4AJ11

Silicon P Channel Power MOS FET Array

Application

High speed power switching

Features

- Low on–resistance
  $R_{DS(on)} \leq 0.13\Omega$, $V_{GS} = -10V$, $I_D = -4A$
  $R_{DS(on)} \leq 0.17\Omega$, $V_{GS} = -4V$, $I_D = -4A$
- Capable of 4V gate drive
- Low drive current
- High speed switching
- High density mounting
- Suitable for motor driver and solenoid driver and lamp driver
- Discrete packaged devices of same die
  2SJ173, 2SJ176, 2SJ219 L , 2SJ219 S

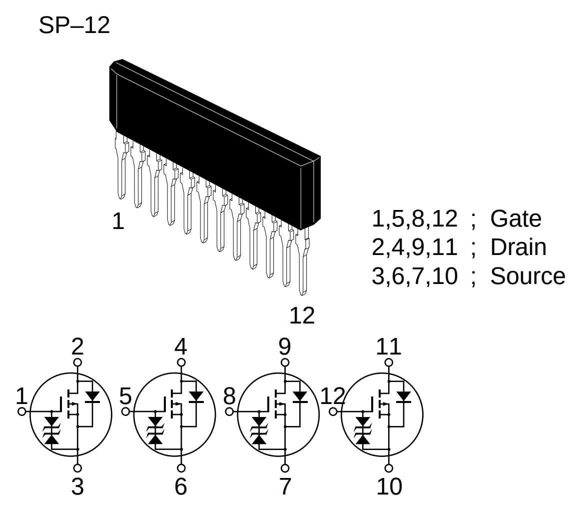


Table 1 Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	–60	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	–8	A
Drain peak current	$I_{D(pulse)}^{*}$	–32	A
Body–drain diode reverse drain current	I_{DR}	–8	A
Channel dissipation	Pch(Tc = 25 °C)**	28	W
Channel dissipation	Pch**	4	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

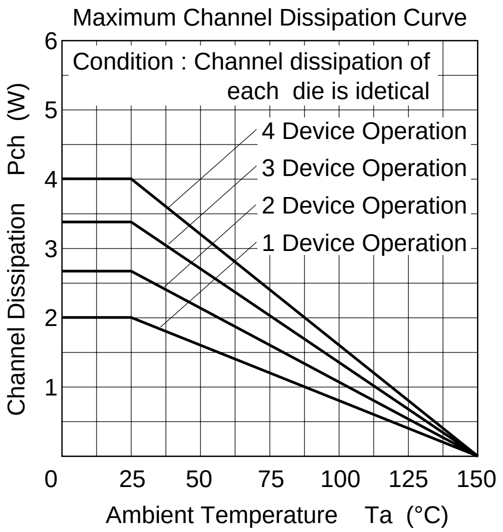
* PW ≤ 10 μs, duty cycle ≤ 1 %
** 4 Devices operation

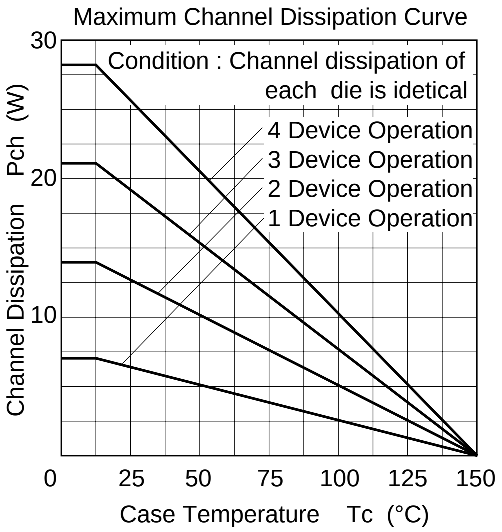
Table 2 Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	–60	—	—	V	I_D = –10 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}	—	—	–250	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	$R_{DS(on)}$	—	0.09	0.13	Ω	I_D = –4 A V_{GS} = –10 V *
		—	0.12	0.17	Ω	I_D = –4 A V_{GS} = –4 V *
Forward transfer admittance	$\|y_{fs}\|$	5.5	7.7	—	S	I_D = –4 A V_{DS} = –10 V *
Input capacitance	Ciss	—	1400	—	pF	V_{DS} = –10 V
Output capacitance	Coss	—	720	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	220	—	pF	f = 1 MHz
Turn–on delay time	$t_{d(on)}$	—	15	—	ns	I_D = –8 A
Rise time	t_r	—	120	—	ns	V_{GS} = –10 V
Turn–off delay time	$t_{d(off)}$	—	220	—	ns	R_L = 3.75 Ω
Fall time	t_f	—	160	—	ns	
Body–drain diode forward voltage	V_{DF}	—	–1.05	—	V	I_F = –8 A, V_{GS} = 0
Body–drain diode reverse recovery time	t_{rr}	—	190	—	µs	I_F = –8 A, V_{GS} = 0, dIF / dt = 50 A / µs

* Pulse Test

■ See characteristic curves of 2SJ173, 2SJ176.


Maximum Channel Dissipation Curve
Condition : Channel dissipation of each die is idetical
4 Device Operation
3 Device Operation
2 Device Operation
1 Device Operation
Channel Dissipation Pch (W)
0
1
2
3
4
5
6
25
50
75
100
125
150
Ambient Temperature Ta (°C)


Maximum Channel Dissipation Curve
Condition : Channel dissipation of each die is idetical
4 Device Operation
3 Device Operation
2 Device Operation
1 Device Operation
Channel Dissipation Pch (W)
0
10
20
30
25
50
75
100
125
150
Case Temperature Tc (°C)