

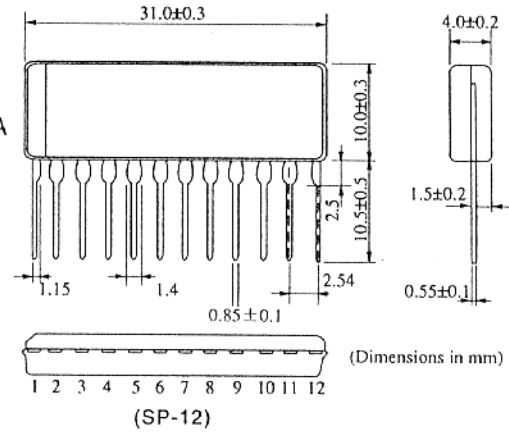
## 6AM11

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

#### HIGH SPEED POWER SWITCHING

#### ■ FEATURES

- Low On-Resistance  
 N-channel:  $R_{DS(on)} \leq 0.17 \Omega$ ,  $V_{GS} = 10 \text{ V}$ ,  $I_D = 2.5 \text{ A}$   
 P-channel:  $R_{DS(on)} \leq 0.2 \Omega$ ,  $V_{GS} = -10 \text{ V}$ ,  $I_D = -2.5 \text{ A}$
- 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: 2SK970 2SK1093  
 P-channel: 2SJ172 2SJ175



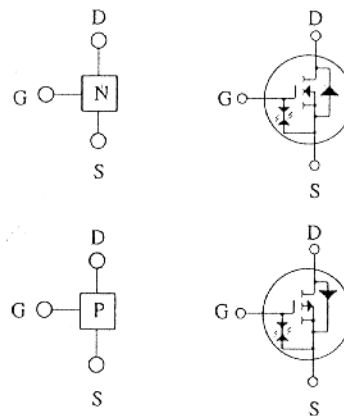
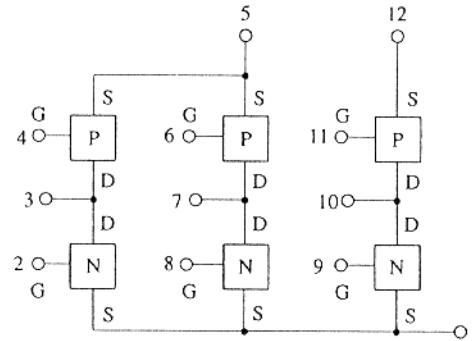
#### ■ ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ ) (1Unit)

Item	Symbol	Rating		Unit
		Nch	Pch	
Drain-Source Voltage	$V_{DSS}$	60	-60	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	$\pm 20$	V
Drain Current	$I_D$	5	-5	A
Drain Peak Current	$I_{D(pulse)}$ *	20	-20	A
Body-Drain Diode	$I_{DR}$	5	-5	A
Reverse Drain Current				
Channel Dissipation	$Pch(T_c = 25^\circ\text{C})^{**}$	36		W
Channel Dissipation	$Pch^*$	4.8		W
Channel Temperature	$T_{ch}$	150		$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ +150		$^\circ\text{C}$

