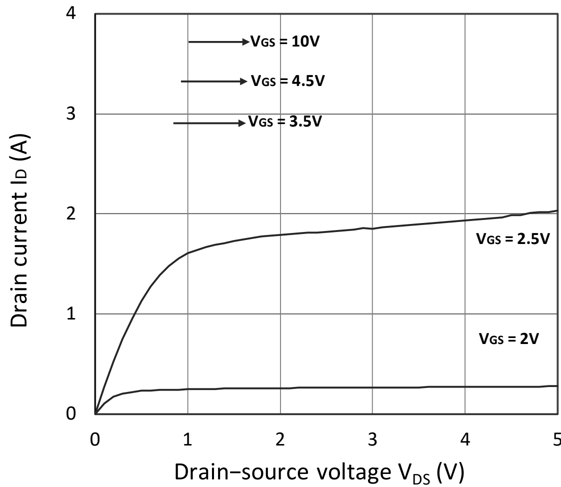



Figure 1. Output Characteristics

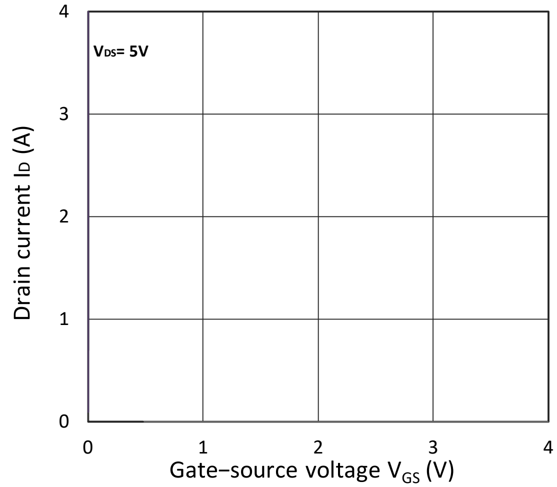



Figure 2. Transfer Characteristics

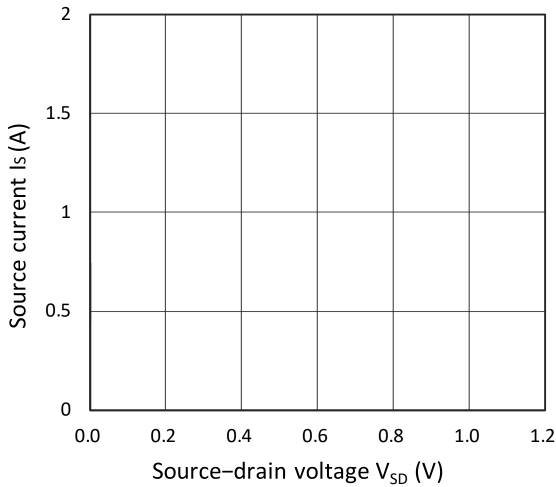



Figure 3. Forward Characteristics of Reverse

