

2SK1169, 2SK1170

Silicon N-Channel MOS FET

Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

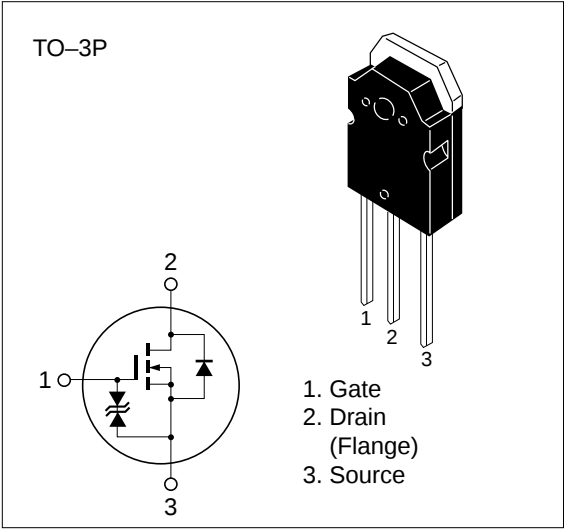


Table 1 Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1169	V_{DSS}	450	V
	2SK1170		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	20	A
Drain peak current		$I_{D(pulse)^{*}}$	80	A
Body to drain diode reverse drain current		I_{DR}	20	A
Channel dissipation		P_{ch}^{**}	120	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 $T_C = 25 \text{ }^{\circ}\text{C}$

Table 2 Electrical Characteristics (Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1169	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
	2SK1170		500	—	—	V	
Gate to source breakdown voltage		$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	2SK1169	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}$, $V_{GS} = 0$
	2SK1170		—	—	—	μA	$V_{DS} = 400 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage		$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static Drain to source on state resistance	2SK1169	$R_{DS(on)}$	—	0.20	0.25	Ω	$I_D = 10 \text{ A}$, $V_{GS} = 10 \text{ V}$ *
	2SK1170		—	0.22	0.27	Ω	
Forward transfer admittance		$ y_{fs} $	10	16	—	S	$I_D = 10 \text{ A}$, $V_{DS} = 10 \text{ V}$ *
Input capacitance		C_{iss}	—	2800	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance		C_{oss}	—	780	—	pF	
Reverse transfer capacitance		C_{rss}	—	90	—	pF	
Turn-on delay time		$t_{d(on)}$	—	32	—	ns	$I_D = 10 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 3 \text{ }\Omega$
Rise time		t_r	—	115	—	ns	
Turn-off delay time		$t_{d(off)}$	—	200	—	ns	
Fall time		t_f	—	90	—	ns	
Body to drain diode forward voltage		V_{DF}	—	1.0	—	V	$I_F = 20 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time		t_{rr}	—	500	—	ns	$I_F = 20 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu\text{s}$

* Pulse Test

