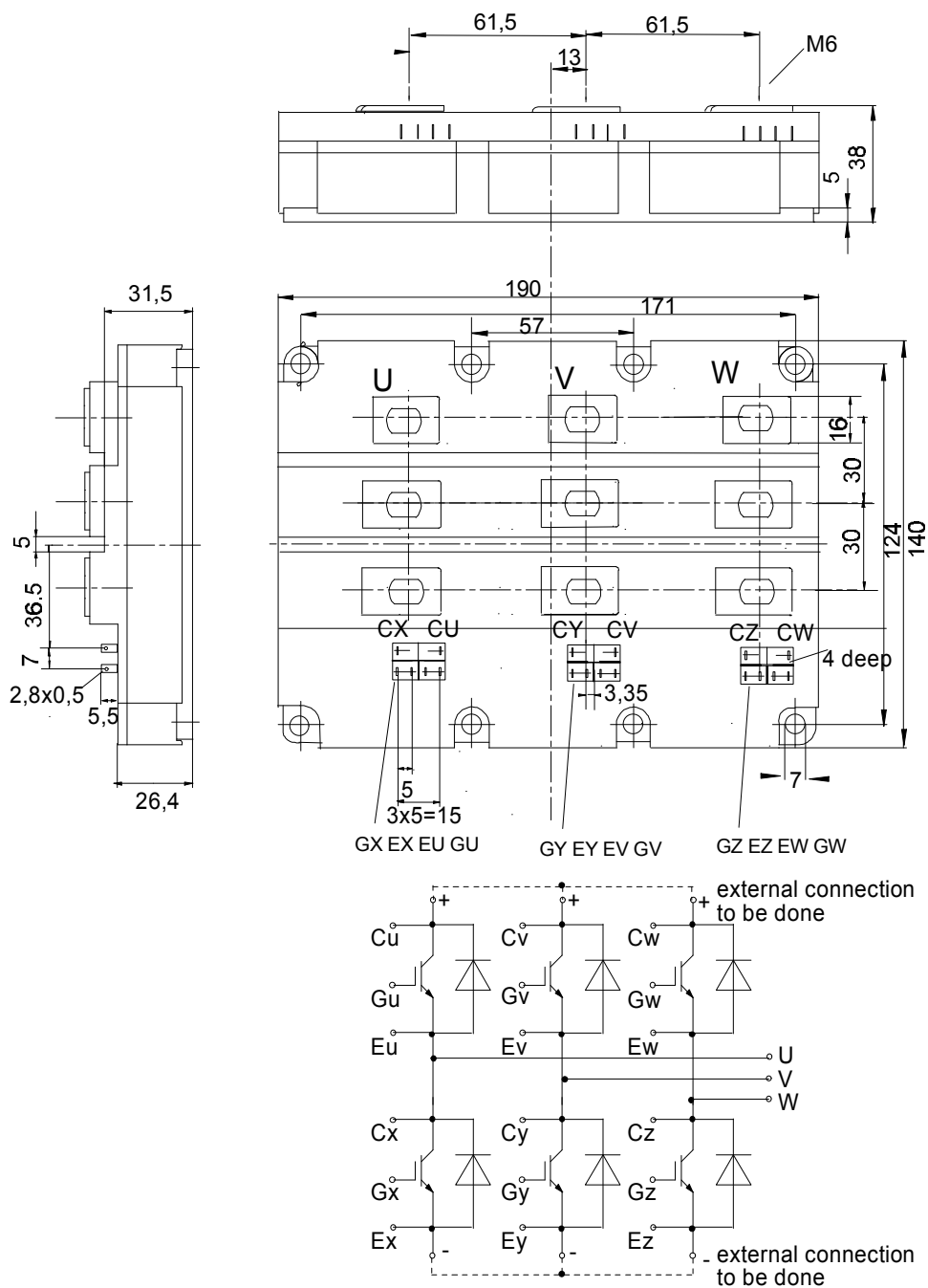




European Power-Semiconductor and Electronics Company GmbH + Co. KG

Marketing Information

FS 300 R 12 KF4



IGBT-Module

FS 300 R 12 KF4

Höchstzulässige Werte / Maximum rated values

Elektrische Eigenschaften / Electrical properties

| | | | | |
|-------------------------------------|-----------------------------------|---|------------|----------|
| Kollektor-Emitter-Sperrspannung | collector-emitter voltage | | V_{CES} | 1200 V |
| Kollektor-Dauergleichstrom | DC-collector current | | I_C | 300 A |
| Periodischer Kollektor Spitzenstrom | repetitive peak collector current | $t_p=1$ ms | I_{CRM} | 600 A |
| Gesamt-Verlustleistung | total power dissipation | $t_c=25^\circ\text{C}$, Transistor /transistor | P_{tot} | 2000 W |
| Gate-Emitter-Spitzenspannung | gate-emitter peak voltage | | V_{GE} | +/- 20 V |
| Dauergleichstrom | DC forward current | | I_F | 300 A |
| Periodischer Spitzenstrom | repetitive peak forw. current | $t_p=1$ ms | I_{FRM} | 600 A |
| Isolations-Prüfspannung | insulation test voltage | RMS, f=50 Hz, t= 1 min. | V_{ISOL} | 2,5 kV |

Charakteristische Werte / Characteristic values: Transistor

| | | | | min. | typ. | max. |
|--------------------------------------|--------------------------------------|---|---------------|------|------|-----------------|
| Kollektor-Emitter Sättigungsspannung | collector-emitter saturation voltage | $i_C=300\text{A}, v_{GE}=15\text{V}, t_{vj}=25^\circ\text{C}$ | $v_{CE\ sat}$ | - | 2,7 | 3,2 V |
| | | $i_C=300\text{A}, v_{GE}=15\text{V}, t_{vj}=125^\circ\text{C}$ | | - | 3,3 | 3,9 V |
