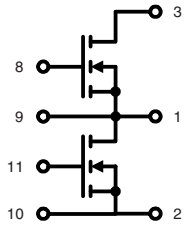
Dual Trench MOSFET Module

Phaseleg Configuration

V_{DSS} = 100 V
I_{D25} = 1000 A
$R_{DS(on)}$ = 0.75 mΩ

Preliminary data



MOSFET T1 + T2

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	①	1000	A
I_{D80}	T_C = 80°C	①	800	A
I_{F25}	(diode) T_C = 25°C	①	1000	A
I_{F80}	(diode) T_C = 80°C	①	800	A

Symbol	Conditions		Characteristic Values (T_{VJ} = 25°C, unless otherwise specified) min.	typ.	max.	
R_{DSon}	V_{GS} = 10 V; I_D = I_{D80}			0.75	1.2	mΩ
V_{GSth}	V_{DS} = 20 V; I_D = 10 mA	2			4	V
I_{DSS}	V_{DS} = V_{DSS}; V_{GS} = 0 V; T_{VJ} = 25°C				0.15	mA
		T_{VJ} = 125°C		1.5		mA
I_{GSS}	V_{GS} = ±20 V; V_{DS} = 0 V				1.5	µA
Q_g	V_{GS}= 10 V; V_{DS} = 80 V; I_D = 1000 A			2355		nC
Q_{gs}				495		nC
Q_{gd}				1000		nC
$t_{d(on)}$	V_{GS}= 10 V; V_{DS} = 50 V;			50		ns
t_r	I_D = 250 A; R_G = 0.68 Ω			100		ns
$t_{d(off)}$				260		ns
t_f				100		ns
V_F	(diode) I_F = 500 A; V_{GS} = 0 V			1.0	1.5	V
t_{rr}	(diode) I_F = 200 A; -di/dt = 1000 A/µs; V_{DS} = 30 V			100		ns
R_{thJC}					0.06	K/W
R_{thJS}	with heat transfer paste			0.12		K/W

① additional current limitation by external leads

Features

- Trench MOSFETs
  - low R_{DSon}
  - optimized intrinsic reverse diode
- package
  - low inductive current path
  - screw connection to high current main terminals
  - use of non interchangeable connectors for auxiliary terminals possible
  - Kelvin source terminals for easy drive
  - isolated DCB ceramic base plate

Applications

- converters with high power density for
  - main and auxiliary AC drives of electric vehicles
  - 4 quadrant DC drives
  - power supplies with low input voltage, e.g. from fuel cells or solar cells

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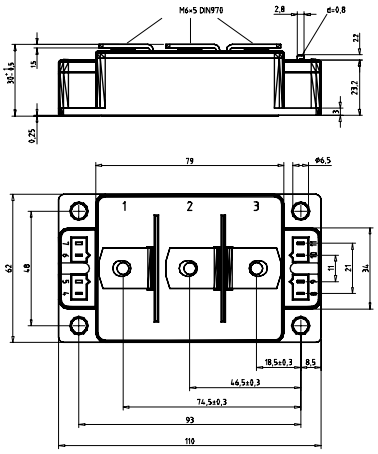
Module

Symbol	Conditions	Maximum Ratings	
I_{RMS}	per main terminal	500	A
T_{VJ}		-40...+175	°C
T_{stg}		-40...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1$ mA; 50/60 Hz	3600	V~
M_d	Mounting torque (M6)	2.25 - 2.75	Nm
	Terminal connection torque (M6)	4.5 - 5.5	Nm

Symbol	Conditions	Characteristic Values min.	typ.	max.	
Weight			250		g

Dimensions in mm (1 mm = 0.0394")



Optional accessories for modules

keyed twin plugs
(UL758, style 1385, CSA class 5851, guide 460-1-1)

- Type ZY180L with wire length 350mm
  – for pins 4 (yellow wire) and 5 (red wire)
  – for pins 11 (yellow wire) and 10 (red wire)
- Type ZY180R with wire length 350mm
  – for pins 7 (yellow wire) and 6 (red wire)
  – for pins 8 (yellow wire) and 9 (red wire)

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