POWERSEM

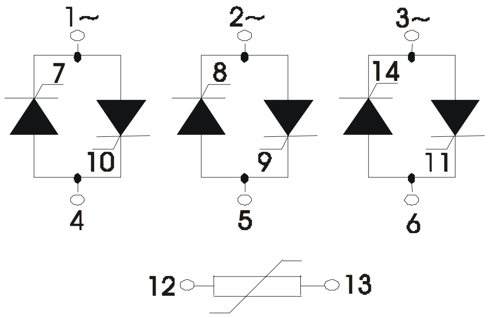
Three Phase AC Controller Modules

PSUT 115

I_{RMS} = 3 x 115A
V_{RRM} = 800-1600 V

Preliminary Data Sheet

V_{RSM} V_{DSM}	V_{RRM} V_{DRM}	Type
900	800	PSUT 115/08
1300	1200	PSUT 115/12
1500	1400	PSUT 115/14
1700	1600	PSUT 115/16



Symbol	Test Conditions			Maximum Ratings	
I_{RMS}	T_C = 85 °C			115	A
	T_C = 75 °C			141	A
I_{TAVM}	T_{VJ}=T_{VJM}			100	A
I_{TSM}	T_{VJ} = 25°C	t = 10 ms	(50 Hz), sine	1000	A
		t = 8.3 ms	(60 Hz), sine	1100	A
	T_{VJ} = T_{VJM}	t = 10 ms	(50 Hz), sine	870	A
		t = 8.3 ms	(60 Hz), sine	950	A
$\int i^2 dt$	T_{VJ} = 25°C	t = 10 ms	(50 Hz), sine	5000	$A^2 s$
	V_R = 0	t = 8.3 ms	(60 Hz), sine	5020	$A^2 s$
	T_{VJ} = T_{VJM}	t = 10 ms	(50 Hz), sine	3780	$A^2 s$
	V_R = 0	t = 8.3 ms	(60 Hz), sine	3740	$A^2 s$
$(di/dt)_{cr}$	T_{VJ} = T_{JVM}			120	A/µs
	f = 50Hz I_G = 0.6 A di_G/dt = 0.6 A/µs				
$(dv/dt)_{cr}$	T_{VJ} = T_{VJM}	V_{DR} = 0.67 V_{DRM}		1000	V/µs
	R_{GK} = ∞, method 1 (linear voltage rise)				
P_{GM}	T_{VJ} = T_{VJM}	t_P = 30µs		10	W
	I_T = I_{TAVM}	t_P = 300µs		5	W
P_{GAVM}				0.5	W
V_{RGM}				10	V
T_{VJ}				-40 ... + 125	°C
T_{VJM}				125	°C
T_{stg}				-40 ... + 130	°C
V_{ISOL}	50/60 HZ, RMS	t = 1 min		3000	V ~
	I_{ISOL} ≤ 1 mA	t = 1 s		3600	V ~
M_d	Mounting torque	M6		6	Nm
	Terminal connection torque	M6		6	Nm
Weight	typ.			290	g

Features
- Thyristor controller for AC (circuit W3C acc. to IEC) for mains frequency
- Isolation voltage 3000 V~
- Planar glasspassivated chips
- Package with metal base plate
- UL registered E 148688

Applications
- Switching and control of three phase AC circuits
- Light and temperature control
- Softstart AC motor controller
- Solid state switches

Advantages
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- High power density

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Symbol	Test Conditions			Characteristic Value	
I_D, I_R	$T_{VJ} = T_{VJM}$, $V_R = V_{RRM}$, $V_D = V_{DRM}$		≤	10	mA
V_T	I_T = 150A, $T_{VJ} = T_{VJM}$		≤	1.81	V
V_{TO}	For power-loss calculations only ($T_{VJ} = T_{VJM}$)			0.95	V
r_T				4.3	mΩ
V_{GT}	V_D = 6V	T_{VJ} = 25°C	≤	2.5	V
I_{GT}	V_D = 6V	T_{VJ} = 25°C	≤	150	mA
V_{GD}	$T_{VJ} = T_{VJM}$	V_D = 0,5 V_{DRM}	≤	0.2	V
I_{GD}	$T_{VJ} = T_{VJM}$	V_D = 6 V	≤	5	mA
I_L	T_{VJ} = 25°C, t_P = 10μs I_G = 0.6A, di_G/dt = 0.6A/μs		≤	600	mA
I_H	T_{VJ} = 25°C, V_D = 6V, R_A = 5Ω		≤	200	mA
t_{gd}	T_{VJ} = 25°C, I_G = 0.6A, di_G/dt = 0.6A/μs		≤	1.2	μs
t_q	$T_{VJ} = T_{VJM}$, I_T = 50A, t_P = 200μs, V_R = 100V -di/dt = 10A/μs, dv/dt = 20V/μs, V_D = 2/3 V_{DRM}			190	μs
R_{thJC}	per thyristor; sine 180°el			0.5	K/W
	per module; sine 180° el			0.083	K/W
R_{thJK}	per thyristor			0.7	K/W
	per module			0.12	K/W
d_S	Creeping distance on surface			12.5	mm
a	Max. allowable acceleration			50	m/s^2

