

FZ 1800 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	1800 A
Period. Kollektor Spitzenstrom	repetitive peak collector current	$t_p=1\text{ ms}$	I_{CRM}	3600 A
Gesamt-Verlustleistung	total power dissipation	$t_c=25^\circ\text{C}$, 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	$t_p=1\text{ ms}$	I_{FRM}	3600 A
Isolations-Prüfspannung	insulating test voltage	RMS, f=50 Hz, t= 1 min.	V_{ISOL}	2,5 kV

Charakteristische Werte / Characteristic values: Transistor

				min.	typ.	max
Koll.-Emitter Sättigungsspannung	coll.-emitter saturation voltage	$i_C=1,8\text{ kA}, v_{GE}=15\text{ V}, t_{vj}=25^\circ\text{C}$	$V_{CE\text{ sat}}$	-	2,7	3,2 V
		$i_C=1,8\text{ kA}, v_{GE}=15\text{ V}, t_{vj}=125^\circ\text{C}$		-	3,3	3,9 V
Gate-Schwellspannung	gate threshold voltage	$i_C=72\text{ mA}, v_{CE}=v_{GE}, t_{vj}=25^\circ\text{C}$	$V_{GE(th)}$	4,5	5,5	6,5 V
Eingangskapazität	input capacity	$f_o=1\text{ MHz}, t_{vj}=25^\circ\text{C}, v_{CE}=25\text{ V}, v_{GE}=0$	C_{ies}	-	135	- 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}	-	-	30 mA
		$v_{CE}=1200\text{ V}, v_{GE}=0\text{ V}, t_{vj}=125^\circ\text{C}$		-	-	300 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 (ohmsche Last)	turn-on time (resistive load)	$i_C=1,8\text{ kA}, v_{CE}=600\text{ V}, v_L=15\text{ V}, v_L=15\text{ V}, R_G=0,43\Omega, t_{vj}=25^\circ\text{C}$	t_{on}	-	-	- μs
		$t_{vj}=125^\circ\text{C}$		-	-	- μs
Speicherzeit (induktive Last)	storage time	$i_C=1,8\text{ kA}, v_{CE}=600\text{ V}, v_L=15\text{ V}, v_L=15\text{ V}, R_G=0,43\Omega, t_{vj}=25^\circ\text{C}$	t_s	-	-	- μs
		$t_{vj}=125^\circ\text{C}$		-	-	- μs
Fallzeit (induktive Last)	fall time (inductive load)	$i_C=1,8\text{ kA}, v_{CE}=600\text{ V}, v_L=15\text{ V}, v_L=15\text{ V}, R_G=0,43\Omega, t_{vj}=25^\circ\text{C}$	t_f	-	-	- μs
		$t_{vj}=125^\circ\text{C}$		-	-	- μs

Bedingungen für den Kurzschlußschutz / Conditions for short-circuit protection

$t_{ig} = 10\mu\text{s}$	$V_{CC} = 750\text{V}$			
$v_L = \pm 15\text{V}$	$v_{CEM} = 900\text{V}$			
$R_{GF} = R_{GR} = 0,43\Omega$	$i_{CMK1} = 18000\text{V}$			
$t_{vj} = 125^\circ\text{C}$	$i_{CMK2} = 13500\text{V}$			
Unabhängig davon dilt bei abweichenden Bedingungen / with regard to other conditions			$v_{CEM} = V_{CES} - 12\text{nH} \cdot di_C/dt $	

