

2SJ409 L, 2SJ409 S

SILICON P-CHANNEL MOS FET

Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V Gate drive device can be driven from 5 V source
- Suitable for Switching regulator, DC – DC converter

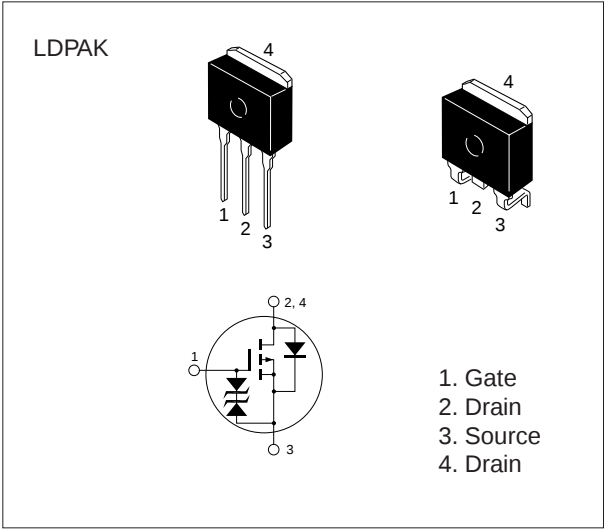


Table 1 Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	–100	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	–20	A
Drain peak current	$I_{D(pulse)}^*$	–80	A
Body–drain diode reverse drain current	I_{DR}	–20	A
Channel dissipation	P_{ch}^{**}	75	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

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

** Value at $T_c=25^\circ C$

Table 2 Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-100	—	—	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	$V_{DS} = -80\text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.12	0.16	Ω	$I_D = -10\text{ A}$ $V_{GS} = -10\text{ V}^*$
			0.16	0.22	Ω	$I_D = -10\text{ A}$ $V_{GS} = -4\text{ V}^*$
Forward transfer admittance	$ y_{fs} $	7.5	12	—	S	$I_D = -10\text{ A}$ $V_{DS} = -10\text{ V}^*$
Input capacitance	C_{iss}	—	1860	—	pF	$V_{DS} = -10\text{ V}$
Output capacitance	C_{oss}	—	680	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	145	—	pF	$f = 1\text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = -10\text{ A}$
Rise time	t_r	—	115	—	ns	$V_{GS} = -10\text{ V}$
Turn-off delay time	$t_{d(off)}$	—	320	—	ns	$R_L = 3\text{ }\Omega$
Fall time	t_f	—	170	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-1.05	—	V	$I_F = -20\text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	280	—	ns	$I_F = -20\text{ A}$, $V_{GS} = 0$, $di_F / dt = 50\text{ A} / \mu\text{s}$

See characteristics curves of 2SJ221

