

**Feature**

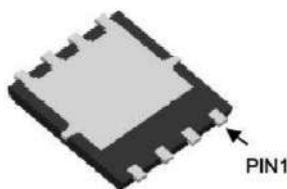
- Low Gate Charge
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

**Product Summary**

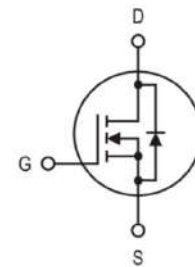
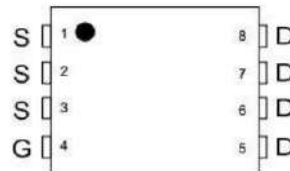
|                             |     |            |
|-----------------------------|-----|------------|
| $V_{DS}$                    | 30  | V          |
| $R_{DS(on),typ} V_{GS}=10V$ | 4.5 | m $\Omega$ |
| $I_D$                       | 65  | A          |

**Applications**

- Power Management in Desktop Computer or DC/DC Converters.
- Isolated DC/DC Converters in Telecom and Industrial.



DFN3.3\*3.3-8L

**Absolute Maximum Ratings**

| Symbol                | Parameter                                  | Rating     | Units      |
|-----------------------|--|------------|------------|
| $V_{DS}$              | Drain-Source Voltage                       | 30         | V          |
| $V_{GS}$              | Gate-Source Voltage                        | $\pm 20$   | V          |
| $I_D@T_C=25^\circ C$  | Continuous Drain Current, $V_{GS} @ 10V^1$ | 32         | A          |
| $I_D@T_C=100^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | 26         | A          |
| $I_{DM}$              | Pulsed Drain Current <sup>2</sup>          | 100        | A          |
| EAS                   | Single Pulse Avalanche Energy <sup>3</sup> | 61.3       | mJ         |
| $I_{AS}$              | Avalanche Current                          | 35         | A          |
| $P_D@T_C=25^\circ C$  | Total Power Dissipation <sup>4</sup>       | 25         | W          |
| $T_{STG}$             | Storage Temperature Range                  | -55 to 150 | $^\circ C$ |
| $T_J$                 | Operating Junction Temperature Range       | -55 to 150 | $^\circ C$ |

**Thermal Data**

| Symbol          | Parameter  | Typ. | Max. | Unit         |
|-----------------|--|------|------|--------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient <sup>1</sup> | ---  | 60   | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case <sup>1</sup>    | ---  | 5    | $^\circ C/W$ |

**N-Channel Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

| Symbol              | Parameter                                      | Conditions  | Min. | Typ. | Max. | Unit |
|---------------------|--|---|------|------|------|------|
| BV <sub>DSS</sub>   | Drain-Source Breakdown Voltage                 | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA  | 30   | ---  | ---  | V    |
| R <sub>DS(ON)</sub> | Static Drain-Source On-Resistance <sup>2</sup> | V <sub>GS</sub> =10V, I <sub>D</sub> =20A   | ---  | 4.5  | 5.2  | mΩ   |
|                     |  | V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A  | ---  | 7.2  | 9    |      |
| V <sub>GS(th)</sub> | Gate Threshold Voltage                         | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA                              | 1.2  | 1.7  | 2.2  | V    |
| I <sub>DSS</sub>    | Drain-Source Leakage Current                   | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C                       | ---  | ---  | 1    | uA   |
|                     |  | V <sub>DS</sub> =30V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C                       | ---  | ---  | 5    |      |
| I <sub>GSS</sub>    | Gate-Source Leakage Current                    | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V  | ---  | ---  | ±100 | nA   |
| g <sub>fs</sub>     | Forward Transconductance                       | V <sub>DS</sub> =5V, I <sub>D</sub> =20A  | ---  | 65   | ---  | S    |
| R <sub>g</sub>      | Gate Resistance                                | V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz                                      | 0.8  | 1.7  | 2.6  | Ω    |
| Q <sub>g</sub>      | Total Gate Charge (4.5V)                       | V <sub>DS</sub> =15V, V <sub>GS</sub> =10V, I <sub>D</sub> =20A                       | ---  | 9    | ---  | nC   |
| Q <sub>gs</sub>     | Gate-Source Charge                             |   | ---  | 2.8  | ---  |      |
| Q <sub>gd</sub>     | Gate-Drain Charge                              |   | ---  | 3.6  | ---  |      |
| T <sub>d(on)</sub>  | Turn-On Delay Time                             | V <sub>DD</sub> =15V, V <sub>GS</sub> =10V, R <sub>G</sub> =3Ω<br>I <sub>D</sub> =20A | ---  | 7    | ---  | ns   |
| T <sub>r</sub>      | Rise Time                                      |   | ---  | 18.8 | ---  |      |
| T <sub>d(off)</sub> | Turn-Off Delay Time                            |   | ---  | 19.5 | ---  |      |
| T <sub>f</sub>      | Fall Time                                      |   | ---  | 3.4  | ---  |      |
| C <sub>iss</sub>    | Input Capacitance                              | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V, f=1MHz                                     | ---  | 1113 | ---  | pF   |
| C <sub>oss</sub>    | Output Capacitance                             |   | ---  | 436  | ---  |      |
| C <sub>rss</sub>    | Reverse Transfer Capacitance                   |   | ---  | 55   | ---  |      |

