Optional Accessories for Thyristor / Diode Modules

For module types MCC/MCD/MCO/MCMA/MCNA 161 up to 700 (for MCD/MCO only L-type):
Keyed Gate Cathode twin plugs with wire length = 350 / 480 mm; gate = white, cathode = red

Type ZY 180 L  (L = Left for pin pair 4/5)
Type ZY 180 R  (R = Right for pin pair 6/7)

For module-type TO-240 package MCC/MCD/ MCMA/MCNA 19 up to 120 and 140 (version 1):
Keyed Gate Cathode twin plugs with wire length = 340 / 460 mm; gate = white, cathode = red

Type ZY 200 L  (L = Left for pin pair 4/5)
Type ZY 200 R  (R = Right for pin pair 6/7)

For ZY 180 and ZY 200: UL 758 Style 3751

For module types MCC/MCD/MDD 310
Threaded spacer for higher Anode / Cathode construction:
Type ZY 250 (material brass)
Not for new design

Design Information
For Thyristors, Diodes, Thyristor / Diode Modules and Rectifier Bridges

Surge current
The 60 Hz value of \( I_{TSM} \) is 10% higher than the 50 Hz value
The \( I_{TSM} \) value at \( T_{VJM} \) is 10% to 15% lower than the 45°C value

50 Hz: \( I_t [A^2s] = I_{TSM} [A] \cdot I_{TSM} [A] \cdot 0.005 [s] \); use rated \( I_{TSM} \) value (10 ms)
60 Hz: \( I_t [A^2s] = I_{TSM} [A] \cdot I_{TSM} [A] \cdot 0.0042 [s] \); use 60-Hz-value of \( I_{TSM} \)

The average current ratings in tables are mostly specified for temperature conditions of: \( T_a = 45°C \), \( T_c = 85°C \) or \( T_c = 100°C \).
For other temperature conditions the current ratings can be calculated using the following formulas applicable up to 400 Hz.

\[
I_{AV} = \frac{-V_{TO} + \sqrt{V_{TO}^2 + 4 \cdot k_2 \cdot r_T \cdot P}}{2 \cdot k_2 \cdot r_T} \quad \text{where} \quad P = \frac{T_{VAM} \cdot T_c}{R_{RUA}} \quad \text{or} \quad P = \frac{T_{VAM} \cdot T_a}{R_{RUA}}
\]

\( k_2 = 1 \) for DC current
\( k_2 = 2.5 \) for sinusoidal half wave current
\( k_2 = 3 \) for 120° rectangular current
\( k_2 = 6 \) for 60° rectangular current

The average forward current is limited by the RMS current value \( I_{f(RMS)} \).
When the calculated value \( I_{AV} \) is higher than \( I_{f(RMS)} / k \), replace it by \( I_{AV} = I_{f(RMS)} / k \).

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.