Transistor

Elektrische Eigenschaften

Höchstzulässige Werte

V_{CES}		600	V
I_C		400	A
I_{CRM}	$t_p = 1$ ms	800	A
P_{tot}	$t_C = 25°C$	1400	W
V_{GE}		20	V
V_{EG}		20	V

Charakteristische Werte

$v_{CE\ sat}$	$i_{CM} = 400$ A,	$v_{GE} = 15$ V,	$t_{vj} = 25°C$	typ.	2,7	V
	$i_{CM} = 400$ A,	$v_{GE} = 15$ V,	$t_{vj} = 25°C$	max.	3,5	V
$v_{GE\ (th)}$	$v_{CE} = 5$ V,	$i_C = 400$ mA,	$t_{vj} = 25°C$	min.	3	V
	$v_{CE} = 5$ V,	$i_C = 400$ mA,	$t_{vj} = 25°C$	max.	6	V
C_{ies}	$v_{CE} = 10$ V,	$v_{GE} = 0$ V,				
	$f_o = 1$ MHz,	$t_{vj} = 25°C$,		typ.	32	nF
i_{CES}	$v_{CE} = 600$ V,	$v_{GE} = 0$ V,	$t_{vj} = 25°C$	typ.	1	mA
	$v_{CE} = 600$ V,	$v_{GE} = 0$ V,	$t_{vj} = 125°C$	typ.	8	mA
i_{GES}	$v_{GE} = 20$ V,	$t_{vj} = 25°C$,		typ.	50	nA
	$v_{GE} = 20$ V,	$t_{vj} = 25°C$,		max.	500	nA
i_{EGS}	$v_{EG} = 20$ V,	$t_{vj} = 25°C$,		typ.	50	nA
	$v_{EG} = 20$ V,	$t_{vj} = 25°C$,		max.	500	nA
t_{on}	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 25°C$	typ.	0,4	µs
	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 125°C$	typ.	0,5	µs
t_s	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 25°C$		typ.	0,4	µs
	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 125°C$		typ.	0,5	µs
t_f	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 25°C$		typ.	0,15	µs
	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 125°C$		typ.	0,25	µs

Bedingungen für den Kurzschlußschutz

$t_{fg} = 10$ µs,
$v_{LF} = v_{LR} = 15$ V,
$R_G = 4{,}7\ \Omega$,
$t_{vj} = 125°C$,

Conditions for protection against short circuits

$V_{CC} = 350$ V,
$v_{CEM} = 500$ V,
$i_{CMK\ 1} \approx 1500$ A,
$i_{CMK\ 2} \approx 1200$ A.

[1] Auch mit umgekehrter Anordnung der Anschlüsse von Kollektor und Ermitter lieferbar:
Typenbezeichnung
FZ 400 R 06 KF2-C

Also available with inverted position of collector and emitter terminals:

type designation
FZ 400 R 06 KF2-C

Transistor

Electrical properties

Maximum rated values

V_{CES}		600	V
I_C		400	A
I_{CRM}	$t_p = 1$ ms	800	A
P_{tot}	$t_C = 25°C$	1400	W
V_{GE}		20	V
V_{EG}		20	V

Characteristic values

$v_{CE\ sat}$	$i_{CM} = 400$ A,	$v_{GE} = 15$ V,	$t_{vj} = 25°C$	typ.	2,7	V
	$i_{CM} = 400$ A,	$v_{GE} = 15$ V,	$t_{vj} = 25°C$	max.	3,5	V
$v_{GE\ (th)}$	$v_{CE} = 5$ V,	$i_C = 400$ mA,	$t_{vj} = 25°C$	min.	3	V
	$v_{CE} = 5$ V,	$i_C = 400$ mA,	$t_{vj} = 25°C$	max.	6	V
C_{ies}	$v_{CE} = 10$ V,	$v_{GE} = 0$ V,				
	$f_o = 1$ MHz,	$t_{vj} = 25°C$,		typ.	32	nF
i_{CES}	$v_{CE} = 600$ V,	$v_{GE} = 0$ V,	$t_{vj} = 25°C$	typ.	1	mA
	$v_{CE} = 600$ V,	$v_{GE} = 0$ V,	$t_{vj} = 125°C$	typ.	8	mA
i_{GES}	$v_{GE} = 20$ V,	$t_{vj} = 25°C$,		typ.	50	nA
	$v_{GE} = 20$ V,	$t_{vj} = 25°C$,		max.	500	nA
i_{EGS}	$v_{EG} = 20$ V,	$t_{vj} = 25°C$,		typ.	50	nA
	$v_{EG} = 20$ V,	$t_{vj} = 25°C$,		max.	500	nA
t_{on}	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 25°C$	typ.	0,4	µs
	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 125°C$	typ.	0,5	µs
t_s	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 25°C$		typ.	0,4	µs
	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 125°C$		typ.	0,5	µs
t_f	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 25°C$		typ.	0,15	µs
	$i_{CM} = 400$ A,	$v_{CE} = 300$ V,				
	$v_{LF} = 15$ V,	$v_{LR} = 15$ V,				
	$R_G = 4{,}7\ \Omega$,	$t_{vj} = 125°C$		typ.	0,25	µs

