

2SK1159, 2SK1160

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, DC-DC converter and motor driver

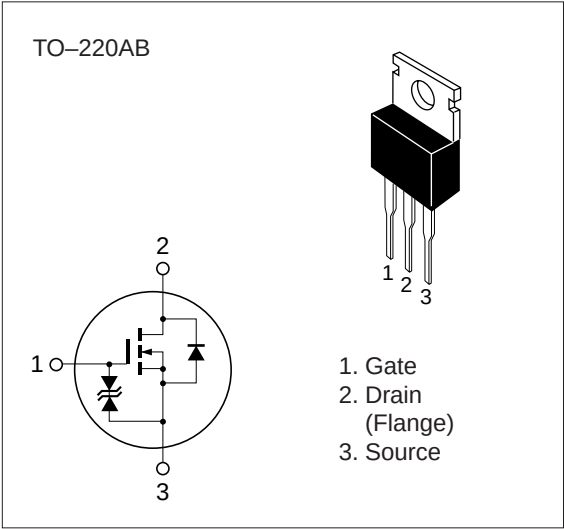


Table 1 Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1159	V_{DSS}	450	V
	2SK1160		500	
Gate to source voltage		V_{GSS}	± 30	V
Drain current		I_D	8	A
Drain peak current		$I_{D(pulse)}^*$	32	A
Body to drain diode reverse drain current		I_{DR}	8	A
Channel dissipation		P_{ch}^{**}	60	W
Channel temperature		T_{ch}	150	$^\circ\text{C}$
Storage temperature		T_{stg}	-55 to +150	$^\circ\text{C}$

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

** Value at $T_C = 25^\circ\text{C}$

Table 2 Electrical Characteristics (Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1159 2SK1160	$V_{(BR)DSS}$	450 500	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
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	2SK1159 2SK1160	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}$, $V_{GS} = 0$ $V_{DS} = 400 \text{ V}$, $V_{GS} = 0$
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	2SK1159 2SK1160	$R_{DS(on)}$	— —	0.55 0.60	0.7 0.8	Ω	$I_D = 4 \text{ A}$, $V_{GS} = 10 \text{ V}$ *
Forward transfer admittance		$ y_{fs} $	4.5	7.5	—	S	$I_D = 4 \text{ A}$, $V_{DS} = 10 \text{ V}$ *
Input capacitance		C_{iss}	—	1150	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance		C_{oss}	—	340	—	pF	
Reverse transfer capacitance		C_{rss}	—	55	—	pF	
Turn-on delay time		$t_{d(on)}$	—	17	—	ns	$I_D = 4 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 7.5 \Omega$
Rise time		t_r	—	55	—	ns	
Turn-off delay time		$t_{d(off)}$	—	100	—	ns	
Fall time		t_f	—	45	—	ns	
Body to drain diode forward voltage		V_{DF}	—	0.9	—	V	$I_F = 8 \text{ A}$, $V_{GS} = 0$
Body to drain diode forward voltage		t_{rr}	—	350	—	ns	$I_F = 8 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu\text{s}$

* Pulse Test

