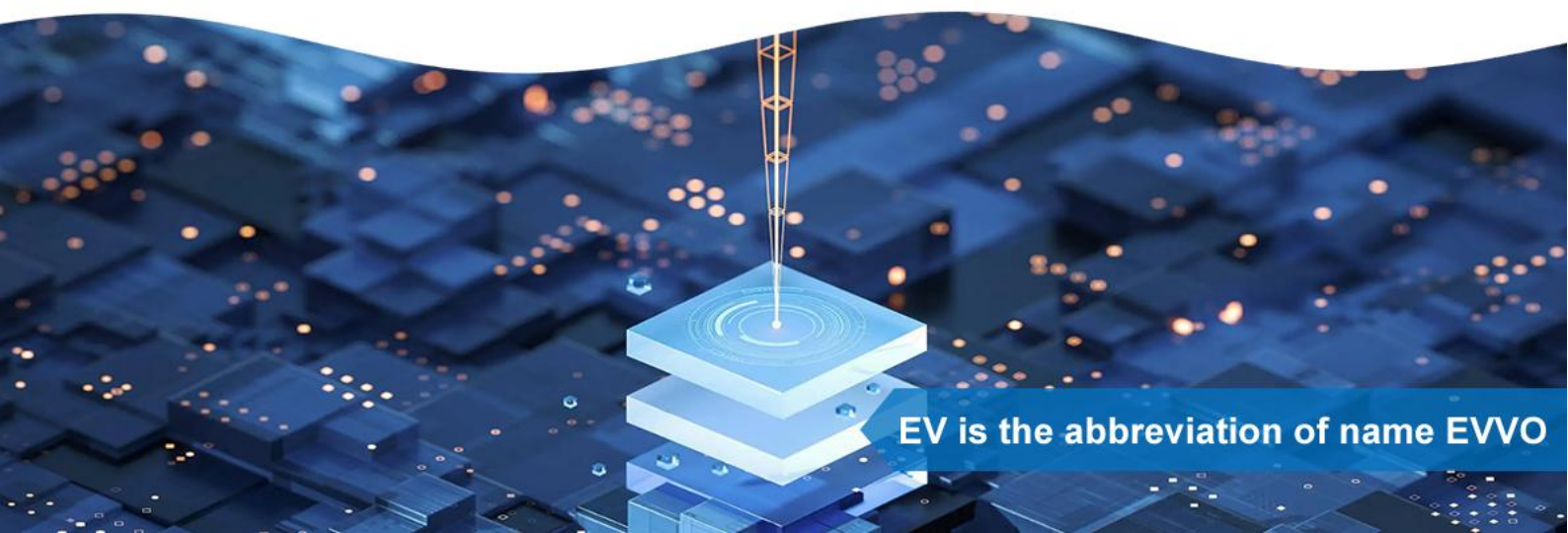
EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

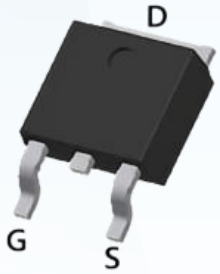
# Product Specification

| | |
|---|---|
| Domestic Part Number | FDD8870 |
| Overseas Part Number | FDD8870 |
| Equivalent Part Number | FDD8870 |



| $V_{DSS}$（V） | $R_{DS\ (ON)}$ | $I_{D(A)}$ |
|---|---|---|
| 30 | 3.5mΩ(Typ)@VGS=10V | 100 |
| | 5.5mΩ(Typ)@VGS=4.5V | |

**Pin Description**



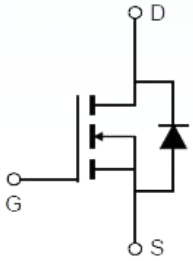

TO-252

## FEATURE:

- The FDD8870 is the high cell density trenched N-ch MOSFETS, which provides excellent $R_{DSON}$ and efficiency for most of the small power switching and load switch applications.