Thermische Eigenschaften **Thermal properties**

R_{thJC}	DC, pro Baustein / per module	0,089	°C/W
R_{thCK}	pro Baustein / per module	0,03	°C/W
$t_{vj\ max}$		150	°C
$t_{vj\ op}$		- 40 / + 150	°C
t_{stg}		- 40 / + 125	°C

Inversdiode

Elektrische Eigenschaften

Höchstzulässige Werte

$I_{F(max)}$		400	A
I_{FRM}	$t_p = 1$ ms	800	A

Charakteristische Werte

v_F	$i_F = 400$ A, $v_{GE} = 0$ V, $t_{vj} = 25°C$	typ.	1,9	V
	$i_F = 400$ A, $v_{GE} = 0$ V, $t_{vj} = 25°C$	max.	2,7	V
I_{RM}	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 25°C$	typ.	21	A
	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 125°C$	typ.	35	A
Q_r	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 25°C$	typ.	3	µAs
	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 125°C$	typ.	11	µAs

Inverse diode

Electrical properties

Maximum rated values

$I_{F(max)}$		400	A
I_{FRM}	$t_p = 1$ ms	800	A

Characteristic values

v_F	$i_F = 400$ A, $v_{GE} = 0$ V, $t_{vj} = 25°C$	typ.	1,9	V
	$i_F = 400$ A, $v_{GE} = 0$ V, $t_{vj} = 25°C$	max.	2,7	V
I_{RM}	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 25°C$	typ.	21	A
	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 125°C$	typ.	35	A
Q_r	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 25°C$	typ.	3	µAs
	$i_{FM} = 400$ A, $-di_F/dt = 300$ A/µs			
	$v_{EG} = 10$ V, $t_{vj} = 125°C$	typ.	11	µAs

Thermische Eigenschaften **Thermal properties**

R_{thJC}	DC, pro Baustein / per module	0,25	°C/W
R_{thCK}	pro Baustein / per module	0,03	°C/W
$t_{vj\ max}$		125	°C
$t_{vj\ op}$		- 40 / + 125	°C
t_{stg}		- 40 / + 125	°C

Innere Isolation **Internal insulation**

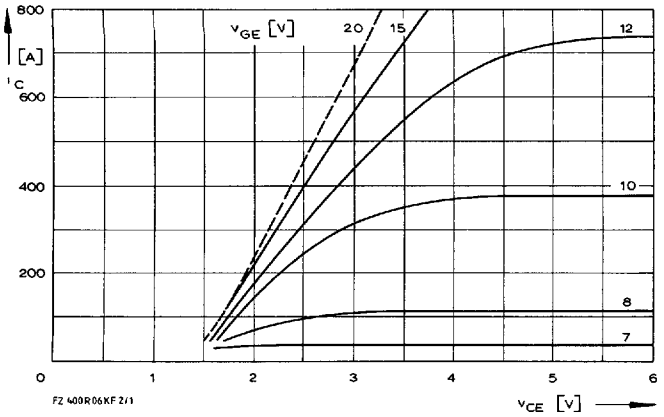
Isoliermaterial: Al N Insulating material: Al N

V_{ISOL}	RMS (f=50 Hz, t=1 min)	2,5	kV

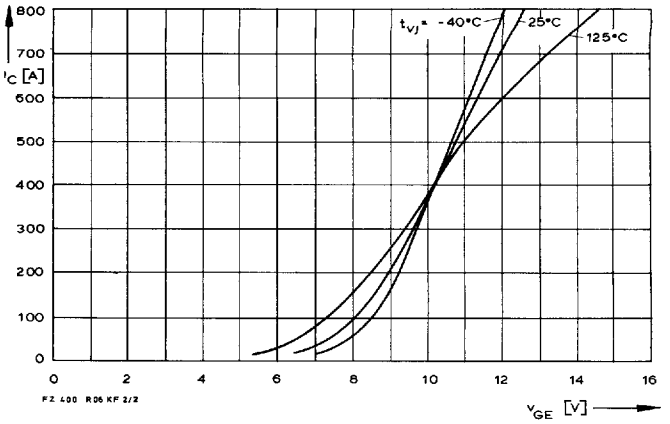
Mechanische Eigenschaften **Mechanical properties**

