POWERSEM

ECO-PAC™ 2

Power MOSFET Stage for Boost Converters

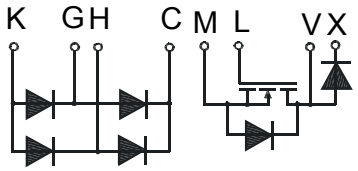
PSBM 24/05

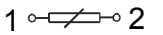
Module for Power Factor Correction

I_{D25} = 35 A
V_{DSS} = 500 V
$R_{DS(on)}$ = 0.12 Ω

Preliminary Data Sheet

V_{RSM} (V)	V_{RRM} (V)	Type
600	500	PSBM 24/05





NTC optional



MOSFET

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	T_{VJ} = 25 °C to 150 °C	500	V
V_{DGR}	T_{VJ} = 25 °C to 150 °C, R_{GS} = 10 Ω	500	V
V_{GS}	continuous	±20	V
I_D	T_S = 85 °C	24	A
I_D	T_S = 25 °C	35	A
I_{DM}	T_S = 25 °C, pulse width limited by T_{VJ}	95	A
P_D	T_S = 85 °C	170	W
I_S	V_{GS} = 0 V, T_S = 25 °C	24	A
I_{SM}	V_{GS} = 0 V, T_S = 25 °C, pulse width limited by T_{VJ}	95	A

Symbol	Test Conditions	Characteristic Values (T_{VJ} = 25 °C, unless otherwise specified)		
V_{DSS}	V_{GS} = 0 V, I_D = 2mA	min.	500	V
$V_{GS(th)}$	V_{DS} = 20 V, I_D = 20 mA	min.	2	V
$V_{GS(th)}$	V_{DS} = 20 V, I_D = 20 mA	max.	5	V
I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V	max.	±500	nA
I_{DSS}	V_{DS} = 500 V, V_{GS} = 0 V	max.	2	mA
$R_{DS(on)}$	T_{VJ} = 25 °C	max.	0.12	Ω
R_{Gint}	T_{VJ} = 25 °C	max.	1.5	Ω
g_{fs}	V_{DS} = 15 V, I_{DS} = 12 A	typ.	30	S
V_{DS}	I_{DS} = 24 V, V_{GS} = 0 V	max.	1.5	V
$t_{d(on)}$	V_{DS} = 250 V, I_{DS} = 12 A, V_{GS} = 10 V	max.	100	ns
$t_{d(off)}$	Zgen. = 1 Ω, L-load	max.	220	ns
C_{iss}	V_{DS} = 25 V, f = 1 MHz, V_{GS} = 0 V	typ.	8.5	nF
C_{oss}		typ.	0.9	nF
C_{rss}		typ.	0.3	nF
Q_g	V_{DS} = 250 V, I_D = 12 A, V_{GS} = 10 V	typ.	350	nC
R_{thJH}		max.	0.38	K/W

Module

Symbol	Test Conditions		Maximum Ratings	
T_{VJ}			-40...+150	°C
T_{JM}			150	°C
T_{stg}			-40...+150	°C
V_{isol}	50/60 Hz	t = 1 min	3000	V~
	Iisol ≤ 1 mA	t = 1 s	3600	V~
M_d	Mounting torque (M 4)		1.5-2.0	Nm
Weight	typ.		24	g

Features

- High level of integration - only one power semiconductor module required for the whole PFC rectifier
- Isolation voltage 3600 V~
- Planar glass passivated chips
- Ultrafast boost diode
- Leads suitable for PC board soldering
- Thermistor (optional)
- UL registered, E 148688

Applications

- Power factor pre-conditioner for SMPS, UPS, battery chargers and inverters
- Boost topology for SMPS including 1~ rectifier bridge
- Power supply for welding equipment

Advantages

- Easy to mount with two screws
- Space and weight savings
- high temperature and power cycling capability
- Small and light weight
- 3 functions in one package

Caution: These Devices are sensitive to electrostatic discharge. Users should observe proper ESD handling precautions.

