

# 4AK25

Silicon N-Channel Power MOS FET Array

# HITACHI

## Application

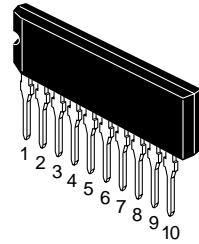
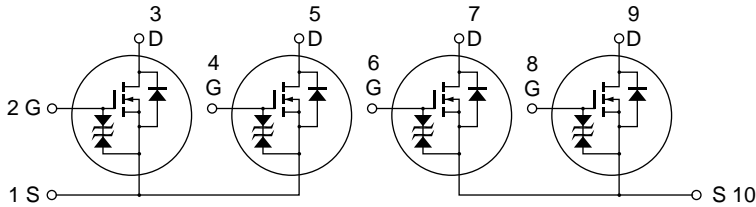
High speed power switching

## Features

- Low on-resistance  
 $R_{DS(on)} = 0.45 \Omega$ ,  $V_{GS} = 10 \text{ V}$ ,  $I_D = 1 \text{ A}$
- Low drive current
- High speed switching
- High density mounting

## Outline

SP-10



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

**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	$V_{\text{DSS}}$	60	V
Gate to source voltage	$V_{\text{GSS}}$	$\pm 20$	V
Drain current	$I_{\text{D}}$	1.5	A
Drain peak current	$I_{\text{D(pulse)}}^{*1}$	4.5	A
Body to drain diode reverse drain current	$I_{\text{DR}}$	1.5	A
Channel dissipation	$\text{Pch}$ ( $T_c = 25^\circ\text{C}$ )*2	24	W
Channel dissipation	$\text{Pch}^{*2}$	3.6	W
Channel temperature	$T_{\text{ch}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

Notes: 1.  $PW \leq 10 \mu\text{s}$ , duty cycle  $\leq 1\%$

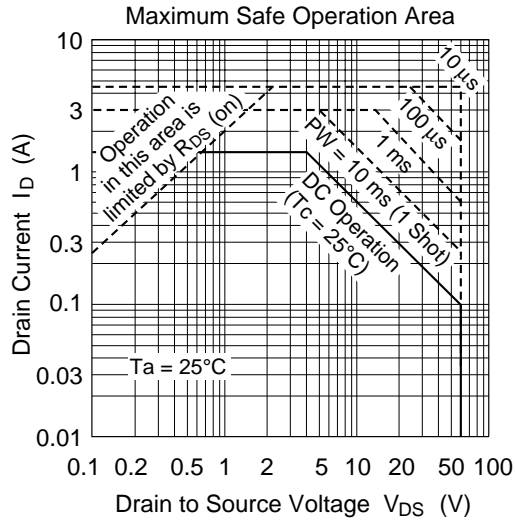
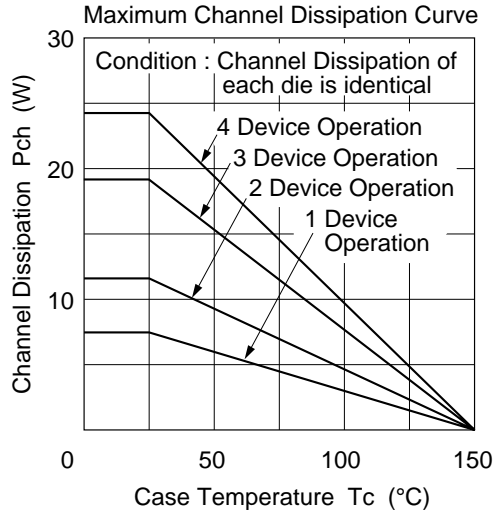
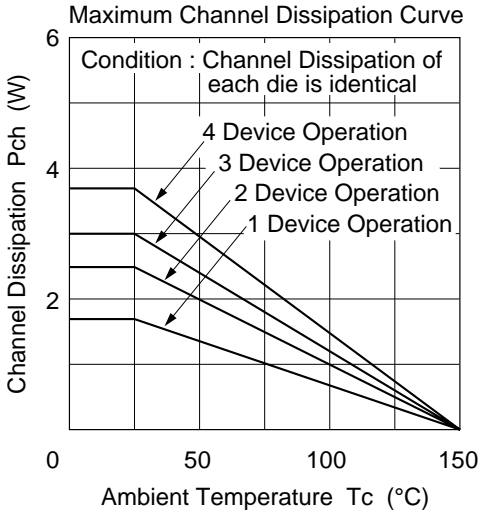
2. 4 Devices operation

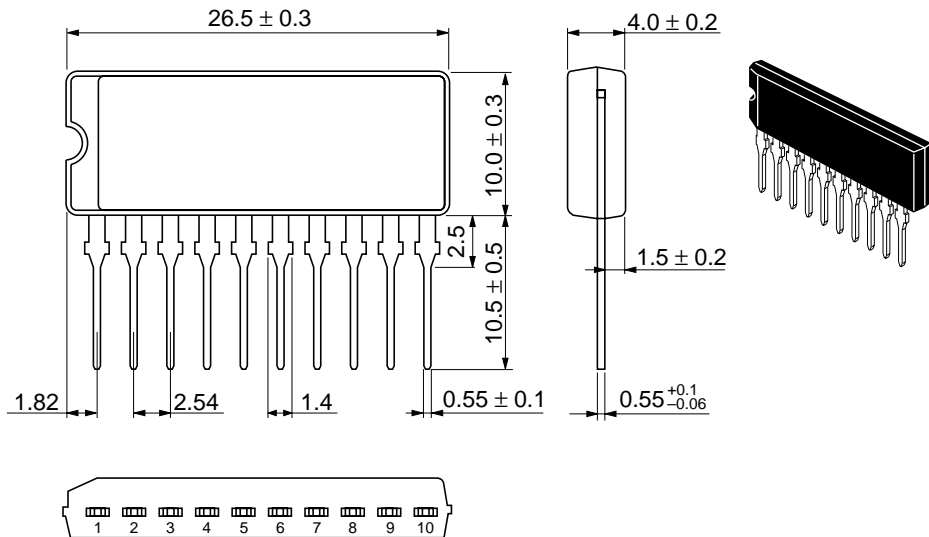
## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	$\mu\text{A}$	$V_{DS} = 50 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.35	0.45	$\Omega$	$I_D = 1 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	0.47	0.65	$\Omega$	$I_D = 1 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	0.9	1.5	—	S	$I_D = 1 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	140	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	70	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	20	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	3	—	ns	$I_D = 1 \text{ A}$
Rise time	$t_r$	—	12	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	$R_L = 30 \text{ }\Omega$
Fall time	$t_f$	—	30	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.1	—	V	$I_F = 1.5 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	70	—	$\mu\text{s}$	$I_F = 1.5 \text{ A}$ , $V_{GS} = 0$ , $dI_F/dt = 50 \text{ A}/\mu\text{s}$

Note: 1. Pulse Test

See characteristic curves of 2SK975





Hitachi Code	SP-10
JEDEC	—
EIAJ	—
Weight (reference value)	2.9 g

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