Transistor **Transistor**

Elektrische Eigenschaften **Electrical properties**

Höchstzulässige Werte		Maximum rated values		
V_{CES}		600	V	
I_C		300	A	
I_{CRM}	$t_p = 1$ ms	600	A	
P_{tot}	$t_C = 85°C$	1200	W	
V_{GE}		20	V	
V_{EG}		20	V	

Charakteristische Werte		Characteristic values				
$v_{CE\,sat}$	$i_{CM} = 300$ A, $v_{GE} = 15$ V,	$t_{vj} = 25°C$	typ.	3	V
	$i_{CM} = 300$ A, $v_{GE} = 15$ V,	$t_{vj} = 25°C$	max.	4	V
$v_{GE\,(th)}$	$v_{CE} = 5$ V, $i_C = 300$ mA,	$t_{vj} = 25°C$	min.	3	V
	$v_{CE} = 5$ V, $i_C = 300$ mA,	$t_{vj} = 25°C$	max.	6	V
C_{GE}	$v_{CE} = 10$ V, $v_{GE} = 0$ V, $f_o = 1$ MHz,	$t_{vj} = 25°C$	typ.	24	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.	6	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}	$i_{CM} = 300$ A, $v_{CE} = 300$ V, $v_{LF} = 15$ V, $R_G = 6{,}8\ \Omega$,	$t_{vj} = 25°C$	typ.	0,4	µs
	$i_{CM} = 300$ A, $v_{CE} = 300$ V, $v_{LF} = 15$ V, $R_G = 6{,}8\ \Omega$,	$t_{vj} = 125°C$	typ.	0,5	µs
t_s	$i_{CM} = 300$ A, $v_{CE} = 300$ V, $v_{LF} = 15$ V, $v_{LR} = 15$ V, $R_G = 6{,}8\ \Omega$,	$t_{vj} = 25°C$	typ.	0,4	µs
	$i_{CM} = 300$ A, $v_{CE} = 300$ V, $v_{LF} = 15$ V, $v_{LR} = 15$ V, $R_G = 6{,}8\ \Omega$,	$t_{vj} = 125°C$	typ.	0,5	µs
t_f	$i_{CM} = 300$ A, $v_{CE} = 300$ V, $v_{LF} = 15$ V, $v_{LR} = 15$ V, $R_G = 6{,}8\ \Omega$,	$t_{vj} = 25°C$	typ.	0,15	µs
	$i_{CM} = 300$ A, $v_{CE} = 300$ V, $v_{LF} = 15$ V, $v_{LR} = 15$ V, $R_G = 6{,}8\ \Omega$,	$t_{vj} = 125°C$	typ.	0,25	µs

Bedingungen für den Kurzschlußschutz	Conditions for protection against short circuits
$t_{fg} = 10$ µs,	$V_{CC} = 350$ V,
$v_{LF} = v_{LR} = 15$ V,	$v_{CEM} = 500$ V,
$R_G = 6{,}8\ \Omega$,	$i_{CMK1} \approx 1200$ A,
$t_{vj} = 125°C$,	$i_{CMK2} \approx 900$ A

Thermische Eigenschaften		Thermal properties		
R_{thJC}	DC, pro Baustein / per module		0,1	°C/W
R_{thCK}	pro Baustein / per module		0,03	°C/W
t_{vjmax}			150	°C
t_{vjop}			-40 / +150	°C
t_{stg}			-40 / +125	°C

Inversdiode **Inverse diode**

Elektrische Eigenschaften **Electrical properties**

Höchstzulässige Werte		Maximum rated values		
$I_{F\,(max)}$		300	A	
I_{FRM}	$t_p = 1$ ms	600	A	