**Diode Characteristics**

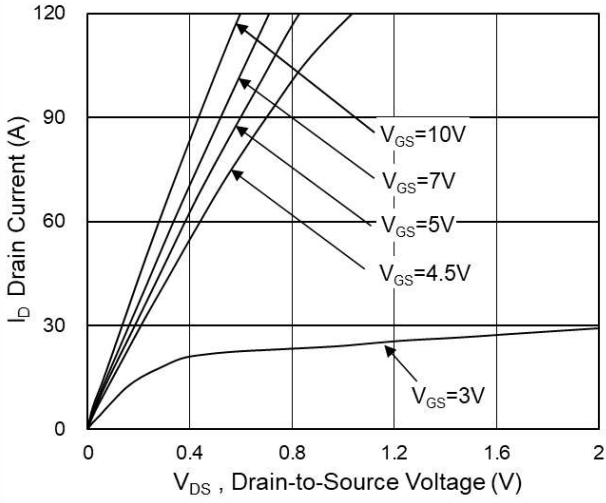
| Symbol          | Parameter                                | Conditions  | Min. | Typ. | Max. | Unit |
|-----------------|--|---|------|------|------|------|
| I <sub>S</sub>  | Continuous Source Current <sup>1,5</sup> | V <sub>G</sub> =V <sub>D</sub> =0V, Force Current             | ---  | ---  | 20   | A    |
| V <sub>SD</sub> | Diode Forward Voltage <sup>2</sup>       | V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C | ---  | ---  | 1    | V    |

Note :

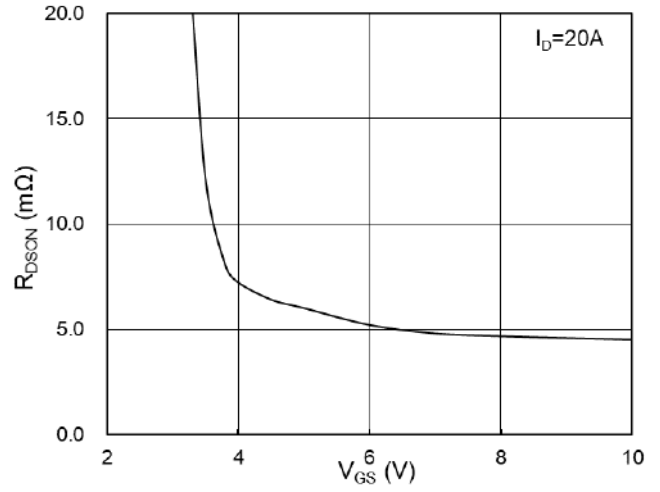
- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The EAS data shows Max. rating . The test condition is V<sub>DD</sub>=25V,V<sub>GS</sub>=10V,L=0.1mH,I<sub>AS</sub>=35A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub> , in real applications , should be limited by total power dissipation.