## APPLICATIONS:

- Load Switch




## Absolute Maximum Ratings

| Symbol | Parameter | | Rating | Units |
|---|---|---|---|---|
| $V_{DSS}$ | Drain-Source Voltage | | 30 | V |
| $V_{GSS}$ | Gate-Source Voltage | | ±20 | V |
| $I_D$ | Continuous Drain Current($V_{GS=}$ -4.5V) | $T_A$=25°C | 100 | A |
| | | $T_A$=70°C | 65 | |
| $T_J$ | Maximum Junction Temperature | | 150 | °C |
| $T_{STG}$ | Storage Temperature Range | | -55 to 150 | °C |
| $I_{DM}$ | Pulsed Drain Current | | 400 | A |
| $P_D$ | Maximum Power Dissipation | $T_A$=25°C | 80 | W |
| | | $T_A$=70°C | --- | |
| $E_{AS}$ | Avalanche Energy, Single Pulsed | | 95 | mJ |
| RθJC | Thermal Resistance-Junction to Case | | 1.9 | °C/W |
| RθJA | Thermal Resistance-Junction to Ambient | | --- | °C/W |

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

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| BVDSS | Drain-Source Breakdown Voltage | VGS=0V, ID=250uA | 30 | --- | --- | V |
| VGS(th) | Gate threshold voltage | VDS=VGS,ID=250uA | 1.0 | 1.5 | 2.5 | V |
| RDS(ON) | Drain-Source On-state Resistance | VGS=10V , ID=30A | --- | 3.5 | 4.7 | mΩ |
| | | VGS=4.5V , ID=25A | --- | 5.5 | 10 | mΩ |
| IGSS | Gate-source leakage current | VGS=±20V , VDS=0V | --- | --- | ±100 | A |
| IDSS | Zero gate voltage drain current | VDS=30V,VGS=0V,TJ=25℃ | --- | --- | 1 | μA |
| | | TJ=55℃ | --- | --- | --- | |
| **Dynamic Characteristic** | | | | | | |
| Ciss | Input Capacitance | VGS=0V, VDS=15V, Frequency=1.0MHz | --- | 2100 | --- | pF |
| Coss | Output Capacitance | | --- | 326 | --- | |
| Crss | Reverse Transfer Capacitance | | --- | 282 | --- | |
| QG | Gate Total Charge | VDS=15V, VGS=10V, IDS=30A | --- | 45 | --- | nC |
| Qgs | Gate-Source charge | | --- | 3 | --- | |
| Qgd | Gate-Drain charge | | --- | 15 | --- | |
| td(on) | Turn-on delay time | VDD=15V , VGS=10V , RG=3Ω, ID=30A | --- | 21 | --- | ns |
| tr | Turn-on Rise Time | | --- | 32 | --- | |
| td(off) | Turn-off Delay Time | | --- | 59 | --- | |
| tf | Turn-off Fall Time | | --- | 34 | --- | |
| RG | Gate Resistance | VGS=0V,VDS=0V,F=1MHz | --- | --- | --- | Ω |
| **Diode Characteristics** | | | | | | |
| VSD | Diode Forward Voltage | VGS=0V , IS=1A , TJ=25℃ | --- | --- | 1.2 | V |
| trr | Reverse Recovery Time | ISD=4.1A, dISD/dt=-100A/μs | --- | 15 | --- | ns |
| Qrr | Reverse Recovery Charge | | --- | 4 | --- | nC |

