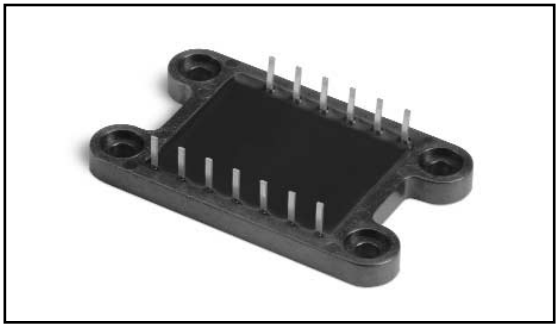
# MODEL 7720 SERIES

## Power Factor Correction Module



### MODELS/RANGE

| | |
|---|---|
| 7720-1A | 1,500 Watts / 3,000 Watts* |
| 7720-2A | 1,000 Watts / 2,250 Watts* |
| 7720-3A | 500 Watts / 1,500 Watts* |

### FEATURES AND BENEFITS

- Module contains all power components necessary to provide power factor correction in a switching power supply.
  - Rectifier bridge
  - Ultrafast platinum output diode
  - 500V .1Ω Max. FET (7720-1A)
- Provides optimum use of available line current
- Allows power supply to meet harmonic requirement
- Module design reduces cost of heat sink
- Saves significant space and assembly time
- Low cost
- Internal temperature sensing
- Replaces up to 10 each TO-220 or TO-247 discrete power semiconductors
- Custom module versions available to meet specific requirements such as:
  - Motor drives
  - Power servo amplifiers
  - Solenoid drivers
  - Solid state relays
  - 3 phase rectifier bridges



### APPLICATIONS

Designed to optimally facilitate a boost type power factor correction (PFC) system for designs with up to 20 A rms input current.

Standard applications include switching power supplies from 500 watts to 3,000 watts with line voltages up to 300 V rms.

* Based on minimun line voltage of 84 V rms / 168 V rms.
Specifications subject to change without notice.

