4AK22

Silicon N-Channel Power MOS FET Array

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Application

High speed power switching

Features

- Low on-resistance
  $R_{DS(on)}$ 0.4 , V_{GS} = 10 V, I_D = 1.5 A
  $R_{DS(on)}$ 0.55 , V_{GS} = 4 V, I_D = 1.5 A
- Capable of 4 V gate drive
- Low drive current
- High speed switching
- High density mounting
- Suitable for motor driver, solenoid driver and lamp driver
- Discrete packaged devices of same die: 2SK1254(L), 2SK1254(S)

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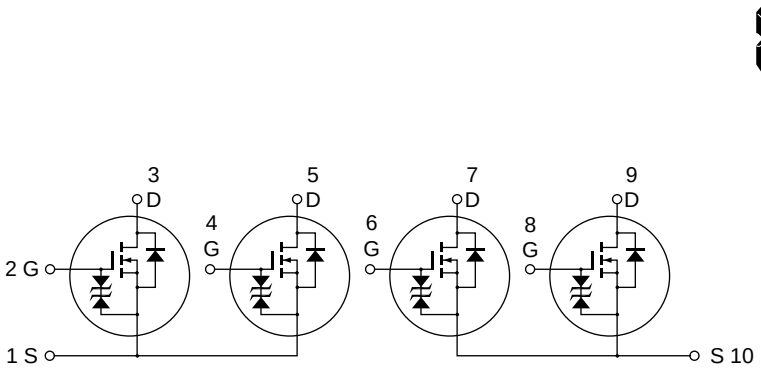
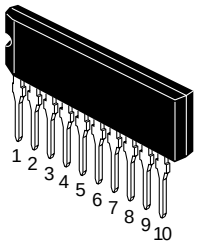
Outline

SP-10





1, 10. Source
2, 4, 6, 8. Gate
3, 5, 7, 9. Drain

Absolute Maximum Ratings (Ta = 25°C) (1 Unit)

Item	Symbol	Rating	Unit
Drain to source voltage	V_{DSS}	120	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	3	A
Drain peak current	$I_{D(pulse)}$*[1]	12	A
Body to drain diode reverse drain current	I_{DR}	3	A
Channel dissipation	Pch (Tc = 25°C)*[2]	28	W
Channel dissipation	Pch*[2]	4	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
2. 4 devices operation

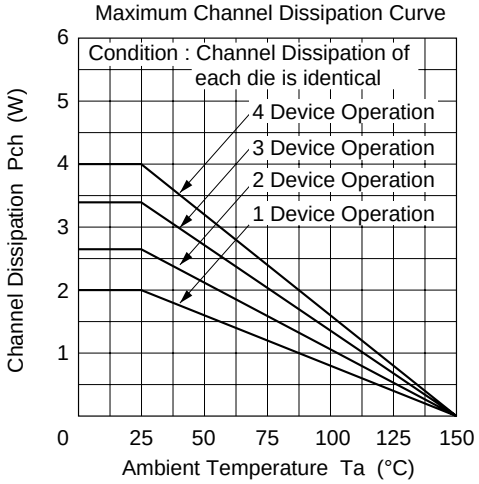
Electrical Characteristics (Ta = 25°C) (1 Unit)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	120	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±16 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	100	µA	V_{DS} = 100 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	0.3	0.4	Ω	I_D = 1.5 A, V_{GS} = 10 V*[1]
		—	0.35	0.55	Ω	I_D = 1.5 A, V_{GS} = 4 V*[1]
Forward transfer admittance	$\|y_{fs}\|$	2.0	3.5	—	S	I_D = 1.5 A, V_{DS} = 10 V*[1]
Input capacitance	Ciss	—	420	—	pF	V_{DS} = 10 V, V_{GS} = 0, f = 1 MHz
Output capacitance	Coss	—	190	—	pF	
Reverse transfer capacitance	Crss	—	25	—	pF	
Turn-on delay time	$t_{d(on)}$	—	5	—	ns	I_D = 1.5 A, V_{GS} = 10 V, R_L = 20 Ω
Rise time	t_r	—	20	—	ns	
Turn-off delay time	$t_{d(off)}$	—	160	—	ns	
Fall time	t_f	—	40	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.95	—	V	I_F = 3 A, V_{GS} = 0
Body to drain diode reverse recovery time	t_{rr}	—	160	—	ns	I_F = 3 A, V_{GS} = 0 dIF/dt = 50 A/µs

