

Three phase full bridge

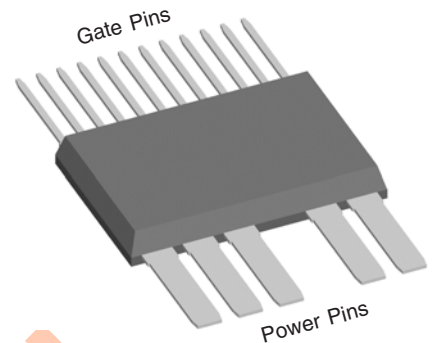
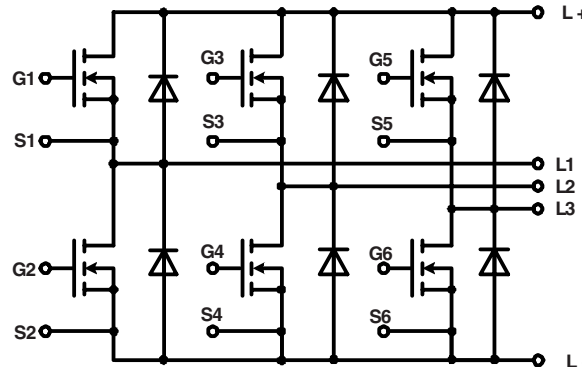
with Trench MOSFETs

in DCB isolated high current package

$$V_{DSS} = 100 \text{ V}$$

$$I_{D25} = 70 \text{ A}$$

$$R_{DSon \text{ typ.}} = 11 \text{ m}\Omega$$



MOSFETs

Symbol	Conditions	Maximum Ratings	
V_{DSS}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	100	V
V_{GS}		± 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 $V_{GS} = 10 \text{ V}; I_D = 35 \text{ A}$ } $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		11 24	14 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 Q_{gs} Q_{gd}	$V_{GS} = 10 \text{ V}; V_{DS} = 80 \text{ V}; I_D = 25 \text{ A}$		110 18 44	nC nC nC
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	$V_{GS} = 10 \text{ V}; V_{DS} = 30 \text{ V};$ $I_D = 25 \text{ A}; R_G = 10 \Omega$		35 85 150 70	ns ns ns 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		1.7	0.85 K/W K/W

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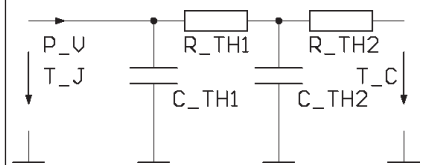
Component

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

Symbol	Conditions	Characteristic Values		
		(T _{VJ} = 25°C, unless otherwise specified)		
		min.	typ.	max.
$R_{pin \text{ to chip}}$			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")

