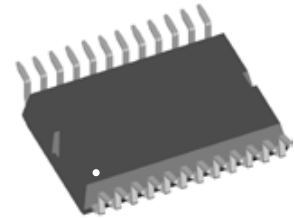
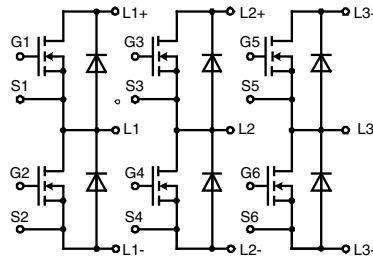


# Three phase full Bridge

with Trench MOSFETs  
in DCB isolated high current package

$V_{DSS} = 150\text{ V}$   
 $I_{D25} = 57\text{ A}$   
 $R_{DSon\text{ typ.}} = 17\text{ m}\Omega$



MOSFETs		Maximum Ratings				
Symbol	Conditions					
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	150	V			
$V_{GS}$		$\pm 20$	V			
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	57	A			
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	45	A			
$I_{D110}$	$T_C = 110^{\circ}\text{C}$	43	A			
$I_{F25}$	$T_C = 25^{\circ}\text{C}$ (diode)	tbd	A			
$I_{F90}$	$T_C = 90^{\circ}\text{C}$ (diode)	tbd	A			
$I_{F110}$	$T_C = 110^{\circ}\text{C}$ (diode)	tbd	A			
Symbol		Characteristic Values				
( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)						
		min.	typ.	max.		
$R_{DSon}^{1)}$	on chip level at		17	22	$\text{m}\Omega$	
	$V_{GS} = 10\text{ V}$		36		$\text{m}\Omega$	
	$T_{VJ} = 25^{\circ}\text{C}$					
	$T_{VJ} = 125^{\circ}\text{C}$					
$V_{GS(th)}$	$V_{DS} = 20\text{ V}; I_D = 1\text{ mA}$	2.5		4.5	V	
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}$		0.1	1	$\mu\text{A}$ mA	
	$T_{VJ} = 25^{\circ}\text{C}$					
	$T_{VJ} = 125^{\circ}\text{C}$					
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			0.2	$\mu\text{A}$	
$Q_g$	$V_{GS} = 10\text{ V}; V_{DS} = 65\text{ V}; I_D = 50\text{ A}$		tbd		nC	
$Q_{gs}$			tbd		nC	
$Q_{gd}$			tbd		nC	
$t_{d(on)}$	inductive load $V_{GS} = 10\text{ V}; V_{DS} = 96\text{ V}$ $I_D = 50\text{ A}; R_G = 33\ \Omega;$ $T_J = 125^{\circ}\text{C}$		tbd		ns	
$t_r$			tbd		ns	
$t_{d(off)}$			tbd		ns	
$t_f$			tbd		ns	
$E_{on}$				tbd		mJ
$E_{off}$				tbd		mJ
$E_{recoff}$			tbd		mJ	
$R_{thJC}$	with heat transfer paste (IXYS test setup)		1.3	1.0	K/W	
$R_{thJH}$				1.6	K/W	

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

### 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

### Source-Drain Diode

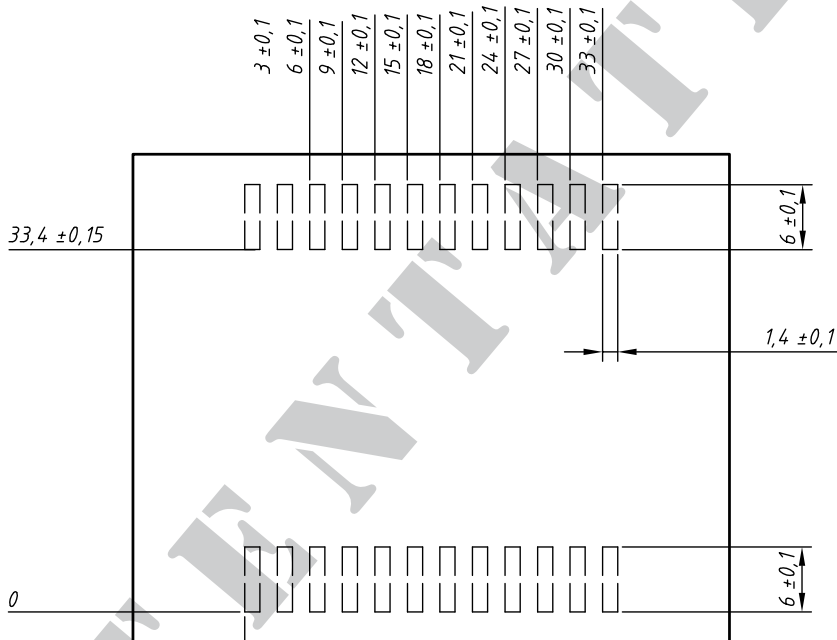
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
( $T_J = 25^\circ\text{C}$ , unless otherwise specified)					
$V_{SD}$	(diode) $I_F = 50\text{ A}$ ; $V_{GS} = 0\text{ V}$		0.9	1.2	V
$t_{rr}$	} $I_F = 50\text{ A}$ ; $-di_F/dt = 800\text{ A}/\mu\text{s}$ ; $V_R = 96\text{ V}$		tbd		ns
$Q_{RM}$			tbd		$\mu\text{C}$
$I_{RM}$			tbd		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

