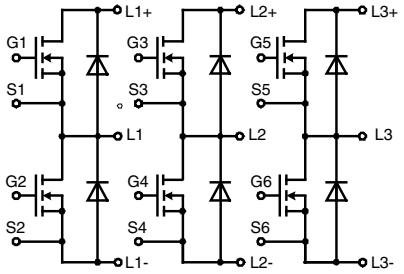
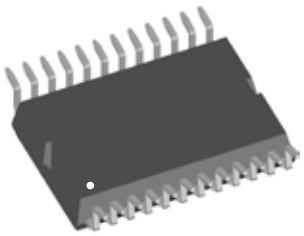
# Three phase full Bridge

with Trench MOSFETs
in DCB isolated high current package

$V_{DSS}$ = 100 V
$I_{D25}$ = 90 A
$R_{DSon\ typ.}$ = 7.5 mΩ



## MOSFETs

| Symbol | Conditions | Maximum Ratings | |
|---|---|---|---|
| $V_{DSS}$ | $T_{VJ}$ = 25°C to 150°C | 100 | V |
| $V_{GS}$ | | ± 20 | V |
| $I_{D25}$ | $T_C$ = 25°C | 90 | A |
| $I_{D90}$ | $T_C$ = 90°C | 68 | A |
| $I_{F25}$ | $T_C$ = 25°C (diode) | 90 | A |
| $I_{F90}$ | $T_C$ = 90°C (diode) | 68 | A |

| Symbol | Conditions | Characteristic Values ($T_{VJ}$ = 25°C, unless otherwise specified) min. | typ. | max. | |
|---|---|---|---|---|---|
| $R_{DSon}$ [1] | on chip level at, $V_{GS}$ = 10 V; $T_{VJ}$ = 25°C | | 7.5 | 8.5 | mΩ |
| | $T_{VJ}$ = 125°C | | 14 | | mΩ |
| $V_{GS(th)}$ | $V_{DS}$ = 20 V; $I_D$ = 1 mA | 2.5 | | 4.5 | V |
| $I_{DSS}$ | $V_{DS}$ = $V_{DSS}$; $V_{GS}$ = 0 V; $T_{VJ}$ = 25°C | | | 1 | µA |
| | $T_{VJ}$ = 125°C | | 0.1 | | mA |
| $I_{GSS}$ | $V_{GS}$ = ± 20 V; $V_{DS}$ = 0 V | | | 0.2 | µA |
| $Q_g$ | $V_{GS}$ = 10 V; $V_{DS}$ = 65 V; $I_D$ = 90 A | | 90 | | nC |
| $Q_{gs}$ | | | 30 | | nC |
| $Q_{gd}$ | | | 30 | | nC |
| $t_{d(on)}$ | inductive load; $V_{GS}$ = 10 V; $V_{DS}$ = 48 V; $I_D$ = 70 A; $R_G$ = 33 Ω; $T_J$ = 125°C | | 130 | | ns |
| $t_r$ | | | 95 | | ns |
| $t_{d(off)}$ | | | 290 | | ns |
| $t_f$ | | | 55 | | ns |
| $E_{on}$ | | | 0.4 | | mJ |
| $E_{off}$ | | | 0.4 | | mJ |
| $E_{recoff}$ | | | 0.007 | | mJ |
| $R_{thJC}$ | | | | 1.0 | K/W |
| $R_{thJH}$ | with heat transfer paste (IXYS test setup) | | 1.3 | 1.6 | K/W |

[1] $V_{DS} = I_D \cdot (R_{DS(on)} + 2R_{Pin\ to\ Chip})$

### Applications

AC drives
- in automobiles
  - electric power steering
  - starter generator
- in industrial vehicles
  - propulsion drives
  - fork lift drives
- in battery supplied equipment

### Features

- MOSFETs in trench technology:
  - low $R_{DSon}$
  - optimized intrinsic reverse diode
- package:
  - high level of integration
  - high current capability
  - aux. terminals for MOSFET control
  - terminals for soldering or welding connections
  - isolated DCB ceramic base plate with optimized heat transfer
- Space and weight savings



