

2SK1540 (L), 2SK1541 (L), 2SK1540 (S), 2SK1541 (S)

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

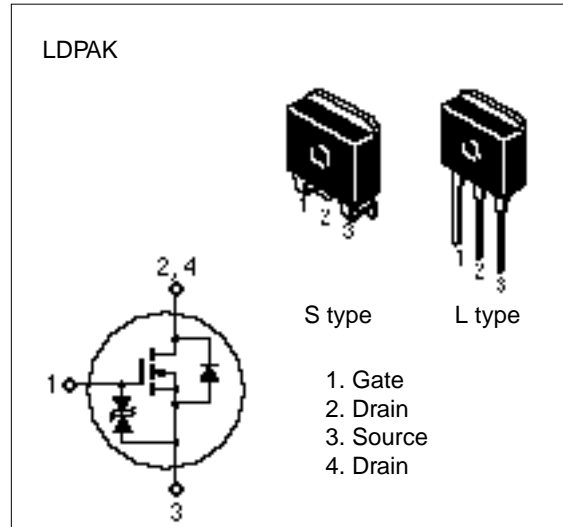


Table 1 Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1540	V_{DSS}	450	V
	2SK1541		500	
Gate to source voltage		V_{GSS}	± 30	V
Drain current		I_D	7	A
Drain peak current		$I_{D(\text{pulse})}^*$	28	A
Body to drain diode reverse drain current		I_{DR}	7	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	2SK1540	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
	2SK1541		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	2SK1540	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}, V_{GS} = 0$
	2SK1541						$V_{DS} = 400 \text{ V}, V_{GS} = 0$
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	2SK1540	$R_{DS(on)}$	—	0.6	0.8	Ω	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}^*$
	2SK1541		—	0.7	0.9		
Forward transfer admittance		$ y_{fs} $	4.0	6.5	—	S	$I_D = 4 \text{ A}, V_{DS} = 10 \text{ V}^*$
Input capacitance		C_{iss}	—	1050	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance		C_{oss}	—	280	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance		C_{rss}	—	40	—	pF	
Turn-on delay time		$t_{d(on)}$	—	15	—	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		$t_{d(off)}$	—	95	—	ns	
Fall time		t_f	—	40	—	ns	
Body to drain diode forward voltage		V_{DF}	—	0.95	—	V	$I_F = 7 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time		t_{rr}	—	320	—	ns	$I_F = 7 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

* Pulse Test

See characteristic curves of 2SK1157, 2SK1158.

