STARPOWER

SEMICONDUCTOR

Rectifier Diode

RD100FPJ180K6S

1800V/100A in one-package

General Description

STARPOWER Rectifier Diode Power Module provides ultra low conduction loss.They are designed for the applications such as SMPS.

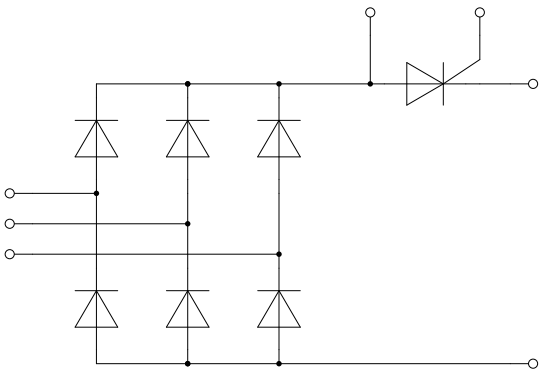
Features

- Low forward voltage drop
- Small temperature coefficient
- High Surge Capacity
- Low inductance
- Isolated Copper Baseplate Using DBC Technology

Typical Applications

- Input bridge rectifier
- AC/DC motor control
- Power supply

Equivalent Circuit Schematic



Absolute Maximum Ratings T_C=25°C unless otherwise noted

Rectifier Diode

Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1800	V
V_{RSM}	Non-repetitive Peak Reverse Voltage	1900	V
I_{FAV}	Average Forward Current T_C=100°C	100	A
I_{FSM}	Surge Forward Current V_R=0V,t_p=10ms,T_j=25°C V_R=0V,t_p=10ms,T_j=125 °C	2625 2100	A
I^2t	I^2t-value V_R=0V,t_p=10ms,T_j=25°C V_R=0V,t_p=10ms,T_j=125°C	34453 22050	A^2s

Thyristor

Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1800	V
V_{RSM}	Non-repetitive Peak Reverse Voltage	1900	V
I_{TAV}	Average On-state Current T_C=85°C	100	A
I_{TSM}	Surge Forward Current V_R=0V,t_p=10ms,T_j=25°C V_R=0V,t_p=10ms,T_j=125°C	2362 1995	A
I^2t	I^2t-value V_R=0V,t_p=10ms,T_j=25°C V_R=0V,t_p=10ms,T_j=125°C	27895 19900	A^2s
(di/dt)cr	Critical Rate of Rise of On-state Current T_j=125°C	150	A/μs
(dv/dt)cr	Critical Rate of Rise of On-State Voltage T_j=125°C	1000	V/μs

Module

Symbol	Description	Value	Unit
T_{jmax}	Maximum Junction Temperature	150	°C
T_{jop}	Operating Junction Temperature	-40 to +150	°C
T_{STG}	Storage Temperature Range	-40 to +125	°C
V_{ISO}	Isolation Voltage RMS,f=50Hz,t=1min	4000	V

Rectifier Diode T_C=25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_F	Diode Forward Voltage	I_F=300A	T_j=25°C			1.55	V
			T_j=125°C			1.50	
I_R	Diode Reverse Current	V_R=V_{RRM}	T_j=125°C			4.50	mA

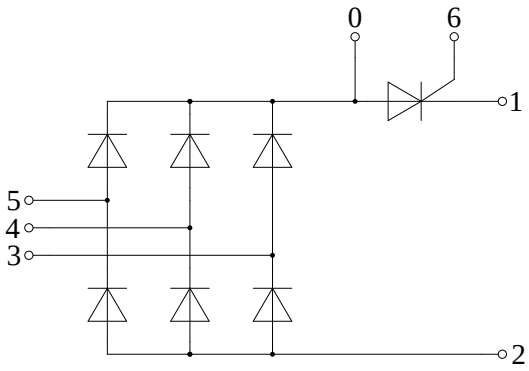
Thyristor Diode T_C=25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_T	Forward Voltage	I_T=300A	T_j=25°C			1.60	V
			T_j=125°C			1.45	
I_D	Reverse Current	V_R=V_{RRM}	T_j=25°C			0.10	mA
			T_j=125°C			20.0	
V_{GT}	Gate Trigger Current	V_D=12V,T_j=25°C				2.0	V
I_{GT}	Gate Trigger Voltage	V_D=12V,T_j=25°C				120	mA
V_{GD}	Gate Non-trigger Current	T_j=125°C		0.25			V
I_H	Holding Current	T_j=25°C				250	mA
I_L	Latching Current	I_G=1.2I_{GT}, T_j=25°C				300	mA