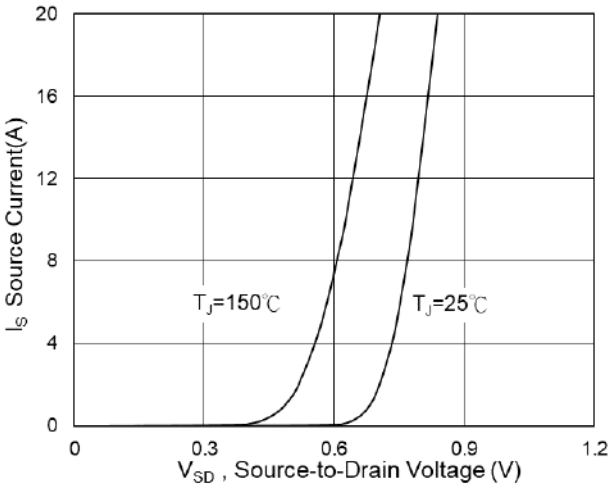
### N- Channel Typical Characteristics



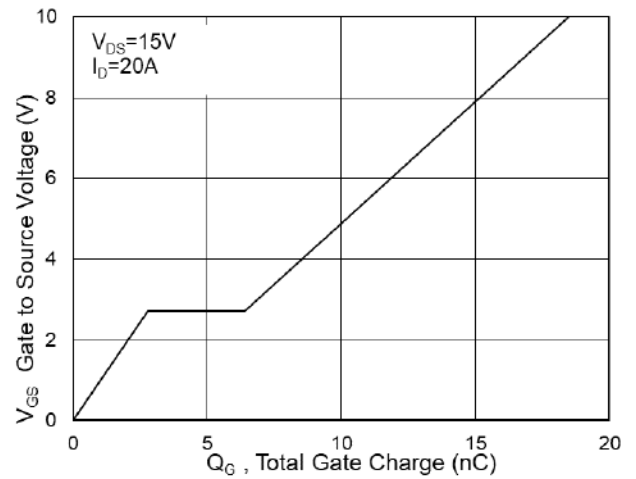
**Fig.1 Typical Output Characteristics**



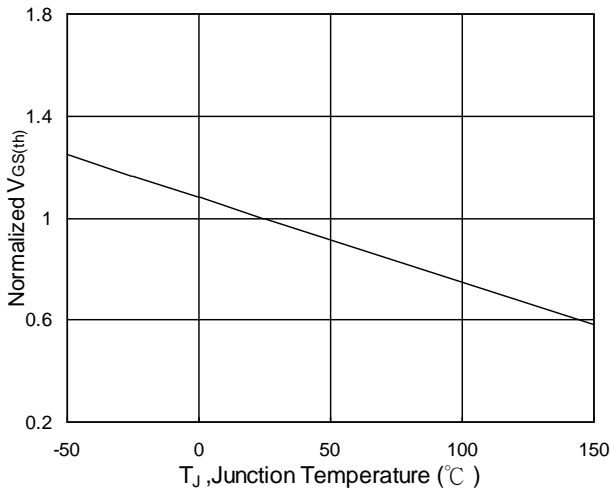
**Fig.2 On-Resistance vs G-S Voltage**



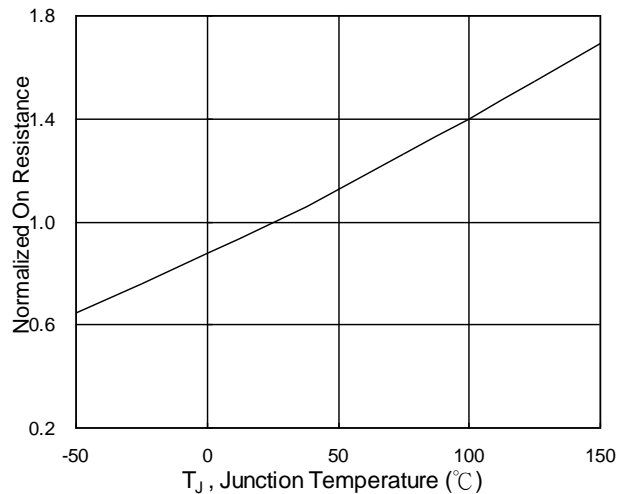
**Fig.3 Source Drain Forward Characteristics**