Temperture sensor

R_{25}	Rated resistance, Tc = 25 °C		5 R_{100}= 493Ω	kΩ
P_{25}	Power dissipation, Tc = 25 °C	max.	20	mW

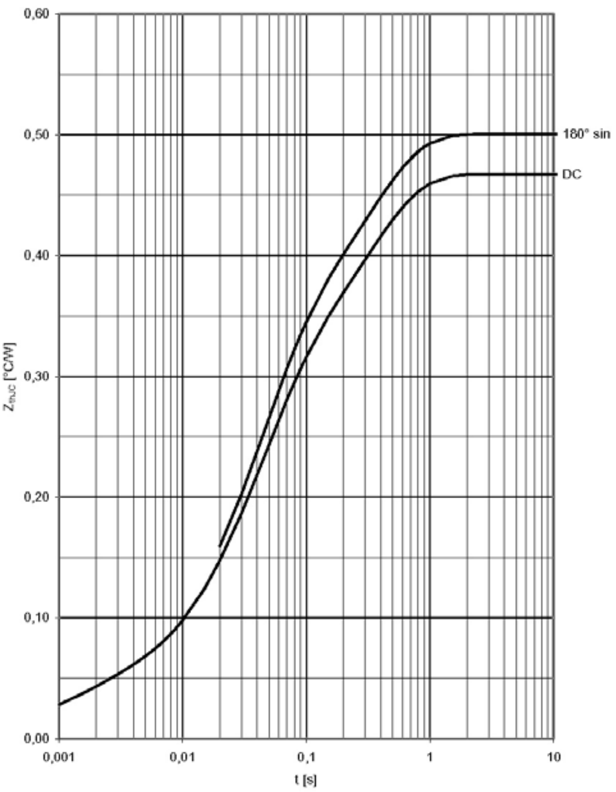

Fig. Transient thermal impedance per arm vs. time

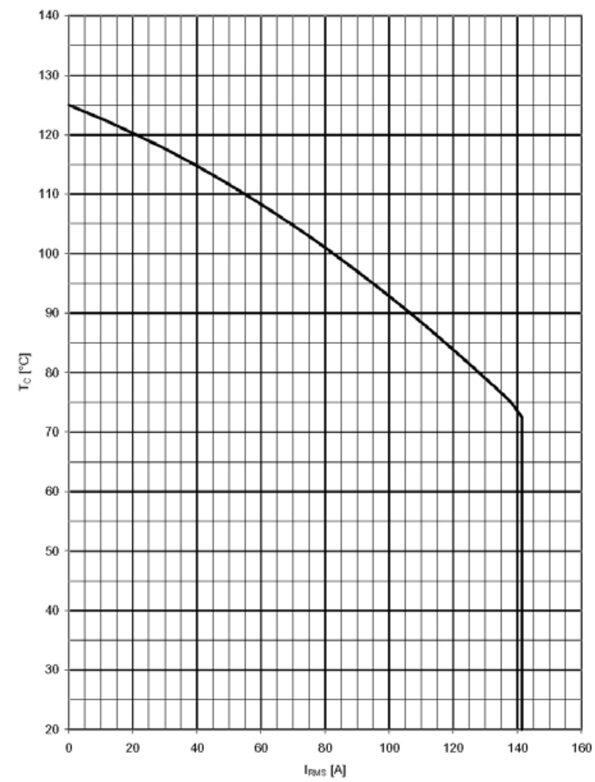

Fig. 2 Maximum allowable case temperature vs. RMS current

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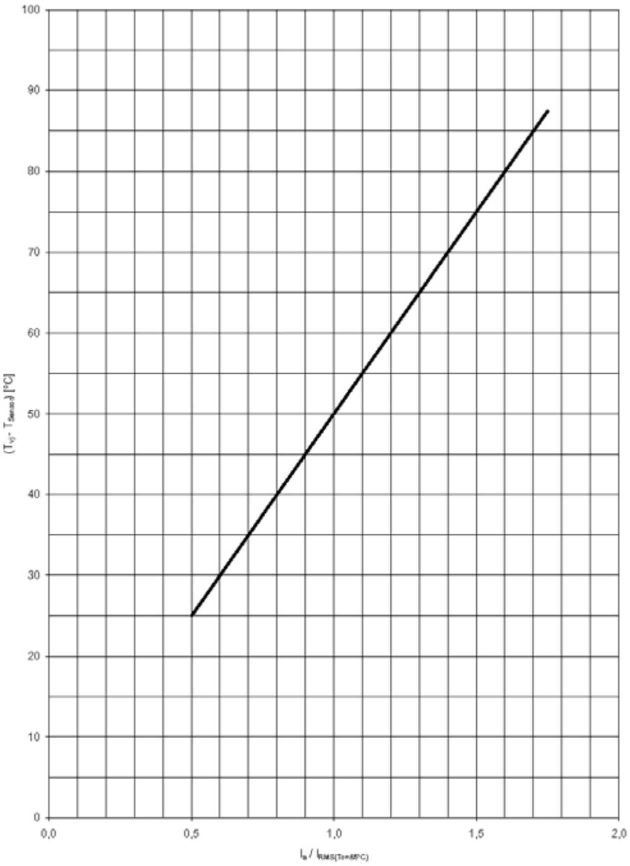

