ACP9122: Dual N-Channel Enhancement Mode Field Effect Transistor

datasheet

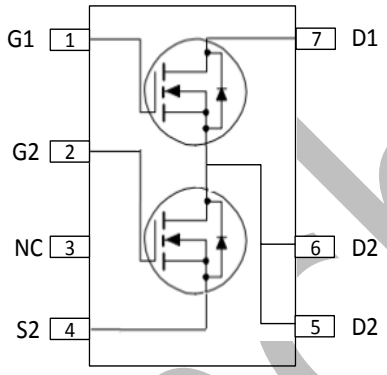
Features

- Output MOSFET voltage: 600V
- Driver output current（DC）: 2A
- $R_{DS(on)}$=4.5Ω @ V_{GS}=10V
- High staturation current
- Operating ambient temperature
  - T_A=-40℃ to 105℃（G: Industrial application）
- Dual N-channel mos
- package：DIP7/SOP6

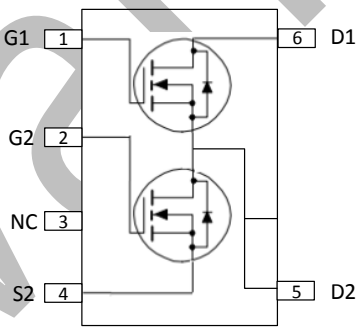
1 Introduction

These dual N-Channel enhancement mode power field effect transistors are particularly suited for high voltage applications for motor driving. This very high density process has been designed to minimize on-state resistance, provide rugged and reliable performance and fast swithing.

The blockdiagram as follows:



Featur 1 DIP7 package



Featur 2 SOP6 package

The absolute maximum rating as follow table shows:

Absolute Maximum Ratings (Tj= 25℃, unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-to-Source Voltage	V_{DSX}	600	V
Continuous Drain Current T_C = 25 °C	I_D	2	A
Continuous Drain Current T_C = 100 °C	I_D	1.2	A
Pulsed Drain Current	I_{DM}[a1]	8	A
Gate-to-Source Voltage	V_{GS}	±30	V
Power Dissipation(Tc=25℃)	P_{tot}	35	W
Operating Junction	T_j	150	℃
Junction to Ambient	Ja	74.29	℃/W
Single Pulse Avalanche Energy	E_{as}	90	mJ

2 Electrical Characteristics

Parameter	Symbol	Test Conditions	Rating			Units
			Min	Typ	Max	
Drain-to-Source Breakdown Voltage	V_{DS}	V_{GS}=0V, I_D=250μA	600			V
Drain-to-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=1.0A		4.5	5.0	Ω
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	3.5	4.0	4.5	V
Drain-to-Source Diode Forward Voltage	V_{SD}	V_{GS}= 0V, I_{DS}=2A			1.5	V
Drain to Source Leakage Current	I_{DSS}	V_{DS}= 600V,V_{GS}=0V,Tc=25℃			1	μA
		V_{DS}= 480V ,V_{GS}=0V,Tc=125℃			100	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	V_{GS} =+30V			100	nA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	V_{GS} =-30V			-100	nA
Input Capacitance	C_{iss}	V_{GS}=0V V_{DS}=25V f =1.0MHz		438		pF
Output Capacitance	C_{oss}			34		pF
Reverse Transfer Capacitance	C_{rss}			1.3		pF
a: Pulse width tp≤300μs,δ≤2%						

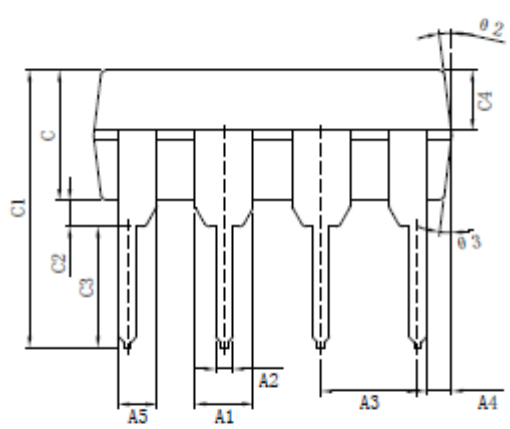
Parameter	Symbol	Test Conditions	Rating			Units
			Min	Typ	Max	
Reverse Recovery Time	T_{rr}	di/dt = 100A/us, I_S = 2A		45	100	ns
Reverse Recovery Charge	Q_{rr}			50		nC
Reverse Recovery Current	I_{RRM}			2.3		A
a: Pulse width tp≤300 μ s, δ ≤2%						

