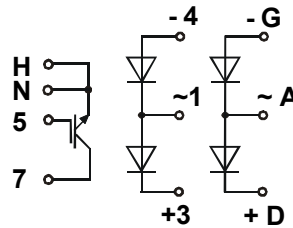


Rectifier Module for Power Factor Correction

PSBI 30/06

$I_{C25} = 42 \text{ A}$
 $V_{CES} = 600 \text{ V}$
 $I_{F25} = 42 \text{ A}$
 $V_{RRM} = 1400 \text{ V}$

Preliminary Data Sheet



IGBT

Symbol	Test Conditions	Maximum Ratings
V_{CES}	$T_{VJ} = 25 \text{ °C to } 150 \text{ °C}$	600 V
V_{GES}	continuous	± 20 V
I_{C25}	$T_C = 25 \text{ °C}$	42 A
I_{C80}	$T_S = 80 \text{ °C}$	29 A
RBSOA	$V_{CE} = 600 \text{ V}, R_G = 10 \text{ }\Omega, T_{VJ} = 125 \text{ °C}$ clamped inductive load, $L = 100 \text{ }\mu\text{H}$	$I_{CM} = 100$ A $V_{CEK} \leq V_{CES}$
t_{SC}	$V_{CE} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}, R_G = 10 \text{ }\Omega,$ $T_{VJ} = 125 \text{ °C},$ non-repetitive	10 μs

Symbol	Test Conditions	Characteristic Values
$T_{VJ} = 25 \text{ °C},$ unless otherwise specified		
$V_{CE(sat)}$	$V_{GE} = 15 \text{ V}, I_C = 30 \text{ A}, T_{VJ} = 25 \text{ °C}$	max. 2.9 V
$V_{CE(sat)}$	$V_{GE} = 15 \text{ V}, I_C = 30 \text{ A}, T_{VJ} = 25 \text{ °C}$	typ. 2.4 V
$V_{CE(sat)}$	$T_{VJ} = 125 \text{ °C}$	typ. 2.9 V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0.3 \text{ mA}$	min. 3 V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 0.3 \text{ mA}$	max. 5 V
I_{CES}	$V_{CE} = V_{CES}, V_{GE} = 0 \text{ V}, T_{VJ} = 25 \text{ °C}$	max. 0.04 mA
I_{CES}	$T_{VJ} = 125 \text{ °C}$	typ. 1 mA
I_{GES}	$V_{CE} = 0 \text{ V}, V_{GE} = \pm 20 \text{ V}$	max. 100 nA
$t_{d(on)}$	inductive load, $T_{VJ} = 125 \text{ °C}$ $V_{CE} = 400 \text{ V}, I_C = 10 \text{ A}$ $V_{GE} = \pm 15 \text{ V}, R_G = 10 \text{ }\Omega$	typ. 30 ns
t_r		typ. 50 ns
$t_{d(off)}$		typ. 270 ns
t_f		typ. 70 ns
E_{on}		typ. 0.78 mJ
E_{off}	typ. 0.55 mJ	
C_{ies}	$V_{CE} = 25 \text{ V}, f = 1 \text{ MHz}, V_{GE} = 0 \text{ V}$	typ. 1500 pF
Q_{Gon}	$V_{CE} = 480 \text{ V}, I_C = 30 \text{ A}, V_{GE} = 15 \text{ V}$	typ. 140 nC
R_{thJC}		max. 0.96 K/W
R_{thJH}		max. tbd K/W

Features

- Package with DCB ceramic base plate and soldering pins for PCB mounting
- Isolation voltage over 3000 V~
- Planar glasspassivated chips
- NPT IGBT with low saturation voltage, ultra fast switching capability, high RBSOA and short circuit ruggedness
- leads suitable for PC board soldering
- UL registered, E 148688

Applications

- single phase rectification with power factor correction (PFC)
- low harmonic content of mains current
- mains current and voltage in phase
- wide input voltage range, controlled output voltage

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 $t = 1 \text{ min}$ lisol $\leq 1 \text{ mA}$ $t = 1 \text{ s}$	3000 V~ 3600 V~
M_d	Mounting torque (M 4)	1.5-1.8 Nm
Weight	typ.	18 g

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

Rectifier Diodes

Symbol	Test Conditions	Maximum Ratings
I_{F25}	$T_C = 25\text{ °C}$	42 A
I_{F80}	$T_C = 80\text{ °C}$	27 A
I_{FSM}	$T_{VJ} = 45\text{ °C}$ $t = 10\text{ ms}$ (50 Hz), sine	300 A
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	320 A
	$T_{VJ} = T_{VJM}$ $t = 10\text{ ms}$ (50 Hz), sine	260 A
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	280 A
$\int i^2 dt$	$T_{VJ} = 45\text{ °C}$ $t = 10\text{ ms}$ (50 Hz), sine	450 A ² s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	425 A ² s
	$T_{VJ} = T_{VJM}$ $t = 10\text{ ms}$ (50 Hz), sine	340 A ² s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	325 A ² s

Symbol	Test Conditions	Characteristic Value
I_R	$V_R = V_{RRM}, T_{VJ} = T_{VJM}$	≤ 3.0 mA
	$V_R = V_{RRM}, T_{VJ} = 25\text{ °C}$	≤ 0.5 mA
V_F	$I_F = 50\text{ A}, T_{VJ} = 25\text{ °C}$	≤ 1.55 V
V_{TO}	For power-loss calculations only	0.85 V
r_T		13 mΩ
R_{thJC}	per diode; DC	2.9 K/W
R_{thJK}	per diode; DC	3.2 K/W
d_s	Creeping distance on surface	11.2 mm
d_A	Creeping distance in air	9.7 mm
a	Max. allowable acceleration	50 m/s ²

Package style and outline
under development

