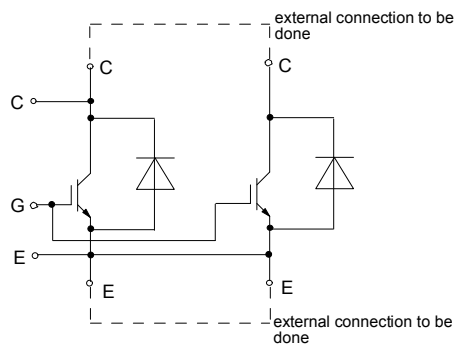
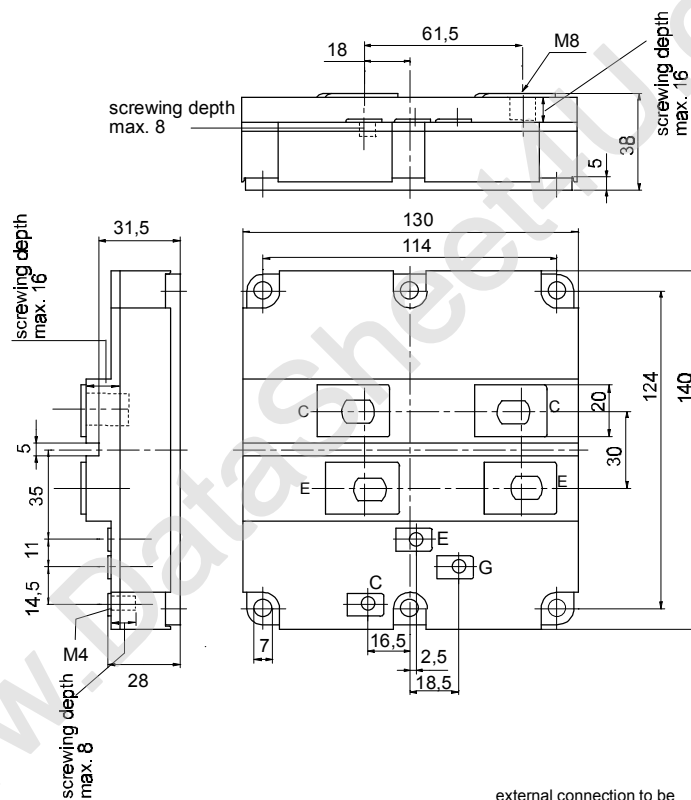


