
4AJ11

Silicon P-Channel Power MOS FET Array

HITACHI

Application

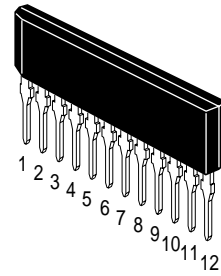
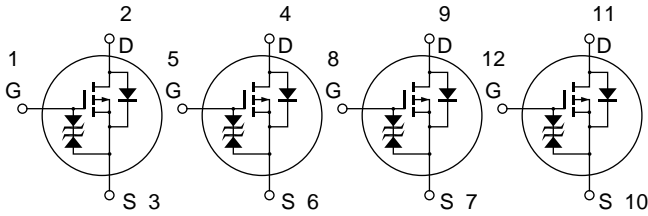
High speed power switching

Features

- Low on-resistance
 $R_{DS(on)} = 0.13$, $V_{GS} = -10$ V, $I_D = -4$ A
 $R_{DS(on)} = 0.17$, $V_{GS} = -4$ V, $I_D = -4$ A
- Capable of 4 V gate drive
- Low drive current
- High speed switching
- High density mounting
- Suitable for motor driver and solenoid driver and lamp driver

Outline

SP-12



1, 5, 8, 12. Gate
2, 4, 9, 11. Drain
3, 6, 7, 10. Source

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

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	$I_{D(pulse)}^{*1}$	-32	A
Body to drain diode reverse drain current	I_{DR}	-8	A
Channel dissipation	$P_{ch} (T_c = 25^\circ\text{C})^{*2}$	28	W
Channel dissipation	P_{ch}^{*2}	4	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

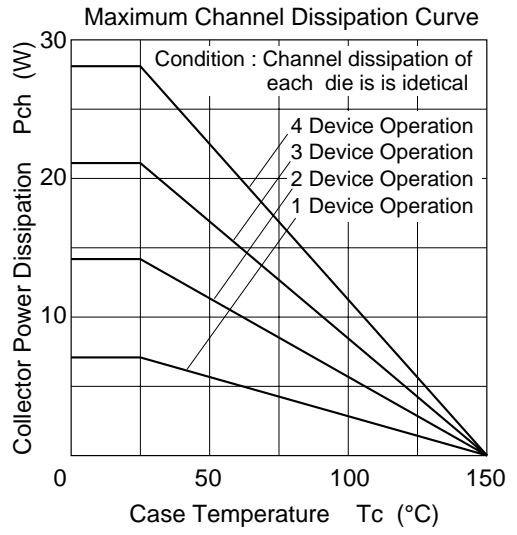
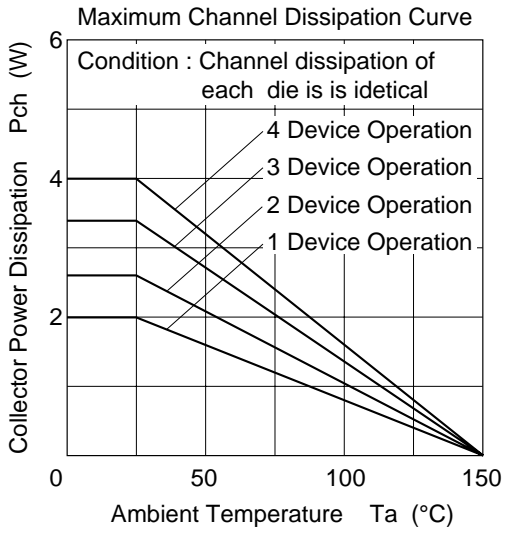
Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$

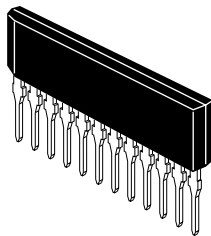
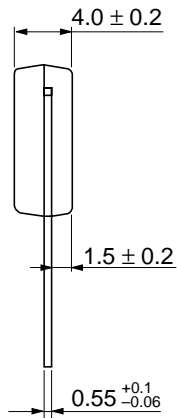
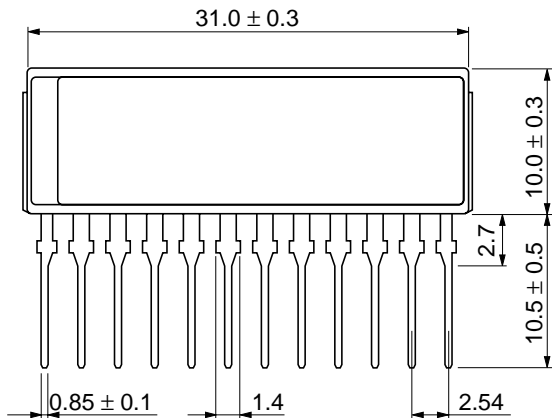
2. 4 Devices operation

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	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-250	μA	$V_{DS} = -50 \text{ V}, V_{GS} = 0$
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	$R_{DS(on)}$	—	0.09	0.13	Ω	$I_D = -4 \text{ A}$ $V_{GS} = -10 \text{ V}^{*1}$
		—	0.12	0.17	Ω	$I_D = -4 \text{ A}$ $V_{GS} = -4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	5.5	7.7	—	S	$I_D = -4 \text{ A}$ $V_{DS} = -10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	1400	—	pF	$V_{DS} = -10 \text{ V}$
Output capacitance	C_{oss}	—	720	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	220	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = -8 \text{ A}$
Rise time	t_r	—	120	—	ns	$V_{GS} = -10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	220	—	ns	$R_L = 3.75 \text{ }\Omega$
Fall time	t_f	—	160	—	ns	
Body to drain diode forward voltage	V_{DF}	—	-1.05	—	V	$I_F = -8 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	190	—	μs	$I_F = -8 \text{ A}, V_{GS} = 0,$ $dI_F/dt = 50 \text{ A}/\mu\text{s}$

Note: 1. Pulse Test





Hitachi Code	SP-12
JEDEC	—
EIAJ	—
Weight (reference value)	3.6 g

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