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

**Figure1:** Output Characteristics

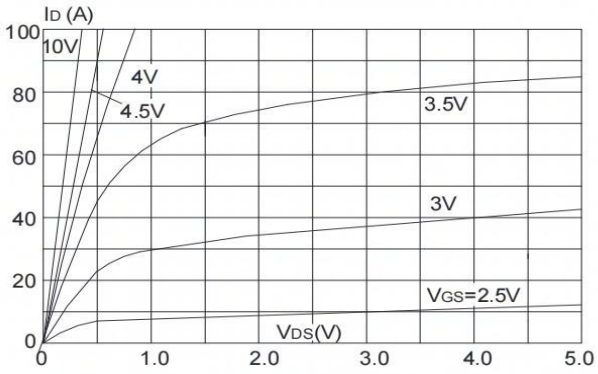



**Figure 2:** Typical Transfer Characteristics

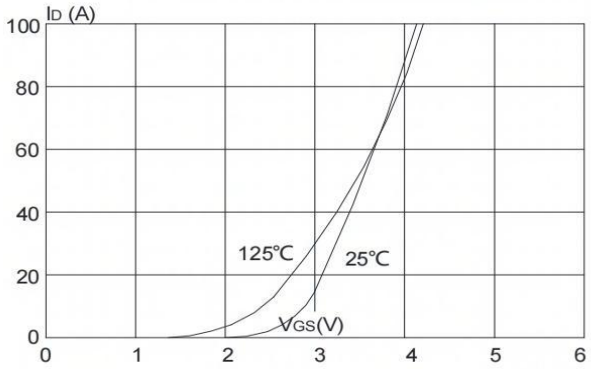



**Figure 3:** On-resistance vs. Drain Current

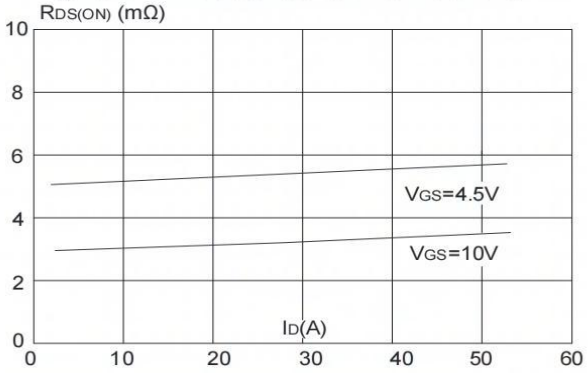



**Figure 4**: Body Diode Characteristics

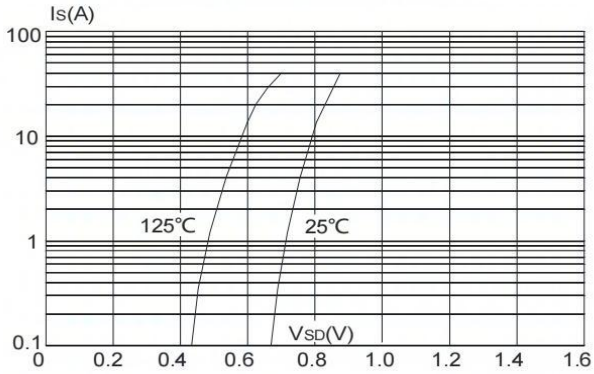



**Figure 5:** Gate Charge Characteristics

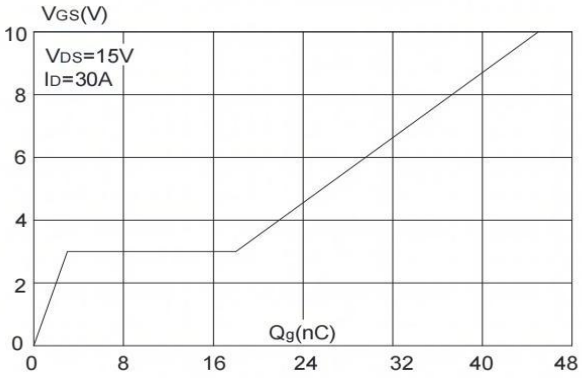