Charakteristische Werte		Characteristic values			
v_F	$i_F = 300$ A, $v_{GE} = 0$ V, $t_{vj} = 25°C$	typ.	1,8	V
	$i_F = 300$ A, $v_{GE} = 0$ V, $t_{vj} = 25°C$	max.	2,5	V
I_{RM}	$i_{FM} = 300$ A, $-di_F/dt = 300$ A/µs, $v_{EG} = 10$ V, $t_{vj} = 25°C$	typ.	30	A
	$i_{FM} = 300$ A, $-di_F/dt = 300$ A/µs, $v_{EG} = 10$ V, $t_{vj} = 125°C$	typ.	56	A
Q_r	$i_{FM} = 300$ A, $-di_F/dt = 300$ A/µs, $v_{EG} = 10$ V, $t_{vj} = 25°C$	typ.	8	µAs
	$i_{FM} = 300$ A, $-di_F/dt = 300$ A/µs, $v_{EG} = 10$ V, $t_{vj} = 125°C$	typ.	22	µAs

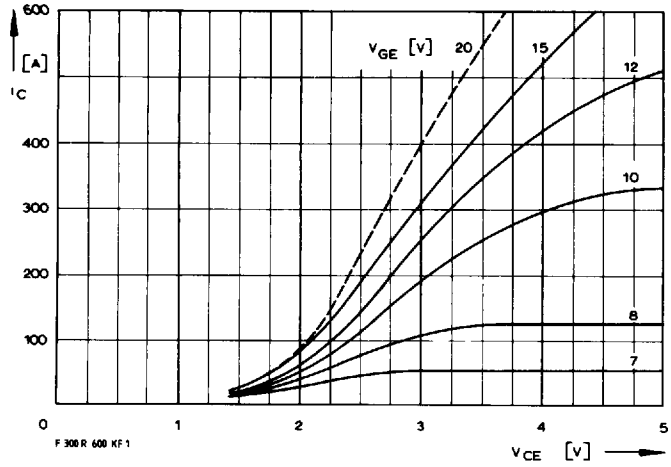
Thermische Eigenschaften		Thermal properties		
R_{thJC}	DC, pro Baustein / per module		0,25	°C/W
	DC, pro Zweig / per arm			°C/W
R_{thCK}	pro Baustein / per module		0,03	°C/W
	pro Zweig / per arm			°C/W
t_{vjmax}			125	°C
t_{vjop}			-40 / +125	°C
t_{stg}			-40 / +125	°C

Innere Isolation		Internal insulation		
Isoliermaterial: AlN		Insulating material: AlN		
V_{ISOL}	RMS		2,5	kV

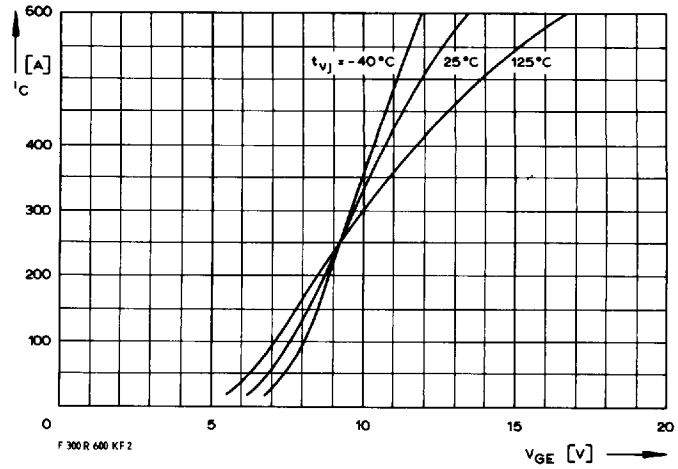
Mechanische Eigenschaften **Mechanical properties**

