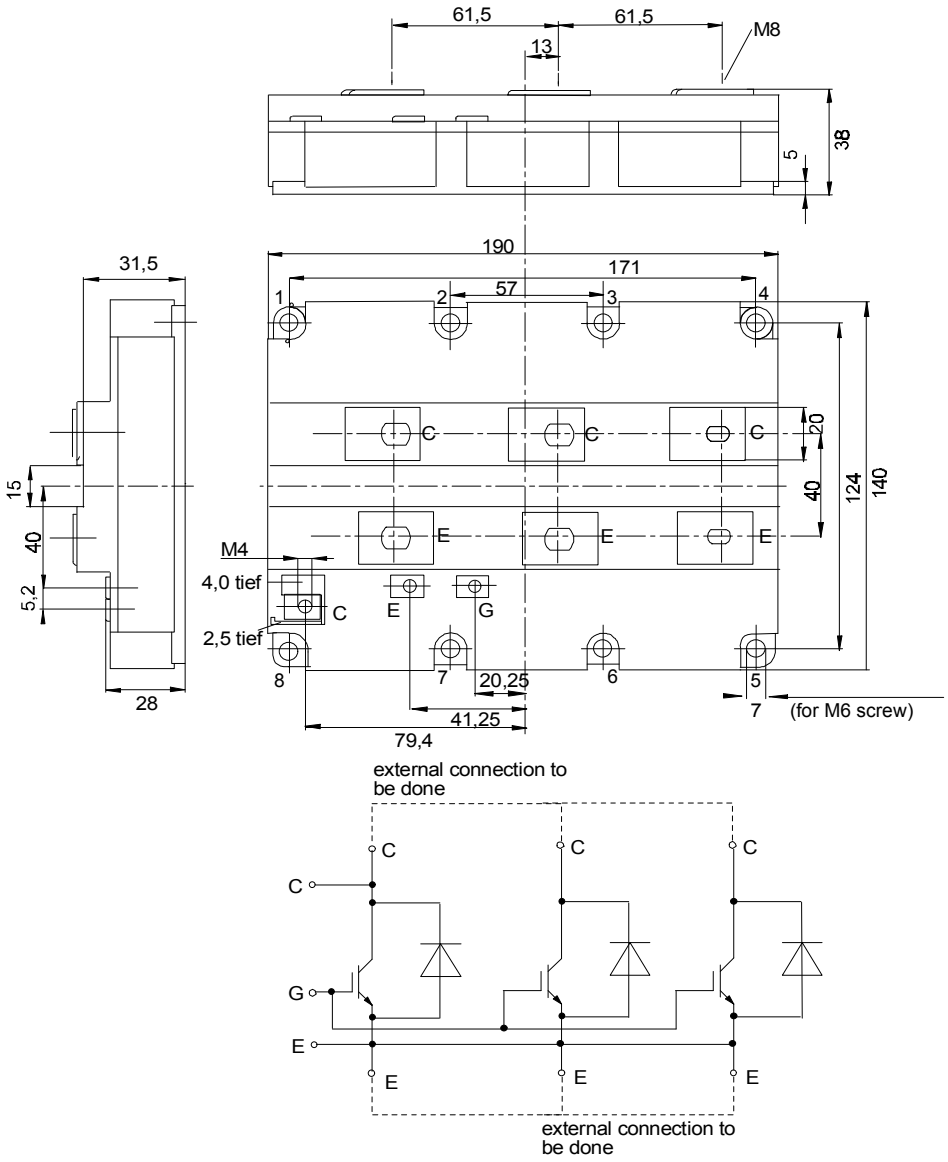
European Power-
Semiconductor and
Electronics Company

Marketing Information
FZ 1800 R 16 KF4



VWK, 27.6.1997

FZ 1800 R 16 KF4

Höchstzulässige Werte / Maximum rated values

Elektrische Eigenschaften / Electrical properties

Vorläufige Daten
Preliminary data

Kollektor-Emitter-Sperrspannung	collector-emitter voltage		V_{CES}	1600	V
Kollektor-Dauergleichstrom	DC-collector current		I_C	1800	A
Periodischer Kollektor Spitzenstrom	repetitive peak collctor current	t_p=1 ms	I_{CRM}	3600	A
Gesamt-Verlustleistung	total power dissipation	t_C=25°C, Transistor /transistor	P_{tot}	11	kW
Gate-Emitter-Spitzenspannung	gate-emitter peak voltage		V_{GE}	+/- 20	V
Dauergleichstrom	DC forward current		I_F	1800	A
Periodischer Spitzenstrom	repetitive peak forw. current	t_p=1ms	I_{FRM}	3600	A
Isolations-Prüfspannung	insulating test voltage	RMS, f=50 Hz, t= 1 min.	V_{ISOL}	3,4	kV

