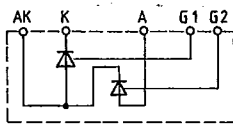


Circuit Configurations Available

MTT 40 A ... MTT 95 A,
 MTD 40 A ... MTD 95 A
 MDT 40 A ... MDT 95 A

Fully controlled version

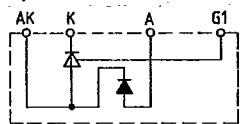
MTT



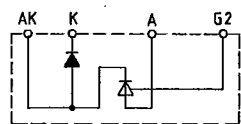
MTT 100 A ... MTT 120 A,
 MTD 100 A ... MTD 120 A,
 MDT 100 A ... MDT 120 A,

Half-controlled version

MTD



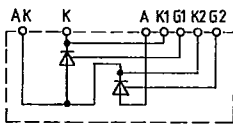
MDT



Thy L 75 A ... Thy M 77 A .. V
 Thy DM 77 A .. V1
 Thy DM 77 A .. V2

Fully controlled version

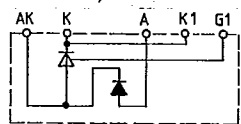
V circuit



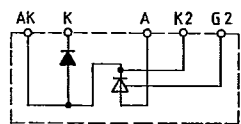
MDD 55 A ... MDD 95 A
 DiL 74 A ... DiL 78 A

Half-controlled version

V1 circuit

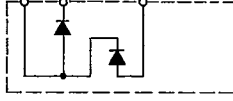


V2 circuit

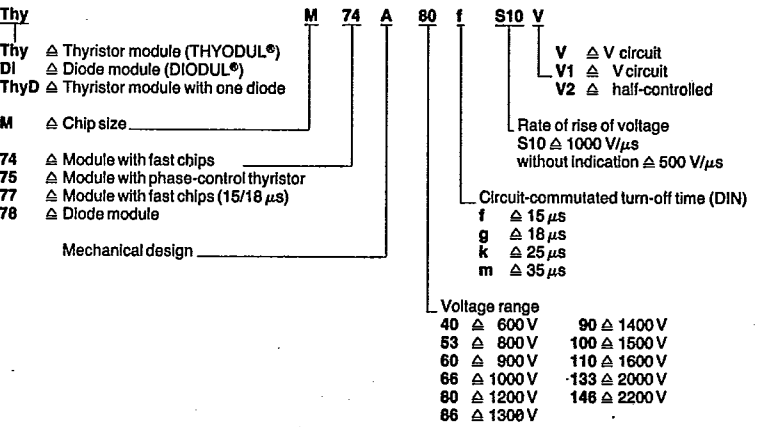
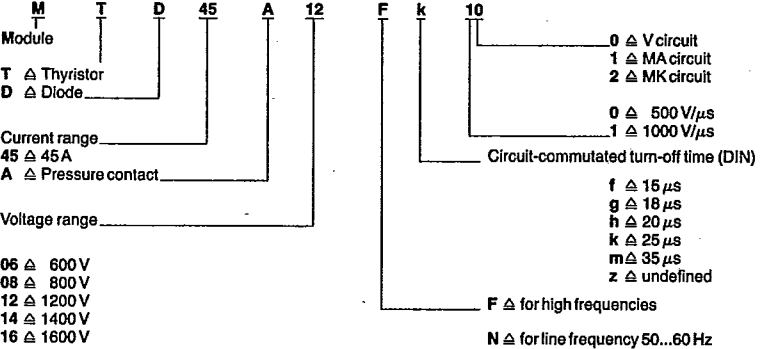


Uncontrolled version

V circuit



Examples for new type designations



All modules mentioned have the test symbol (File No. E 78437 (N))

Electrical and thermal characteristics per diode/thyristor

Max. repetitive peak off-state or reverse voltage V_{DRM}
 V_{FRM}

Maximum ratings

| | |
|---|----------------------|
| Mean on-state or forward current | I_{TAV}, I_{FAV} |
| RMS on-state or forward current | I_{TRMS}, I_{FRMS} |
| Max. single cycle surge current (t = 10 ms, 25°C) | I_{TSM}, I_{FSM} |
| i^2 value (for fusing) (t = 10 ms, 25°C) | $i^2 t$ |
| Critical rate of rise of on-state current (DIN 41787) | $(di/dt)_{cr}$ |
| Critical rate of rise of off-state voltage normal version (DIN 41787) | $(dv/dt)_{cr}$ |
| special version | |