## Marketing Information FZ 1200 R 12 KF 4



## FZ 1200 R 12 KF4

### Höchstzulässige Werte / Maximum rated values

#### Elektrische Eigenschaften / Electrical properties

Kollektor-Emitter-Sperrspannung	collector-emitter voltage		$V_{CES}$	1200 V
Kollektor-Dauerstrom	DC-collector current		$I_C$	1200 A
Periodischer Kollektor Spitzenstrom	repetitive peak collector current	$t_p=1$ ms	$I_{CRM}$	2400 A
Gesamt-Verlustleistung	total power dissipation	$t_c=25^\circ\text{C}$ , Transistor /transistor	$P_{tot}$	7800 W
Gate-Emitter-Spitzenspannung	gate-emitter peak voltage		$V_{GE}$	$\pm 20$ V
Dauerstrom	DC forward current		$I_F$	1200 A
Periodischer Spitzenstrom	repetitive peak forw. current	$t_p=1$ ms	$I_{FRM}$	2400 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	$i_C=1,2\text{kA}$ , $v_{GE}=15\text{V}$ , $t_{vj}=25^\circ\text{C}$ $i_C=1,2\text{kA}$ , $v_{GE}=15\text{V}$ , $t_{vj}=125^\circ\text{C}$	$V_{CE\text{ sat}}$	-	2,7 3,3	3,2 V 3,9 V
Gate-Schwellenspannung	gate threshold voltage	$i_C=48\text{mA}$ , $v_{CE}=v_{GE}$ , $t_{vj}=25^\circ\text{C}$	$V_{GE(th)}$	4,5	5,5	6,5 V
Eingangskapazität	input capacity	$f_O=1\text{MHz}$ , $t_{vj}=25^\circ\text{C}$ , $v_{CE}=25\text{V}$ , $v_{GE}=0\text{V}$	$C_{ies}$	-	90	- nF
Kollektor-Emitter Reststrom	collector-emitter cut-off current	$v_{CE}=1200\text{V}$ , $v_{GE}=0\text{V}$ , $t_{vj}=25^\circ\text{C}$ $v_{CE}=1200\text{V}$ , $v_{GE}=0\text{V}$ , $t_{vj}=125^\circ\text{C}$	$i_{CES}$	-	16 100	- mA 200 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)	$i_C=1,2\text{kA}$ , $v_{CE}=600\text{V}$ $v_L = \pm 15\text{V}$ , $R_G = 0,82\Omega$ , $t_{vj}=25^\circ$ $v_L = \pm 15\text{V}$ , $R_G = 0,82\Omega$ , $t_{vj}=125^\circ$	$t_{on}$		0,7 0,8	- $\mu\text{s}$ - $\mu\text{s}$
Speicherzeit (induktive Last)	storage time (inductive load)	$i_C=1,2\text{kA}$ , $v_{CE}=600\text{V}$ $v_L = \pm 15\text{V}$ , $R_G = 0,82\Omega$ , $t_{vj}=25^\circ$ $v_L = \pm 15\text{V}$ , $R_G = 0,82\Omega$ , $t_{vj}=125^\circ$	$t_s$		0,9 1,0	- $\mu\text{s}$ - $\mu\text{s}$
Fallzeit (induktive Last)	fall time (inductive load)	$i_C=1,2\text{kA}$ , $v_{CE}=600\text{V}$ $v_L = \pm 15\text{V}$ , $R_G = 0,82\Omega$ , $t_{vj}=25^\circ$ $v_L = \pm 15\text{V}$ , $R_G = 0,82\Omega$ , $t_{vj}=125^\circ$	$t_f$		0,10 0,15	- $\mu\text{s}$ - $\mu\text{s}$
Einschaltverlustenergie pro Puls	turn-on energy loss per puls	$i_C=1,2\text{kA}$ , $v_{CE}=600\text{V}$ , $L_s=70\text{nH}$ $v_L = \pm 15\text{V}$ , $R_G=0,82\Omega$ , $T_{vj}=125^\circ\text{C}$	$E_{on}$	-	170	- mWs
Abschaltverlustleistung pro Puls	turn-off energy loss per puls	$i_C=1,2\text{kA}$ , $v_{CE}=600\text{V}$ , $L_s=70\text{nH}$ $v_L = \pm 15\text{V}$ , $R_G=0,82\Omega$ , $T_{vj}=125^\circ\text{C}$	$E_{off}$	-	190	- mWs

### Charakteristische Werte / Characteristic values

Inversdiode / Inverse diode						
Durchlaßspannung	forward voltage	$i_F=1,2\text{kA}$ , $v_{GE}=0\text{V}$ , $t_{vj}=25^\circ\text{C}$ $i_F=1,2\text{kA}$ , $v_{GE}=0\text{V}$ , $t_{vj}=125^\circ\text{C}$	$V_F$	-	2,2 2,0	2,7 V 2,5 V
Rückstromspitze	peak reverse recovery current	$i_F=1,2\text{kA}$ , $v_{RM}=600\text{V}$ , $v_{EG} = 10\text{V}$ $-di_F/dt = 6 \text{ kA}/\mu\text{s}$ , $t_{vj} = 25^\circ\text{C}$ $t_{vj} = 125^\circ\text{C}$	$I_{RM}$		400 700	- A - A
Sperrverzögerungsladung	recovered charge	$i_F=1,2\text{kA}$ , $v_{RM}=600\text{V}$ , $v_{EG} = 10\text{V}$ $-di_F/dt = 6 \text{ kA}/\mu\text{s}$ , $t_{vj} = 25^\circ\text{C}$ $t_{vj} = 125^\circ\text{C}$	$Q_r$		50 150	- $\mu\text{As}$ - $\mu\text{As}$

