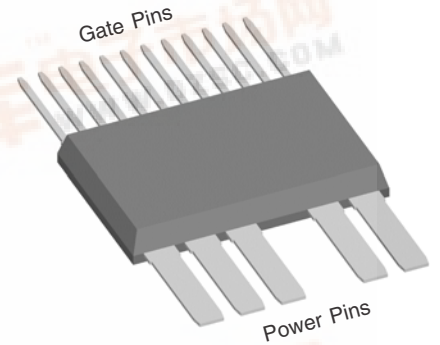
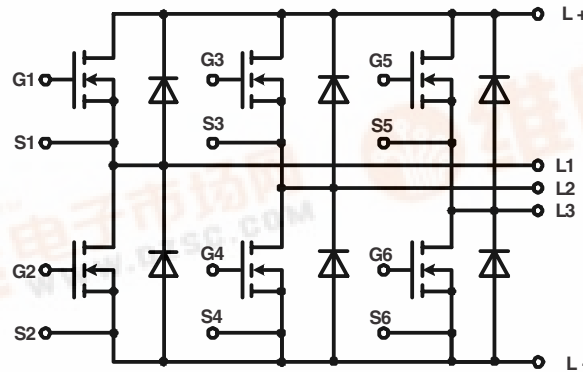


# Three phase full bridge with Trench MOSFETs in DCB isolated high current package

$V_{DSS} = 100\text{ V}$   
 $I_{D25} = 70\text{ A}$   
 $R_{DSon\ typ.} = 11\text{ m}\Omega$



### MOSFETs

Symbol	Conditions	Maximum Ratings	
$V_{DSS}$	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	100	V
$V_{GS}$		$\pm 20$	V
$I_{D25}$	$T_C = 25^{\circ}\text{C}$	70	A
$I_{D90}$	$T_C = 90^{\circ}\text{C}$	50	A
$I_{F25}$	$T_C = 25^{\circ}\text{C (diode)}$	130	A
$I_{F90}$	$T_C = 90^{\circ}\text{C (diode)}$	85	A

### 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
  - auxiliary terminals for MOSFET control
  - terminals for soldering or welding connections
  - isolated DCB ceramic base plate with optimized heat transfer

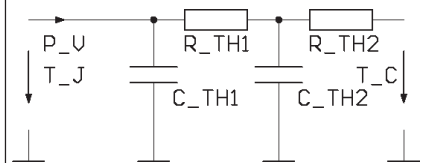
Symbol	Conditions	Characteristic Values ( $T_{VJ} = 25^{\circ}\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$R_{DSon}$	on chip level at $V_{GS} = 10\text{ V}; I_D = 35\text{ A}$	$\left. \begin{matrix} T_{VJ} = 25^{\circ}\text{C} \\ T_{VJ} = 125^{\circ}\text{C} \end{matrix} \right\}$		11, 14, 24 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, 1 mA
$I_{GSS}$	$V_{GS} = \pm 20\text{ V}; V_{DS} = 0\text{ V}$			0.2 μA
$Q_g$ $Q_{gs}$ $Q_{gd}$	$V_{GS} = 10\text{ V}; V_{DS} = 80\text{ V}; I_D = 25\text{ A}$		110, 18, 44	nC
$t_{d(on)}$		$V_{GS} = 10\text{ V}; V_{DS} = 30\text{ V}; I_D = 25\text{ A}; R_G = 10\ \Omega$	35	ns
$t_r$			85	ns
$t_{d(off)}$	150		ns	
$t_f$	70		ns	
$V_F$	(diode) $I_F = 35\text{ A}; V_{GS} = 0\text{ V}$	0.8	1.25	V
$t_{rr}$	(diode) $I_F = 75\text{ A}; -di/dt = 100\text{ A}/\mu\text{s}; V_{DS} = 30\text{ V}$	80		ns
$R_{thJC}$ $R_{thJH}$	with heat transfer paste		0.85, 1.7	K/W, K/W



**Component**

Symbol	Conditions	Maximum Ratings	
$I_{RMS}$	per pin in main current paths (L+, L-, 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 <sub>VJ</sub> = 25°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

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


junction - case (typ.)

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

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

Dimensions in mm (1 mm = 0.0394")

