

Fast switching diode chip in EMCON-Technology

**FEATURES:**

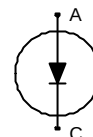
- 1200V EMCON technology 120  $\mu\text{m}$  chip
- soft, fast switching
- low reverse recovery charge
- small temperature coefficient

**This chip is used for:**

- EUPEC power modules and discrete devices

**Applications:**

- SMPS, resonant applications, drives



| Chip Type    | $V_R$ | $I_F$ | Die Size                  | Package      | Ordering Code     |
|--------------|-------|-------|---------------------------|--------------|-------------------|
| SIDC56D120F6 | 1200V | 75A   | 7.5 x 7.5 mm <sup>2</sup> | sawn on foil | Q67050-A4186-A001 |

**MECHANICAL PARAMETER:**

|                                 |                                                                                              |                 |
|---------------------------------|----------------------------------------------------------------------------------------------|-----------------|
| Raster size                     | 7.5 x 7.5                                                                                    | mm <sup>2</sup> |
| Area total / active             | 56.25 / 46.65                                                                                |                 |
| Anode pad size                  | 6.78 x 6.78                                                                                  |                 |
| Thickness                       | 120                                                                                          | $\mu\text{m}$   |
| Wafer size                      | 150                                                                                          | mm              |
| Flat position                   | 180                                                                                          | deg             |
| Max. possible chips per wafer   | 248 pcs                                                                                      |                 |
| Passivation frontside           | Photoimide                                                                                   |                 |
| Anode metallisation             | 3200 nm AlSiCu                                                                               |                 |
| Cathode metallisation           | 1400 nm Ni Ag –system<br>suitable for epoxy and soft solder die bonding                      |                 |
| Die bond                        | electrically conductive glue or solder                                                       |                 |
| Wire bond                       | Al, $\leq 500\mu\text{m}$                                                                    |                 |
| Reject Ink Dot Size             | $\varnothing$ 0.65mm ; max 1.2mm                                                             |                 |
| Recommended Storage Environment | store in original container, in dry nitrogen,<br>< 6 month at an ambient temperature of 23°C |                 |

## Maximum Ratings

| Parameter                                                              | Symbol         | Condition                       | Value      | Unit |
|------------------------------------------------------------------------|----------------|---------------------------------|------------|------|
| Repetitive peak reverse voltage                                        | $V_{RRM}$      |                                 | 1200       | V    |
| Continuous forward current limited by $T_{jmax}$                       | $I_F$          |                                 | 75         | A    |
| Single pulse forward current<br>(depending on wire bond configuration) | $I_{FSM}$      | $t_P = 10\text{ ms sinusoidal}$ | tbd        |      |
| Maximum repetitive forward current limited by $T_{jmax}$               | $I_{FRM}$      |                                 | 150        |      |
| Operating junction and storage temperature                             | $T_J, T_{stg}$ |                                 | -55...+150 | °C   |

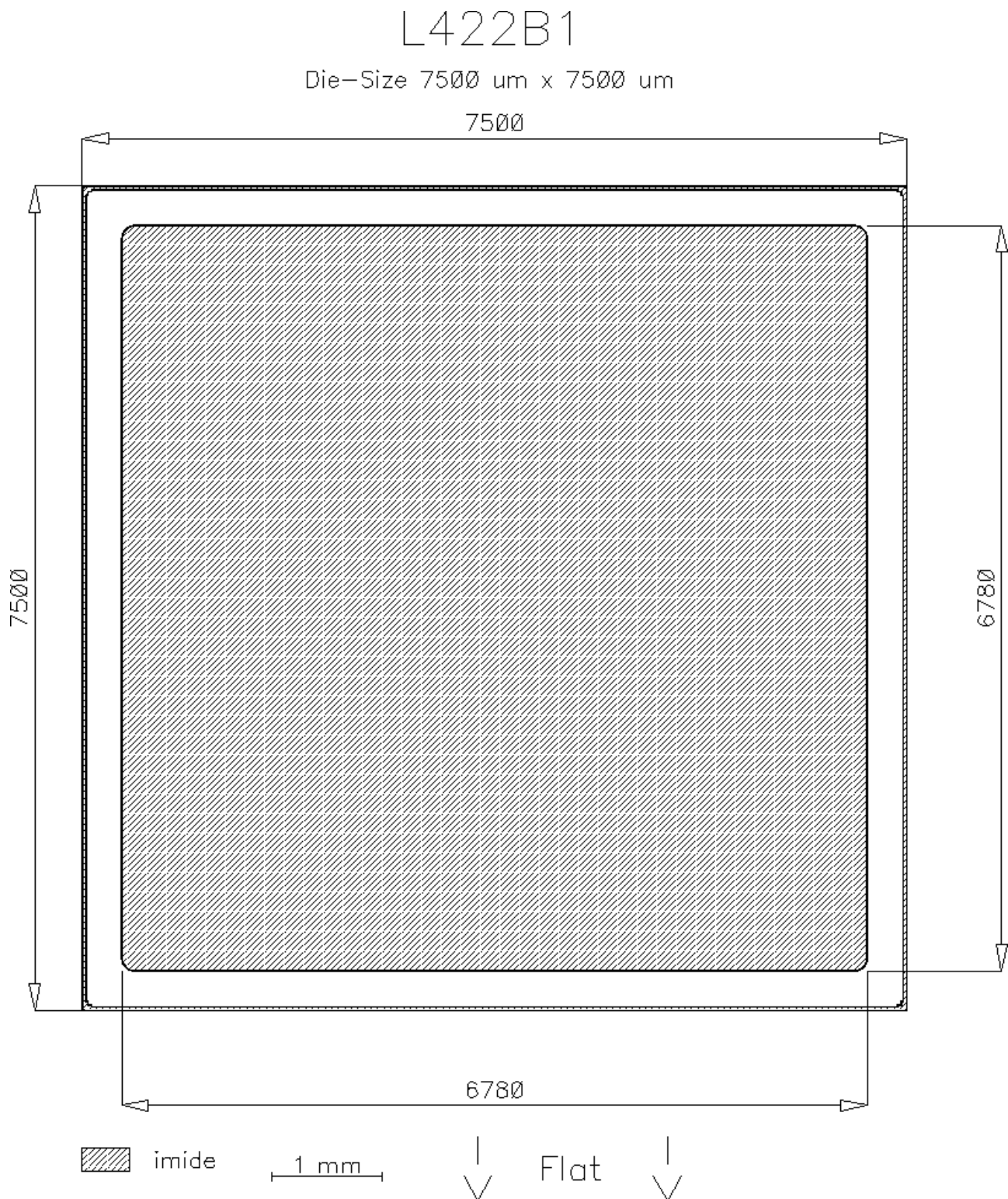
## Static Electrical Characteristics (tested on chip), $T_J=25^\circ\text{C}$ , unless otherwise specified

