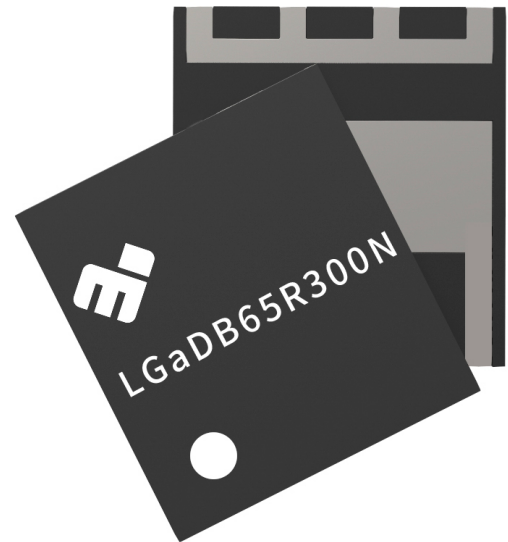


## LGaDB65R300N

# 650V GaN enhancement mode power transistor datasheet

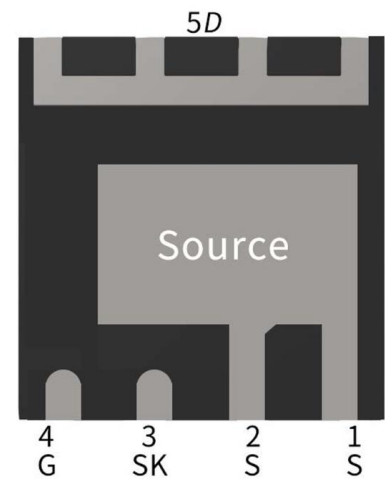
## 1.Features

- 650 V enhancement mode power transistor
- $R_{DS(on)}=300m\Omega(max.)@V_{GS}=6V$
- Simple gate drive requirements(-10V to 7 V)
- Very high switching frequency
- Fast and controllable fall and rise times
- Reverse conduction capability
- Zero reverse recovery loss
- Reliable and rugged



## 2.Applications

- AC\_DC Converters
- DC\_DC Converters
- Bridgeless Totem Pole PFCs
- Inverters
- Energy Storage Systems
- Solar Energy
- On Board Chargers
- Uninterruptable Power Supplies
- Appliances
- Motor & Pump Drives
- Laser Drivers



|               |     |
|---------------|-----|
| Gate          | 4   |
| Drain         | 5   |
| Kelvin Source | 3   |
| Source        | 1,2 |

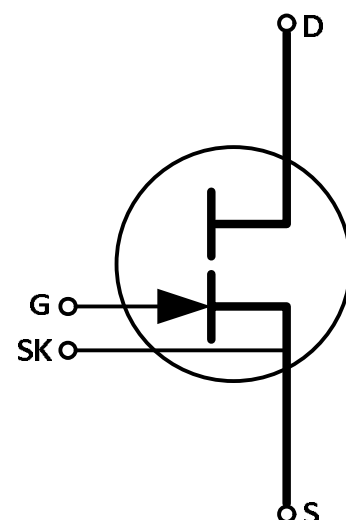
## 3.Description

The LGaDB65R300N is an enhancement mode GaN-on-QST(Qromis Substrate Technology) power transistor.

The QST substrate provides a path for achieving a very thick GaN buffer layer, making the device more suitable for high voltage and high current application scenarios.

The properties of GaN allow for high current, high voltage breakdown and high switching frequency.