G		465	g
M1		3	Nm
M2	terminals M4 / M6	2 Nm / 3 Nm	

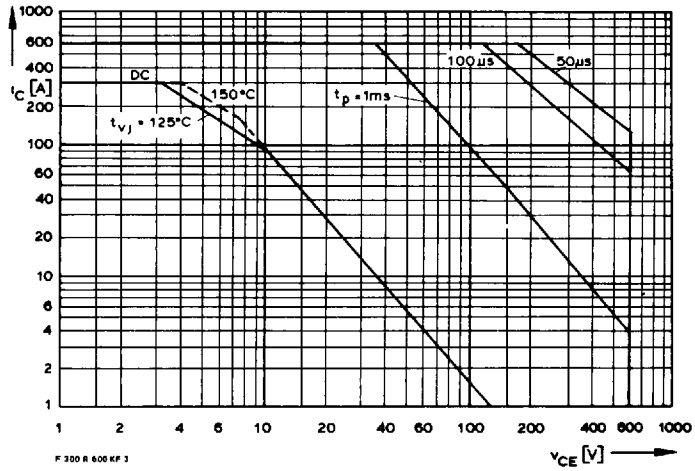
Maßbild Seite 123, Nr. 5 — outline page 123, no. 5



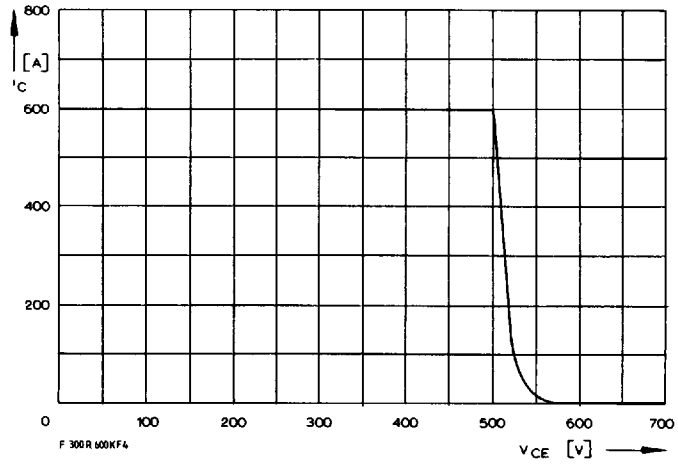
1 Kollektor-Emitter-Spannung im Sättigungsbereich (typisch).
Collector-emitter-voltage in saturation region (typical).
$t_{vj} = 25°C$



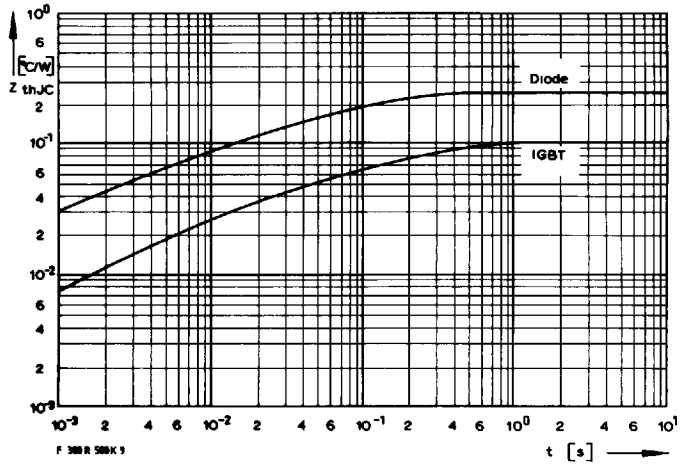
2 Übertragungscharakteristik (typisch).
Transfer characteristic (typical).
$V_{CE} = 5\ V$



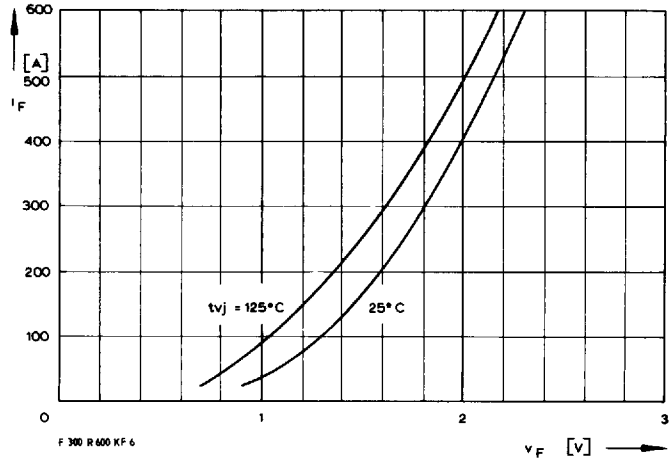
3 Erlaubter Arbeitsbereich in Vorwärtsrichtung (Einzelimpuls, nicht periodisch).
Forward biased safe operating area (single pulse, non repetitive).
$t_C = 25°C$