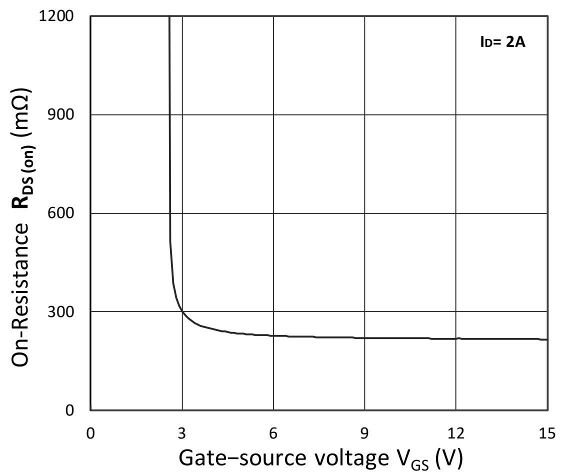



Figure 4. $R_{DS(ON)}$ vs. $V_{GS}$

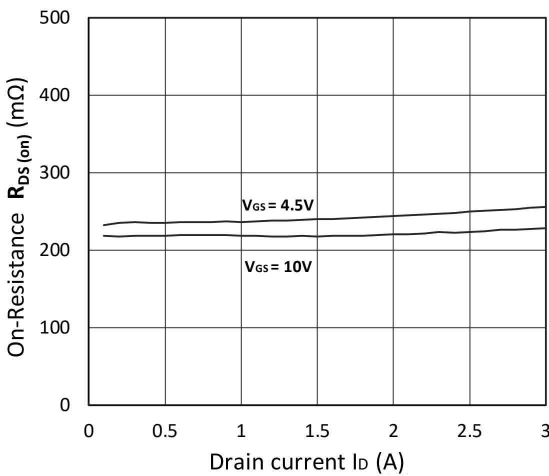



Figure 5. $R_{DS(ON)}$ vs. $I_D$

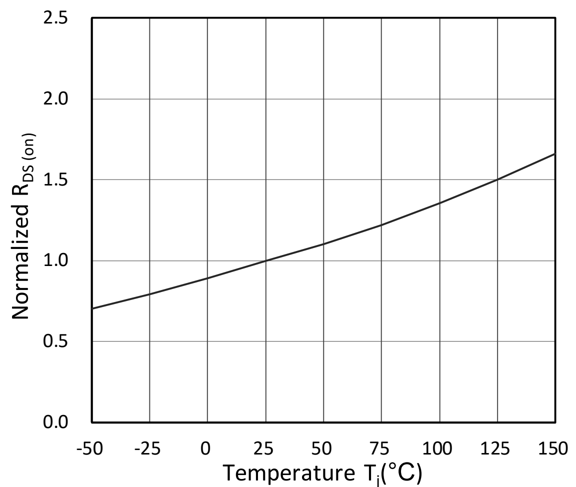



Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

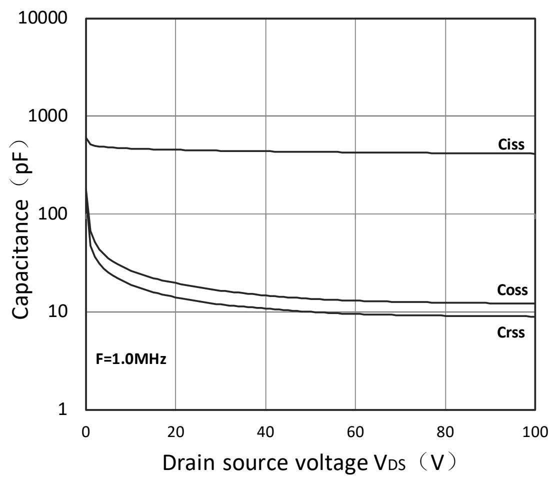



Figure 7. Capacitance Characteristics

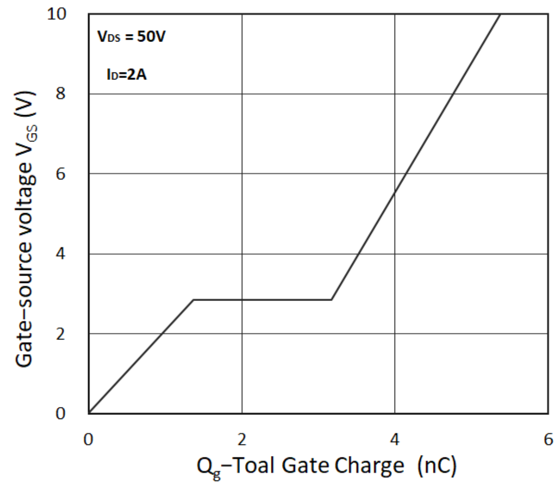
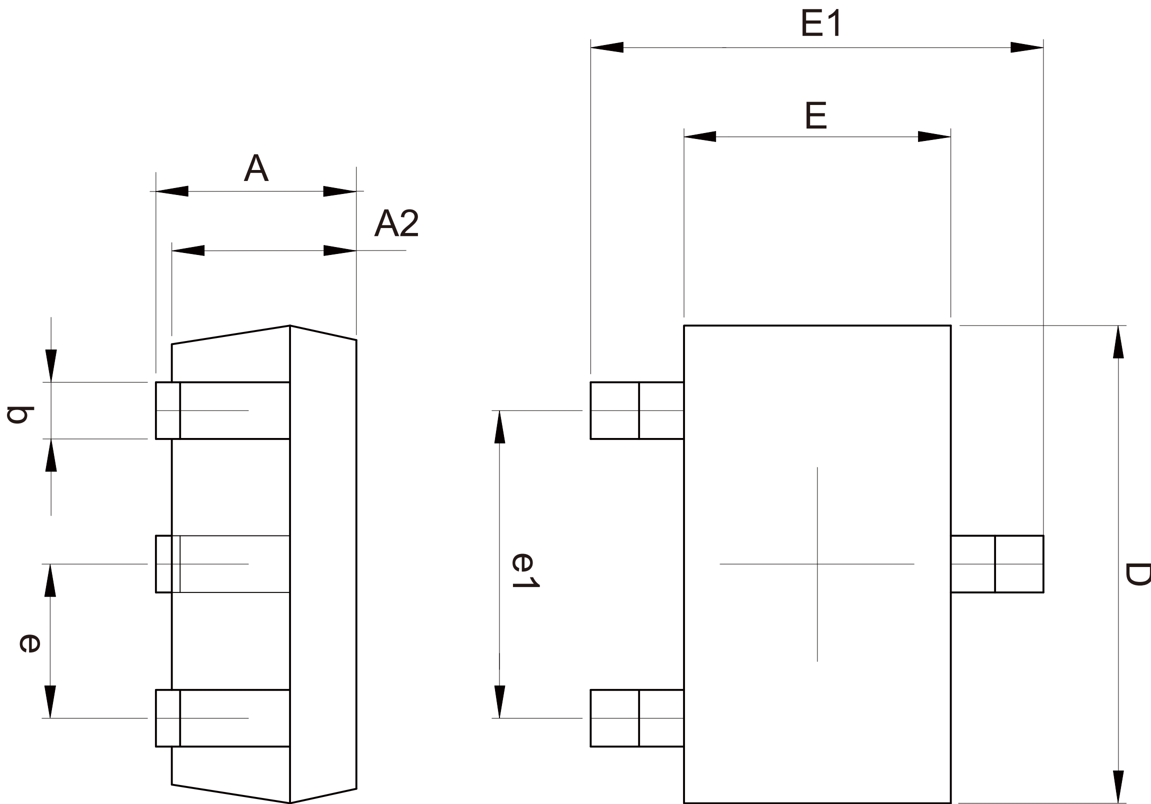
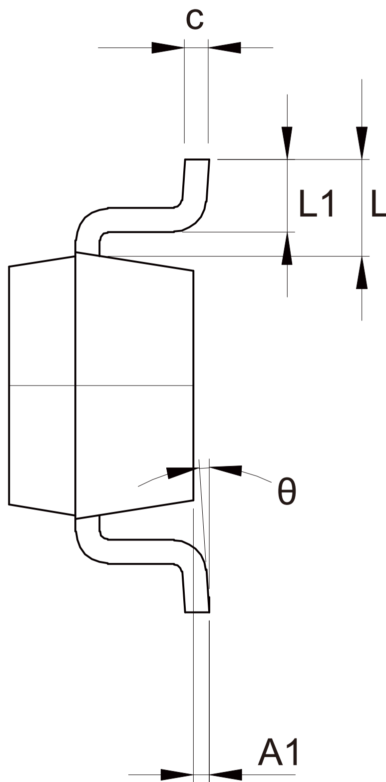



