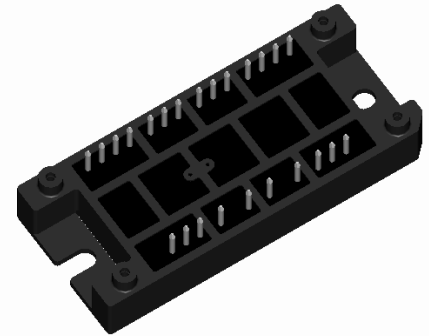
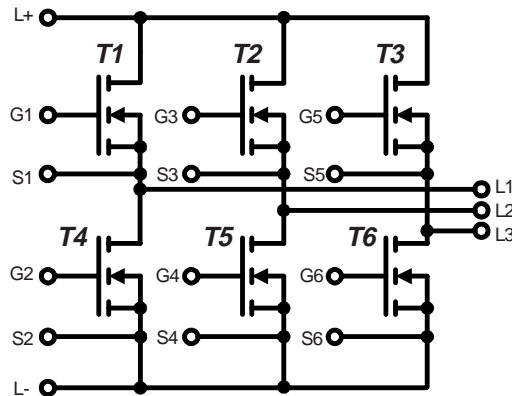


# Three phase full bridge with Trench MOSFETs

$V_{DSS} = 75\text{ V}$   
 $R_{DSon} = 2.3\text{ m}\Omega$   
 $I_{D25} = 340\text{ A}$

Preliminary data



### MOSFETs T1 - T6

Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	75	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	340	A
$I_{D80}$	$T_C = 80^{\circ}\text{C}$	250	A
$I_{D25}$	$T_C = 25^{\circ}\text{C}$ (diode)	340	A
$I_{D80}$	$T_C = 80^{\circ}\text{C}$ (diode)	250	A

### Applications

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

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$R_{DSon}$	$V_{GS} = 10\text{ V}; I_D = I_{D80}$		2.3	3.3 m $\Omega$
$V_{GSth}$	$V_{DS} = 20\text{ V}; I_D = 2\text{ mA}$	2		4 V
$I_{DSS}$	$V_{DS} = 75\text{ V}; V_{GS} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.25	0.02 mA mA
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			0.2 $\mu\text{A}$
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 10\text{ V}; V_{DS} = 0.5 \cdot V_{DSS}; I_D = 175\text{ A}$		450	nC
			60	nC
			170	nC
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	$V_{GS} = 10\text{ V}; V_{DS} = 0.5 \cdot V_{DSS};$ $I_D = 175\text{ A}; R_G = 2.2\ \Omega$		60	ns
			170	ns
			320	ns
			200	ns
$V_F$	(diode) $I_F = 175\text{ A}; V_{GS} = 0\text{ V}$		1.1	1.6 V
$t_{rr}$	(diode) $I_F = 40\text{ A}; -di/dt = 200\text{ A}/\mu\text{s}; V_{DS} = 30\text{ V}$		90	ns
$R_{thJC}$ $R_{thJH}$	with heat transfer paste		0.51	0.26 K/W K/W

Ratings and characteristic values are per individual MOSFET

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

### Features

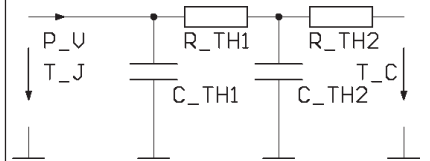
- MOSFETs in trench technology:
  - low  $R_{DSon}$
  - optimized intrinsic reverse diode
- package:
  - high level of integration
  - solder terminals for PCB mounting
  - isolated DCB ceramic base plate with optimized heat transfer

**Module**

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

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

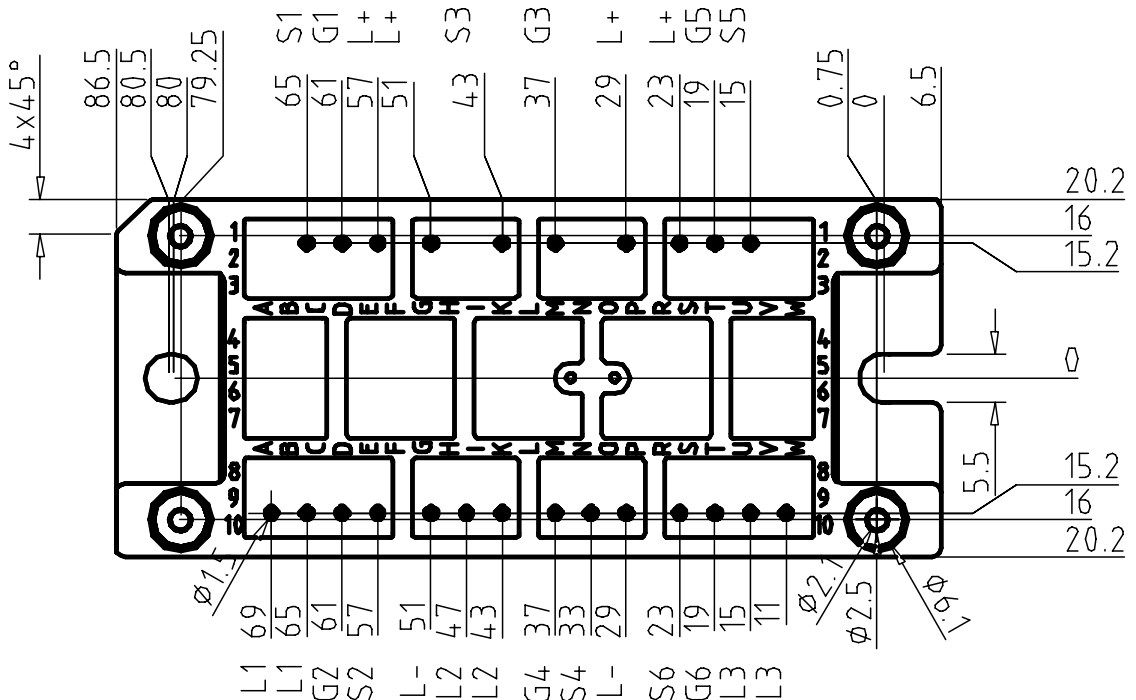
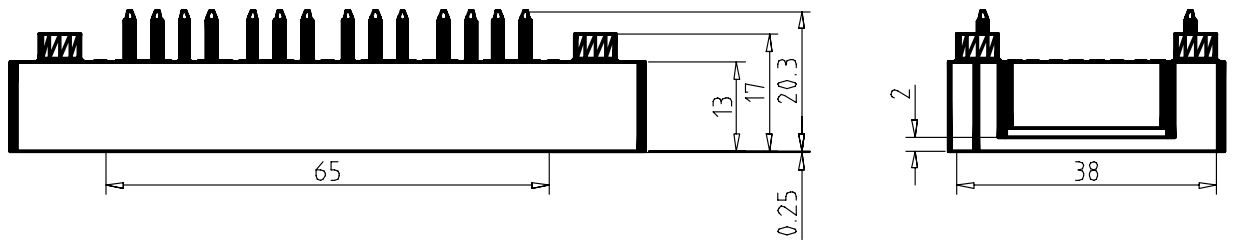
**Equivalent Circuits for Simulation**
**Thermal Response**


junction - case (typ.)

$$C_{th1} = 0.13 \text{ J/K}; R_{th1} = 0.08 \text{ K/W}$$

$$C_{th2} = 0.22 \text{ J/K}; R_{th2} = 0.18 \text{ K/W}$$

Dimensions in mm (1 mm = 0.0394")



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