4 Erlaubter Arbeitsbereich in Rückwärtsrichtung.
Reverse biased safe operating area.
$t_{vj} = 125°C$, $V_{LF} = V_{LR} = 15\ V$, $R_G = 6{,}8\ \Omega$

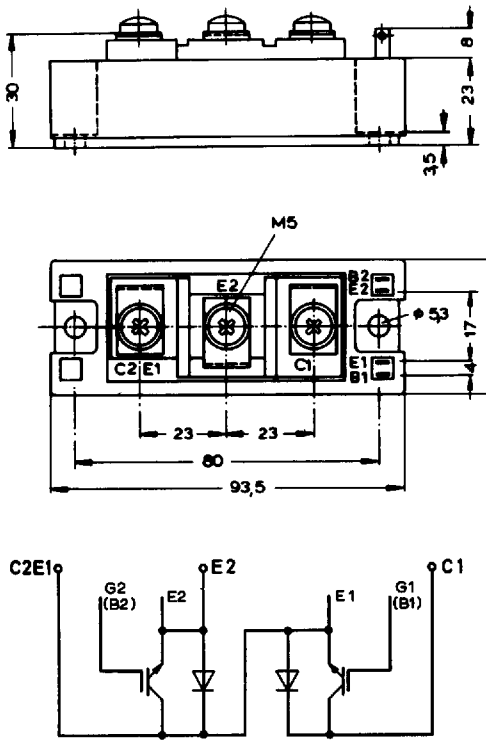


5 Transienter innerer Wärmewiderstand je Zweig (DC).
Transient thermal impedance per arm (DC).



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

Maßbilder / Schaltbilder
Outlines / Circuits



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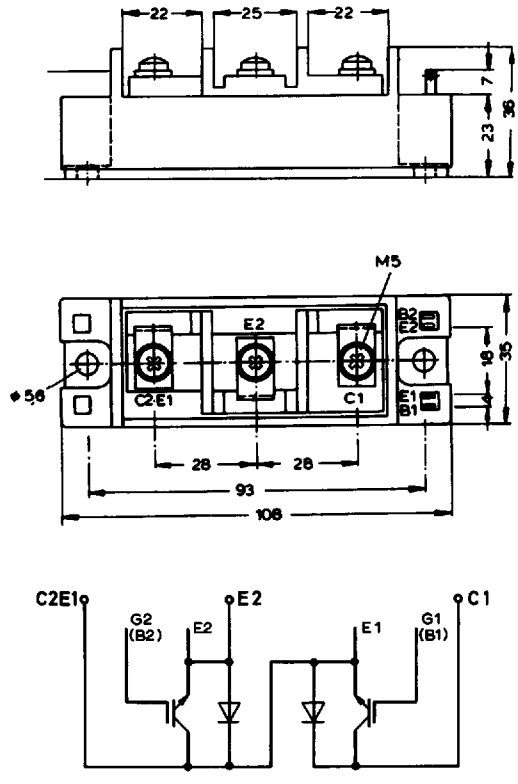

