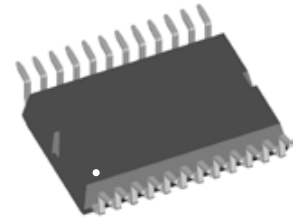
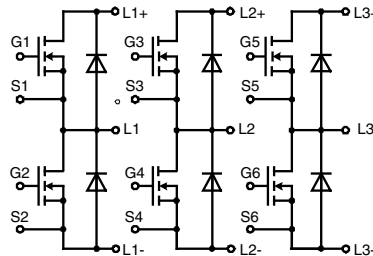


Three phase full Bridge

with Trench MOSFETs
in DCB isolated high current package

$V_{DSS} = 55 \text{ V}$
 $I_{D25} = 150 \text{ A}$
 $R_{DSon \text{ typ.}} = 2.2 \text{ m}\Omega$



| MOSFETS | | | |
|-----------|---|-----------------|---|
| Symbol | Conditions | Maximum Ratings | |
| V_{DSS} | $T_{VJ} = 25^\circ\text{C to } 150^\circ\text{C}$ | 55 | V |
| V_{GS} | | ± 20 | V |
| I_{D25} | $T_C = 25^\circ\text{C}$ | 150 | A |
| I_{D90} | $T_C = 90^\circ\text{C}$ | 115 | A |
| I_{F25} | $T_C = 25^\circ\text{C (diode)}$ | 140 | A |
| I_{F90} | $T_C = 90^\circ\text{C (diode)}$ | 90 | A |

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

| Symbol | Conditions | Characteristic Values | | | |
|-----------------|--|---|------|------|------------------|
| | | $(T_{VJ} = 25^\circ\text{C, unless otherwise specified})$ | | | |
| | | min. | typ. | max. | |
| $R_{DSon}^{1)}$ | on chip level at } $V_{GS} = 10 \text{ V}$ | $T_{VJ} = 25^\circ\text{C}$ | 2.2 | 3.1 | $\text{m}\Omega$ |
| | | $T_{VJ} = 125^\circ\text{C}$ | 3.7 | 5.3 | $\text{m}\Omega$ |
| $V_{GS(th)}$ | $V_{DS} = 20 \text{ V}; I_D = 1 \text{ mA}$ | 2.0 | 4.0 | | V |
| I_{DSS} | $V_{DS} = V_{DSS}; V_{GS} = 0 \text{ V}$ | | | 1 | μA |
| I_{GSS} | $V_{GS} = \pm 20 \text{ V}; V_{DS} = 0 \text{ V}$ | | 50 | | μA |
| Q_g | $V_{GS} = 10 \text{ V}; V_{DS} = 28 \text{ V}; I_D = 100 \text{ A}$ | | 110 | | nC |
| Q_{gs} | | | 35 | | nC |
| Q_{gd} | | | 25 | | nC |
| $t_{d(on)}$ | inductive load } $V_{GS} = 10 \text{ V}; V_{DS} = 24 \text{ V}$ $I_D = 100 \text{ A}; R_G = 39 \Omega;$ $T_J = 125^\circ\text{C}$ | | 100 | | ns |
| t_r | | | 110 | | ns |
| $t_{d(off)}$ | | | 500 | | ns |
| t_f | | | 100 | | ns |
| E_{on} | | | 0.12 | | mJ |
| E_{off} | | | 0.53 | | mJ |
| E_{recoff} | | 0.01 | | mJ | |
| R_{thJC} | | | 1.3 | 1.0 | K/W |
| R_{thJH} | with heat transfer paste (IXYS test setup) | | 1.3 | 1.6 | K/W |