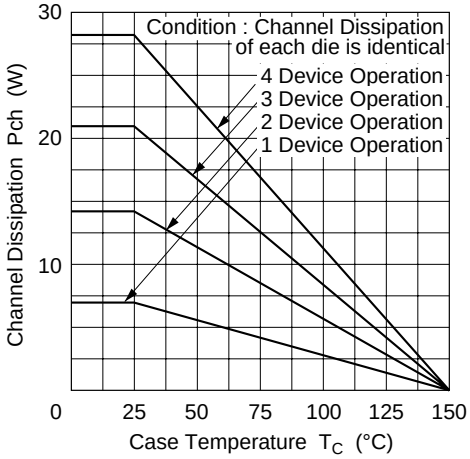
Note: 1. Pulse Test

See characteristic curves of 2SK1254(L), 2SK1254(S)

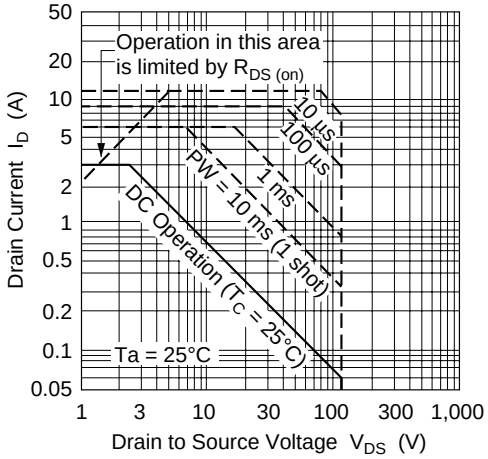
Maximum Channel Dissipation Curve



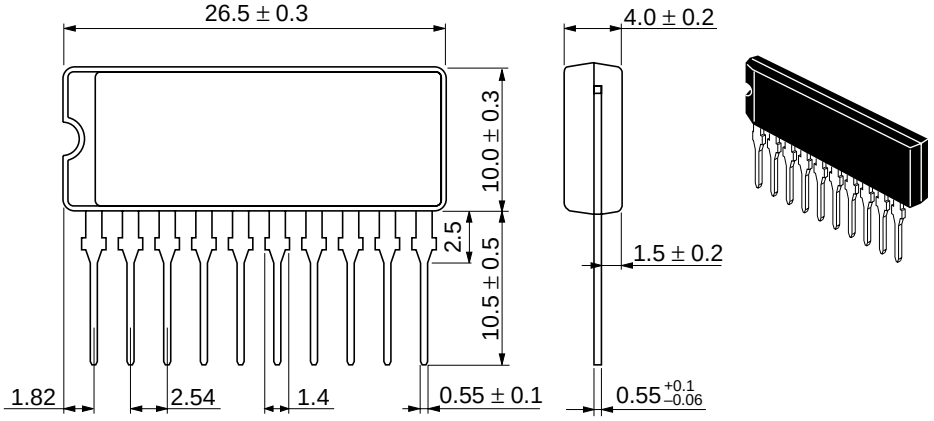
Maximum Channel Dissipation Curve

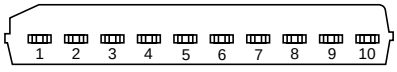


Maximum Safe Operation Area



Unit: mm


26.5 ± 0.3
4.0 ± 0.2
10.0 ± 0.3
2.5
10.5 ± 0.5
1.5 ± 0.2
1.82
2.54
1.4
0.55 ± 0.1
0.55 +0.1 −0.06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