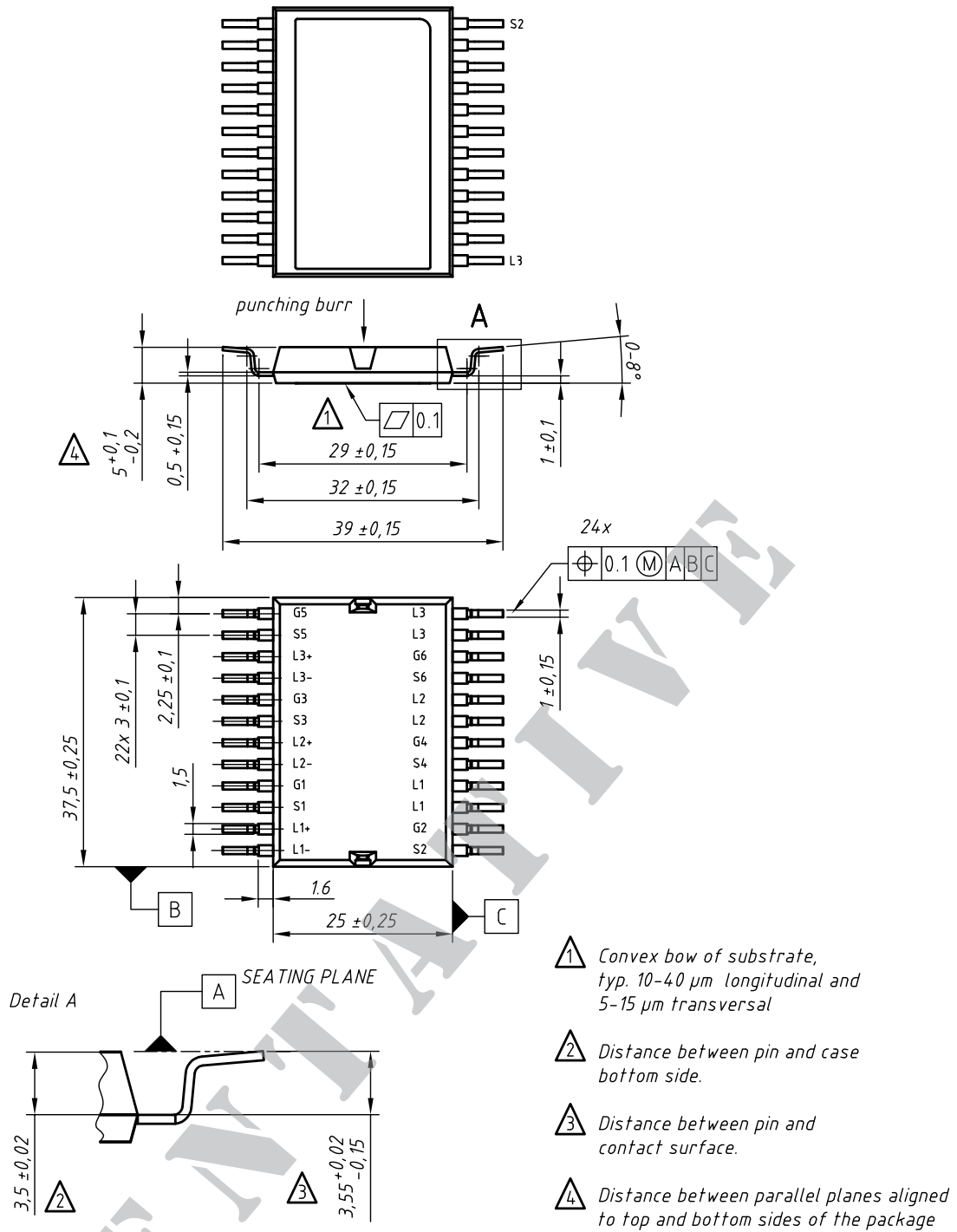
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
$R_{pin\ to\ chip}^{1)}$			tbd	$\text{m}\Omega$
$C_P$	coupling capacity between shorted pins and back side metallization		160	pF
<b>Weight</b>		25		g

<sup>1)</sup>  $V_{DS} = I_D \cdot (R_{DS(on)} + 2R_{Pin\ to\ Chip})$



Remarks:

- 1) pin layout / dimensions are conditionally
- 2) soldering paste thickness:  $200\mu\text{m}$



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

Leads	Ordering	Part Name & Packing Unit Marking	Part Marking	Delivering Mode	Base Qty.	Ordering Code
SMD	Standard	GMM 3x60-015X2 - SMD	GMM 3x60-015X2	Blister	28	510635

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

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