Characteristics

| | |
|---|------------|
| Max. off-state or reverse current (T_{jmax}) | I_D, I_R |
| Threshold voltage | $V_{(TO)}$ |
| Slope resistance | r_T |
| Circuit-commutated turn-off time (DIN 41787) | t_q |
| Gate circuit characteristics | |
| Min. gate trigger voltage ($T_j = 25^\circ C$) | V_{GT} |
| Min. gate trigger current ($T_j = 25^\circ C$) | I_{GT} |
| Max. gate non-trigger current ($T_{jmax}, 0.5 V_{DRM}$) | I_{GD} |
| Max. gate non-trigger voltage ($T_{jmax}, 0.5 V_{DRM}$) | V_{GD} |
| Max. permissible gate power dissipation | P_{GAV} |

Thermal characteristics

| | |
|---------------------------------------|------------|
| Junction temperature | T_{j0} |
| Operating temperature range | T_j |
| Storage temperature range | T_{stg} |
| Thermal resistance, junction to case | R_{thJC} |
| Thermal resistance, case to heat sink | R_{thCH} |

Mechanical and other characteristics

| | |
|-------------------|-----------|
| Mounting torque | M_d |
| Leakage path | |
| Weight | |
| Isolation voltage | V_{ISO} |
| Outlines | |

¹⁾ Thyristor peak reverse voltage
²⁾ Diode peak reverse voltage
³⁾ $V_D = 6 V, R_A = 5 \Omega$

Modules for line-commutated converters

| | MTT 40A MTD 40A MDT 40A | MTT 50A MTD 50A MDT 50A | MTT 65A MTD 65A MDT 65A | MTT 95A MTD 95A MDT 95A | MTT 120A MTD 120A MDT 120A | Thy L75A...V | Thy M 75A...V Thy DM 75A...V1 Thy DM 75A...V2 | MDD 55A | MDD 95A | DIL 78A |
|------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|----------------------------------|--------------|---|------------|------------|------------|
| V | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| V | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 |
| V | — | — | — | — | — | — | — | — | — | — |
| V | — | — | — | — | — | — | — | — | — | — |
| V | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 | 1200 |
| V | — | — | — | — | — | — | — | — | — | — |
| V | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 |
| V | — | — | — | — | — | — | — | — | — | — |
| V | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 | 1600 |
| A | 40 | 50 | 65 | 95 | 120 | 135 | 160 | 55 | 95 | 160 |
| A | 75 | 105 | 120 | 150 | 200 | 210 | 250 | 105 | 150 | 250 |
| A | 850 | 1100 | 1500 | 1900 | 2600 | 3500 | 5100 | 1000 | 3600 | 6700 |
| A ² s | 3600 | 6000 | 11250 | 18000 | 33800 | 61000 | 130000 | 5000 | 65000 | 224500 |
| A/μs | 100 | 100 | 100 | 100 | 150 | 100 | 100 | — | — | — |
| V/μs | 500 | 500 | 500 | 500 | 500 | 500 | 500 | — | — | — |
| V/μs | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | — | — | — |
| mA | 15 | 15 | 15 | 20 | 25 | 25 | 25 | 10 | 15 | 25 |
| V | 0.85 | 0.84 | 0.82 | 0.85 | 0.85 | 0.98 | 0.97 | 0.784 | 0.748 | 0.85 |
| mΩ | 6.65 | 5.17 | 3.33 | 2.7 | 2.0 | 1.41 | 1.2 | 5.4 | 1.72 | 0.77 |
| μs | typ. 150 | typ. 150 | typ. 150 | typ. 150 | typ. 180 | typ. 200 | typ. 200 | — | — | — |
| V | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | 1.5 | — | — | — |
| mA | 150 | 150 | 150 | 150 | 150 | 250 | 250 | — | — | — |
| mA | 4 | 4 | 4 | 4 | 5 | 10 | 10 | — | — | — |
| V | 0.25 | 0.25 | 0.25 | 0.25 | 0.2 | 0.2 | 0.2 | — | — | — |
| W | 20 | 20 | 20 | 20 | — | 20 | 20 | — | — | — |
| °C | 125 | 125 | 125 | 140 | 125 | 125 | 125 | 150 | 150 | 150 |
| °C | -40...+125 | -40...+125 | -40...+125 | -40...+140 | -40...+125 | -40...+125 | -40...+125 | -40...+150 | -40...+150 | -40...+150 |
| °C | -40...+130 | -40...+130 | -40...+130 | -40...+140 | -40...+130 | -40...+130 | -40...+130 | -40...+150 | -40...+150 | -40...+150 |
| K/W | 0.6 | 0.6 | 0.5 | 0.36 | 0.107 | 0.21 | 0.16 | 0.7 | 0.45 | 0.230 |
| K/W | 0.08 | 0.08 | 0.08 | 0.08 | 0.06 | 0.04 | 0.04 | 0.08 | 0.08 | 0.04 |
| Nm | 2.5...3.5 | 2.5...3.5 | 2.5...3.5 | 2.5...3.5 | 4...5 | 4...5 | 4...5 | 2.5...3.5 | 2.5...3.5 | 4...5 |
| mm | 13 | 13 | 13 | 13 | 14 | 13 | 13 | 13 | 13 | 13 |
| g | 120 | 120 | 120 | 120 | 400 | 500 | 500 | 120 | 120 | 500 |
| V _{eff} | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |
| Fig | 1 | 1 | 1 | 1 | 2 | 4 | 4 | 3 | 3 | 5 |