**Recommended replacement: MTI 85WX100GD**

## Source-Drain Diode

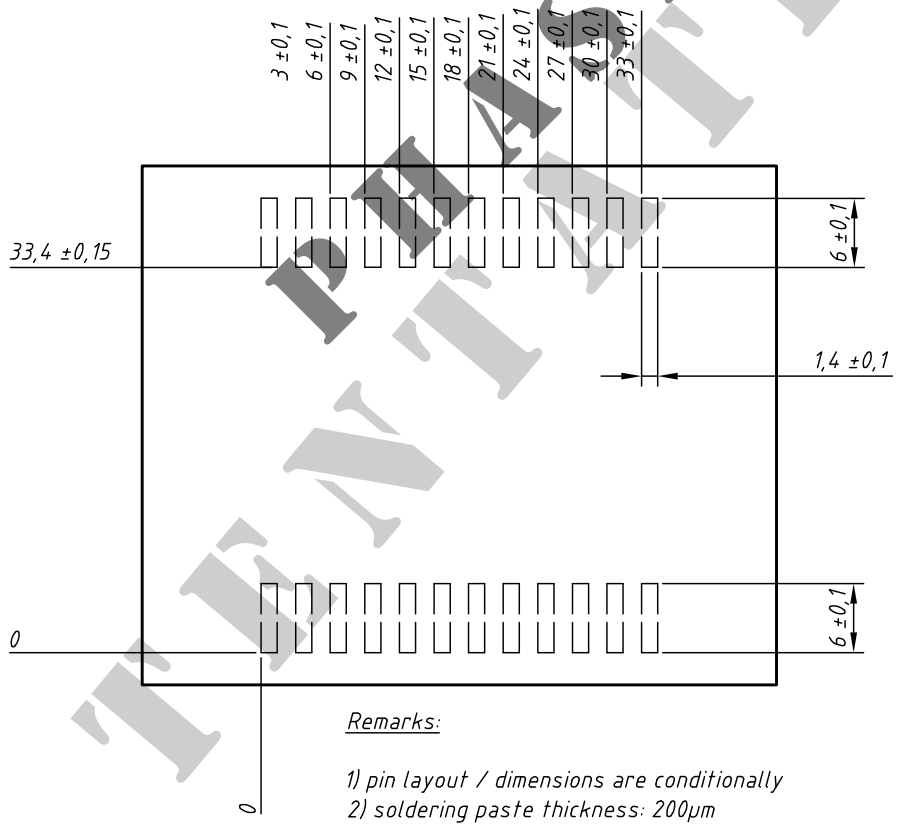
| Symbol | Conditions | Characteristic Values ($T_J$ = 25°C, unless otherwise specified) min. | typ. | max. | |
|---|---|---|---|---|---|
| $V_{SD}$ | (diode) $I_F$ = 70 A; $V_{GS}$ = 0 V | | 0.9 | 1.2 | V |
| $t_{rr}$ | $I_F$ = 70 A; -di$_F$/dt = 800 A/µs; $V_R$ = 48 V | | 55 | | ns |
| $Q_{RM}$ | | | 0.95 | | µC |
| $I_{RM}$ | | | 33 | | A |