**Figure 6:** Capacitance Characteristics

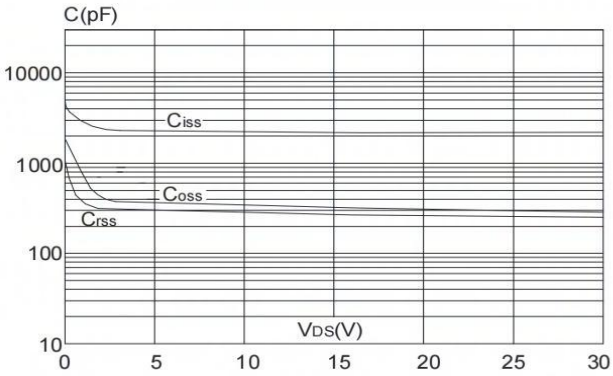


**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature

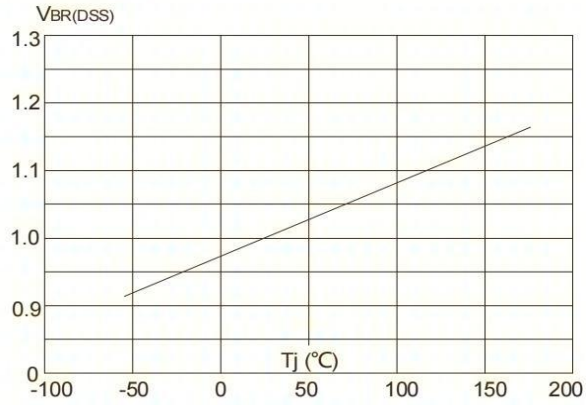



**Figure 8:** Normalized on Resistance vs. Junction Temperature

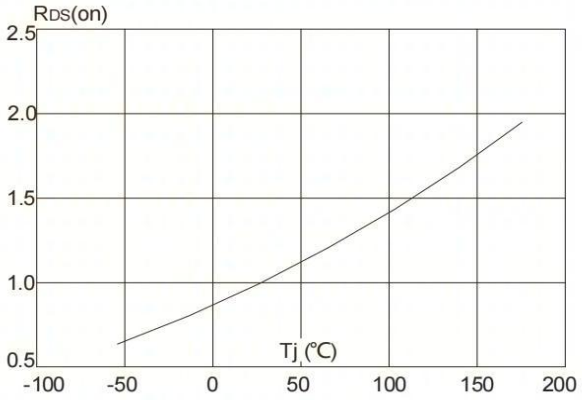



**Figure 9:** Maximum Safe Operating Area

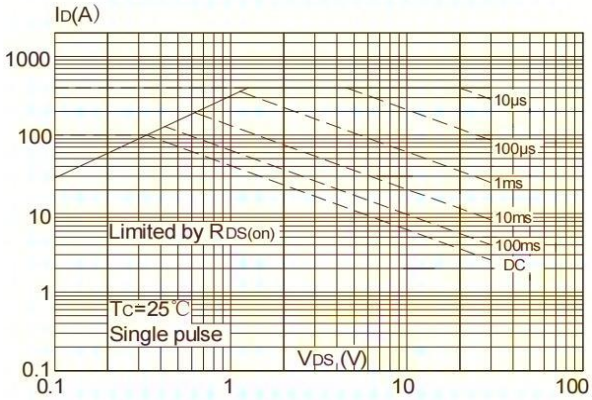



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature

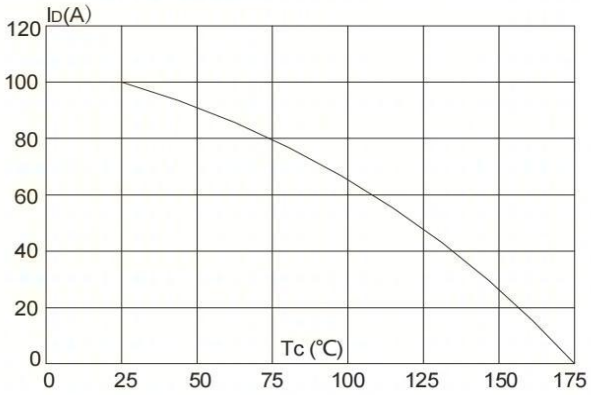
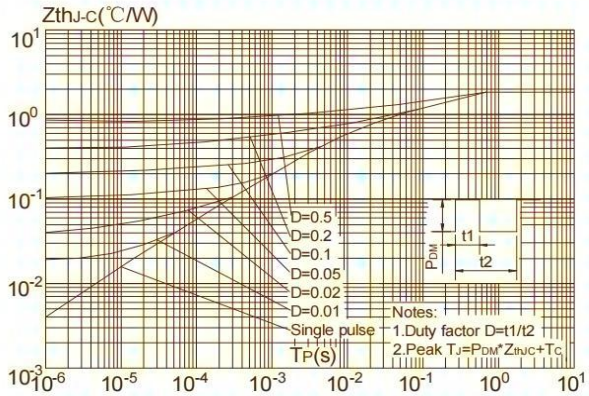
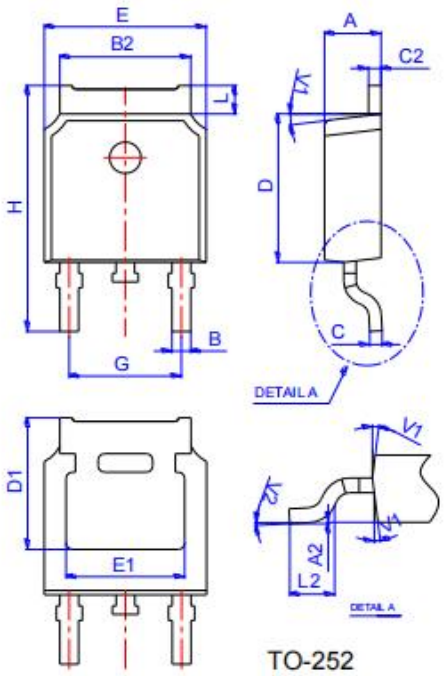