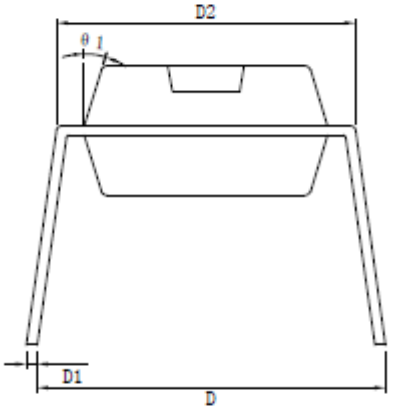
3 Package information

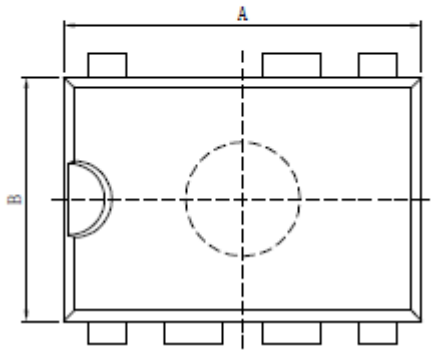
ACP9122 provideDIP7 package。

3.1 DIP7 package information

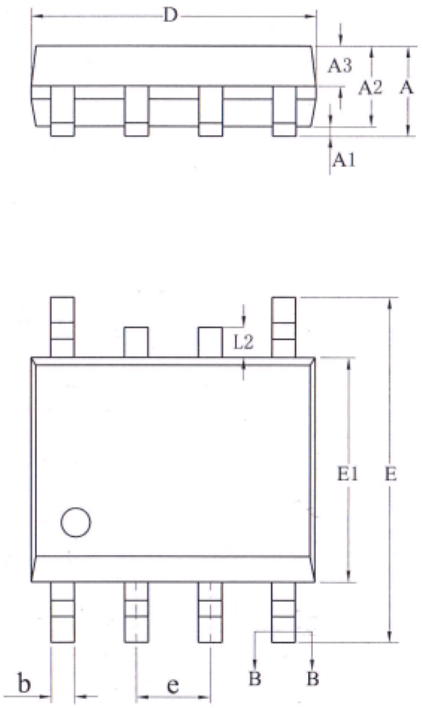
type \ size	min(mm)	max(mm)		min(mm)	max(mm)
A	9.00	9.20	C2	0.50TYP	
A1	1.474	1.574	C3	3.20	3.40
A2	0.41	0.51	C4	1.47	1.57
A3	2.44	2.64	D	8.20	8.80
A4	0.51TYP		D1	0.244	0.264
A5	0.99TYP		D2	7.62	7.87
B	6.10	6.30	θ1	17° TYP4	
C	3.20	3.40	θ2	10° TYP4	
C1	7.10	7.30	θ3	8° TYP	

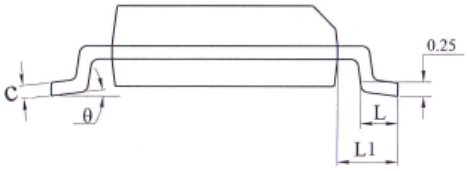


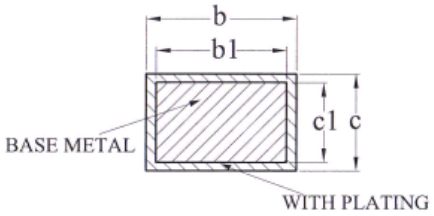




3.2 SOP6 package information







SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.75
A1	0.10	—	0.225
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.47
b1	0.38	0.41	0.44
c	0.20	—	0.24
c1	0.19	0.20	0.21
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.50	—	0.80
L1	1.05REF		
L2	0.30	0.40	0.50
θ	0	—	8°

4 Revision history

version	Name	Date	Changes
V1.0	Daniel	2023-3-1	initial version