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

Source-Drain Diode

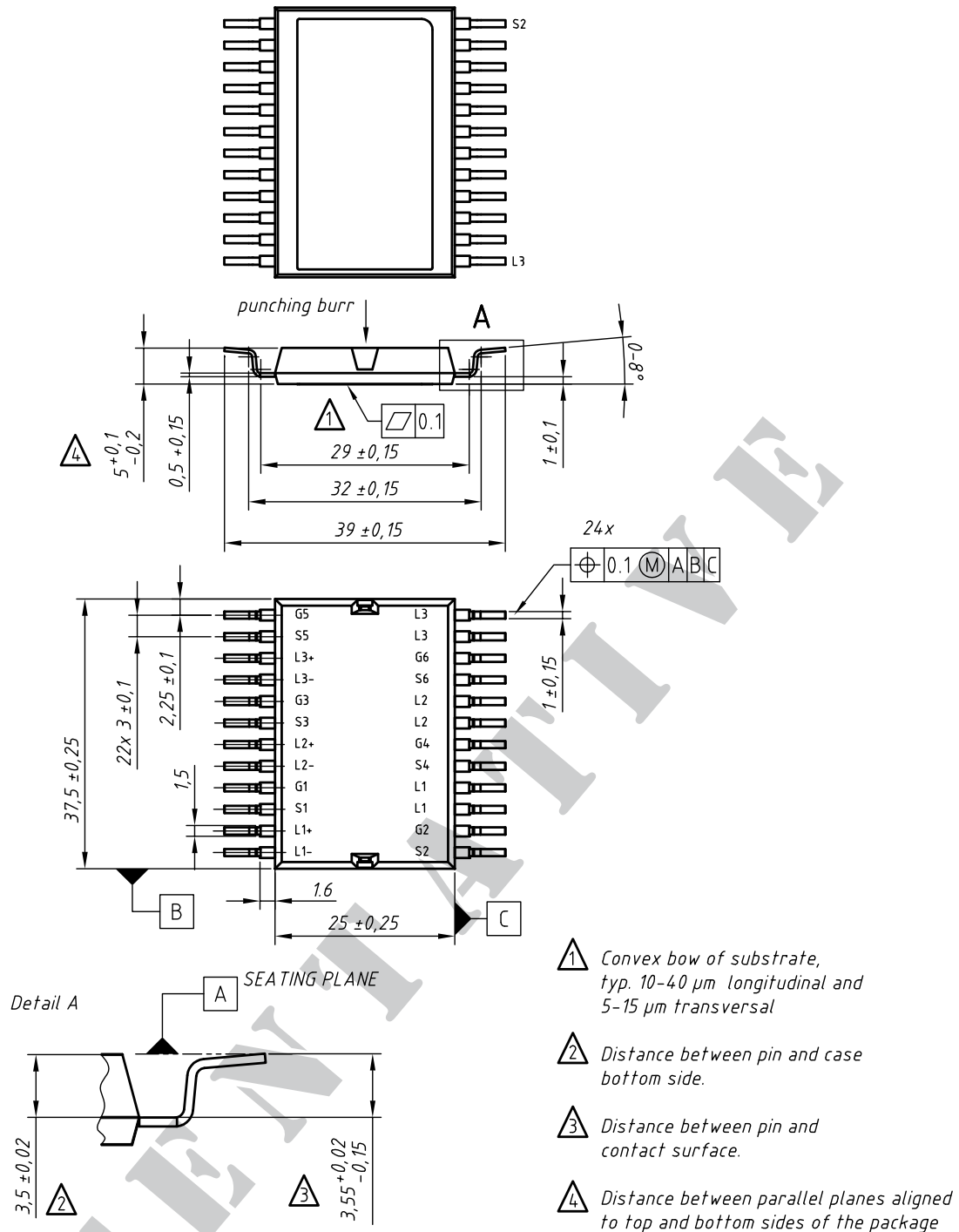
| Symbol | Conditions | Characteristic Values | | | |
|----------|--|-----------------------|------|------|---------------|
| | | min. | typ. | max. | |
| V_{SD} | (diode) $I_F = 80 \text{ A}$; $V_{GS} = 0 \text{ V}$ | | 0.9 | 1.2 | V |
| t_{rr} | $I_F = 100 \text{ A}$; $-di_F/dt = 800 \text{ A}/\mu\text{s}$ $V_R = 24 \text{ V}$; $T_J = 125^\circ\text{C}$ | | 38 | | ns |
| Q_{RM} | | | 0.45 | | μC |
| I_{RM} | | | 22 | | 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 | $^\circ\text{C}$ |
| T_{stg} | | -55...+125 | $^\circ\text{C}$ |
| V_{ISOL} | $I_{ISOL} \leq 1 \text{ mA}$, 50/60 Hz, $f = 1 \text{ minute}$ | 1000 | V~ |
| F_C | mounting force with clip | 50 - 250 | N |