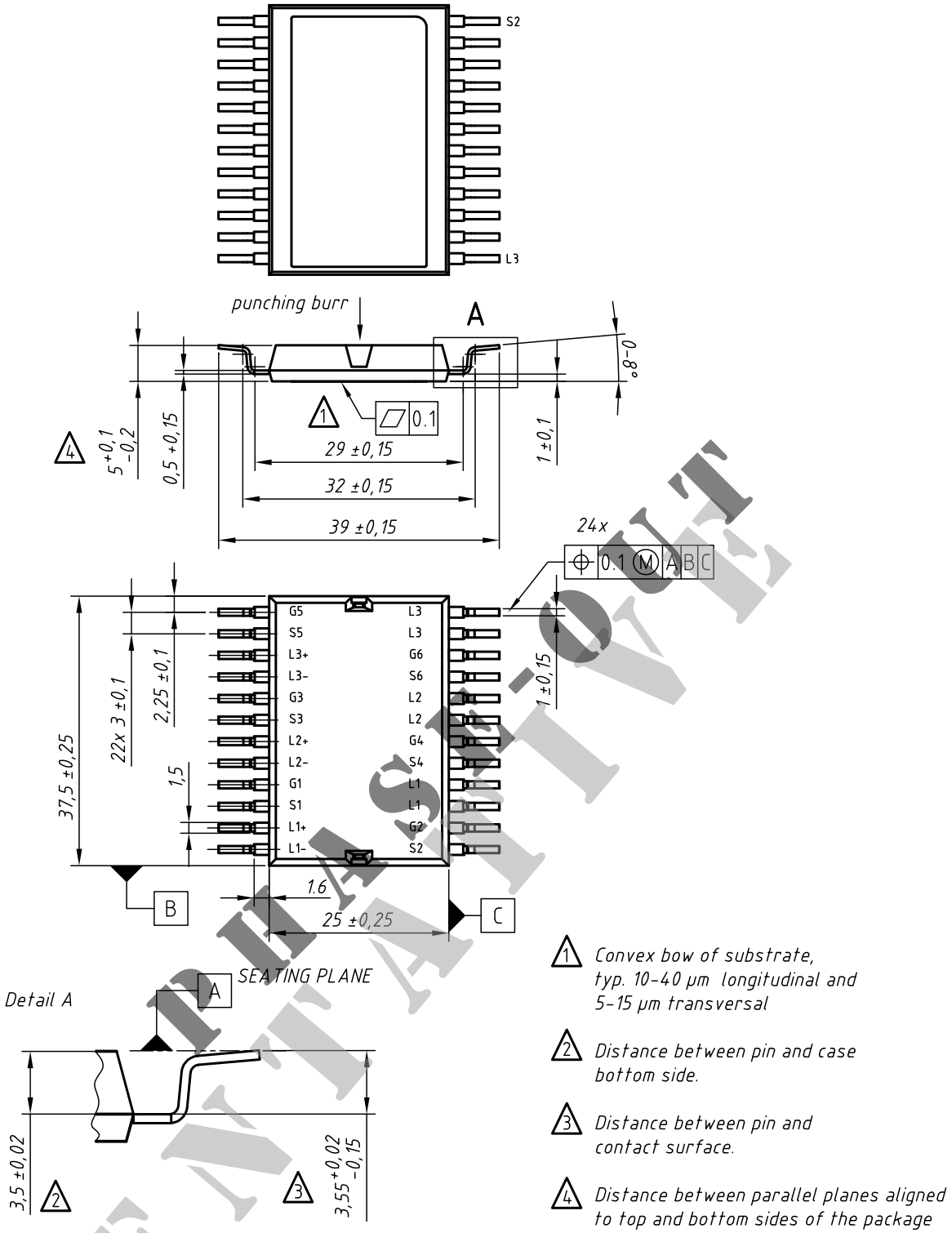
## Component

| Symbol | Conditions | Maximum Ratings | |
|---|---|---|---|
| $I_{RMS}$ | per pin in main current paths (P+, N-, L1, L2, L3) may be additionally limited by external connections 2 pins for output L1, L2, L3 | 75 | A |
| $T_J$ | | -55...+175 | °C |
| $T_{stg}$ | | -55...+125 | °C |
| $V_{ISOL}$ | $I_{ISOL}$ ≤ 1 mA, 50/60 Hz, f = 1 minute | 1000 | V~ |
| $F_C$ | mounting force with clip | 50 - 250 | N |

| Symbol | Conditions | Characteristic Values min. | typ. | max. | |
|---|---|---|---|---|---|
| $R_{pin\ to\ chip}$ [1] | | | tbd | | mΩ |
| $C_P$ | coupling capacity between shorted pins and back side metallization | | 160 | | pF |
| Weight | | | 25 | | g |

[1] $V_{DS} = I_D \cdot (R_{DS(on)} + 2R_{Pin\ to\ Chip})$






1 Convex bow of substrate, typ. 10-40 µm longitudinal and 5-15 µm transversal

2 Distance between pin and case bottom side.

3 Distance between pin and contact surface.

4 Distance between parallel planes aligned to top and bottom sides of the package

contact pin:
- galv. tin plating, per pin side: Sn 10...25 µm, undercoating Ni 0,2...1 µm
- stamping edges may be free of tin
- puching burr: ≤ 0,05mm

| Leads | Ordering | Part Name & Packing Unit Marking | Part Marking | Delivering Mode | Base Qty. | Ordering Code |
|---|---|---|---|---|---|---|
| SMD | Standard | GMM 3x100-01X1 - SMD | GMM 3x100-01X1 | Blister | 28 | 509 035 |



IXYS reserves the right to change limits, test conditions and dimensions. 20110307