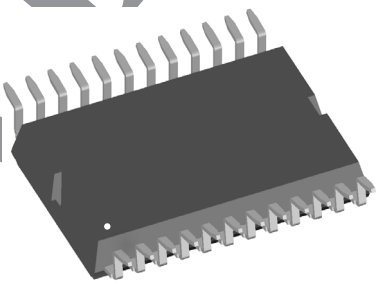
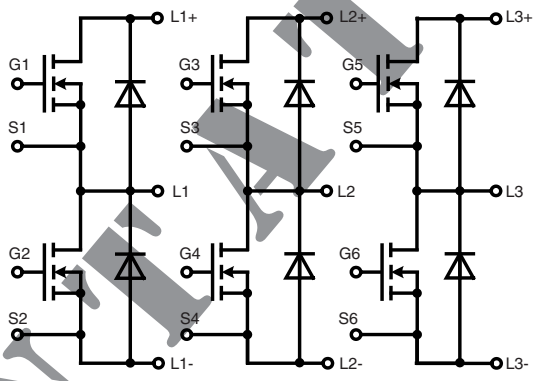
Three phase full Bridge

with Trench MOSFETs
in DCB-isolated high-current package

V_{DSS} = 75 V
I_{D25} = 180 A
$R_{DSon\ typ.}$ = 2.2 mΩ

Part number
MTC120WX75GD





PRELIMINARY

Features / Advantages:

- 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

Applications:

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

Package: ISOPLUS-DIL®

- High level of integration
- RoHS compliant
- High current capability
- Aux. Terminals for MOSFET control
- Terminals for soldering or welding connections
- Space and weight savings

Terms & Conditions of usage
The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.
Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office.
Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend
- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

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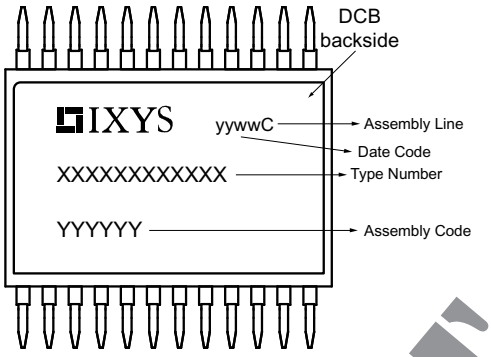
MOSFETs				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{DSS}	*drain source breakdown voltage*		T_{VJ} = 25°C to 150°C			75	V
V_{GS}	*gate source voltage*					±15	V
V_{GSM}	*max. transient gate source voltage*					±20	V
I_{D25}	*continuous drain current*		T_C = 25°C			180	A
I_{D80}			T_C = 80°C			144	A
I_{D100}			T_C = 100°C			128	A
$R_{DS(on)}$ [1]	*static drain source on resistance*	on chip level at	T_{VJ} = 25°C		2.2	3.1	mΩ
		I_D = 100 A; V_{GS} = 10 V	T_{VJ} = 125°C		3.7		mΩ
$V_{GS(th)}$	*gate threshold voltage*	I_D = 1 mA; V_{DS} = V_{GS}	T_{VJ} = 25°C	2.0		4.0	V
I_{DSS}	*drain source leakage current*	V_{DS} = V_{DSS}; V_{GS} = 0 V	T_{VJ} = 25°C			1	µA
			T_{VJ} = 125°C		50		µA
I_{GSS}	*gate source leakage current*	V_{GS} = ±20 V; V_{DS} = 0 V				500	nA
R_G	*gate resistance*	on chip level					Ω
C_{iss}	*input capacitance*	V_{GS} = 0 V; V_{DS} = 25 V; f = 1 Mhz			10.5		nF
C_{oss}	*output capacitance*				1.17		nF
C_{rss}	*reverse transfer capacitance*				125		pF
Q_g	*total gate charge*	V_{GS} = 10 V; V_{DS} = 28 V; I_D = 100 A			178		nC
Q_{gs}	*gate source charge*				53		nC
Q_{gd}	*gate drain (Miller) charge*				41		nC
$t_{d(on)}$	*turn-on delay time*	inductive load	T_{VJ} = 125°C				ns
t_r	*current rise time*	V_{GS} = 10 V; V_{DS} = 24 V					ns
$t_{d(off)}$	*turn-off delay time*	I_D = 100 A; R_G = 39 Ω					ns
t_f	*current fall time*						ns
E_{on}	*turn-on energy per pulse*						mJ
E_{off}	*turn-off energy per pulse*						mJ
$E_{rec(off)}$	*turn-off reverse recovery losses*						mJ
R_{thJC}	*thermal resistance junction to case*					0.7	K/W
R_{thJH}	*thermal resistance junction to heatsink*	with heat transfer paste (IXYS test setup)			1.0		K/W
		[1] V_{DS} = I_D·($R_{DS(on)}$ + 2·$R_{Pin\ to\ Chip}$)					
Source-Drain Diode							
I_{F25}	*forward current*	V_{GS} = 0 V	T_C = 25°C			180	A
I_{F80}			T_C = 80°C			134	A
I_{F100}			T_C = 100°C			106	A
V_{SD}	*source drain voltage*	I_F = 100 A; V_{GS} = 0 V	T_{VJ} = 25°C		0.9	1.2	V
Q_{RM}	*reverse recovery charge*	V_R = 24 V; I_F = 100 A	T_{VJ} = 125°C				µC
I_{RM}	*max. reverse recovery current*	di/dt = 800 A/µs					A
t_{rr}	*reverse recovery time*						ns