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

¹⁾ $V_{DS} = I_D \cdot (R_{DS(on)} + 2R_{\text{pin to Chip}})$

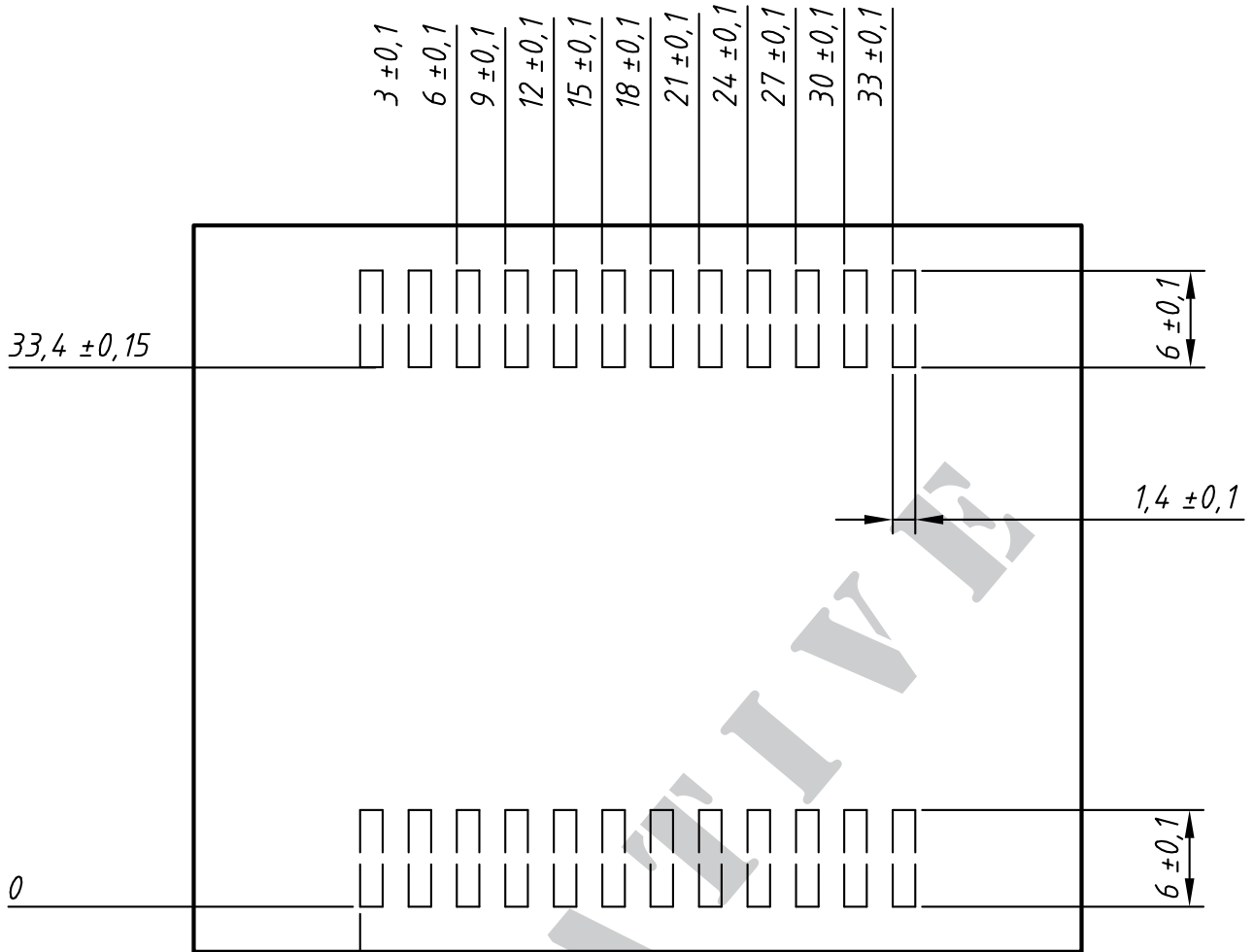


contact pin:
 - galv. tin plating, per pin side: Sn 10...25 μ m, undercoating Ni 0,2...1 μ m
 - stamping edges may be free of tin
 - punching burr: $\leq 0,05$ mm

| Leads | Ordering | Part Name & Packing Unit Marking | Part Marking | Delivering Mode | Base Qty. | Ordering Code |
|-------|----------|----------------------------------|------------------|-----------------|-----------|---------------|
| SMD | Standard | GMM 3x160-0055X2 - SMD | GMM 3x160-0055X2 | Blister | 28 | 507 504 |

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

20110307



Remarks:

- 1) pin layout / dimensions are conditionally
- 2) soldering paste thickness: 200µm