Module Characteristics T_C=25°C unless otherwise noted

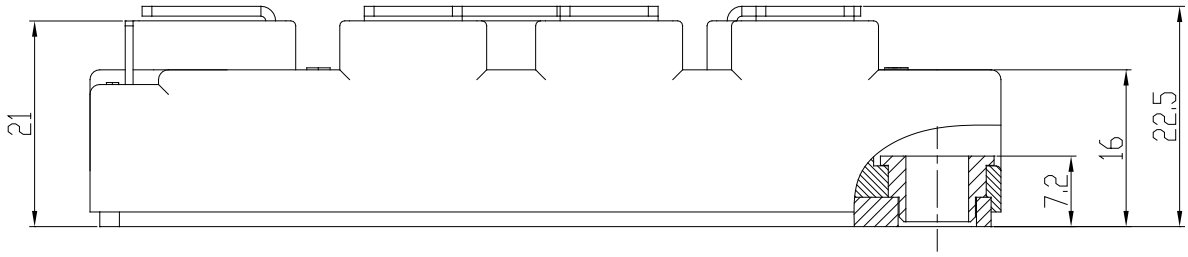
Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Junction-to-Case (per Rectifier) Junction-to-Case (per Thyristor)			0.434 0.256	K/W
R_{thCH}	Case-to-Heatsink (per Rectifier) Case-to-Heatsink (per Thyristor) Case-to-Heatsink (per Module)		0.346 0.204 0.045		K/W
M	Terminal Connection Torque, Screw M5 Mounting Torque,Screw M5		2.7		N.m
G	Weight of Module		150		g

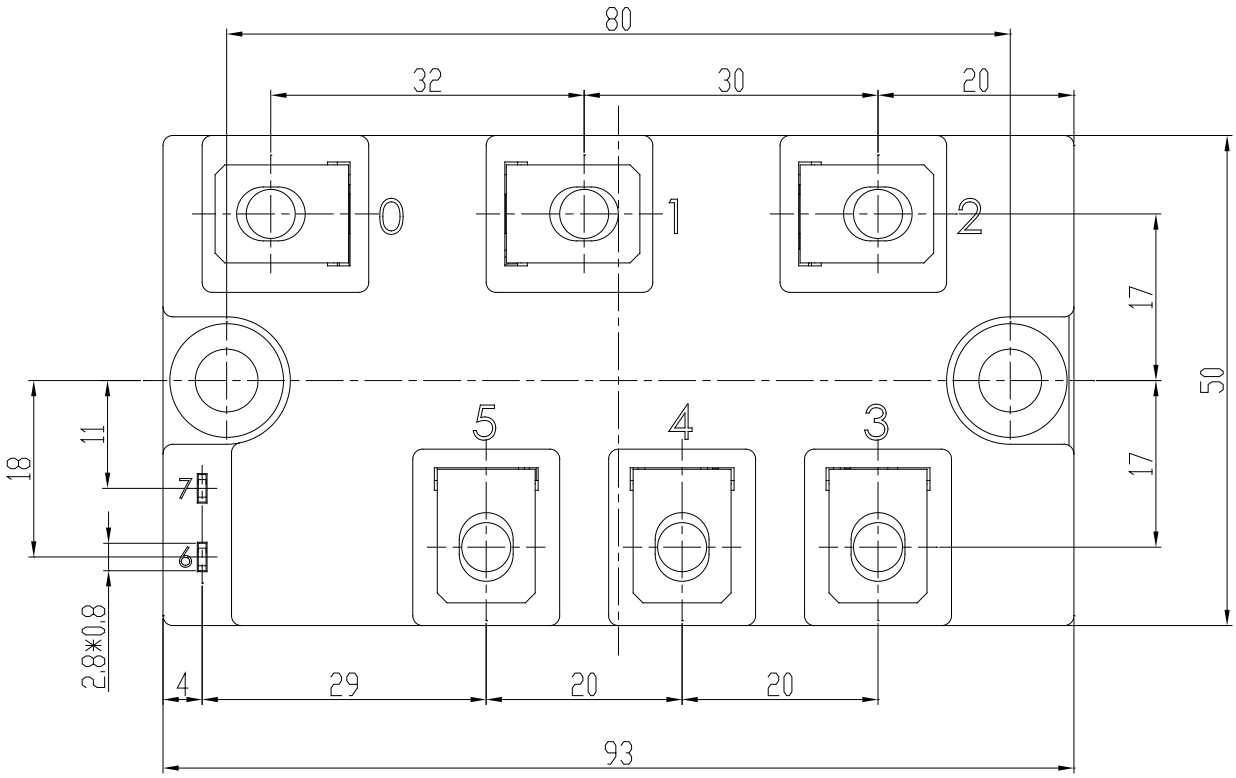
Circuit Schematic



Package Dimensions

Dimensions in Millimeters





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