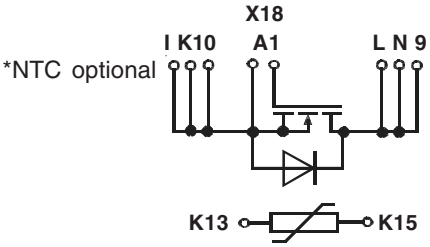
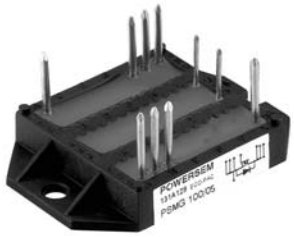
Power MOSFET
in ECO-PAC 2

Single MOSFET Die

Preliminary Data Sheet

I_{D25} = 82 A
V_{DSS} = 500 V
R_{DSon} = 50 mΩ





MOSFET					
Symbol	**Conditions**			**Maximum Ratings**	
V_{DSS}	T_J = 25°C to 150°C			500	V
V_{DGR}	T_J = 25°C to 150°C; R_{GS} = 1 MΩ			500	V
V_{GS}	Continuous			±20	V
V_{GSM}	Transient			±30	V
I_{D25}	T_C = 25°C			82	A
I_{D80}	T_C = 80°C			62	A
E_{AR}	T_C = 25°C			60	mJ
E_{AS}	T_C = 25°C			3	J
dv/dt	$I_S \le I_{DM}$, di/dt ≤ 100 A/µs, $V_{DD} \le V_{DSS}$ $T_J \le$ 150°C, R_G = 2 Ω			5	V/ns
P_D	T_C = 25°C			400	W
Symbol	**Conditions**	**Characteristic Values** (T_J = 25°C, unless otherwise specified) **min.**	**typ.**	**max.**	
V_{DSS}	V_{GS} = 0 V, I_D = 5 mA	500			V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 8 mA	2		4	V
I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0			±100	nA
I_{DSS}	$V_{DS} = V_{DSS}$, T_J = 25°C V_{GS} = 0 V, T_J = 125°C			100 2	µA mA
$R_{DS(on)}$	V_{GS} = 10 V, $I_D = I_T$, [1]			50	mΩ
g_{fs}	V_{DS} = 10 V, $I_D = I_T$, [1]	45			S
C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		9400		pF
C_{oss}			1280		pF
C_{rss}			460		pF
$t_{d(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = I_T$ R_G = 1 Ω (external)		45		ns
t_r			60		ns
$t_{d(off)}$			120		ns
t_f			45		ns
$Q_{g(on)}$	V_{GS} = 10 V, $V_{DS} = 0.5 \cdot V_{DSS}$, $I_D = I_T$		330		nC
Q_{gs}			55		nC
Q_{gd}			155		nC
R_{thJC}				0.30	K/W
R_{thCK}	with heatsink compound (0.42 K/m.K; 50 µm)		0.15		K/W

Features
- Silicon chip on Direct-Copper-Bond substrate
  - High power dissipation
  - Isolated mounting surface
  - 3000 V electrical isolation
- Low drain to tab capacitance(< 25 pF)
- Low $R_{DS(on)}$ HDMOS™ process
- Rugged polysilicon gate cell structure
- Unclamped Inductive Switching (UIS) rated
- Fast intrinsic Rectifier
- UL certified, E 148688

Applications
- DC-DC converters
- Battery chargers
- Switched-mode and resonant-mode power supplies
- DC choppers
- AC motor control

Advantages
- Easy assembly
- Space savings
- High power density

Caution:
These Devices are sensitive to electrostatic discharge. Users should observe proper ESD handling precautions.

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Source-Drain Diode

Symbol	Conditions	Characteristic Values (T_J = 25°C, unless otherwise specified) min.	typ.	max.	
I_S	V_{GS} = 0 V			85	A
I_{SM}	Repetitive; pulse width limited by T_{JM}			340	A
V_{SD}	$I_F = I_S$, V_{GS} = 0 V			1.5	V
t_{rr}	I_F = 50A,-di/dt = 100 A/µs, V_R = 100 V			250	ns
Q_{RM}			1.4		µC
I_{RM}			13		A

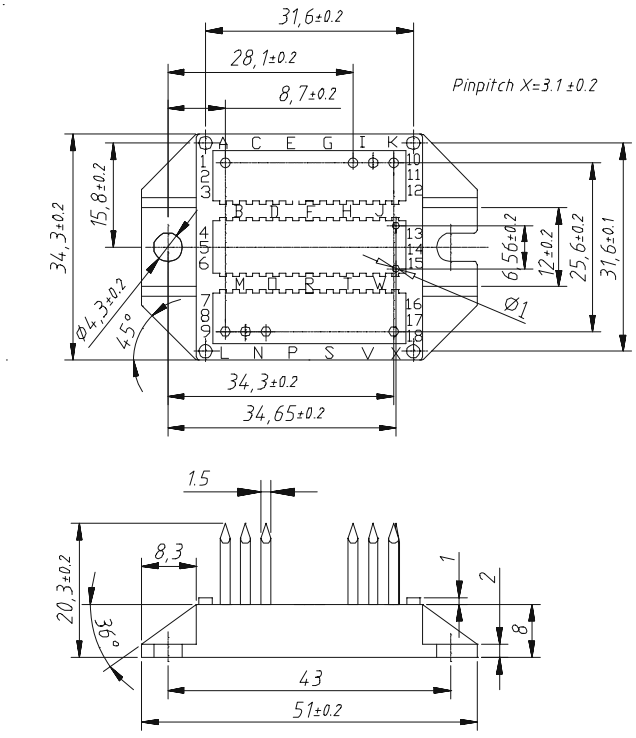
Note: [1] Pulse test, t ≤ 300 µs, duty cycle d ≤ 2%
[2] I_T test current: I_T = 25 A

Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	°C
T_{stg}		-40...+125	°C
V_{ISOL}	I_{ISOL} ≤ 1 mA; 50/60 Hz; t = 1 s	3600	V~
M_d	Mounting torque (M4)	1.5 - 2.0	Nm
a	Max. allowable acceleration	50	m/s^2

Symbol	Conditions	Characteristic Values min.	typ.	max.	
d_S	Creepage distance on surface (pin to heatsink)	11.2			mm
d_A	Strike distance in air (pin to heatsink)	11.2			mm
Weight			24		g

Dimensions in mm (1 mm = 0.0394")



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