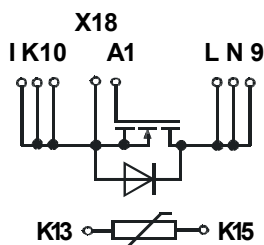


### Power MOSFET in ECO-PAC 2

### PSMG 100/05\*

$I_{D25} = 82 \text{ A}$   
 $V_{DSS} = 500 \text{ V}$   
 $R_{DS(on)} = 50 \text{ m}\Omega$

Single MOSFET Die



\*NTC optional



#### Preliminary Data Sheet

#### MOSFET

Symbol	Test Conditions	Maximum Ratings	
$V_{DSS}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$	500	V
$V_{DGR}$	$T_J = 25^\circ\text{C}$ to $150^\circ\text{C}$ ; $R_{GS} = 1 \text{ M}\Omega$	500	V
$V_{GS}$	Continuous	$\pm 20$	V
$V_{GSM}$	Transient	$\pm 30$	V
$I_{D25}$	$T_C = 25^\circ\text{C}$	82	A
$I_{D80}$	$T_C = 80^\circ\text{C}$	62	A
$E_{AR}$	$T_C = 25^\circ\text{C}$	60	mJ
$E_{AS}$	$T_C = 25^\circ\text{C}$	3	J
$dv/dt$	$I_S \leq I_{DM}$ , $di/dt \leq 100 \text{ A}/\mu\text{s}$ , $V_{DD} \leq V_{DSS}$ $T_J \leq 150^\circ\text{C}$ , $R_G = 2 \Omega$	5	V/ns
$P_D$	$T_C = 25^\circ\text{C}$	400	W

#### Features

- Silicon chip on Direct-Copper-Bond substrate
- High power dissipation
- Isolated mounting surface
- 3000V electrical isolation
- Low drain to tab capacitance (< 25pF)
- 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.

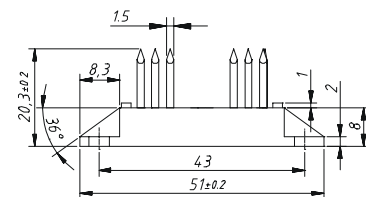
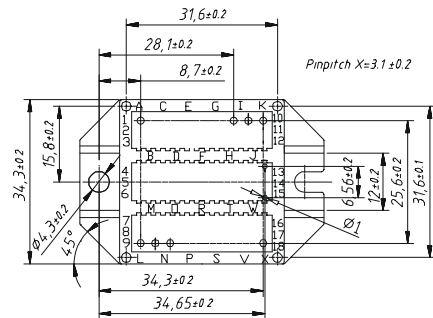
Symbol	Test Conditions	Characteristic Values ( $T_J = 25^\circ\text{C}$ , unless otherwise specified)		
		min.	typ.	max.
$V_{DSS}$	$V_{GS} = 0 \text{ V}$ , $I_D = 5 \text{ mA}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 8 \text{ mA}$	2		V
$I_{GSS}$	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$			$\pm 100$ nA
$I_{DSS}$	$V_{DS} = V_{DSS}$ , $T_J = 25^\circ\text{C}$ $V_{GS} = 0 \text{ V}$ , $T_J = 125^\circ\text{C}$			100 $\mu\text{A}$ 2 mA
$R_{DS(on)}$	$V_{GS} = 10 \text{ V}$ , $I_D = I_T$ , <sup>1)</sup>			50 m $\Omega$
$g_{fs}$	$V_{DS} = 10 \text{ V}$ , $I_D = I_T$ , <sup>1)</sup>	45		S
$C_{iss}$ $C_{oss}$ $C_{rss}$	} $V_{GS} = 0 \text{ V}$ , $V_{DS} = 25 \text{ V}$ , $f = 1 \text{ MHz}$		9400	pF
			1280	pF
			460	pF
$t_{d(on)}$ $t_r$ $t_{d(off)}$ $t_f$	} $V_{GS} = 10 \text{ V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = I_T$ $R_G = 1 \Omega$ (External),		45	ns
			60	ns
			120	ns
			45	ns
$Q_{g(on)}$ $Q_{gs}$ $Q_{gd}$	} $V_{GS} = 10 \text{ V}$ , $V_{DS} = 0.5 \cdot V_{DSS}$ , $I_D = I_T$		330	nC
			55	nC
			155	nC
$R_{thJC}$ $R_{thCK}$	with heatsink compound (0.42 K/m.K; 50 $\mu\text{m}$ )	0.15	0.30	K/W K/W

### Source-Drain Diode

Symbol	Test Conditions	Characteristic Values (T <sub>J</sub> = 25°C, unless otherwise specified)		
		min.	typ.	max.
I <sub>S</sub>	V <sub>GS</sub> = 0 V			85 A
I <sub>SM</sub>	Repetitive; pulse width limited by T <sub>JM</sub>			340 A
V <sub>SD</sub>	I <sub>F</sub> = I <sub>S</sub> , V <sub>GS</sub> = 0 V			1.5 V
t <sub>rr</sub>	I <sub>F</sub> = 50A, -di/dt = 100 A/μs, V <sub>R</sub> = 100 V			250 ns
Q <sub>RM</sub>		1.4		μC
I <sub>RM</sub>		13		A

Note: 1) Pulse test, t ≤ 300 μs, duty cycle d ≤ 2%  
 2) I<sub>T</sub> test current: I<sub>T</sub> = 25A

Dimensions in mm (1 mm = 0.0394")



### Module

Symbol	Conditions	Maximum Ratings	
T <sub>VJ</sub>		-40...+150	°C
T <sub>stg</sub>		-40...+125	°C
V <sub>ISOL</sub>	I <sub>ISOL</sub> ≤ 1 mA; 50/60 Hz; t = 1 s	3600	V~
M <sub>d</sub>	Mounting torque (M4)	1.5 - 2.0	Nm
		14 - 18	lb.in.
a	Max. allowable acceleration	50	m/s <sup>2</sup>

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
d <sub>S</sub>	Creepage distance on surface (Pin to heatsink)	11.2		mm
d <sub>A</sub>	Strike distance in air (Pin to heatsink)	11.2		mm
Weight		24		g