Fig. 3 Difference between the value of junction temperature and sensor temperature vs. starting current per RMS current

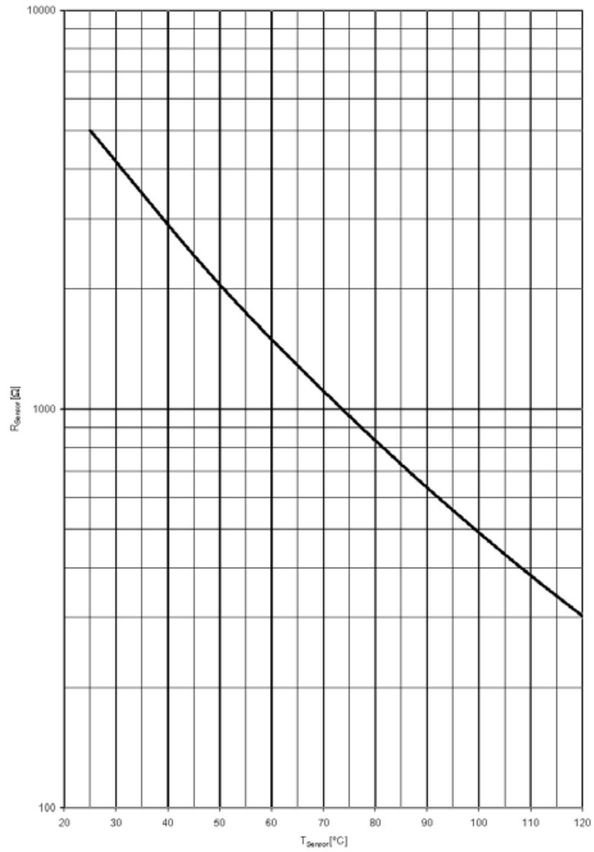

Fig. 4 Sensor resistance vs. sensor temperature

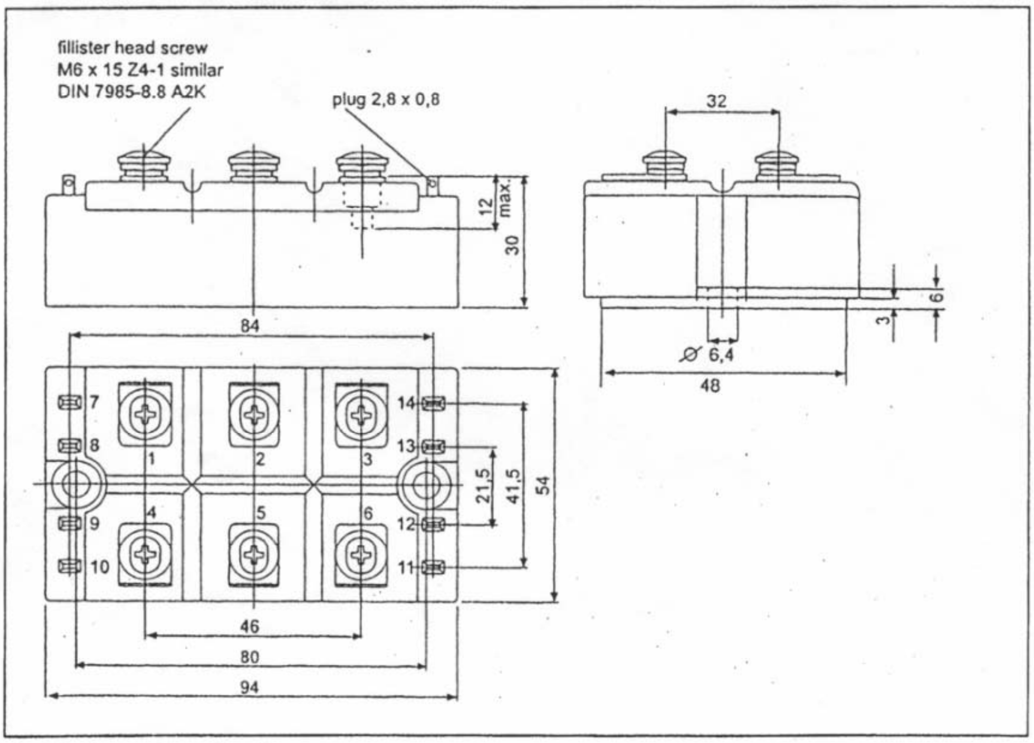

Fig. 5 Package style and outline

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