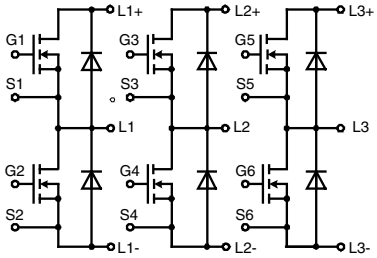
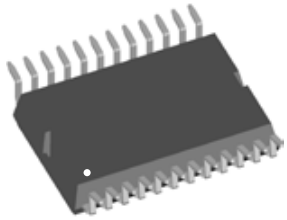
Three phase full Bridge

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 min.	typ.	max.	
			(T_{VJ} = 25°C, unless otherwise specified)			
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}	with heat transfer paste (IXYS test setup)				1.0	K/W
R_{thJH}				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

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Source-Drain Diode

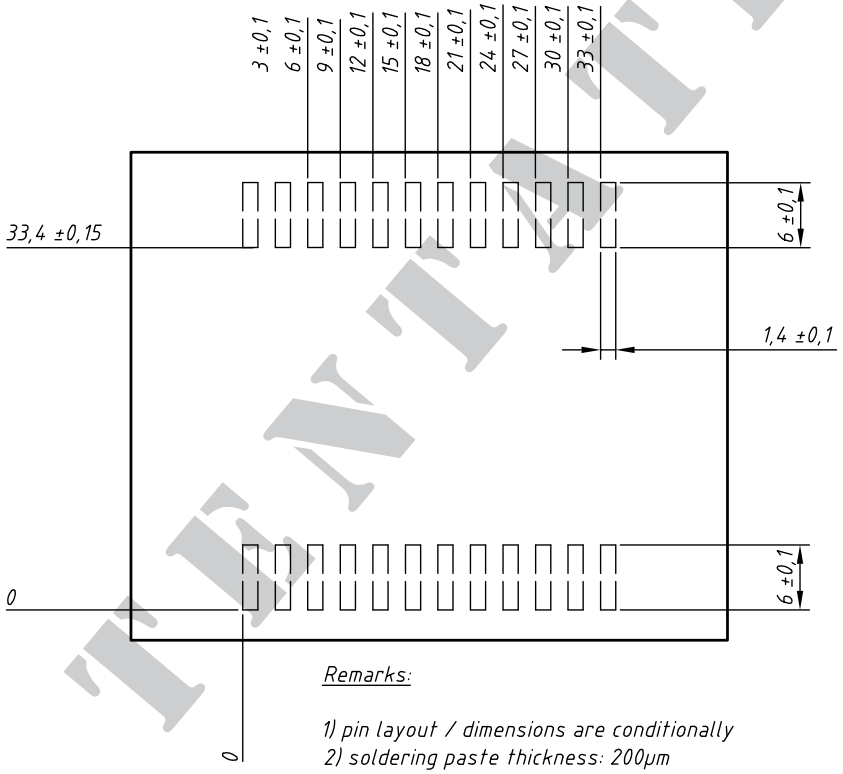
Symbol	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
V_{SD}	(diode) I_F = 70 A; V_{GS} = 0 V		0.9	1.2	V
t_{rr}	I_F = 70 A; -di_F/dt = 800 A/µs; V_R = 48 V		55		ns
Q_{RM}			0.95		µC
I_{RM}			33		A

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



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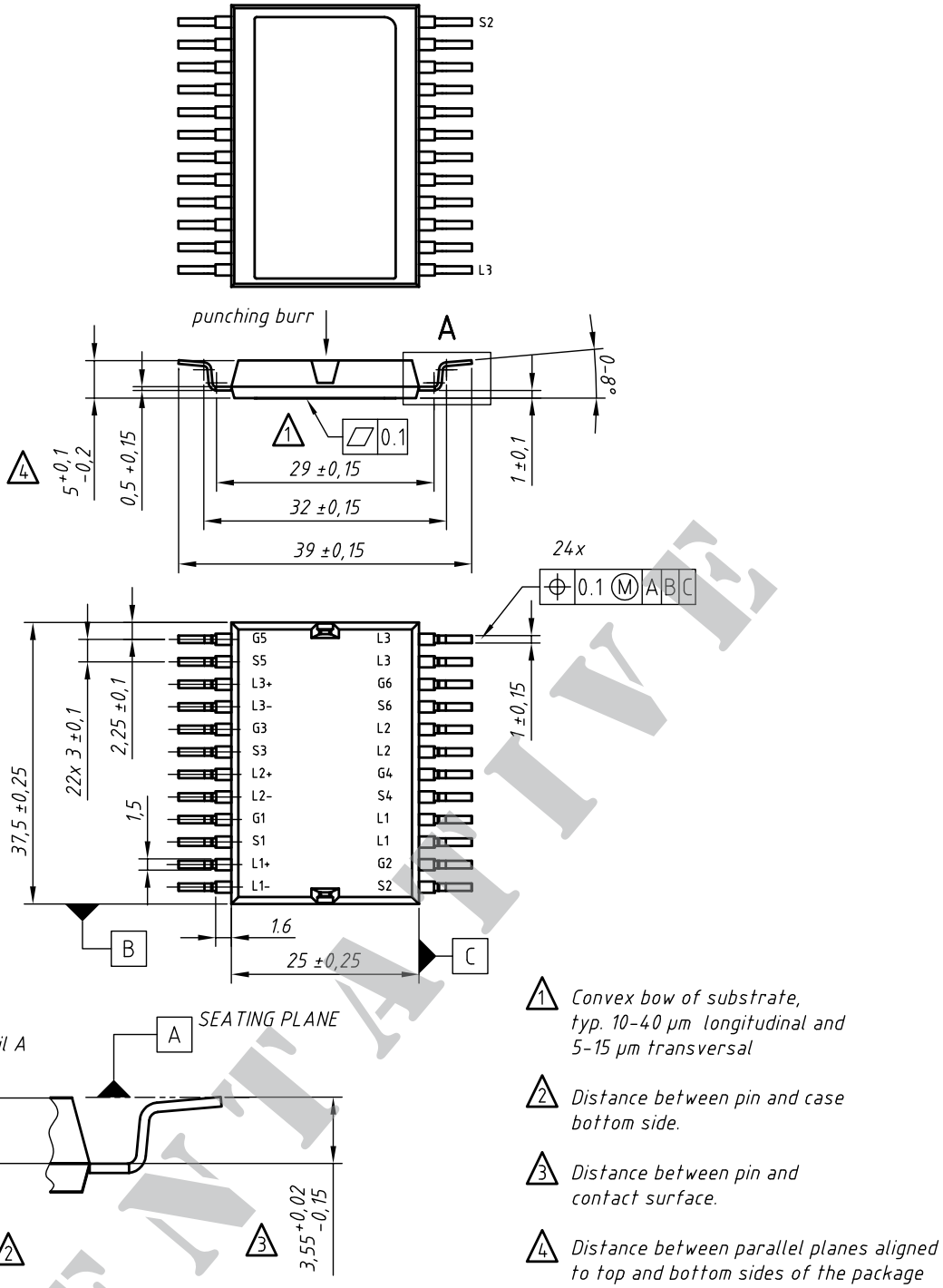

1 Convex bow of substrate, typ. 10-40 µm longitudinal and 5-15 µm transversal

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

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