## ELECTRICAL CHARACTERISTICS

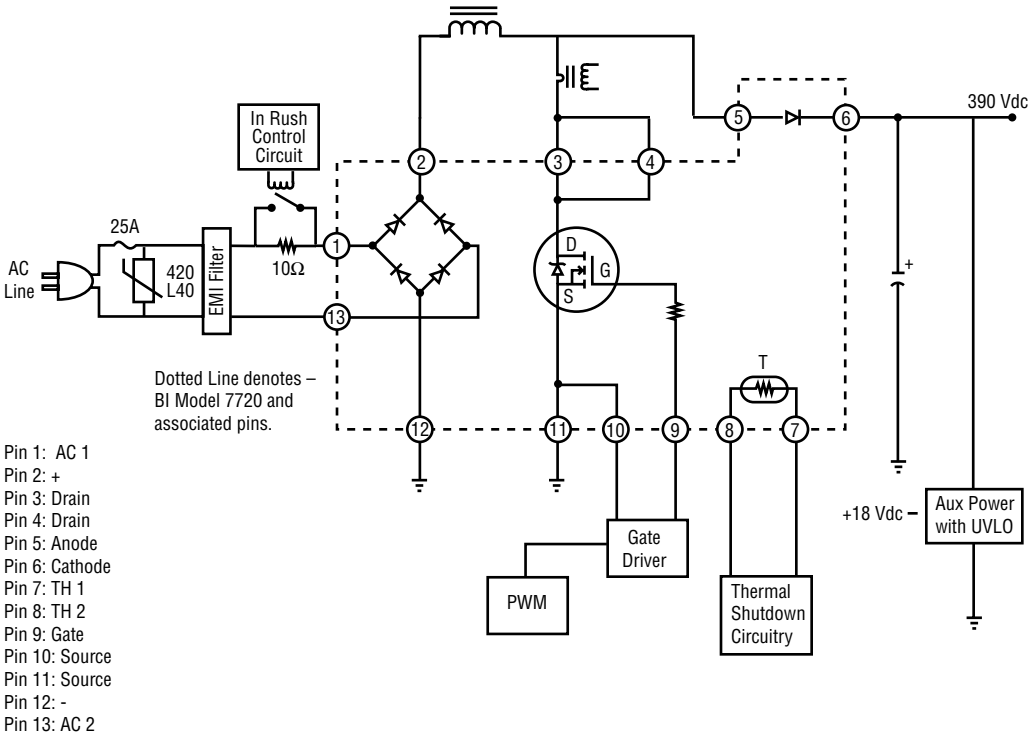
| | Parameter | Symbol | Conditions[1] | 7720-X | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|---|
| **FET** | Drain Leakage Current | $I_{DSS}$ | $V_{DS}$ = 500V, $V_{GS}$ = 0V | -1 | | | 1.0 | mA |
| | | | | -2 | | | 750 | µA |
| | | | | -3 | | | 500 | µA |
| | On-State Voltage | $V_{DS(on)}$ | $I_{DS}$ = 28A, $V_{GS}$ = 10V | -1 | | 2.2 | 2.9 | V |
| | | | $I_{DS}$ = 21A | -2 | | 2.2 | 2.9 | V |
| | | | $I_{DS}$ = 14A | -3 | | 2.2 | 2.9 | V |
| | Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = 4V, $I_{DS}$ = 1mA | -1,-2,-3 | 2.0 | 3.0 | 4.0 | V |
| | Gate Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±15V, $V_{DS}$ = 0V | -1 | | | ±2 | µA |
| | | | | -2 | | | ±1.5 | µA |
| | | | | -3 | | | ±1 | µA |
| | Diode Forward Voltage | $V_{SD}$ | $I_{SD}$ = 50A, $V_{GS}$ = 0V | -1 | | 0.95 | 1.5 | V |
| | | | $I_{SD}$ = 37.5A | -2 | | 0.95 | 1.5 | V |
| | | | $I_{SD}$ = 25A | -3 | | 0.95 | 1.5 | V |
| | Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 25V, f = 1.0MHz | -1 | | 12 | | nF |
| | | | | -2 | | 9 | | nF |
| | | | | -3 | | 6 | | nF |
| | Gate Resistor | $R_G$ | | -1 | | 1.28 | | Ω |
| | | | | -2 | | 1.70 | | Ω |
| | | | | -3 | | 2.55 | | Ω |
| | Junction Temperature | $T_j$ | | -1,-2,-3 | | | 150 | °C |
| | Thermal Resistance | $R_{thjc}$ | | -1 | | 0.19 | | °C/W |
| | | | | -2 | | 0.25 | | °C/W |
| | | | | -3 | | 0.38 | | °C/W |
| **D1-D4** | Reverse Leakage Current | $I_R$ | $V_R$ = 600V | -1,-2,-3 | | 1 | 250 | µA |
| | Forward Voltage | $V_F$ | $I_F$ = 25A | -1,-2 | | 1.0 | 1.2 | V |
| | | | $I_F$ = 18A | -3 | | 1.0 | 1.2 | V |
| | Junction Temperature | $T_j$ | | -1,-2,-3 | | | 150 | °C |
| | Thermal Resistance | $R_{thjc}$ | | -1,-2 | | 1.3 | | °C/W |
| | | | | -3 | | 1.4 | | °C/W |
| **D5** | Forward Voltage | $V_F$ | $I_F$ = 25A | -1,-2 | | 1.5 | 2.8 | V |
| | | | $I_F$ = 18A | -3 | | 1.5 | 2.8 | V |
| | Forward Voltage | $V_F$ | $I_F$ = 25A, t = 150°C | -1,-2 | | 1.3 | 2.5 | V |
| | | | $I_F$ = 18A | -3 | | 1.3 | 2.5 | V |
| | Reverse Leakage Current | $I_R$ | $V_R$ = 600V | -1,-2,-3 | | 1 | 500 | µA |
| | Reverse Leakage Current | $I_R$ | $V_R$ = 600V, t = 150°C | -1,-2,-3 | | 0.3 | 1.5 | mA |
| | Reverse Recovery Time | $t_{rr}$ | $I_F$ = 1.0A, di/dt = 100A/µs | -1,-2,-3 | | 30 | 40 | ns |
| | Reverse Recovery Time | $t_{rr}$ | $I_F$ = 25A, di/dt = 100A/µs | -1,-2,-3 | | 40 | 45 | ns |
| | Junction Temperature | $T_j$ | | -1,-2,-3 | | | 175 | °C |
| | Thermal Resistance | $R_{thjc}$ | | -1,-2 | | 1.3 | | °C/W |
| | | | | -3 | | 1.4 | | °C/W |
| **TH1** | Resistance | $R_{25}$ | I = 1mA | | 22.5 | 25 | 27.5 | KΩ |
| | Resistance Ratio | $R_T/R_{25}$ | t = 80 | | | 0.126 | | |
| | | | t = 90 | | | 0.0916 | | |
| | | | t = 100 | | | 0.0679 | | |
| | | | t = 110 | | | 0.0511 | | |
| | Dissipation Constant | $P_D$ | | | 1.0 | | | mW/°C |
| | Thermal Time Constant | t | | | | | 10 | sec |