Charakteristische Werte / Characteristic values: Invers-Diode

Durchlaßspannung	forward voltage	$i_F=1,8\text{ kA}, v_{GE}=0\text{ V}, t_{vj}=25^\circ\text{C}$	V_F	-	2,2	2,7 V
		$i_F=1,8\text{ kA}, v_{GE}=0\text{ V}, t_{vj}=125^\circ\text{C}$		-	2	2,5 V
Rückstromspitze	peak reverse recovery current	$i_F=1,8\text{ kA}, -di_F/dt=1,8\text{ kA}/\mu\text{s}$	I_{RM}	-	-	- A
		$v_{RM}=600\text{ V}, v_{EG}=10\text{ V}, t_{vj}=25^\circ\text{C}$		-	-	- A
		$v_{RM}=600\text{ V}, v_{EG}=10\text{ V}, t_{vj}=125^\circ\text{C}$		-	-	- A
Sperrverzögerungsladung	recovered charge	$i_F=1,8\text{ kA}, -di_F/dt=1,8\text{ kA}/\mu\text{s}$	Q_r	-	-	- μAs
		$v_{RM}=600\text{ V}, v_{EG}=10\text{ V}, t_{vj}=25^\circ\text{C}$		-	-	- μAs
		$v_{RM}=600\text{ V}, v_{EG}=10\text{ V}, t_{vj}=125^\circ\text{C}$		-	-	- μAs

Thermische Eigenschaften / Thermal properties

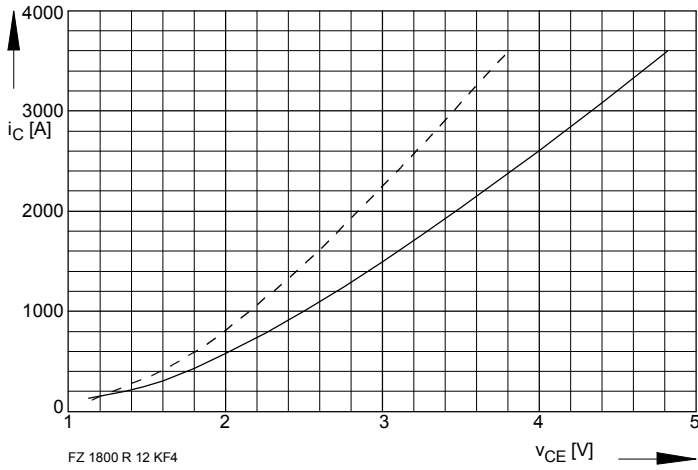
Innerer Wärmewiderstand	thermal resist., junction to case	Transistor / transistor, DC	R_{thJC}	0,011 °C/W
		Diode, DC		0,024 °C/W
Übergangs-Wärmewiderstand	thermal resist., case to heatsink	pro Module / per Module	R_{thCK}	0,006 °C/W
Höchstzul. Sperrschichttemp.	max. junction temperature	Transistor	$t_{vj\text{ max}}$	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

Gehäuse, siehe Anlage	case, see appendix	Seite / page		1
Innere Isolation	internal insulation			Al ₂ O ₃
Anzugsdrehm. f. mech. Befest.	mounting torque		M1	3 Nm
Anzugsdrehm. f. elektr. Anschl.	terminal connection torque	terminals M4	M2	2 Nm
		terminals M8		8...10 Nm
Gewicht	weight		G	ca.2300 g

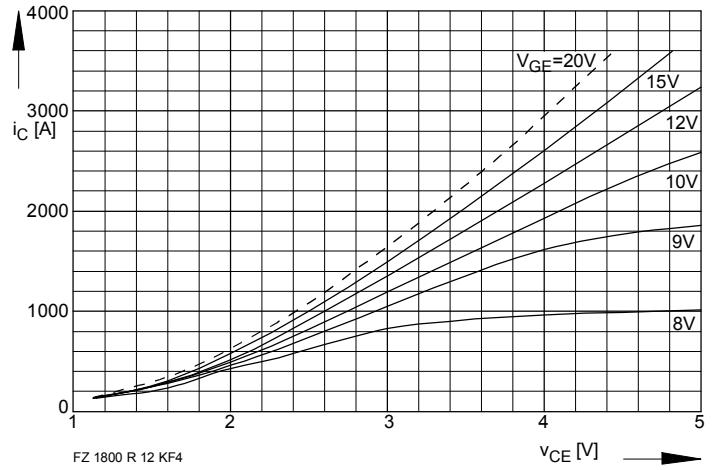
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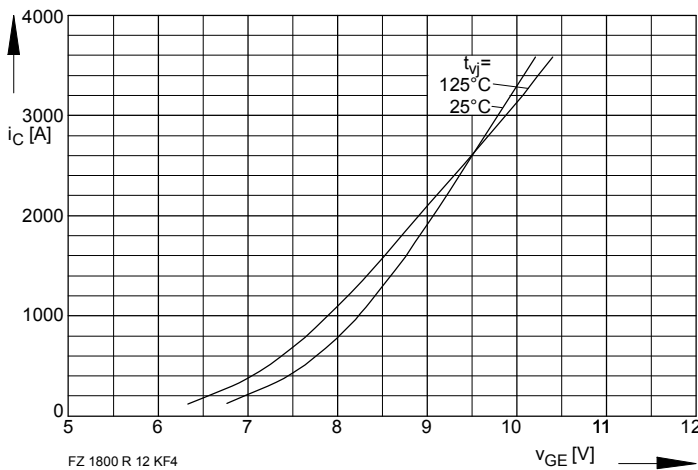
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Bild / Fig. 1
 Kollektor-Emitter-Spannung im Sättigungsbereich (typisch)
 Collector-emitter-voltage in saturation region (typical)
 $V_{GE} = 15V$
 - - - $t_{vj} = 25^{\circ}C$
 — $t_{vj} = 125^{\circ}C$