**Fig.4 Gate-Charge Characteristics**



**Fig.5 Normalized  $V_{GS(th)}$  vs  $T_J$**



**Fig.6 Normalized  $R_{DS(on)}$  vs  $T_J$**

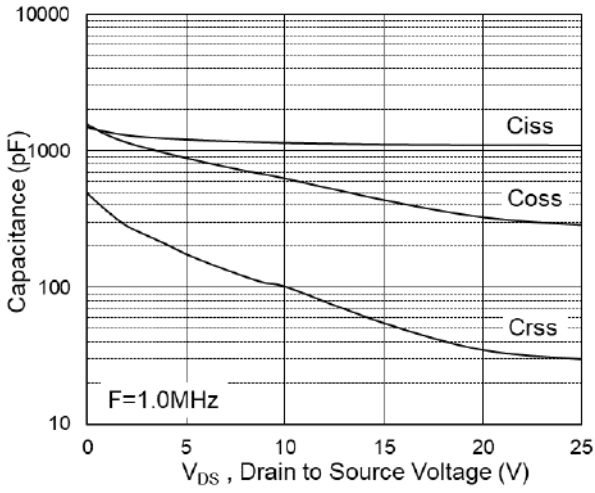


Fig.7 Capacitance

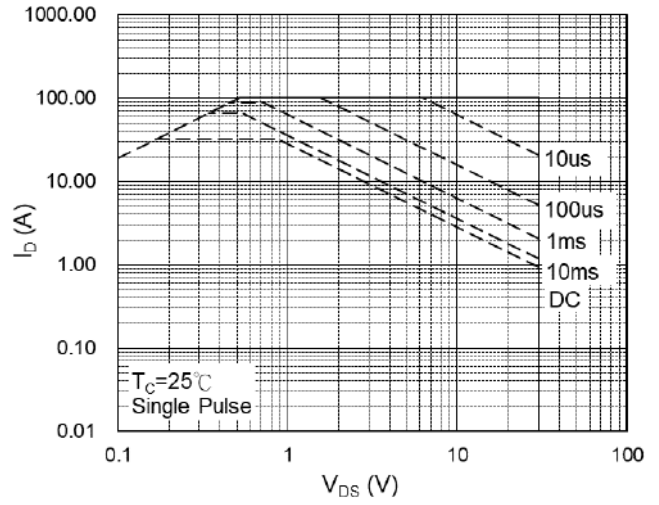


Fig.8 Safe Operating Area

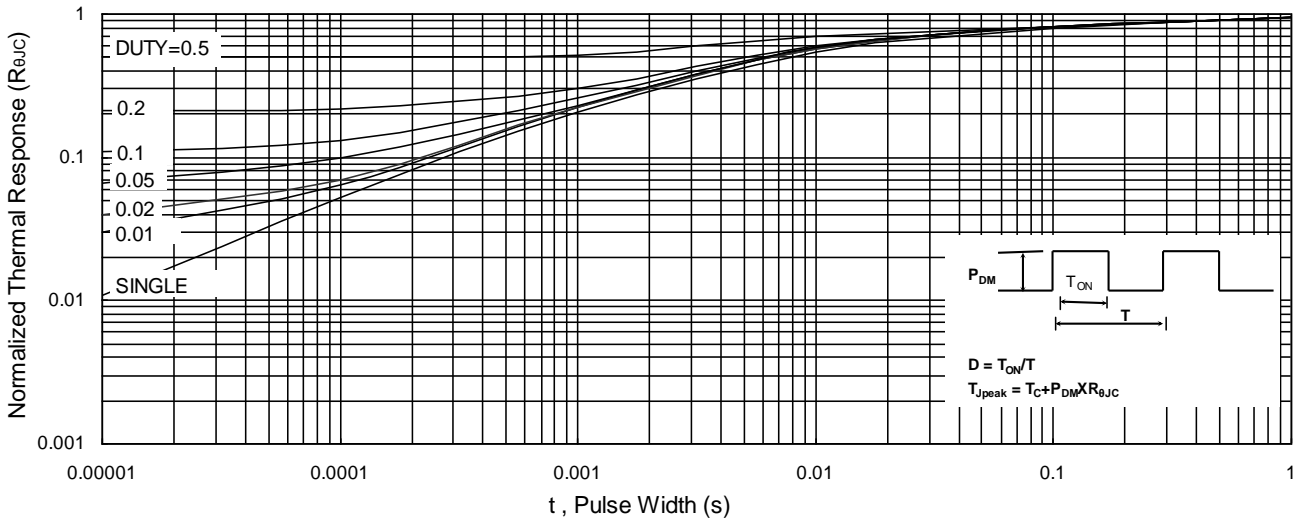


Fig.9 Normalized Maximum Transient Thermal Impedance

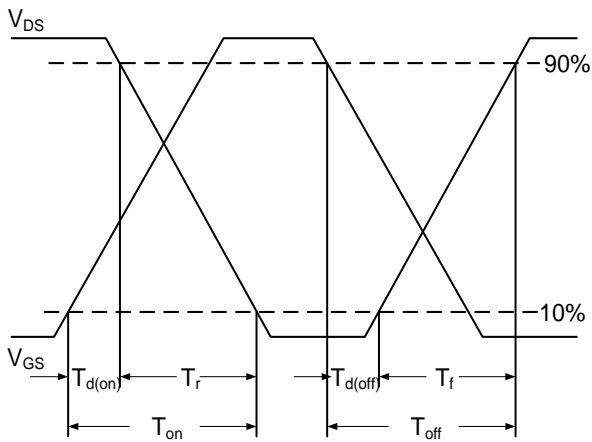


Fig.10 Switching Time Waveform

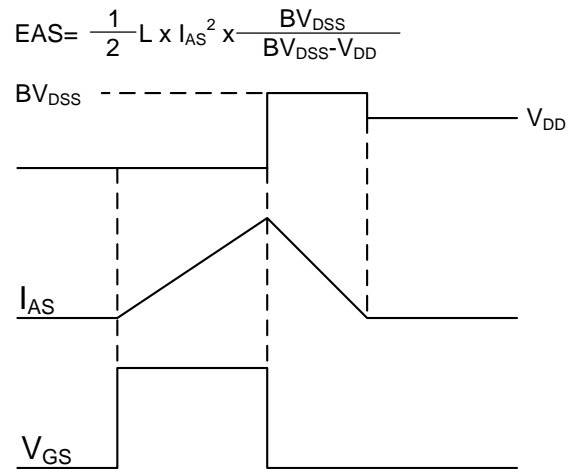
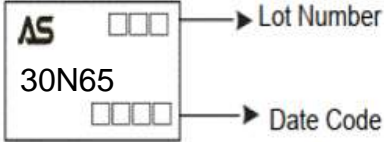


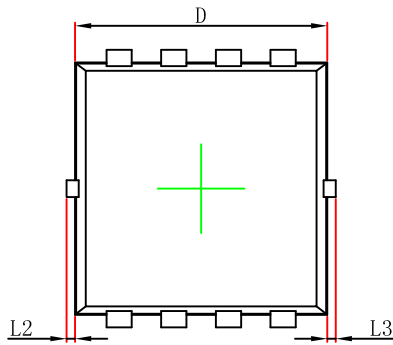
Fig.11 Unclamped Inductive Switching Waveform

## Ordering and Marking Information

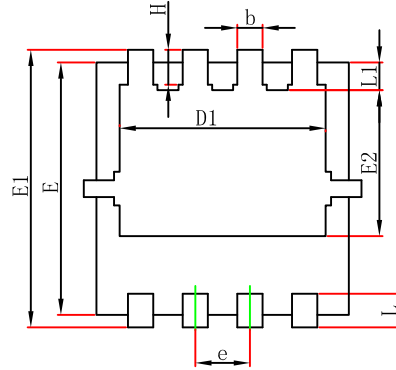
| Ordering Device No. | Marking | Package      | Packing   | Quantity |
|---------------------|---------|--------------|-----------|----------|
| ASDM30N65E-R        | 30N65   | DFN3.3*3.3-8 | Tape&Reel | 5000     |

| PACKAGE      | MARKING  |
|--------------|--|
| DFN3.3*3.3-8 |  <p>AS      □□□ → Lot Number<br/> 30N65<br/> □□□□ → Date Code</p> |

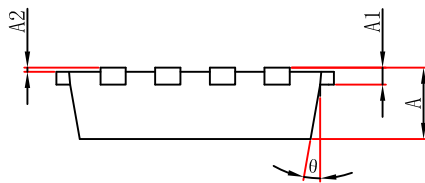
### DFN (3.3×3.3)-8L(P0.65T0.80) PACKAGE OUTLINE DIMENSIONS



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

| 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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