G		465 g
M 1		3 Nm
M 2	terminals M 4 / M 6	2 Nm / 3 Nm

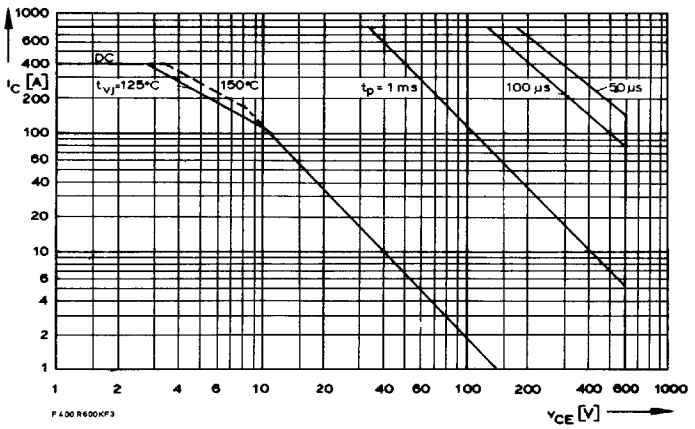
Maßbild[1] outline[1]
Seite 183, Nr. 5 page 183, no. 5



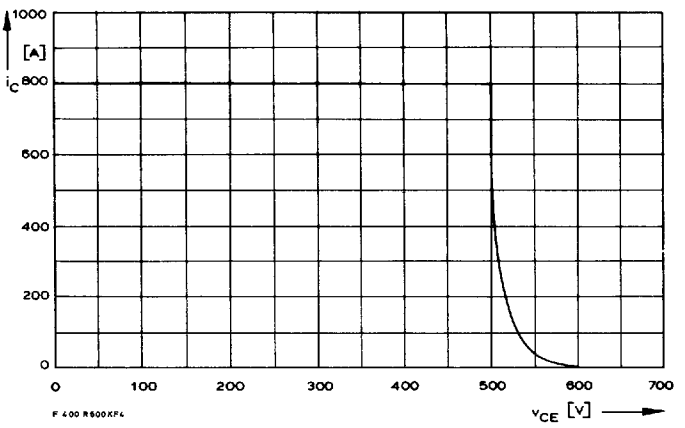
1 Kollektor-Emitter-Spannung im Sättigungsbereich (typisch).
Collector-emitter-voltage in saturation region (typical).
t_{vj} = 25°C



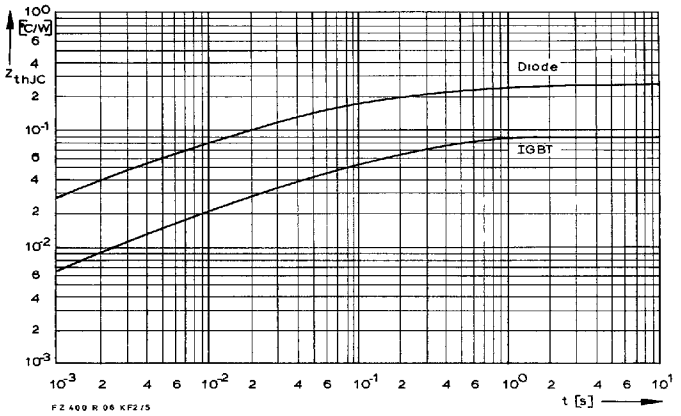
2 Übertragungscharakteristik (typisch).
Transfer characteristic (typical).
v_{CE} = 5 V



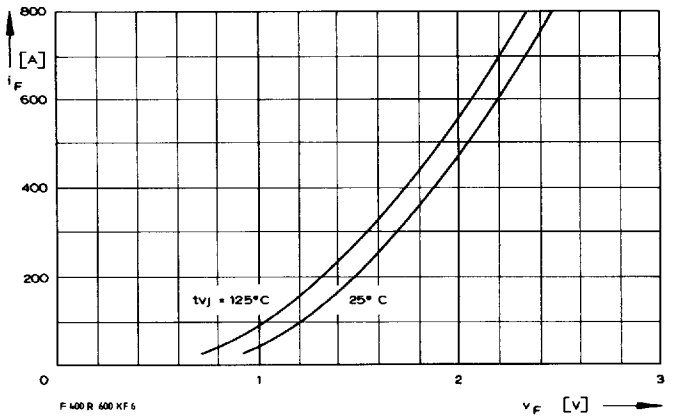
3 Vorwarts-Arbeitsbereich FBSOA (Einzelimpuls, nicht periodisch).
Forward biased safe operating area (single pulse, non repetitive).
t_C = 25°C



4 Rückwarts-Arbeitsbereich RBSOA.
Reverse biased safe operating area.
t_{vj} = 125°C, v_{LF} = v_{LR} = 15 V, R_G = 4,7 Ω



5 Transienter innerer Warmewiderstand je Zweig (DC).
Transient thermal impedance per arm (DC).



6 Durchlaßkennlinie der Inversdiode (typisch).
Forward characteristic of the inverse diode (typical).
v_{GE} = 0 V