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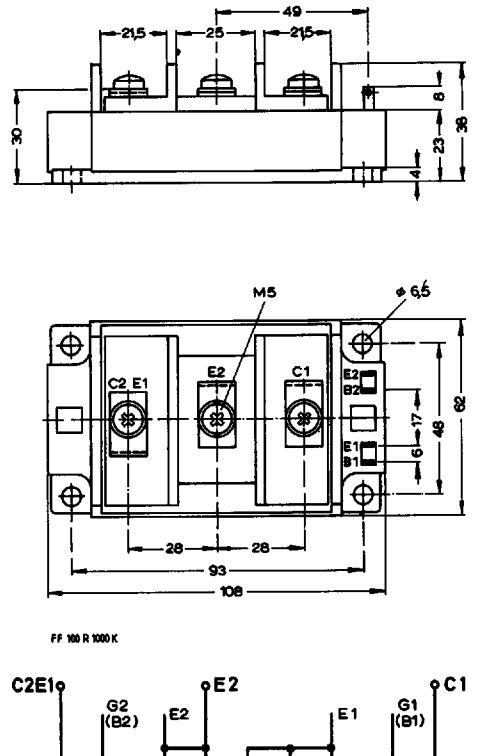

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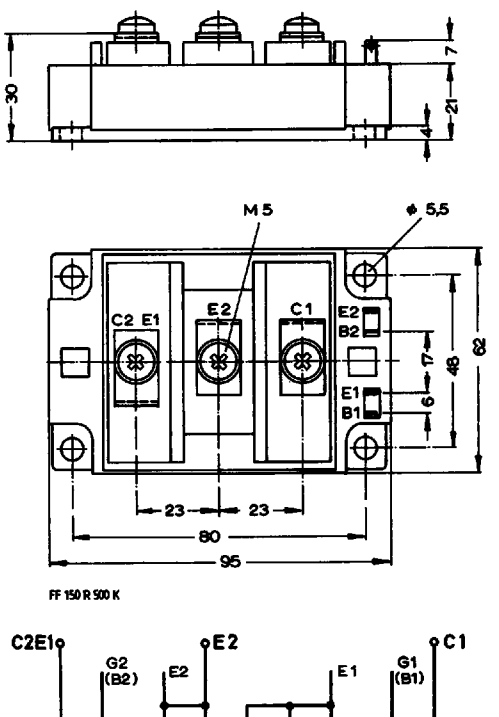

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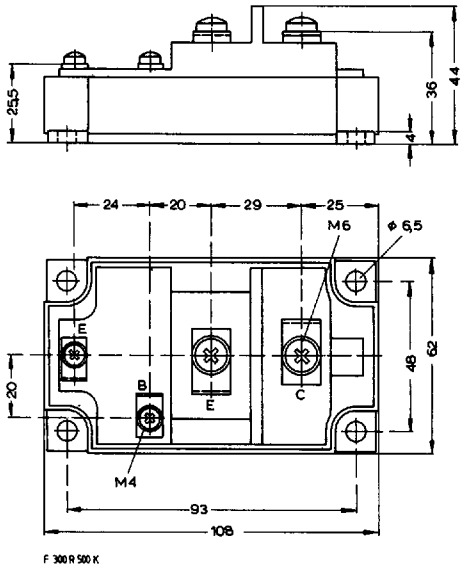
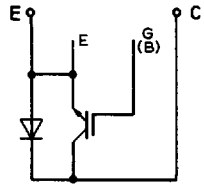


F 300 R 500 K



1)

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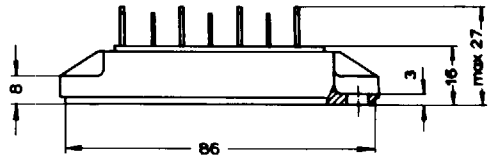
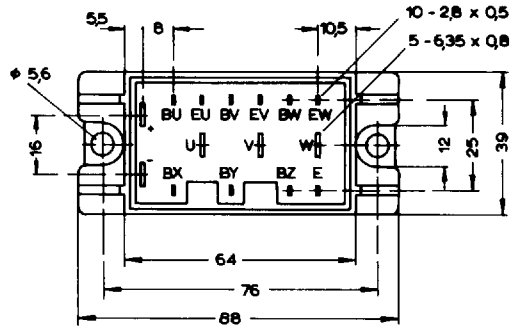
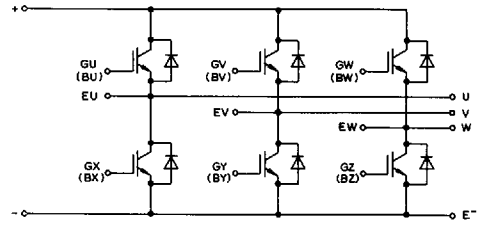




