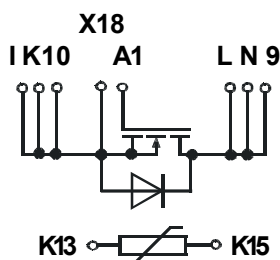


Power MOSFET in ECO-PAC 2

PSMG 100/05*

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

Single MOSFET Die



*NTC optional



Preliminary Data Sheet

MOSFET

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1\text{ M}\Omega$	500	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 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}	$V_{GS} = \pm 20\text{ V}$, $V_{DS} = 0$			± 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 μA 2 mA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = I_T$, ¹⁾			50 mΩ
g_{fs}	$V_{DS} = 10\text{ V}$, $I_D = I_T$, ¹⁾	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 μm)		0.30	K/W
			0.15	K/W

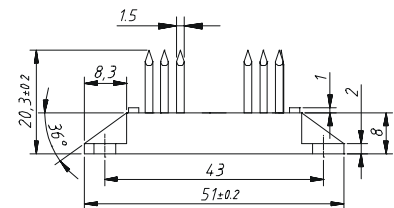
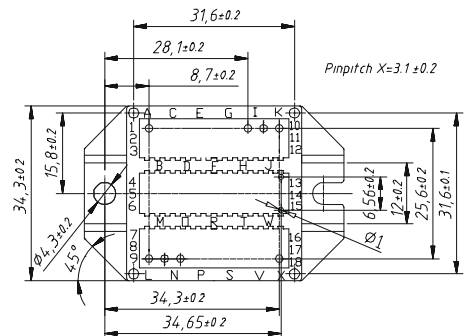
Source-Drain Diode

Characteristic Values
($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values		
		min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			85 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			340 A
V_{SD}	$I_F = I_S, V_{GS} = 0\text{ V}$			1.5 V
t_{rr}	$I_F = 50\text{ A}, -di/dt = 100\text{ A}/\mu\text{s}, V_R = 100\text{ V}$			250 ns
Q_{RM}			1.4	μC
I_{RM}			13	A

Note: ¹⁾ Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $d \leq 2\%$
²⁾ I_T test current: $I_T = 25\text{ A}$

Dimensions in mm (1 mm = 0.0394")



Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{stg}		-40...+125	$^\circ\text{C}$
V_{ISOL}	$I_{ISOL} \leq 1\text{ mA}; 50/60\text{ Hz}; t = 1\text{ s}$	3600	V~
M_d	Mounting torque (M4)	1.5 - 2.0	Nm
		14 - 18	lb.in.
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