

## 2SK1159, 2SK1160

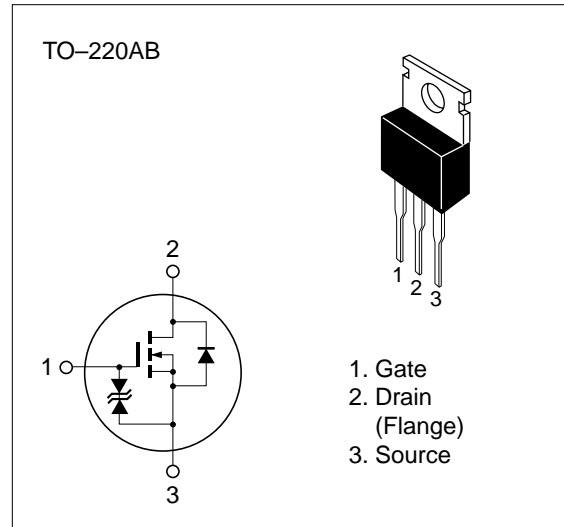
### Silicon N-Channel MOS FET

#### 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		$V_{GSS}$	$\pm 30$	V
Drain current		$I_D$	8	A
Drain peak current		$I_{D(\text{pulse})}^*$	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	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
	2SK1160		500				
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	$I_{DSS}$	—	—	250	μA	$V_{DS} = 360 \text{ V}, V_{GS} = 0$
	2SK1160						$V_{DS} = 400 \text{ V}, V_{GS} = 0$
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	$R_{DS(on)}$	—	0.55	0.7	Ω	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}^*$
	2SK1160		—	0.60	0.8		
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	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance		$C_{oss}$	—	340	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance		$C_{rss}$	—	55	—	pF	
Turn-on delay time		$t_{d(on)}$	—	17	—	ns	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time		$t_r$	—	55	—	ns	$R_L = 7.5 \text{ } \Omega$
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

