

20V N-Channel MOSFET

Description

The PM8205ATS8 uses advanced Trench technology and designs to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in PWM, load switching and general purpose applications.

Features

- 20V MOSFET Technology
- Very low on-resistance
- Super fast switching speed
- Cost-effective

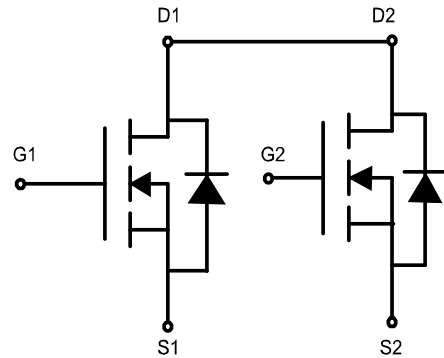
Applications

- Charge protection for lithium batteries (only used for lithium battery protector)

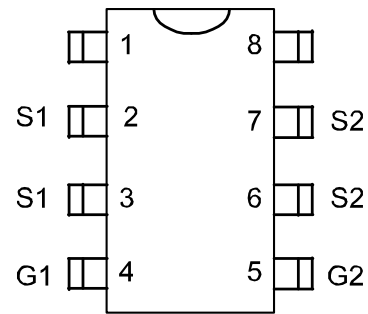
MOSFET Product Summary

V_{DSS}	$R_{DS(ON)}$ @ $V_{GS}=4.5V$	$R_{DS(ON)}$ @ $V_{GS}=2.5V$	I_D
20V	18m Ω	26m Ω	8A

Dimensions and Pin Configuration



Circuit diagram



Top View

- D1/D2 - Pin1 and Pin8 do not connect

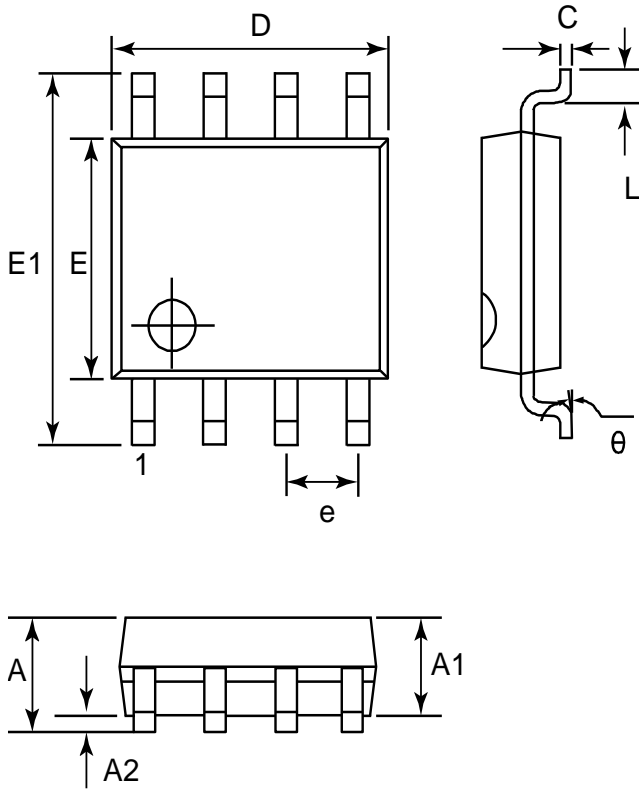
Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current ($V_{GS}=4.5V$, @ $T_a=25^\circ C$)	I_D	8	A
Continuous Drain Current ($V_{GS}=4.5V$, @ $T_a=70^\circ C$)	I_D	6	A
Pulsed Drain Current	I_{DM}	20	A
Power Dissipation ($t \leq 10s$, @ $T_a=25^\circ C$)	P_D	2.5	W
Thermal Resistance from Junction to Ambient($t \leq 10s$)	$R_{\theta JA}$	83	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{STG}	-55~ +150	$^\circ C$

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

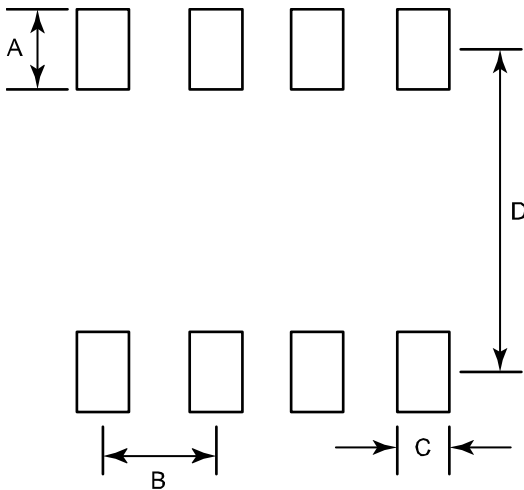
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	19.5	20.5	40	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 6V, V_{DS} = 0V$	-	-	± 1	μA
Breakdown voltage temperature coefficient	$\frac{\Delta BV_{DSS}}{\Delta T_j}$	$T_A = 25^\circ\text{C}, I_D = 1mA$	-	0.03	-	$V/^\circ\text{C}$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.65	0.8	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 6.0A$	-	36	45	m Ω
		$V_{GS} = 2.5V, I_D = 3.0A$	-	52	70	
Forward trans conductance	g_{FS}	$V_{DS} = 5V, I_D = 4.5A$	-	10	-	S
Diode forward voltage	V_{SD}	$I_S = 1.0A, V_{GS} = 0V, T_j = 25^\circ\text{C}$	-	0.72	1.2	V
Drain source continuous current	I_S		-	-	1.7	A
Dynamic characteristics						
Total gate charge	Q_g	$V_{DS} = 10V,$ $V_{GS} = 4.5V,$ $I_D = 6A$	-	8	12	nC
Gate-source charge	Q_{gs}		-	2.1	-	
Gate-drain charge	Q_{gd}		-	2.5	-	
Input Capacitance	C_{iss}	$V_{DS} = 8V,$ $V_{GS} = 0V,$ $f = 1MHz$	-	480	-	pF
Output Capacitance	C_{oss}		-	290	-	
Reverse Transfer Capacitance	C_{riss}		-	120	-	
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 10V,$ $V_{GS} = 4.5V,$ $I_D = 1A$ $R_G = 6\Omega$	-	8	15	ns
Turn-on rise time	t_r		-	12	25	
Turn-off delay time	$t_{d(off)}$		-	34	70	
Turn-off fall time	t_f		-	32	60	

TSSOP-8 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A			1.20			0.047
A1	0.80	1.00	1.05	0.002		0.006
A2	0.05		0.15	0.031	0.039	0.041
C	0.09		0.20	0.004		0.008
D	2.9	3.0	3.1	0.114	0.118	0.122
E	4.3	4.4	4.5	0.169	0.173	0.177
E1	6.4 BSC			0.252 BSC		
e	0.65 BSC			0.026 BSC		
L	0.45	0.60	0.75	0.018	0.024	0.030
theta	0°		8°	0°		8°

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	1.00	0.039
B	0.65	0.026
C	0.40	0.016
D	6.00	0.236