TENTATIVE

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Package ISOPLUS-DIL®				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per pin in main current paths (L1+...L3+, L1-...L3-, L1...L3) may be additionally limited by external connections (PCB tracks) 2 pins for output L1, L2, L3				75	A
T_{stg}	*storage temperature*			-55		125	°C
T_{VJM}	*virtual junction temperature*			-55		175	°C
Weight					25		g
F_C	*mounting force with clip*			50		250	N
V_{ISOL}	*isolation voltage*	t = 1 second	50/60 Hz, RMS, $I_{ISOL} \leq 1$ mA	1200			V
		t = 1 minute		1000			V
$R_{pin\text{-}chip}$	*resistance terminal to chip*	$V_{DS} = I_D \cdot (R_{DS(on)} + 2 \cdot R_{pin\ to\ chip})$			0.5		mΩ
C_P	*coupling capacity*	between shorted pins and back side metallization			160		pF



Part number
M = MOSFET
T = Trench
C = Trench 2nd Generation
120 = Current Rating [A]
WX = 6-Pack with separated Phase Legs
75 = Reverse Voltage [V]
GD = ISOPLUS-DIL

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	MTC120WX75GD-SMD	MTC120WX75GD	Tube	13	517115

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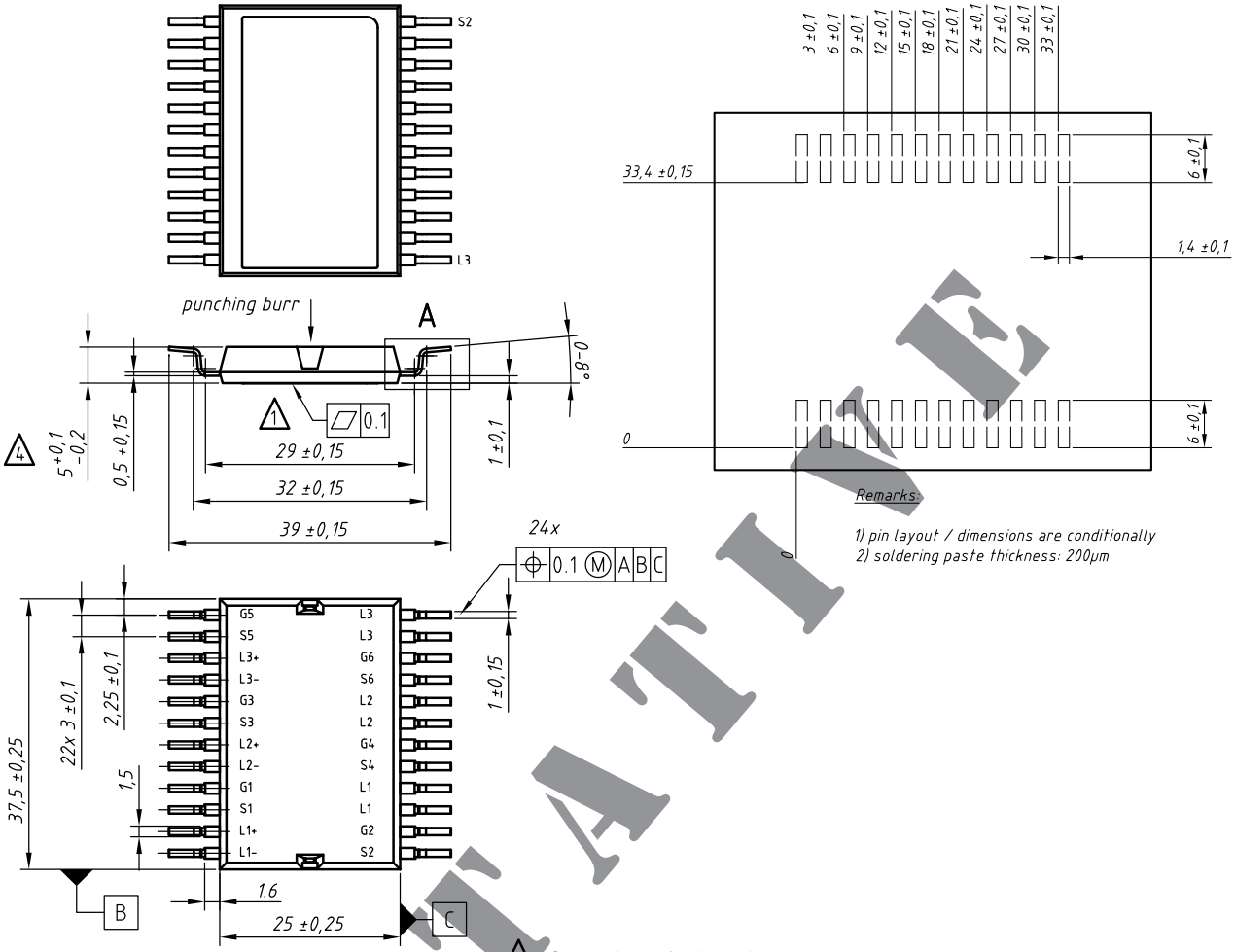
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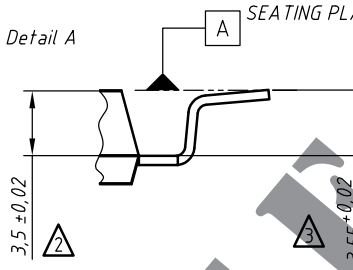
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Outlines ISOPLUS-DIL®





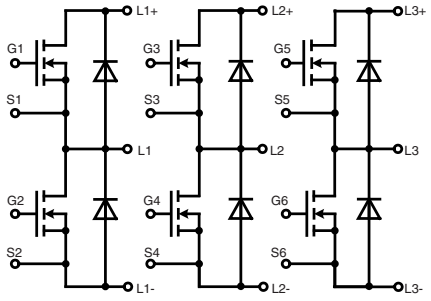
1 Convex bow of substrate, typ. 10-40 µm longitudinal and 5-15 µm transversal

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



TENTATIVE

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