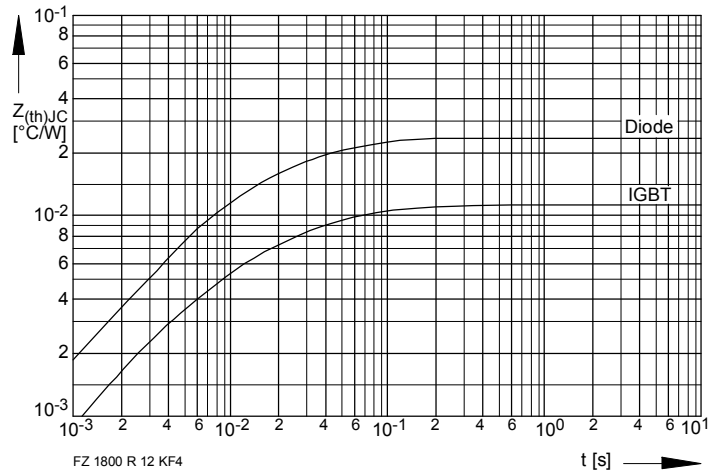
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Bild / Fig. 2
 Kollektor-Emitter-Spannung im Sättigungsbereich (typisch)
 Collector-emitter-voltage in saturation region (typical)
 $t_{vj} = 125^{\circ}C$



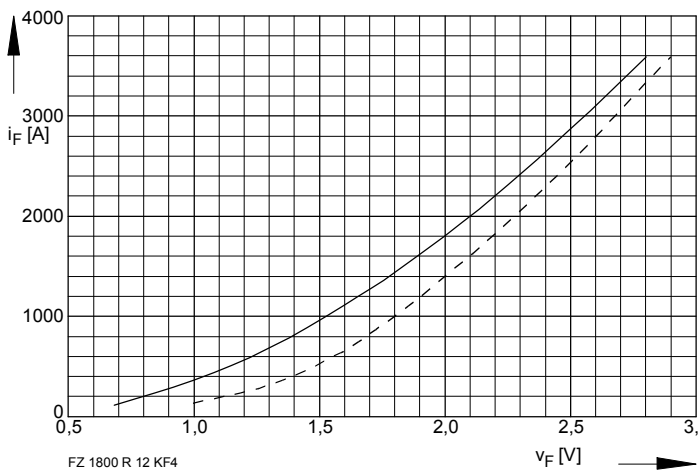
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Bild / Fig. 3
 Übertragungscharakteristik (typisch)
 Transfer characteristic (typical)
 $V_{CE} = 20V$



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Bild / Fig. 4
 Transient innerer Wärmewiderstand (DC)
 Transient thermal impedance (DC)



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Bild / Fig. 5
 Durchlaßkennlinie der Inversdiode (typisch)
 Forward characteristic of the inverse diode (typical)
 - - - $t_{vj} = 25^{\circ}C$
 — $t_{vj} = 125^{\circ}C$

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