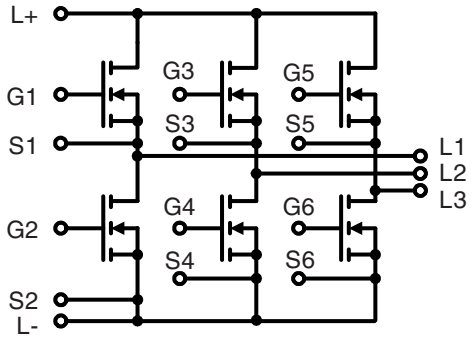
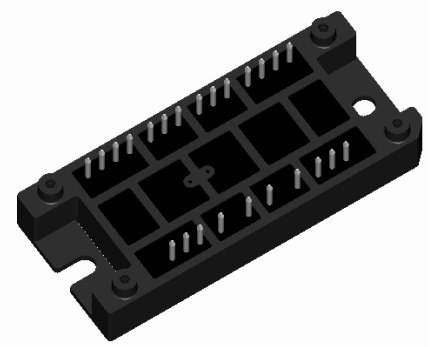
Three phase full bridge with Trench MOSFETs

V_{DSS} = 100 V
R_{DSon} = 3.6 mΩ
I_{D25} = 210 A





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	210	A
I_{D80}	T_C = 80°C	170	A
I_{D25}	T_C = 25°C (diode)	210	A
I_{D80}	T_C = 80°C (diode)	170	A

Symbol	Conditions	Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; I_D = 100 A		3.6	5.2	mΩ
V_{GSth}	V_{DS} = 20 V; I_D = 2 mA	2		4	V
I_{DSS}	V_{DS} = 100 V; V_{GS} = 0 V; T_{VJ} = 25°C			0.02	mA
	T_{VJ} = 125°C		0.25		mA
I_{GSS}	V_{GS} = ±20 V; V_{DS} = 0 V			0.2	µA
Q_g	V_{GS} = 10 V; V_{DS} = 80 V; I_D = 200 A		430		nC
Q_{gs}			90		nC
Q_{gd}			180		nC
$t_{d(on)}$	V_{GS} = 10 V; V_{DS} = 50 V; I_D = 50 A; R_G = 2.7 Ω		40		ns
t_r			100		ns
$t_{d(off)}$			260		ns
t_f			100		ns
V_F	(diode) I_F = 100 A; V_{GS} = 0 V		1.0	1.5	V
t_{rr}	(diode) I_F = 40 A; -di/dt = 200 A/µs; V_{DS} = 30 V		100		ns
R_{thJC}				0.26	K/W
R_{thJH}	with heat transfer paste		0.51		K/W

Applications

AC drives
- in automobiles and trucks
  - electric power steering
  - starter generator
  - etc...
- 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
  - solder terminals for PCB mounting
  - isolated DCB ceramic base plate with optimized heat transfer

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

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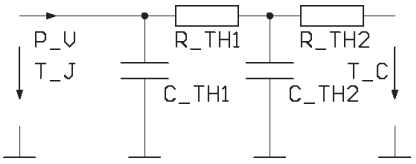
Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+175	°C
T_{stg}		-40...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1$ mA; 50/60 Hz; t = 1 min	500	V~
M_d	Mounting torque (M5)	2 - 2.5	Nm

Symbol	Conditions (T_{VJ} = 25°C, unless otherwise specified)	Characteristic Values min.	typ.	max.
Weight	typ.		80	g

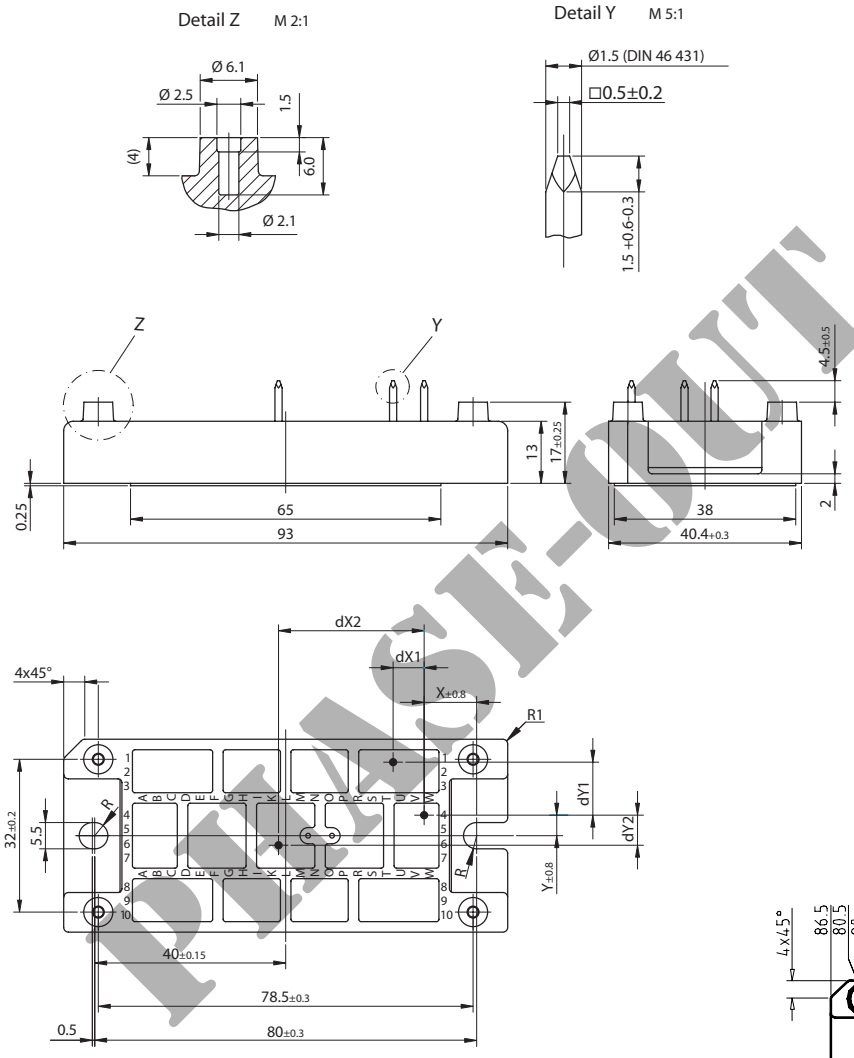
Equivalent Circuits for Simulation

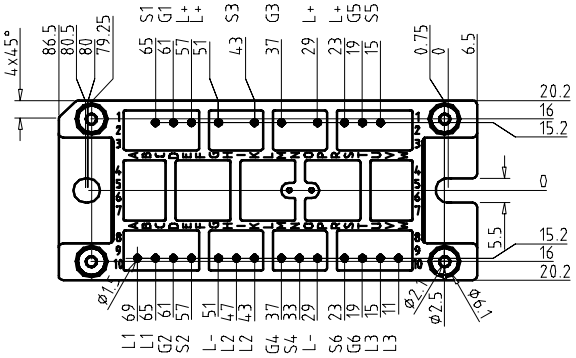
Thermal Response



junction - case (typ.)
C_{th1} = 0.13 J/K; R_{th1} = 0.08 K/W
C_{th2} = 0.22 J/K; R_{th2} = 0.18 K/W

Dimensions in mm (1 mm = 0.0394")





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