B

Modules for inverters

Modules for self-commutated converters

| MTD 61A MDT 61A | MTD 91A MDT 91A | Thy DM 75A...V1 Thy DM 75A...V2 | MTT 45A MTD 45A MDT 45A | MTT 46A MTD 46A MDT 46A | MTT 100A MTD 100A MDT 100A | MTT 110A MTD 110A MDT 110A | Thy M74A...V Thy DM 74A...V1 Thy DM 74A...V2 | Thy M77A...V Thy DM 77A...V1 Thy DM 77A...V2 | MDD 72A | DIL 74A |
|--------------------------------------|--------------------------------------|--------------------------------------|-------------------------------|-------------------------------|----------------------------------|----------------------------------|--|--|------------|------------|
| - | - | - | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| - | - | - | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 |
| - | - | - | - | 900 | - | 900 | - | 900 | 900 | 900 |
| - | - | - | - | 1000 | - | 1000 | - | 1000 | 1000 | 1000 |
| - | - | - | 1200 | - | 1200 | - | 1200 | - | 1200 | 1200 |
| - | - | - | 1300 | - | 1300 | - | 1300 | - | 1300 | 1300 |
| 1400 ¹ /2000 ² | 1400/2000 | 1400 ¹ /2000 ² | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | 1500 | 1500 |
| 1600 ¹ /2500 ² | 1600 ¹ /2500 ² | 1600 ¹ /2200 ² | - | - | - | - | - | - | - | - |
| 65 | 95 | 160 | - | - | - | - | - | - | - | - |
| 120 | 150 | 250 | 120 | 120 | 200 | 200 | 250 | 250 | 150 | 250 |
| 1500 | 1900 | 5100 | 1200 | 1300 | 2750 | 3000 | 5100 | 5400 | 2410 | 4700 |
| 11250 | 18000 | 130000 | 7200 | 8500 | 37800 | 45000 | 130000 | 146000 | 29000 | 110500 |
| 100 | 100 | 100 | 100 | 100 | 160 | 200 | 200 | 200 | - | - |
| 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | - | - |
| 1000 | 1000 | 1000 | - | - | - | - | - | - | - | - |
| 15 | 20 | 25 | 15 | 15 | 30 | 30 | 40 | 40 | 40 | 60 |
| 0.82 | 0.85 | 0.97 | 1.4 | 1.35 | 1.2 | 1.2 | 1.36 | 1.28 | 1.395 | 1.3 |
| 3.33 | 2.7 | 1.2 | 3.43 | 3.16 | 2.1 | 1.4 | 1.29 | 1.26 | 1.53 | 1.1 |
| typ. 150 | typ. 150 | typ. 200 | k:25/m:35 | f:15/g:18 | g:18/h:20/k:25 | e:12/f:15 | k:25/m:35 | f:15/g:18 | - | - |
| 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 2 | 2 | 2.5 | 2.5 | - | - |
| 150 | 150 | 250 | 250 | 250 | 150 | 150 | 250 | 250 | - | - |
| 4 | 4 | 10 | 6 | 6 | 10 ³⁾ | 10 ³⁾ | 10 | 10 | - | - |
| 0.25 | 0.25 | 0.2 | 0.2 | 0.2 | 0.25 ³⁾ | 0.25 ³⁾ | 0.2 | 0.2 | - | - |
| 20 | 20 | 20 | 20 | 20 | - | - | 20 | 20 | - | - |
| 125 | 140 | 125 | 125 | 125 | 125 | 125 | 125 | 125 | 140 | 140 |
| -40...+125 | -40...+140 | -40...+125 | -40...+125 | -40...+125 | -40...+125 | -40...+125 | -40...+125 | -40...+125 | -40...+140 | -40...+140 |
| -40...+130 | -40...+140 | -40...+130 | -40...+130 | -40...+130 | -40...+130 | -40...+130 | -40...+130 | -40...+130 | -40...+140 | -40...+140 |
| 0.5 | 0.36 | 0.16 | 0.5 | 0.5 | 0.214 | 0.214 | 0.2 | 0.2 | 0.45 | 0.23 |
| 0.08 | 0.08 | 0.04 | 0.08 | 0.08 | 0.06 | 0.06 | 0.04 | 0.04 | 0.08 | 0.04 |
| 2.5...3.5 | 2.5...3.5 | 4...5 | 2.5...3.5 | 2.5...3.5 | 4...5 | 4...5 | 4...5 | 4...5 | 2.5...3.5 | 4...5 |
| 13 | 13 | 13 | 13 | 13 | 14 | 14 | 13 | 13 | 13 | 13 |
| 120 | 120 | 500 | 120 | 120 | 400 | 400 | 500 | 500 | 120 | 500 |
| 3000 | 3000 | 3000 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 | 2500 |
| 1 | 1 | 4 | 1 | 1 | 2 | 2 | 4 | 4 | 3 | 5 |