| Gate-Schwellenspannung | gate threshold voltage | $i_C=12\text{mA}, v_{CE}=v_{GE}, t_{vj}=25^\circ\text{C}$ | $v_{GE(th)}$ | 4,5 | 5,5 | 6,5 V |
| Eingangskapazität | input capacity | $f_o=1\text{MHz}, t_{vj}=25^\circ\text{C}, v_{CE}=25\text{V}, v_{GE}=0\text{V}$ | C_{ies} | - | 22 | - nF |
| Kollektor-Emitter Reststrom | collector-emitter cut-off current | $v_{CE}=1200\text{V}, v_{GE}=0\text{V}, t_{vj}=25^\circ\text{C}$ | i_{CES} | - | - | 5 mA |
| | | $v_{CE}=1200\text{V}, v_{GE}=0\text{V}, t_{vj}=125^\circ\text{C}$ | | - | - | 50 mA |
| Gate-Emitter Reststrom | gate leakage current | $v_{CE}=0\text{V}, v_{GE}=20\text{V}, t_{vj}=25^\circ\text{C}$ | i_{GES} | - | - | 400 nA |
| Emitter-Gate Reststrom | gate leakage current | $v_{CE}=0\text{V}, v_{EG}=20\text{V}, t_{vj}=25^\circ\text{C}$ | i_{EGS} | - | - | 400 nA |
| Einschaltzeit (induktive Last) | turn-on time (inductive load) | $i_C=300\text{A}, v_{CE}=600\text{V}$ | t_{on} | | | |
| | | $v_L = \pm 15\text{V}, R_G=6,8\Omega, t_{vj}=25^\circ\text{C}$ | | - | 0,35 | - μs |
| | | $v_L = \pm 15\text{V}, R_G=6,8\Omega, t_{vj}=125^\circ\text{C}$ | | - | 0,45 | - μs |
| Speicherzeit (induktive Last) | storage time (inductive load) | $i_C=300\text{A}, v_{CE}=600\text{V}$ | t_s | | | |
| | | $v_L = \pm 15\text{V}, R_G=6,8\Omega, t_{vj}=25^\circ\text{C}$ | | - | 0,9 | - μs |
| | | $v_L = \pm 15\text{V}, R_G=6,8\Omega, t_{vj}=125^\circ\text{C}$ | | - | 1,0 | - μs |
| Fallzeit (induktive Last) | fall time (inductive load) | $i_C=300\text{A}, v_{CE}=600\text{V}$ | t_f | | | |
| | | $v_L = \pm 15\text{V}, R_G=6,8\Omega, t_{vj}=25^\circ\text{C}$ | | - | 0,10 | - μs |
| | | $v_L = \pm 15\text{V}, R_G=6,8\Omega, t_{vj}=125^\circ\text{C}$ | | - | 0,15 | - μs |