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case



## Package Mechanical Data:TO-252-3L

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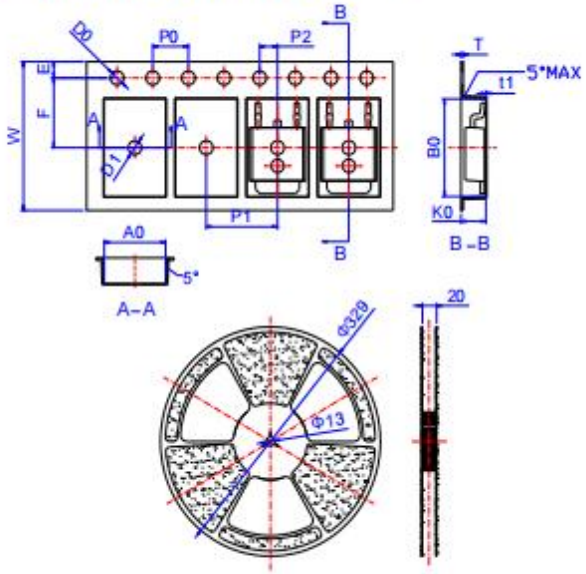
| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 5.48 | 0.202 | | 0.216 |
| C | 0.40 | | 0.60 | 0.016 | | 0.024 |
| C2 | 0.44 | | 0.58 | 0.017 | | 0.023 |
| D | 5.90 | | 6.30 | 0.232 | | 0.248 |
| D1 | 5.30REF | | | 0.209REF | | |
| E | 6.40 | | 6.80 | 0.252 | | 0.268 |
| E1 | 4.63 | | | 0.182 | | |
| G | 4.47 | | 4.67 | 0.176 | | 0.184 |
| H | 9.50 | | 10.70 | 0.374 | | 0.421 |
| L | 1.09 | | 1.21 | 0.043 | | 0.048 |
| L2 | 1.35 | | 1.65 | 0.053 | | 0.065 |
| V1 | | 7° | | | 7° | |
| V2 | 0° | | 6° | 0° | | 6° |

## Reel Spectification-TO-252




| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| W | 15.90 | 16.00 | 16.10 | 0.626 | 0.630 | 0.634 |
| E | 1.65 | 1.75 | 1.85 | 0.065 | 0.069 | 0.073 |
| F | 7.40 | 7.50 | 7.60 | 0.291 | 0.295 | 0.299 |
| D0 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| D1 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 7.90 | 8.00 | 8.10 | 0.311 | 0.315 | 0.319 |
| P2 | 1.90 | 2.00 | 2.10 | 0.075 | 0.079 | 0.083 |
| A0 | 6.85 | 6.90 | 7.00 | 0.270 | 0.271 | 0.276 |
| B0 | 10.45 | 10.50 | 10.60 | 0.411 | 0.413 | 0.417 |
| K0 | 2.68 | 2.78 | 2.88 | 0.105 | 0.109 | 0.113 |
| T | 0.24 | | 0.27 | 0.009 | | 0.011 |
| t1 | 0.10 | | | 0.004 | | |
| 10P0 | 39.80 | 40.00 | 40.20 | 1.567 | 1.575 | 1.583 |

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