Charakteristische Werte / Characteristic values: Transistor

				min.	typ.	max	
Kollektor-Emitter Sättigungsspannung	collector-emitter saturation voltage	i_C=1,8kA,v_{GE}=15V, t_{vj}=25°C	$v_{CE\ sat}$	-	3,5	3,9	V
		i_C=1,8kA,v_{GE}=15V, t_{vj}=125°C		-	4,6	5,0	V
Gate-Emitter-Schwellspannung	gate threshold voltage	i_C=120mA, v_{CE}=v_{GE}, t_{vj}=25°C	$v_{GE(th)}$	4,5	5,5	6,5	V
Eingangskapazität	input capacity	f_O=1MHz,t_{vj}=25°C,v_{CE}=25V,v_{GE}=0	C_{ies}	-	270	-	nF
Kollektor-Emitter Reststrom	collector-emitter cut-off current	v_{CE}=1600V, v_{GE}=0V, t_{vj}=25°C	i_{CES}	-	12	-	mA
		v_{CE}=1600V, v_{GE}=0V, t_{vj}=125°C		-	120	-	mA
Gate-Emitter Reststrom	gate leakage current	v_{CE}=0V, v_{GE}=20V, t_{vj}=25°C	i_{GES}	-	-	600	nA
Emitter-Gate Reststrom	gate leakage current	v_{CE}=0V, v_{GE}=20V, t_{vj}=25°C	i_{EGS}	-	-	600	nA
Einschaltzeit (induktive Last)	turn-on time (induktive load)	i_C=1,8kA,v_{CE}=900V	t_{on}				
		v_L=15V,R_G=1,2Ω , t_{vj}=25°C		-	0,8	-	µs
		v_L=15V,R_G=1,2Ω , t_{vj}=125°C		-	1,0	-	µs
Speicherzeit (induktive Last)	storage time	i_C=1,8kA,v_{CE}=900V	t_s				
		v_L=15V,R_G=1,2Ω , t_{vj}=25°C		-	1,1	-	µs
		v_L=15V,R_G=1,2Ω , t_{vj}=125°C		-	1,3	-	µs
Fallzeit (induktive Last)	fall time (inductive load)	i_C=1,8kA,v_{CE}=900V	t_f				
		v_L=15V,R_G=1,2Ω , t_{vj}=25°C		-	0,25	-	µs
		v_L=15V,R_G=1,2Ω , t_{vj}=125°C		-	0,30	-	µs

Charakteristische Werte / Characteristic values:

Transistor / transistor

Einschaltverlustenergie pro Puls	turn-on energy lost per puls	i_C=1,8kA,v_{CE}=900V,L_S=50nH v_L=15V,R_G=1,2Ω , t_{vj}=125°C	E_{on}	-	750	-	mWs
Abschaltverlustenergie pro Puls	turn-off energy lost per puls	i_C=1,8kA,v_{CE}=900V,L_S=50nH v_L=15V,R_G=1,2Ω , t_{vj}=125°C	E_{off}	-	450	-	mWs

Inversdiode / Inverse diode

Durchlaßspannung	forward voltage	i_F=1,8kA, v_{GE}=0V, t_{vj}=25°C	V_F	-	2,4	2,8	V
		i_F=1,8kA, v_{GE}=0V, t_{vj}=125°C		-	2,2	-	V
Rückstromspitze	peak reverse recovery current	i_F=1,8kA, -di_F/dt=600A/µs	I_{RM}				
		v_{RM}=900V, v_{EG}=10V, t_{vj}=25°C		-	1100	-	A
		v_{RM}=900V, v_{EG}=10V, t_{vj}=125°C		-	1300	-	A
Sperrverzögerungsladung	recovered charge	i_F=1,8kA, -di_F/dt=1,8kA/µs	Q_r				
		v_{RM}=900V, v_{EG}=10V, t_{vj}=25°C		-	180	-	µAs
		v_{RM}=900V, v_{EG}=10V, t_{vj}=125°C		-	400	-	µAs

