4AK18

Silicon N-Channel Power MOS FET Array

HITACHI

Application

High speed power switching

Features

- Low on-resistance
  $R_{DS(on)} \leq 0.38\ \Omega$, V_{GS} = 10 V, I_D = 1 A
  $R_{DS(on)} \leq 0.53\ \Omega$, V_{GS} = 4 V, I_D = 1 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: 2SK973(L), 2SK973(S)

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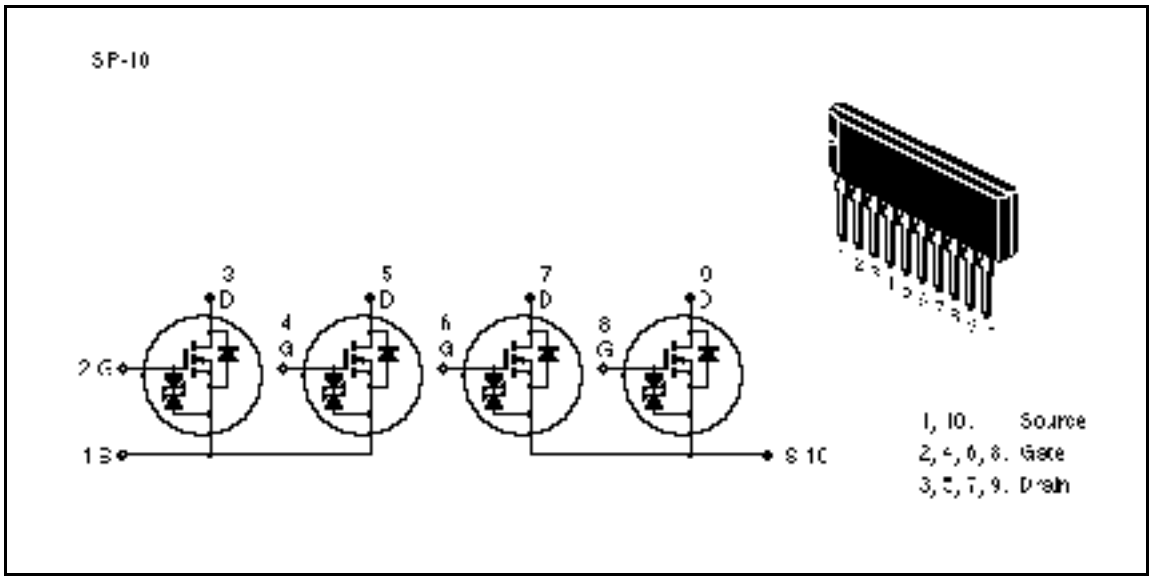
Outline