\* $PW \leq 10 \mu\text{s}$ , duty cycle  $\leq 1\%$

\*\*6Devices Operation

#### ■ EQUIVALENT CIRCUIT



## ■ ELECTRICAL CHARACTERISTICS (Ta = 25°C) (1 Unit)

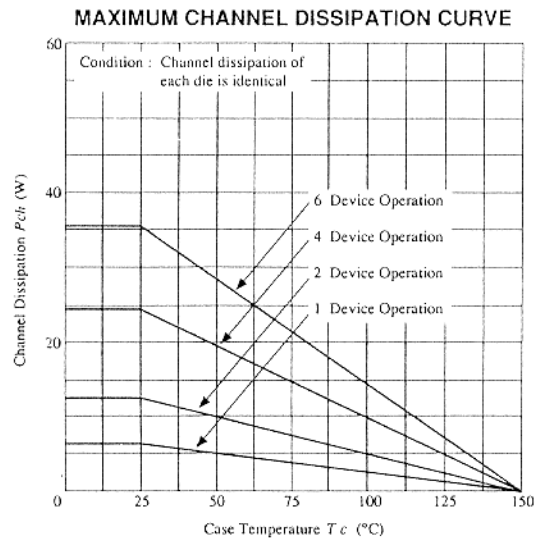
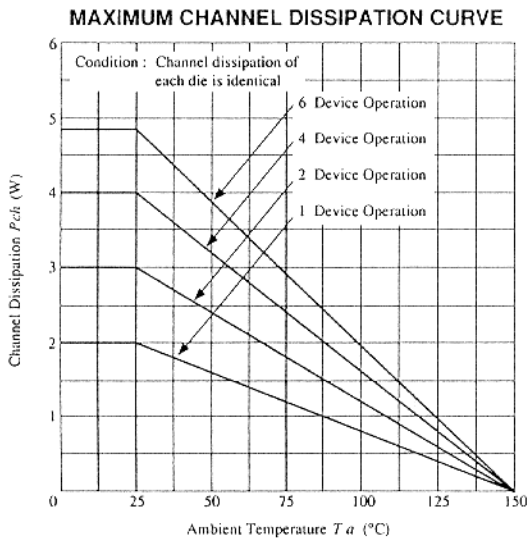
Item	Symbol	Test Condition	N Channel			P Channel			Unit
			min.	typ.	max.	min.	typ.	max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 10\text{mA}, V_{GS} = 0$	60	—	—	-60	—	—	V
Gate-Source Breakdown Voltage	$V_{(BRS)GSS}$	$I_G = \pm 100\ \mu\text{A}, V_{DS} = 0$	$\pm 20$	—	—	$\pm 20$	—	—	V
Gate-Source Leak Current	$I_{GSS}$	$V_{GS} = \pm 16\text{V}, V_{DS} = 0$	—	—	$\pm 10$	—	—	$\pm 10$	$\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 50\text{V}, V_{GS} = 0$	—	—	250	—	—	-250	$\mu\text{A}$
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$	1.0	—	2.0	-1.0	—	-2.0	V
Static Drain-Source On State Resistance	$R_{DS(on)}$	$I_D = 2.5\text{A}, V_{GS} = 10\text{V}^*$	—	0.13	0.17	—	0.15	0.2	$\Omega$
		$I_D = 2.5\text{A}, V_{GS} = 4\text{V}^*$	—	0.18	0.24	—	0.20	0.27	$\Omega$
Forward Transfer Admittance	$ y_{fs} $	$I_D = 2.5\text{A}, V_{DS} = 10\text{V}^*$	2.7	4.5	—	2.7	5.0	—	S
Input Capacitance	$C_{iss}$	$V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$	—	400	—	—	900	—	pF
Output Capacitance	$C_{oss}$		—	220	—	—	460	—	pF
Reverse Transfer Capacitance	$C_{rss}$		—	60	—	—	130	—	pF
Turn-on Delay Time	$t_d(on)$		$I_D = 2.5\text{A}, V_{GS} = 10\text{V}, R_L = 12\ \Omega$	—	5	—	—	8	—
Rise Time	$t_r$	—		30	—	—	35	—	ns
Turn-off Delay Time	$t_d(off)$	—		170	—	—	180	—	ns
Fall Time	$t_f$	—		75	—	—	85	—	ns
Body-Drain Diode Forward Voltage	$V_{DF}$	$I_F = 5\text{A}, V_{GS} = 0$		—	1.0	—	—	-1.0	—
Body-Drain Diode Reverse Recovery Time	$t_n$	$I_F = 5\text{A}, V_{GS} = 0, di_F/dt = 50\text{A}/\mu\text{s}$	—	100	—	—	170	—	ns

\* Pulse Test

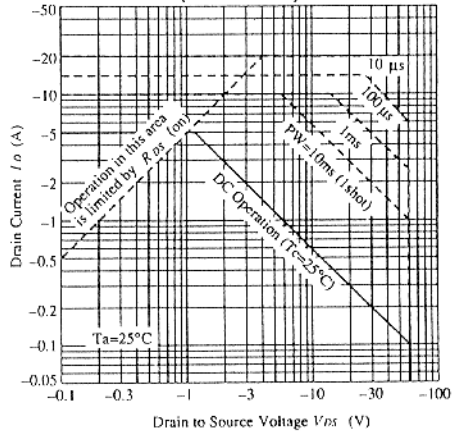
Note) Polarity of test conditions for P channel device is reversed.

■ Nch: See characteristic curves of 2SK970

■ Pch: See characteristic curves of 2SJ172



**MAXIMUM SAFE OPERATION AREA  
(P-channel)**



**MAXIMUM SAFE OPERATION AREA  
(N-channel)**

