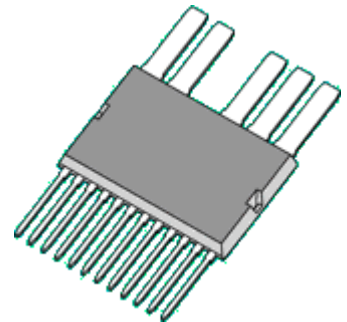
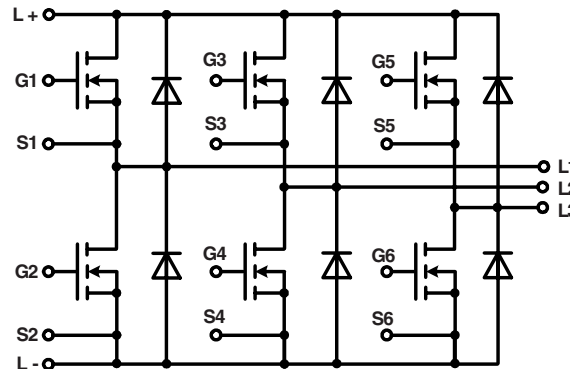


# Three phase full bridge

with Trench MOSFETs  
in DCB isolated high current package

$V_{DSS} = 40\text{ V}$   
 $R_{DSon} = 2.0\text{ m}\Omega$   
 $I_{D25} = 190\text{ A}$

Preliminary data



MOSFETs			
Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	40	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	190	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	145	A
$I_{F25}$	$T_C = 25^{\circ}\text{C}$ (diode)	125	A
$I_{F90}$	$T_C = 90^{\circ}\text{C}$ (diode)	80	A

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$R_{DSon}$	on chip level at $V_{GS} = 10\text{ V}$		2.0	2.6
			3.2	
				mΩ
				mΩ
$V_{GSth}$	$V_{DS} = 20\text{ V}; I_D = 1\text{ mA}$	2		4
				V
$I_{DSS}$	$V_{DS} = V_{DSS}; V_{GS} = 0\text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.1	1
				μA
				mA
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			0.2
				μA
$Q_g$	$V_{GS} = 10\text{ V}; V_{DS} = 14\text{ V}; I_D = 25\text{ A}$		94	nC
$Q_{gs}$			18	nC
$Q_{gd}$			29	nC
$t_{d(on)}$	$V_{GS} = 10\text{ V}; V_{DS} = 30\text{ V};$ $I_D = 25\text{ A}; R_G = 10\ \Omega$		40	ns
$t_r$			85	ns
$t_{d(off)}$			140	ns
$t_f$			90	ns
$V_F$	(diode) $I_F = 110\text{ A}; V_{GS} = 0\text{ V}$		1.0	1.6
				V
$t_{rr}$	(diode) $I_F = 20\text{ A}; -di/dt = 100\text{ A}/\mu\text{s}; V_{DS} = 20\text{ V}$		70	ns
$R_{thJC}$	with heat transfer paste			0.85
$R_{thJH}$			1.1	K/W
				K/W

### 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:
  - logic level gate control
  - low  $R_{DSon}$
  - optimized intrinsic reverse diode
- package:
  - high level of integration
  - high current capability
  - auxiliary terminals for MOSFET control
  - terminals for soldering or welding connections
  - isolated DCB ceramic base plate with optimized heat transfer

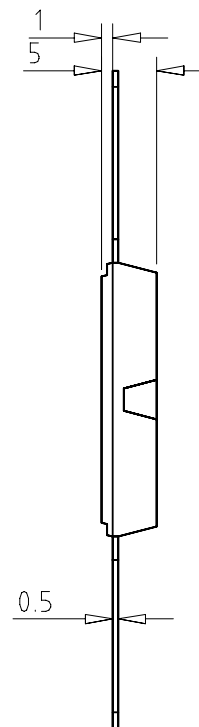
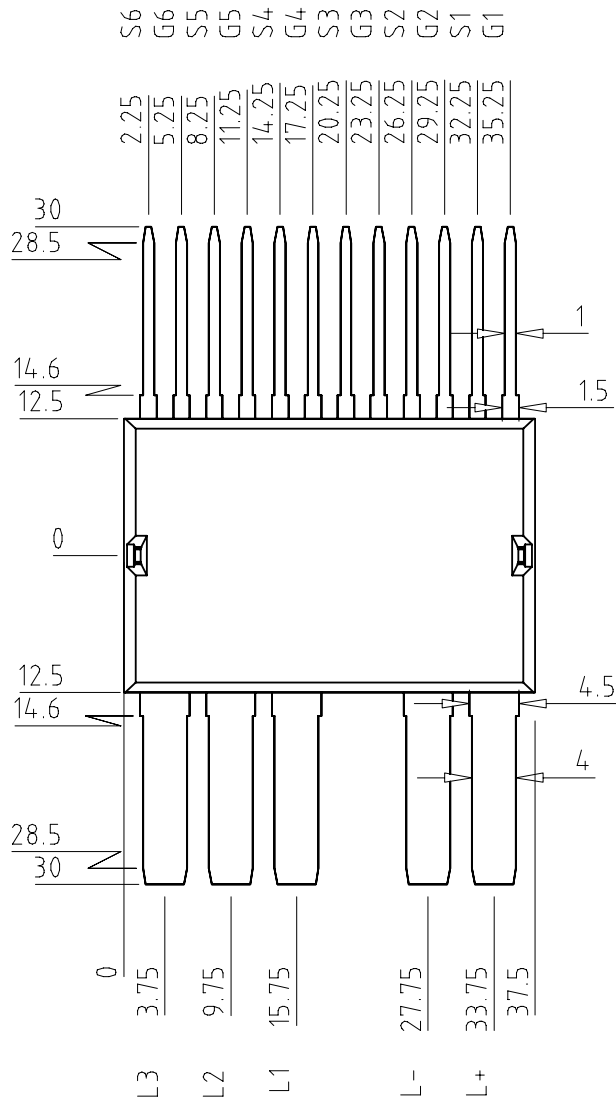
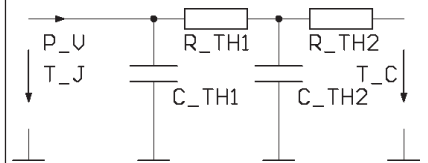
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**Component**

Symbol	Conditions	Maximum Ratings	
$I_{RMS}$	per pin in main current paths (P+, N-, L <sub>1</sub> , L <sub>2</sub> , L <sub>3</sub> ) may be additionally limited by external connections	300	A
$T_{VJ}$		-40...+175	°C
$T_{stg}$		-55...+125	°C
$V_{ISOL}$	$I_{ISOL} \leq 1$ mA; 50/60 Hz; t = 1 min	1000	V~
$F_c$	Mounting force with clip	50 - 250	N

Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$R_{pin\ to\ chip}$			0.6	mΩ
$C_p$	coupling capacity between shorted pins and mounting tab in the case		160	pF
Weight	typ.		25	g

**Dimensions in mm (1 mm = 0.0394")**

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


junction - case (typ.)

$$C_{th1} = 0.039 \text{ J/K}; R_{th1} = 0.28 \text{ K/W}$$

$$C_{th2} = 0.069 \text{ J/K}; R_{th2} = 0.57 \text{ K/W}$$