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

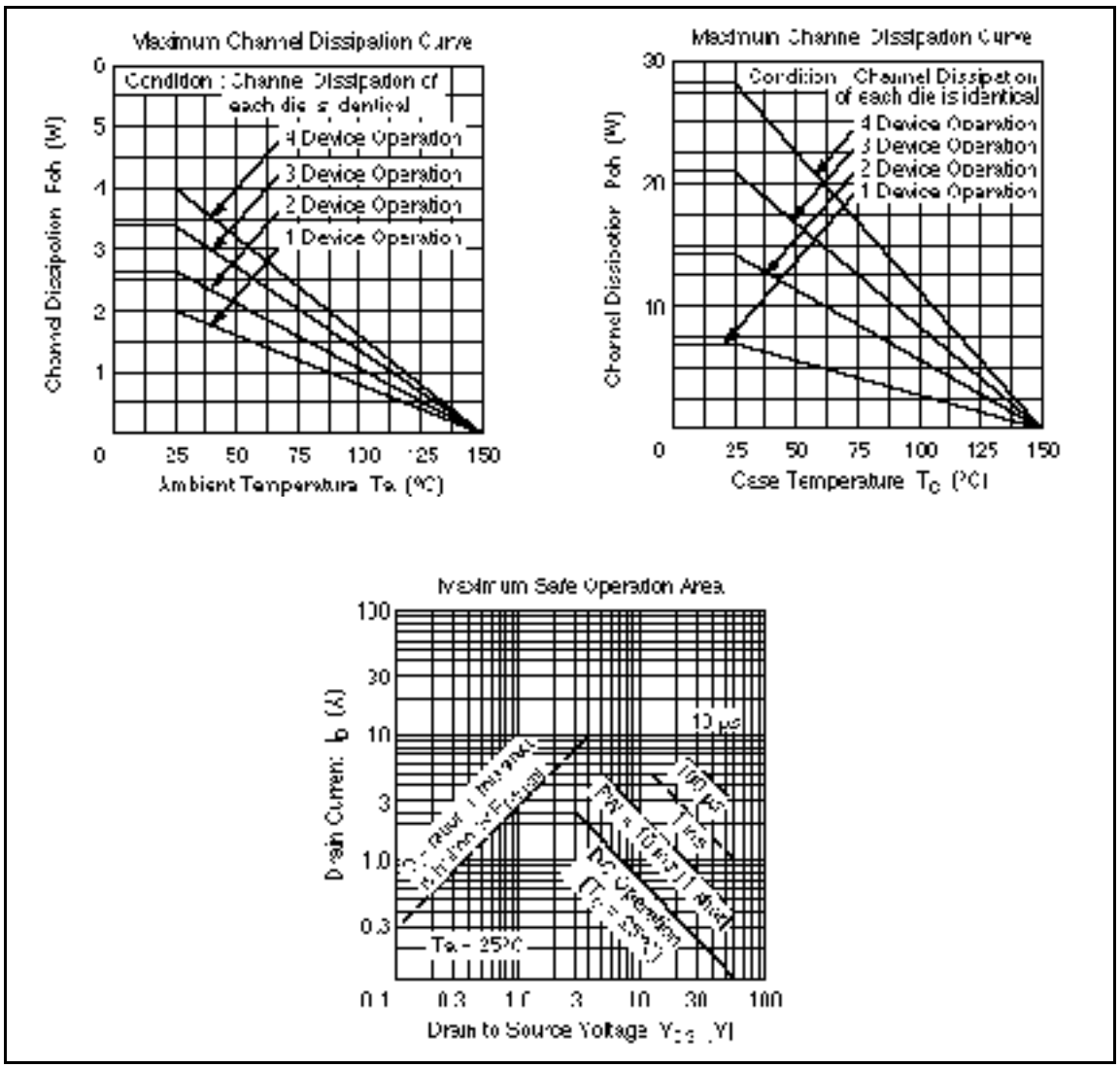
Item	Symbol	Rating	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	2.5	A
Drain peak current	$I_{D(pulse)}$*[1]	10	A
Body to drain diode reverse drain current	I_{DR}	2.5	A
Channel dissipation	Pch (Tc = 25°C)*[2]	28	W
Channel dissipation	Pch*[2]	4	W
Channel 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	$V_{(BR)DSS}$	60	—	—	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} = 50 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	$R_{DS(on)}$	—	0.25	0.38	Ω	I_D = 1 A V_{GS} = 10 V*[1]
		—	0.40	0.53	Ω	I_D = 1 A V_{GS} = 4 V*[1]
Forward transfer admittance	$\|y_{fs}\|$	1.2	2.0	—	S	I_D = 1 A V_{DS} = 10 V*[1]
Input capacitance	Ciss	—	240	—	pF	V_{DS} = 10 V
Output capacitance	Coss	—	115	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	35	—	pF	f = 1 MHz
Turn-on delay time	$t_{d(on)}$	—	4	—	ns	I_D = 1 A
Rise time	t_r	—	15	—	ns	V_{GS} = 10 V
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	R_L = 30 Ω
Fall time	t_f	—	40	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	I_F = 2 A, V_{GS} = 0
Body to drain diode reverse recovery time	t_{rr}	—	70	—	ns	I_F = 2 A, V_{GS} = 0 dIF/dt = 50 A/µs

Note: 1. Pulse Test


Maximum Channel Dissipation Curve
Condition : Channel Dissipation of each die is identical
4 Device Operation
3 Device Operation
2 Device Operation
1 Device Operation
Channel Dissipation Pch (W)
Ambient Temperature Ta (°C)
Maximum Channel Dissipation Curve
Condition : Channel Dissipation of each die is identical
4 Device Operation
3 Device Operation
2 Device Operation
1 Device Operation
Channel Dissipation Pch (W)
Case Temperature Tc (°C)
Maximum Safe Operation Area
Drain Current ID (A)
10 µs
100 µs
1 ms
DC Operation
Ta = 25°C
Drain to Source Voltage VDS (V)

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