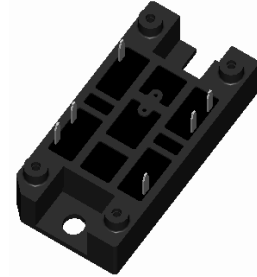
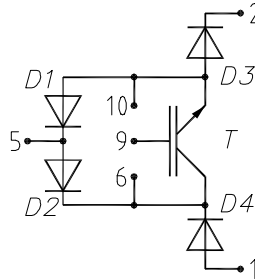


Rectifier Module for Three Phase Power Factor Correction



Typical Rectified Mains Power

$$P_n = 15 \text{ kW}$$

at $V_n = 400 \text{ V } 3\text{-}$; $f_T = 15 \text{ kHz}$; $T_C = 80^\circ\text{C}$

Transistor T

| Symbol | Conditions | Maximum Ratings | |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------|---------------|
| V_{CES} | $T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$ | 1200 | V |
| V_{GES} | | ± 20 | V |
| I_{C25} | $T_C = 25^\circ\text{C}$ | 95 | A |
| I_{C80} | $T_C = 80^\circ\text{C}$ | 65 | A |
| I_{CM} V_{CEK} | $V_{GE} = \pm 15 \text{ V}$; $R_G = 22 \Omega$; $T_{VJ} = 125^\circ\text{C}$ RBSOA; $L = 100 \mu\text{H}$ | 100 | A |
| t_{SC} (SCSOA) | $V_{CE} = V_{CES}$; $V_{GE} = \pm 15 \text{ V}$; $R_G = 22 \Omega$; $T_{VJ} = 125^\circ\text{C}$ non-repetitive | 10 | μs |

| Symbol | Conditions | Characteristic Values | | | |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------|----------------------------------|----------------|
| | | (T _{VJ} = 25°C, unless otherwise specified) | | | |
| | | min. | typ. | max. | |
| $V_{CE(sat)}$ | $I_C = 20 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$ | | 1.7 1.9 | 2.0 V | |
| $V_{GE(th)}$ | $I_C = 2 \text{ mA}$; $V_{GE} = V_{CE}$ | 4.5 | | 6.5 V | |
| I_{CES} | $V_{CE} = V_{CES}$; $V_{GE} = 0 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$ | | 1.8 | 1.6 mA mA | |
| I_{GES} | $V_{CE} = 0 \text{ V}$; $V_{GE} = \pm 20 \text{ V}$ | | | 400 nA | |
| $t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off} | Inductive load, $T_{VJ} = 125^\circ\text{C}$ $V_{CE} = 600 \text{ V}$; $I_C = 20 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$; $R_G = 22 \Omega$ | | 100 70 500 70 3.0 2.2 | ns ns ns ns mJ mJ | |
| C_{ies} | | $V_{CE} = 25 \text{ V}$; $V_{GE} = 0 \text{ V}$; $f = 1 \text{ MHz}$ | | 3.3 | nF |
| Q_{Gon} | | $V_{CE} = 600 \text{ V}$; $V_{GE} = 15 \text{ V}$; $I_C = 50 \text{ A}$ | | 240 | nC |
| R_{thJC} R_{thJH} | | with heatsink transfer paste | | 0.6 | 0.3 K/W K/W |

Features

- NPT IGBT with low saturation voltage
- fast recovery epitaxial diodes (FRED)
- module package:
 - high level of integration
 - solder terminals for PCB mounting
 - isolated DCB ceramic base plate
 - large creepage and strike distances

Applications

Three phase rectifier with power factor correction, set up as follows:

- input from three phase mains
 - wide range of input voltage
 - mains currents approximately sinusoidal in phase with mains voltage
 - topology permits to control overcurrent such as in case of input voltage peaks
- output
 - direct current link
 - buck type converter - reduced output voltage
 - possibility to supply boost converter, inverter etc.
- required components
 - one power semiconductor module per phase
 - one inductor and one capacitor per phase on mains side
 - output inductor, depending on supplied circuit

IXYS reserves the right to change limits, test conditions and dimensions.

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IXYS Semiconductor GmbH
Edisonstr. 15, D-68623 Lampertheim
Phone: +49-6206-503-0, Fax: +49-6206-503627

IXYS Corporation
3540 Bassett Street, Santa Clara CA 95054
Phone: (408) 982-0700, Fax: 408-496-0670

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