### Thermische Eigenschaften / Thermal properties

Innere Wärmewiderstand	thermal resistance, junction to case	Transistor / transistor, DC Transistor,DC,pro Zweig/per arm	$R_{thJC}$		0,016 °C/W 0,032 °C/W
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	pro Modul / per Module	$R_{thCK}$		0,008 °C/W
Höchstzul. Sperrschichttemperatur	max. junction temperature	pro Modul / per Module	$t_{vj\text{ max}}$		150 °C
Betriebstemperatur	operating temperature	Transistor / transistor	$t_{c\text{ op}}$		-40...+125 °C
Lagertemperatur	storage temperature		$t_{stg}$		-40...+125 °C

### Mechanische Eigenschaften / Mechanical properties

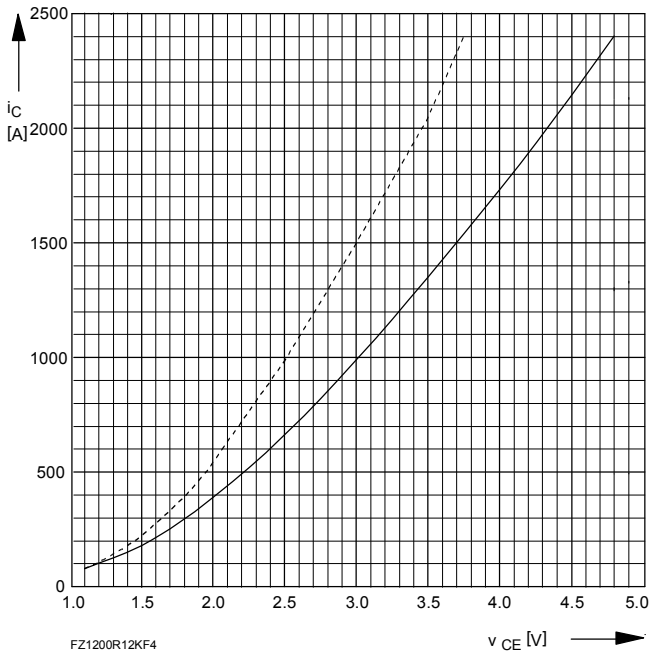
Innere Isolation	internal insulation				$\text{Al}_2\text{O}_3$
Anzugsdrehmoment f. mech. Befestigung	mounting torque	terminals M6 / tolerance +/-15%	M1		5 Nm
Anzugsdrehmoment f. elektr. Anschlüsse	terminal connection torque	terminals M4 / tolerance +/-15%	M2		2 Nm
		terminals M8			8...10 Nm
Gewicht	weight		G		ca. 1500 g

### Bedingung für den Kurzschlußschutz / Conditions for short-circuit protection

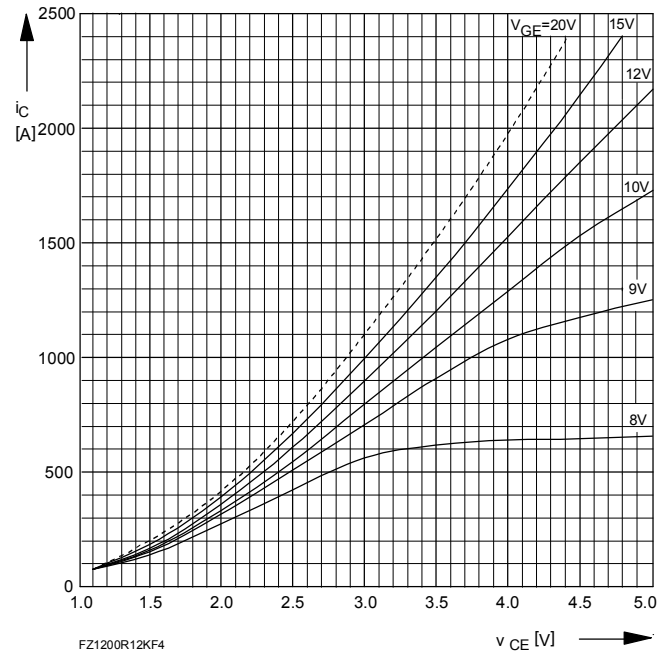
$t_{ig} = 10 \mu\text{s}$	$V_{CC} = 750 \text{ V}$
$v_L = \pm 15 \text{ V}$	$v_{CEM} = 900 \text{ V}$
$R_{GF} = R_{GR} = 0,82 \Omega$	$i_{CMK1} \gg 10000 \text{ A}$
$t_{vj} = 125^\circ\text{C}$	$i_{CMK2} \gg 8000 \text{ A}$