Data according to IEC 60747 refer to a single diode unless otherwise stated

POWERSEM GmbH, Walpersdorfer Str. 53
D - 91126 Schwabach
Phone: 09122 - 9764 - 0 FAX: 09122 - 9764 - 20

© 2002 POWERSEM reserves the right to change limits, test conditions and dimensions

Boost Diode

Symbol	Test Conditions		Maximum Ratings	
V_{RRM}			600	V
I_{FAV}	T_S = 85 °C, rectangular δ =0.5		40	A
I_{FSM}	T_{VJ} = 45 °C,	T = 10 ms (50Hz)	300	A
		T = 8.3 ms (60Hz)	320	A
	T_{VJ} = 150 °C,	T = 10 ms (50Hz)	260	A
		T = 8.3 ms (60Hz)	280	A
P	T_S = 85 °C		36	W

Symbol	Test Conditions			Characteristic Values	
			T_{VJ} = 25 °C, unless otherwise specified		
V_F	I_F = 22 A,	T_{VJ} = 25 °C	max.	1.65	V
		T_{VJ} = 150 °C	max.	1.4	V
I_R	V_R = 600 V,	T_{VJ} = 25 °C	max.	1.5	mA
	V_R = 480 V,	T_{VJ} = 25 °C	max.	0.25	mA
		T_{VJ} = 125 °C	max.	7	mA
V_{T0}	} for power-loss calculations only		max.	1.14	V
r_T	} T_{VJ} = 125 °C		max.	10	mΩ
I_{RM}	I_F = 30 A, -di_F/dt = 240 A/µs		max.	11	A
	V_R = 350 V, T_{VJ} = 100 °C		typ.	10	A
R_{thJH}			max.	1.8	K/W

Rectifier Diodes

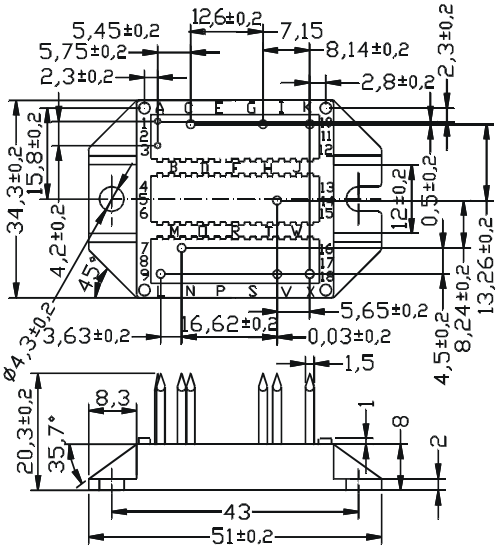
Symbol	Test Conditions		Maximum Ratings	
V_{RRM}			800	V
I_{dAV}	T_S = 85 °C, sinus 180 °		40	A
I_{FSM}	T_{VJ} = 45 °C,	T = 10 ms (50Hz)	300	A
		T = 8.3 ms (60Hz)	320	A
	T_{VJ} = 150 °C,	T = 10 ms (50Hz)	260	A
		T = 8.3 ms (60Hz)	280	A
P	T_S = 85 °C		33	W

Symbol	Test Conditions			Characteristic Values	
			T_{VJ} = 25 °C, unless otherwise specified		
V_F	I_F = 20 A,	T_{VJ} = 25 °C	max.	1.4	V
		T_{VJ} = 125 °C	max.	1.4	V
I_R	V_R = 800 V,	T_{VJ} = 25 °C	max.	0.25	mA
	V_R = 640 V,	T_{VJ} = 125 °C	max.	2	mA
V_{T0}	for power-loss calculations only		max.	1.05	V
r_T	T_{VJ} = 125 °C		max.	16	mΩ
R_{thJH}			max.	2.0	K/W

Module

Symbol	Test Conditions	Characteristic Values	
d_s	Creeping distance on surface	11.2	mm
d_A	Creeping distance in air	5.6	mm
a	Max. allowable acceleration	50	m/s²
R_{25}*	NTC @ 25 °C	470.000	Ω

Package style and outline
Dimensions in mm (1mm = 0.0394")



*NTC will be changed in future to 5.000 Ω.

POWERSEM GmbH, Walpersdorfer Str. 53
D - 91126 Schwabach
Phone: 09122 - 9764 - 0 FAX: 09122 - 9764 - 20

© 2002 POWERSEM reserves the right to change limits, test conditions and dimensions