Thermische Eigenschaften / Thermal properties

Innerer Wärmewiderstand	thermal resistance, junction to case	Transistor / transistor, DC	R_{thJC}	0,011	°C/W
		Diode, DC		0,027	°C/W
Übergangs-Wärmewiderstand	thermal resistance, case to heatsink	pro Module / per Module	R_{thCK}	0,006	°C/W
Höchstzul. Sperrschichttemperatur	max. junction temperature	pro Module / per Module	$t_{vj\ max}$	150	°C
Betriebstemperatur	operating temperature	Diode / diode	$t_{c\ op}$	-40...+125	°C
Lagertemperatur	storage temperature		t_{stg}	-40...+125	°C

Mechanische Eigenschaften / Mechanical properties

Gehäuse, siehe Anlage	case, see appendix			Seite 3	
Innere Isolation	internal insulation			Al_2O_3	
Anzugsdrehmoment f. mech. Befestigung	mounting torque	terminals M6 / tolerance +/-15%	M1	5	Nm
Anzugsdrehmoment f. elektr. Anschlüsse	terminal connection torque	terminals M4 / tolerance +5%/-10%	M2	2	Nm
		terminals M8		8...10	Nm
Gewicht	weight		G	ca.2300	g

Bedingungen für den Kurzschlußschutz

t_{fg}=10µs, v_{LF}=v_{LR} = 15V,
R_{GF}=R_{GR} = 1,2Ω
t_{vj}=125°C

V_{CC}=1000V
V_{CEM}=1300V
i_{CMK1} » 18000A
i_{CMK2} » 13500A

Conditions for short-circuit protection

Unabhängig davon gilt bei abweich. Bedingungen / with regard to other conditions
v_{CEM} = V_{CES} -12 nH x Idic/dtI

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

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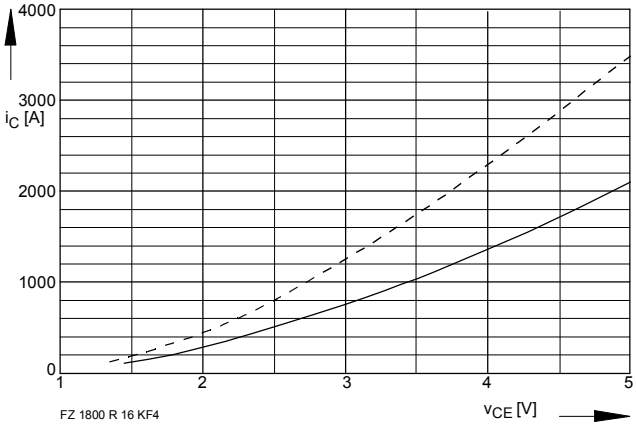

Bild / Fig. 1
Kollektor-Emitter-Spannung im Sättigungsbereich (typisch)
Collector-emitter-voltage in saturation region (typical)
V_{GE} = 15 V
----- t_{vj} = 25 °C
— t_{vj} = 125 °C

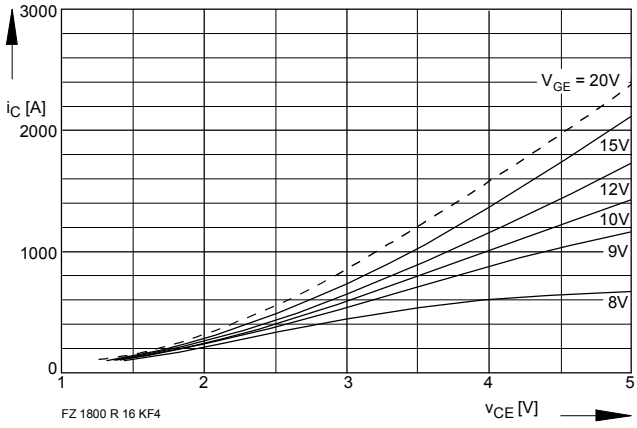

Bild / Fig. 2
Kollektor-Emitter-Spannung im Sättigungsbereich (typisch)
Collector-emitter-voltage in saturation region (typical)
t_{vj} = 125 °C