Unabhängig davon gilt bei abweichenden Bedingungen / with regard to other conditions  $v_{CEM} = V_{CES} - 15\text{nH} \times |di/dt|$

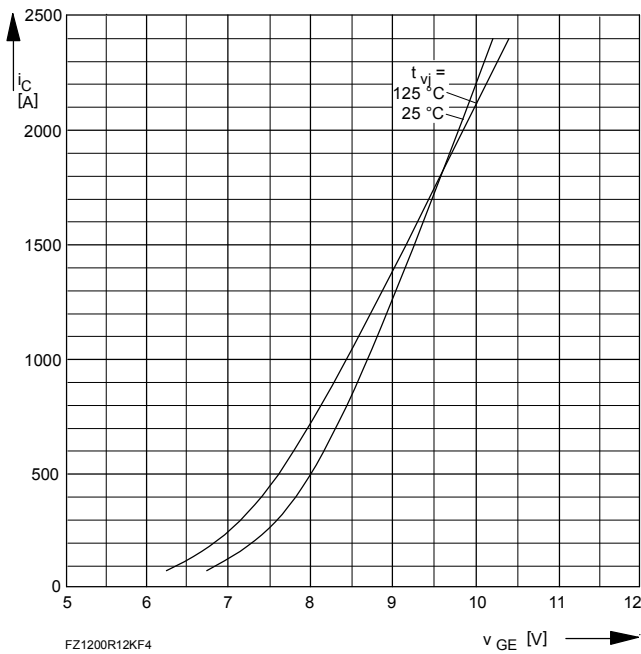
Mit dieser technischen Information werden Halbleiterbauelemente spezifiziert, jedoch keine Eigenschaften zugesichert. Sie gilt in Verbindung mit den zugehörigen Technischen Erläuterungen. This technical information specifies semiconductor devices but promises no characteristics. It is valid in combination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



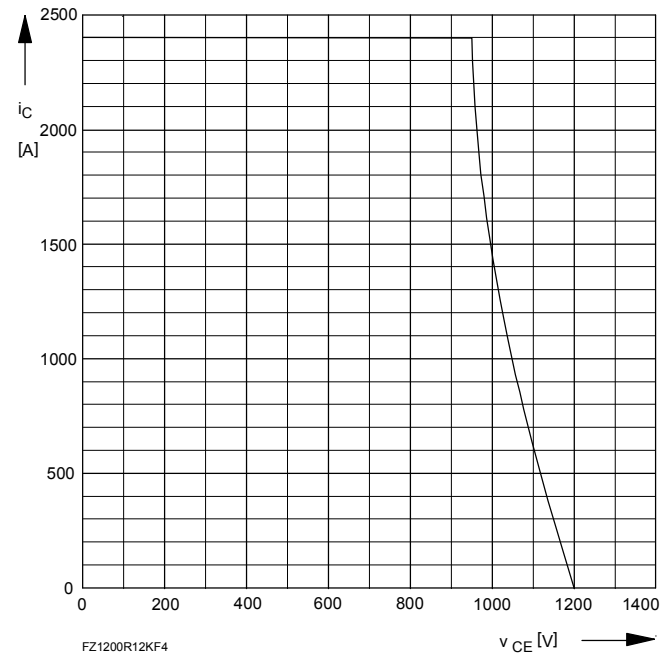
Bild/Fig. 1  
 Kollektor-Emitter-Spannung im Sättigungsbereich (typisch)  
 Collector-emitter-voltage in saturation region (typical)  
 $V_{GE} = 15V$   
 - - -  $T_{vj} = 25^\circ C$   
 —  $T_{vj} = 125^\circ C$