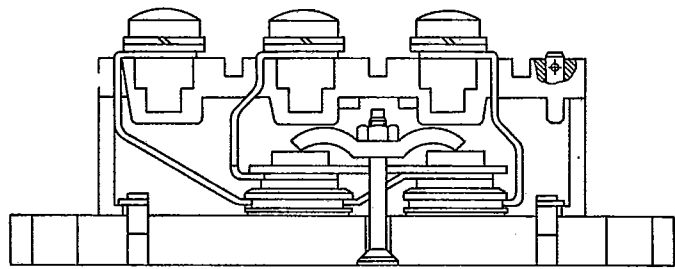
Thyristor and Diode Modules – Ideal for Compact Converters

THYODUL® units make the design of converters more compact and economic as well as much simpler. Owing to their potential-free design no additional isolation parts are necessary for installation.

Advantages in construction, simple assembly and favorable prices justify in most cases a new-construction of converters in the low and middle capacity ranges.

The following survey shows all THYODUL® units available at present and their most important technical characteristics. Full technical details, curves and circuit information are provided in the Data Book "Leistungshalbleiter-Module für potential-freien Aufbau", Ordering code: B3-B3000 (at present only German edition).

Pressure contact system:



Outlines:

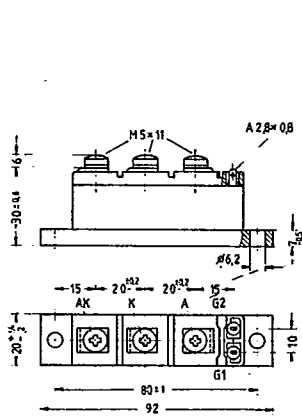


Fig. 1

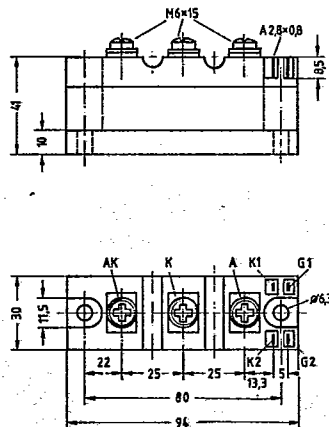


Fig. 2

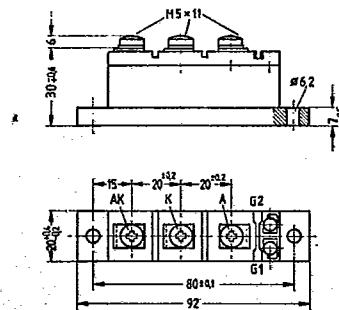


Fig. 3

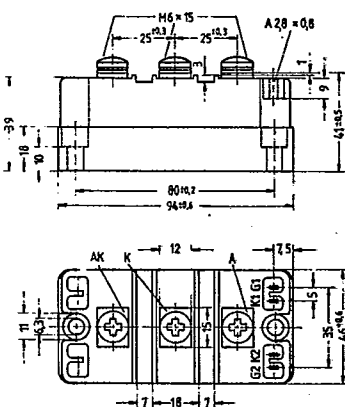


Fig. 4

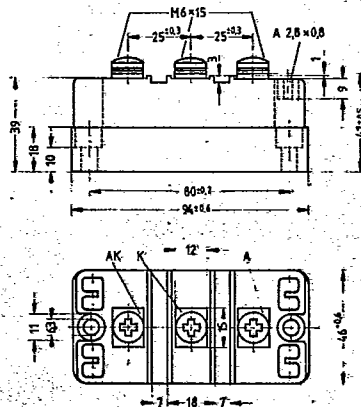


Fig. 5

Dimensions in mm

5