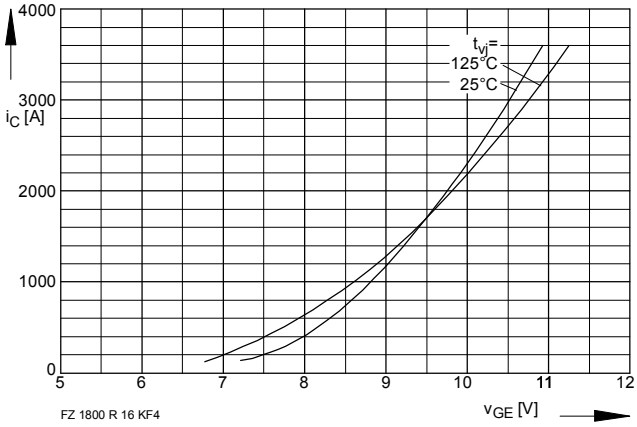

Bild / Fig. 3
Übertragungscharakteristik (typisch)
Transfer characteristic (typical)
V_{CE}= 20V

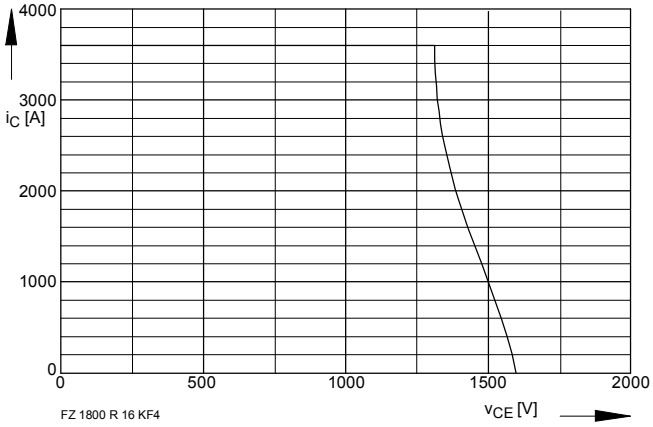

Bild / Fig. 4
Rückwärts-Arbeitsbereich
Reverse biased safe operating area
t_{vj} = 125°C,v_{LF} = v_{LR} = 15V, R_G = 1.2Ω

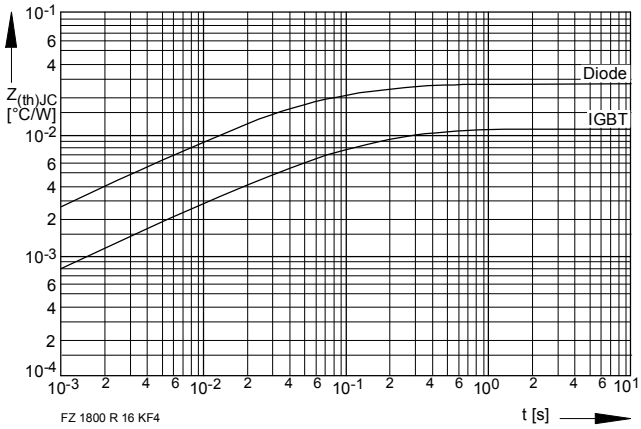

Bild / Fig. 5
Transienter innerer Wärmewiderstand (DC)
Transient thermal impedance (DC)

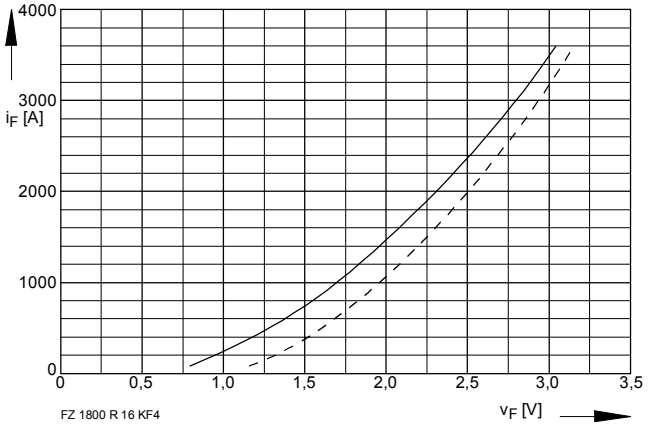

Bild / Fig. 6
Durchlaßkennlinie der Inversdiode (typisch)
Forward charateristic of the inverse diode (typical)
----- t_{vj} = 25°C
— t_{vj} = 125°C

Terms & Conditions of Usage

Attention
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