Figure 8. Gate Charge Characteristics

**SOT-23-3Package Outline Data**

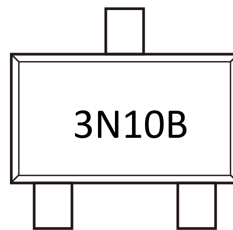


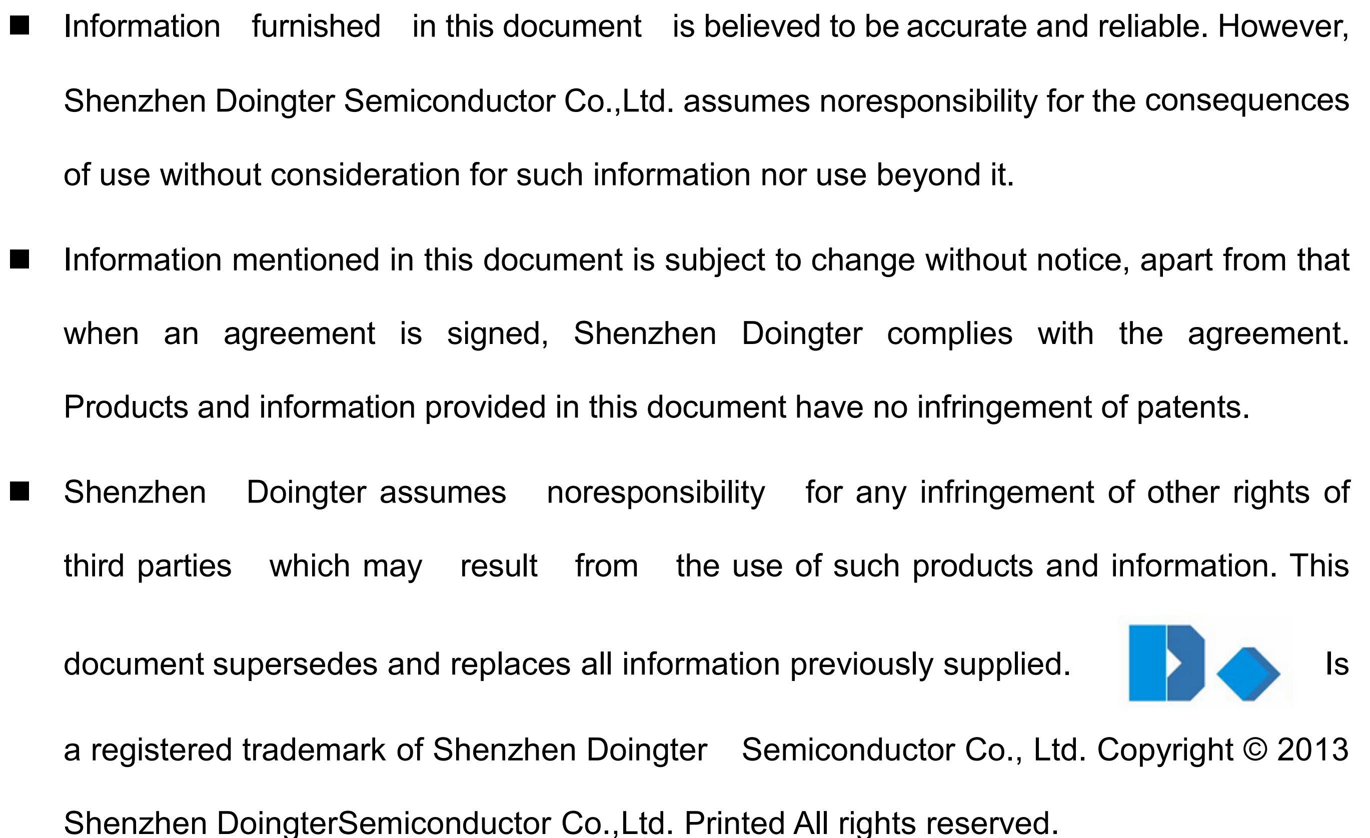

| COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER | | | |
|---|---|---|---|
| SYMBOL | MIN | NOM | MAX |
| A | 1.050 | —— | 1.300 |
| A1 | 0.000 | —— | 0.200 |
| A2 | 1.050 | —— | 1.200 |
| b | 0.300 | 0.400 | 0.500 |
| c | 0.100 | —— | 0.200 |
| D | 2.820 | 2.900 | 3.020 |
| E | 1.500 | 1.600 | 1.700 |
| E1 | 2.650 | 2.800 | 2.950 |
| e | 0.950TYP | | |
| e1 | 1.800 | 1.900 | 2.000 |
| L | 0.6REf | | |
| L1 | 0.300 | 0.450 | 0.600 |
| θ | 0° | -- | 8° |

Unit:mm

## Marking Information：




## Attention :

- Information furnished in this document is believed to be accurate and reliable. However, Shenzhen Doingter Semiconductor Co.,Ltd. assumes noresponsibility for the consequences of use without consideration for such information nor use beyond it.
- Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Shenzhen Doingter complies with the agreement. Products and information provided in this document have no infringement of patents.
- Shenzhen Doingter assumes noresponsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.  Is a registered trademark of Shenzhen Doingter Semiconductor Co., Ltd. Copyright © 2013 Shenzhen DoingterSemiconductor Co.,Ltd. Printed All rights reserved.