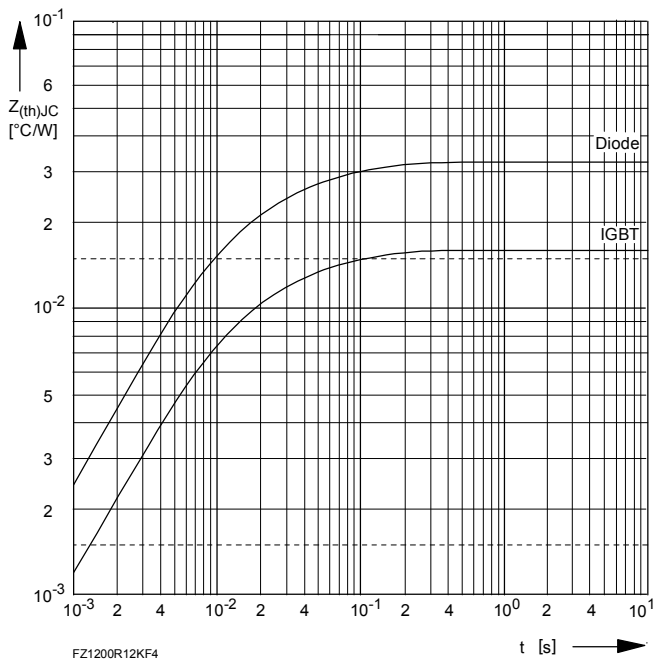
Bild/Fig. 2  
 Kollektor-Emitter-Spannung im Sättigungsbereich (typisch)  
 Collector-emitter-voltage in saturation region (typical)  
 $T_{vj} = 125^\circ C$



Bild/Fig. 3  
 Übertragungscharakteristik (typisch)  
 Transfer characteristic (typical)  
 $V_{CE} = 20V$

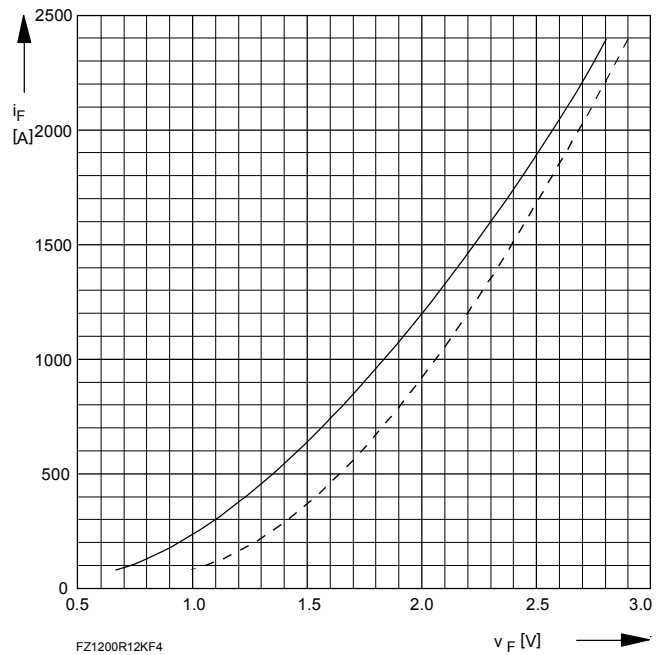


Bild/Fig. 4  
 Rückwärts-Arbeitsbereich  
 Reverse biased safe operating area  
 $t_{vj} = 125^\circ C$ ,  $v_{LE} = v_{LR} = 15V$ ,  $R_G = 0,82W$



FZ1200R12KF4

Bild/Fig. 5  
 Transienter innerer Wärmewiderstand (DC)  
 Transient thermal impedance (DC)



FZ1200R12KF4

Bild/Fig. 6  
 Durchlaßkennlinie der Inversdiode (typisch)  
 Forward characteristic of the inverse diode (typical)  
 .....  $t_{vj} = 25^{\circ}C$   
 —  $t_{vj} = 125^{\circ}C$

## **Terms & Conditions of Usage**

### **Attention**

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