F 6 - 8 R 600 KF



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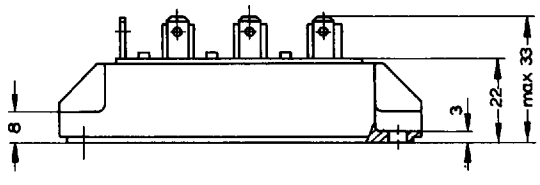
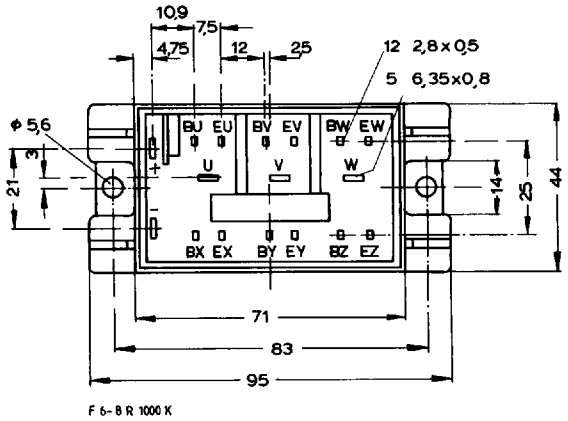
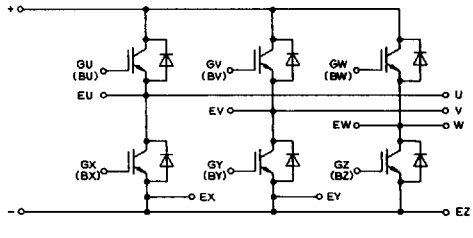




F 6-8 R 1000 K



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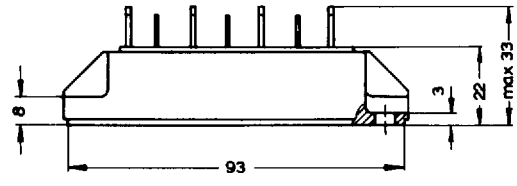
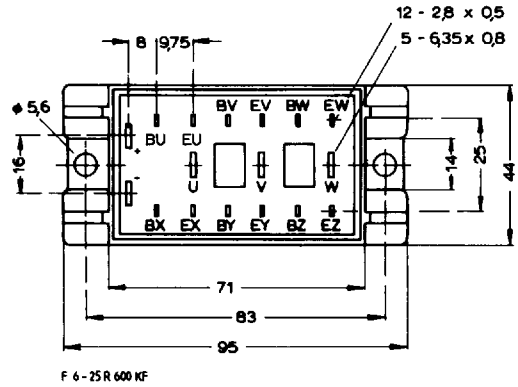
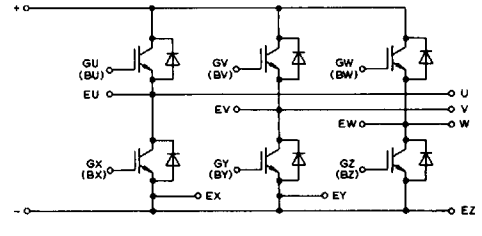