Charakteristische Werte / Characteristic values: Invers-Diode

| | | | | | | |
|-------------------------|-------------------------------|---|----------|---|-----|------------------|
| Durchlaßspannung | forward voltage | $i_F=300\text{A}, v_{GE}=0\text{V}, t_{vj}=25^\circ\text{C}$ | V_F | - | 2,3 | 2,9 V |
| | | $i_F=300\text{A}, v_{GE}=0\text{V}, t_{vj}=125^\circ\text{C}$ | | - | 2,1 | - V |
| Rückstromspitze | peak reverse recovery current | $i_F=300\text{A}, -di_F/dt=300\text{A}/\mu\text{s}$ | I_{RM} | | | |
| | | $v_{RM}=600\text{V}, v_{EG}=10\text{V}, t_{vj}=25^\circ\text{C}$ | | - | 25 | - A |
| Sperrverzögerungsladung | recovered charge | $v_{RM}=600\text{V}, v_{EG}=10\text{V}, t_{vj}=125^\circ\text{C}$ | | - | 65 | - A |
| | | $i_F=300\text{A}, -di_F/dt=300\text{A}/\mu\text{s}$ | Q_r | | | |
| | | $v_{RM}=600\text{V}, v_{EG}=10\text{V}, t_{vj}=25^\circ\text{C}$ | | - | 4 | - μAs |
| | | $v_{RM}=600\text{V}, v_{EG}=10\text{V}, t_{vj}=125^\circ\text{C}$ | | - | 20 | - μAs |

Thermische Eigenschaften / Thermal properties

| | | | | | |
|-----------------------------------|--------------------------------------|---|---------------|------|--|
| Innerer Wärmewiderstand | thermal resistance, junction to case | Transistor,DC,pro Modul/per module | R_{thJC} | | 0,011 $^\circ\text{C}/\text{W}$ |
| | | Transistor,DC,pro Zweig/per arm | | | 0,064 $^\circ\text{C}/\text{W}$ |
| | | Diode,DC, pro Modul/per module | | | 0,023 $^\circ\text{C}/\text{W}$ |
| | | Diode,DC, pro Zweig/per arm | | | 0,140 $^\circ\text{C}/\text{W}$ |
| Übergangs-Wärmewiderstand | thermal resistance, case to heatsink | pro Modul / per Module pro Zweig / per arm | R_{thCK} | typ. | 0,006 $^\circ\text{C}/\text{W}$ 0,036 $^\circ\text{C}/\text{W}$ |
| Höchstzul. Sperrschichttemperatur | max. junction temperature | | $t_{vj\ max}$ | | 150 $^\circ\text{C}$ |
| Betriebstemperatur | operating temperature | Transistor / transistor | $t_{c\ op}$ | | -40...+150 $^\circ\text{C}$ |
| | | Diode / diode | $t_{c\ op}$ | | -40...+125 $^\circ\text{C}$ |
| Lagertemperatur | storage temperature | | t_{stg} | | -40...+125 $^\circ\text{C}$ |

Mechanische Eigenschaften / Mechanical properties

| | | | | | |
|--|----------------------------|--------------|----|--|-------------------------|
| Gehäuse, siehe Anlage | case, see appendix | | | | |
| Innere Isolation | internal insulation | | | | Al_2O_3 |
| Anzugsdrehmoment f. mech. Befestigung | mounting torque | | M1 | | 3 Nm |
| Anzugsdrehmoment f. elektr. Anschlüsse | terminal connection torque | terminals M6 | M2 | | 5...6 Nm |
| Gewicht | weight | | G | | ca. 2300 g |

Mit dieser technischen Information werden Halbleiterbauelemente spezifiziert, jedoch keine Eigenschaften zugesichert. Sie gilt in Verbindung mit den zugehörigen Technischen Erläuterungen. This technical information specifies semiconductor devices but promises no characteristics. It is valid in combination with the belonging technical notes.