1 - $T_{Case}$ = 25°C unless otherwise specified.

## ENVIRONMENTAL

| | |
|---|---|
| Storage Temperature Range | -55°C to +125°C |
| Operating Temperature Range | -40°C to +125°C |
| Recommended Operating Case Temperature, Max. | +100°C |

## SYSTEM DIAGRAM

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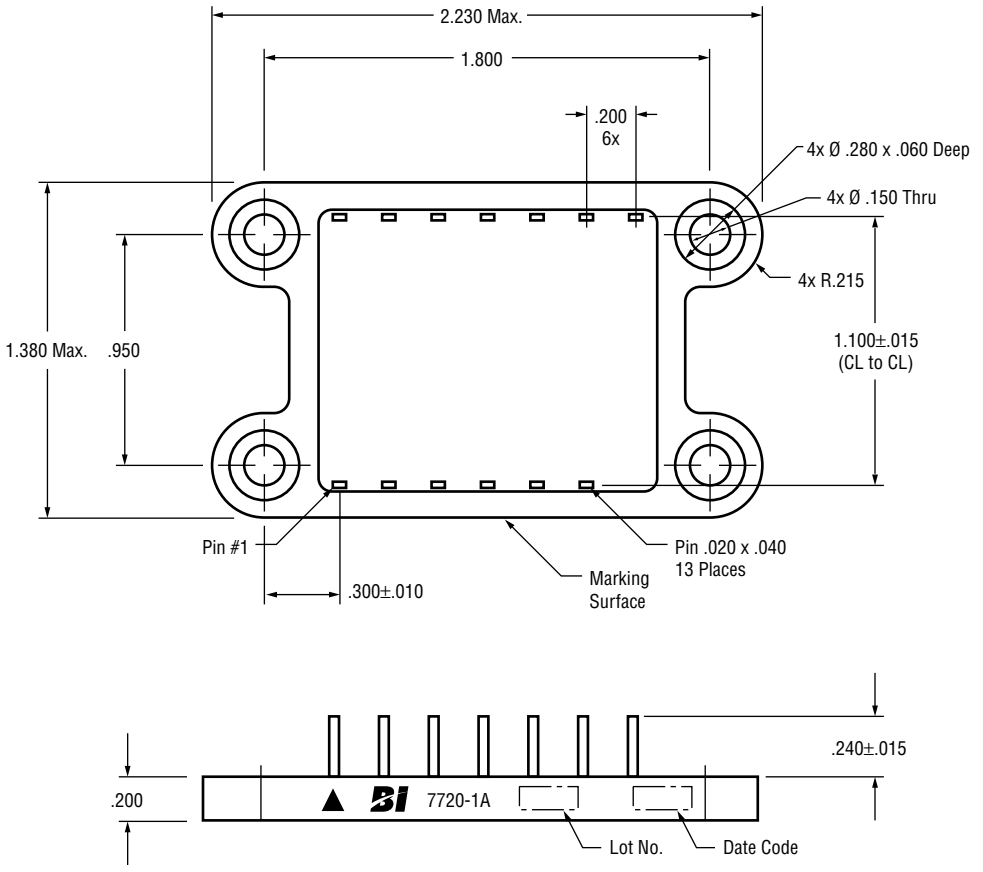
## OUTLINE DIMENSIONS (Inch)




## ORDERING INFORMATION