HITACHI

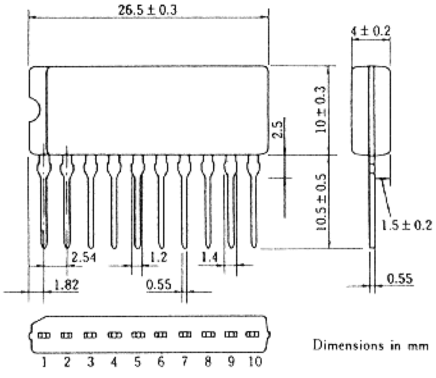
4AM13

SILICON N-CHANNEL / P-CHANNEL POWER MOS FET ARRAY

HIGH SPEED POWER SWITCHING

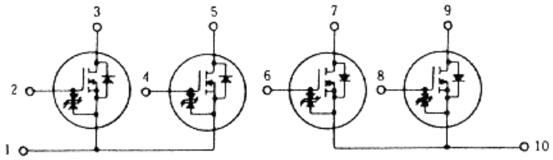
■ FEATURES

- Low On-Resistance
  - N-channel: R_{DS} (on) ≦ 0.4 Ω , V_{GS} = 10 V,
I_D = 1.5 A
  - P-channel: R_{DS} (on) ≦ 0.45 Ω , V_{GS} = −10 V,
I_D = −1.5 A
- Capable of 4 V Gate Drive
- Low Drive Current
- High Speed Switching
- High Density Mounting
- Suitable for H-bridged Motor Driver
- Discrete Packaged Devices of Same Die:
  - N-channel: 2SK973
  - P-channel: 2SJ182



(SP-10)

■EQUIVALENT CIRCUIT



■ABSOLUTE MAXIMUM RATINGS (Ta = 25℃) (1Unit)

Item	Symbol	Rating		Unit
		Nch	Pch	
Drain-Source Voltage	V_{DSS}	60	−60	V
Gate-Source Voltage	V_{GSS}	±20	±20	V
Drain Current	I_D	3	−3	A
Drain Peak Current	$I_{D(pulse)}$*	12	−12	A
Body-Drain Diode Reverse Drain Current	I_{DR}	3	−3	A
Channel Dissipation	Pch(Tc=25℃)**	28		W
Channel Dissipation	Pch**	4		W
Channel Temperature	Tch	150		℃
Storage Temperature	Tstg	−55∼+150		℃

*PW≦10μs, duty cycle≦1%

**4Devices Operation

■PIN CONNECTION

2, 4, 6, 8 ; Gate
3, 5, 7, 9 ; Drein
1, 10 ; Source

■ELECTRICAL CHARACTERISTICS (Ta = 25℃) (1Unit)

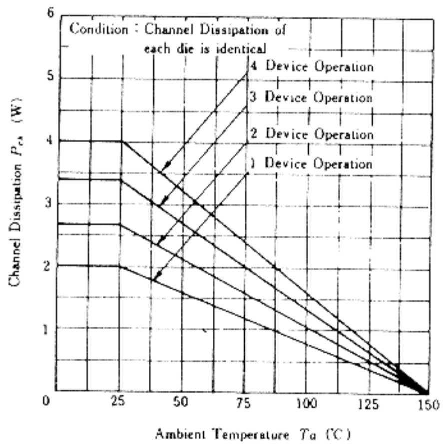
Item	Symbol	Test Condition	N Chanel			P Chanel			Unit
			min.	typ.	max.	min.	typ.	max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 10mA, V_{GS} = 0	60	—	—	–60	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G = ±100A, V_{DS} = 0	±20	—	—	±20	—	—	V
Gate-Source Leak Current	I_{GSS}	V_{GS} = ±16V, V_{DS} = 0	—	—	±10	—	—	±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 50V, V_{GS} = 0V	—	—	250	—	—	–250	μA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	I_D = 1mA, V_{DS} = 10V	1.0	—	2.0	–1.0	—	–2.0	V
Static Drain-Source On State Resistance	$R_{DS(on)}$	I_D = 1.5A, V_{GS} = 10V*	—	0.25	0.35	—	0.28	0.4	Ω
		I_D = 1.5A, V_{DS} = 4V*	—	0.35	0.5	—	0.4	0.55	Ω
Forward Transfer Admittance	$\lvert yfs \rvert$	I_D = 1.5A, V_{DS} = 10V*	1.5	2.5	—	1.5	2.5	—	S
Input Capacitance	Ciss	V_{DS} = 10V, V_{GS} = 0, f = 1MHz	—	240	—	—	400	—	pF
Output Capacitance	Coss		—	115	—	—	240	—	pF
Reverse Transfer Capacitance	Crss		—	35	—	—	70	—	pF
Turn-on Delay Time	$t_{d(on)}$	I_D =1.5A, V_{GS} = 10V, R_L = 20Ω	—	4	—	—	5	—	ns
Rise Time	t_r		—	20	—	—	25	—	ns
Turn-off Delay Time	$t_{d(off)}$		—	80	—	—	180	—	ns
Fall Time	t_f		—	40	—	—	80	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	I_F = 3A, V_{GS} = 0	—	1.2	—	—	–1.1	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	I_F = 3A, V_{GS} = 0, di_F/dt=50A/μs	—	75	—	—	140	—	ns

* Pulse Test

Note) Polarity of test conditions for P channel device is reversed

■Nch: See characteristic curves of 2SK973
■Pch: See characteristic curves of 2SJ182

MAXIMUM CHANNEL DISSIPATION CURVE



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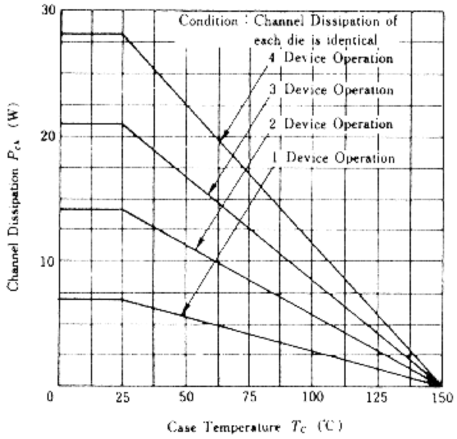
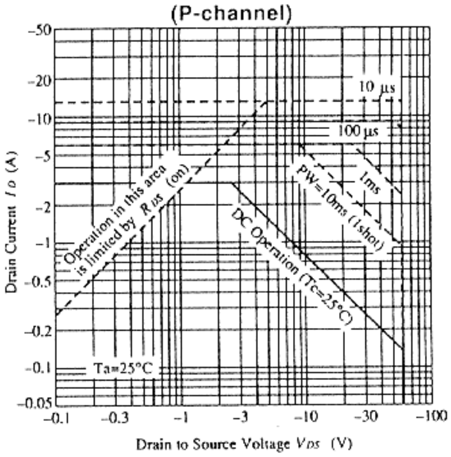


MAXIMUM SAFE OPERATION AREA (P-channel)



MAXIMUM SAFE OPERATION AREA (N-channel)