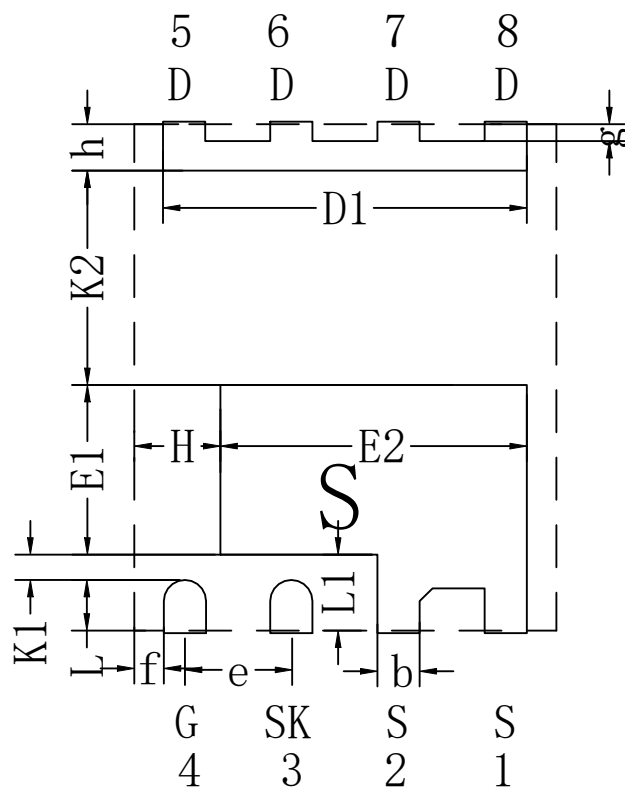
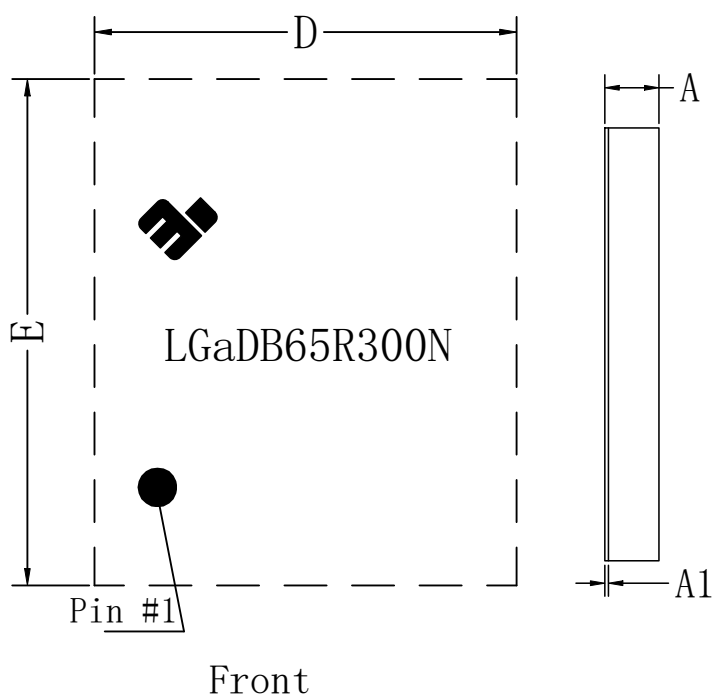
The LGaDB65R300N offers very low junction-to-case thermal resistance for demanding high power applications. These features combine to provide very high efficiency power switching.



## Electrical Characteristics (Typical values at $T_J = 25\text{ }^{\circ}\text{C}$ , $V_{GS} = 6\text{ V}$ unless otherwise noted)

| Parameters                       | Sym.          | Min. | Typ. | Max. | Units            | Conditions                                                                            |
|----------------------------------|---------------|------|------|------|------------------|---------------------------------------------------------------------------------------|
| Drain-to-Source Blocking Voltage | $V_{(BL)DSS}$ | 650  |      |      | V                | $V_{GS} = 0\text{ V}$ , $I_{DSS} \leq 9\text{ }\mu\text{A}$                           |
| Drain-to-Source On Resistance    | $R_{DS(on)}$  |      | 280  | 300  | $\text{m}\Omega$ | $V_{GS} = 6\text{ V}$ , $T_J = 25\text{ }^{\circ}$<br>$C\ I_{DS} = 1.6\text{ A}$      |
| Gate-to-Source Threshold         | $V_{GS(th)}$  | 1.3  | 1.9  | 2.6  | V                | $V_{DS} = V_{GS}$ , $I_{DS} = 1.2\text{ mA}$                                          |
| Gate-to-Source Current           | $I_{GS}$      |      | 90   |      | $\mu\text{A}$    | $V_{GS} = 6\text{ V}$ , $V_{DS} = 0\text{ V}$                                         |
| Drain-to-Source Leakage Current  | $I_{DSS}$     |      | 4    | 9    | $\mu\text{A}$    | $V_{DS} = 650\text{ V}$ , $V_{GS} = 0\text{ V}$<br>$T_J = 25\text{ }^{\circ}\text{C}$ |

## Package Dimensions



| DIMENSION | MILLOMETERS |       |       |
|-----------|-------------|-------|-------|
|           | MIN         | NOM   | MAX   |
| A         | —           | 0.750 | 1.350 |
| A1        | —           | 0.050 | —     |
| b         | 0.475       | 0.500 | 0.525 |
| D         | 4.900       | 5.000 | 5.100 |
| D1        | 4.280       | 4.310 | 4.340 |
| E         | 5.900       | 6.000 | 6.100 |
| E1        | 1.980       | 2.010 | 2.040 |
| E2        | 3.600       | 3.630 | 3.660 |
| e         | 1.245       | 1.270 | 1.295 |
| K1        | 0.270       | 0.300 | 0.330 |
| K2        | —           | 2.540 | —     |
| L         | 0.570       | 0.600 | 0.630 |
| L1        | 0.870       | 0.900 | 0.930 |
| f         | 0.325       | 0.350 | 0.375 |
| H         | 0.990       | 1.020 | 1.050 |
| h         | 0.520       | 0.550 | 0.580 |
| g         | 0.170       | 0.200 | 0.230 |

**LGaDB65R300N****DISCLAIMER**

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