F 6-25 R 600 KF



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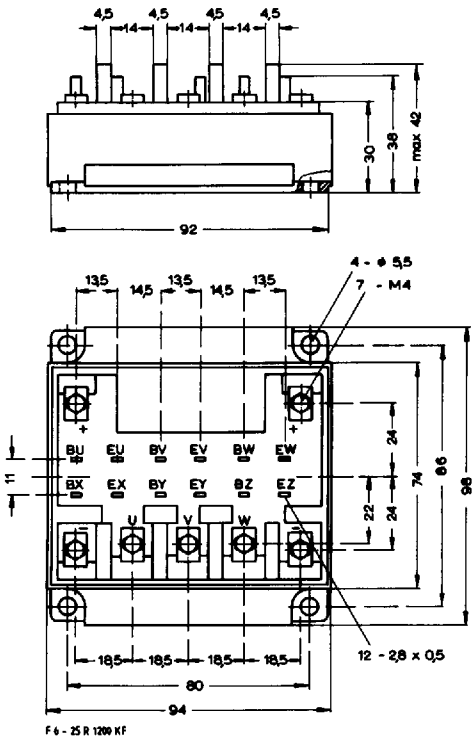
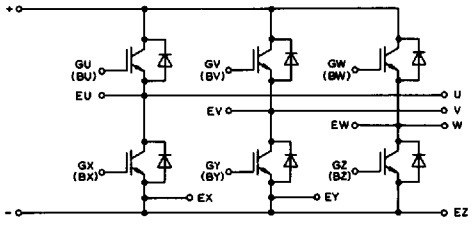
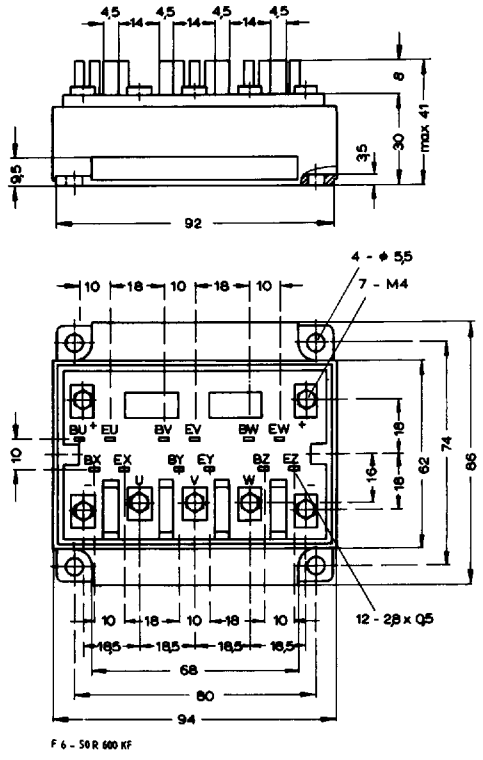

4,5 14 4,5 14 4,5 14 4,5
30
38
max 42
92
13,5 14,5 13,5 14,5 13,5
4 - ⌀ 5,5
7 - M4
BU EU BV EV BW EW
GX EX GY EY GZ EZ
U V W
11
24
22
24
74
86
98
18,5 18,5 18,5 18,5
80
94
12 - 2,8 x 0,5
F 6 - 25 R 1200 KF


GU (BU)
GV (BV)
GW (BW)
EU
EV
EW
U
V
W
GX (BX)
GY (BY)
GZ (BZ)
EX
EY
EZ

9


4,5 14 4,5 14 4,5 14 4,5
8
30
35
max 41
9,5
92
10 18 10 18 10
4 - ⌀ 5,5
7 - M4
BU EU BV EV BW EW
GX EX GY EY GZ EZ
U V W
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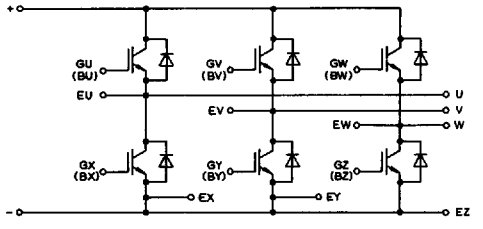
16
18
62
74
86
10 18 10 18 10
18,5 18,5 18,5 18,5
68
80
94
12 - 2,8 x 0,5
F 6 - 50 R 600 KF


GU (BU)
GV (BV)
GW (BW)
EU
EV
EW
U
V
W
GX (BX)
GY (BY)
GZ (BZ)
EX
EY
EZ

10