| Parameter                       | Symbol   | Conditions         |                        | Value |      |      | Unit          |
|---------------------------------|----------|--------------------|------------------------|-------|------|------|---------------|
|                                 |          |                    |                        | min.  | Typ. | max. |               |
| Reverse leakage current         | $I_R$    | $V_R=1200\text{V}$ | $T_J=25^\circ\text{C}$ |       |      | 250  | $\mu\text{A}$ |
| Cathode-Anode breakdown Voltage | $V_{Br}$ | $I_R=4\text{mA}$   | $T_J=25^\circ\text{C}$ | 1200  |      |      | V             |
| Forward voltage drop            | $V_F$    | $I_F=75\text{A}$   | $T_J=25^\circ\text{C}$ |       | 2.1  |      | V             |

## Dynamic Electrical Characteristics, at $T_J = 25^\circ\text{C}$ , unless otherwise specified, tested at component

| Parameter                                     | Symbol        | Conditions                          |                         | Value |      |      | Unit             |
|-----------------------------------------------|---------------|-------------------------------------|-------------------------|-------|------|------|------------------|
|                                               |               |                                     |                         | min.  | Typ. | max. |                  |
| Reverse recovery time                         | $t_{rr1}$     | $I_F=75\text{A}$                    | $T_J=25^\circ\text{C}$  |       | tbd  |      | ns               |
|                                               | $t_{rr2}$     | $di/dt=A/ms$<br>$V_R=600\text{V}$   | $T_J=150^\circ\text{C}$ |       |      |      |                  |
| Peak recovery current                         | $I_{RRM1}$    | $I_F=75\text{A}$                    | $T_J=25^\circ\text{C}$  |       | tbd  |      | A                |
|                                               | $I_{RRM2}$    | $di/dt= A/ms$<br>$V_R= 600\text{V}$ | $T_J=150^\circ\text{C}$ |       |      |      |                  |
| Reverse recovery charge                       | $Q_{rr1}$     | $I_F=75\text{A}$                    | $T_J=25^\circ\text{C}$  |       | tbd  |      | nC               |
|                                               | $Q_{rr2}$     | $di/dt= A/ms$<br>$V_R= 600\text{V}$ | $T_J=150^\circ\text{C}$ |       |      |      |                  |
| Peak rate of fall of reverse recovery current | $di_{rr1}/dt$ | $I_F=75\text{A}$                    | $T_J=25^\circ\text{C}$  |       | tbd  |      | A/ $\mu\text{s}$ |
|                                               | $di_{rr2}/dt$ | $di/dt=A/ms$<br>$V_R= 600\text{V}$  | $T_J=150^\circ\text{C}$ |       |      |      |                  |
| Softness                                      | S1            | $I_F=75\text{A}$                    | $T_J=25^\circ\text{C}$  |       | tbd  |      | 1                |
|                                               | S2            | $di/dt= A/ms$<br>$V_R= 600\text{V}$ | $T_J=150^\circ\text{C}$ |       |      |      |                  |

CHIP DRAWING:



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**FURTHER ELECTRICAL CHARACTERISTICS:**

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This chip data sheet refers to the device data sheet

INFINEON TECHNOLOGIES /  
EUPEC

tbd

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**Description:**

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AQL 0,65 for visual inspection according to failure catalog

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Electrostatic Discharge Sensitive Device according to MIL-STD 883

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Test-Normen Villach/Prüffeld

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