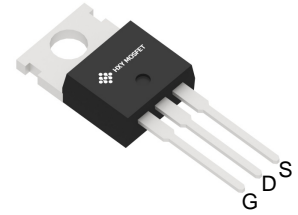




## Description

The 2SK4171 uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.



TO-220  
(TO-220AB)

## General Features

$V_{DS} = 60V, I_D = 80A$

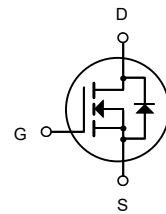
$R_{DS(ON)} < 7m\Omega @ V_{GS} = 10V$

## Application

High efficiency switch mode power supplies

Power factor correction

Electronic lamp ballast



N-Channel MOSFET

## Ordering Information

Product ID	Pack	Brand	Units Tube
2SK4171	TO-220(TO-220AB)	HXY MOSFET	50

## Absolute Maximum Ratings@ $T_j=25^\circ C$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	60	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Drain Current, V <sub>GS</sub> @ 10V	80	A
I <sub>DM</sub>	Pulsed Drain Current	340	A
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	120	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C



**Electrical Characteristics(Tc=25°C, unless otherwise specified)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>BV<sub>DSS</sub></b>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	---	---	V
<b>I<sub>DSS</sub></b>	Zero Gate Voltage Drain Current	V <sub>GS</sub> =0V, V <sub>DS</sub> =60V	---	---	1	μA
<b>I<sub>GSS</sub></b>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0A	---	---	±100	nA
<b>V<sub>GS(th)</sub></b>	GATE-Source Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	2	2.8	4	V
<b>R<sub>DS(on)</sub></b>	Drain-Source On Resistance <sup>3</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> 30A	---	5.8	7	mΩ
<b>C<sub>iss</sub></b>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	---	3629	---	pF
<b>C<sub>oss</sub></b>	Output Capacitance		---	280.25	--	
<b>C<sub>rss</sub></b>	Reverse Transfer Capacitance		---	228	---	
<b>t<sub>d(on)</sub></b>	Turn-On Delay Time	V <sub>DS</sub> =30V, I <sub>D</sub> =30A, R <sub>ENG</sub> =1.8Ω, V <sub>GS</sub> =10V	---	18.9	---	ns
<b>t<sub>r</sub></b>	Rise Time		---	83.6	---	ns
<b>t<sub>d(off)</sub></b>	Turn-Off Delay Time		---	38.85	---	ns
<b>t<sub>f</sub></b>	Fall Time		---	80.75	---	ns
<b>Q<sub>g</sub></b>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =30A	---	80.85	---	nc
<b>Q<sub>gs</sub></b>	Gate-Source Charge		---	22.05	---	nc
<b>Q<sub>gd</sub></b>	Gate-Drain "Miller" Charge		---	25.2	---	nc
<b>V<sub>SD</sub></b>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>SD</sub> =30A	---	---	1.2	V
<b>I<sub>S</sub></b>	Continuous Drain Current	V <sub>D</sub> =V <sub>G</sub> =0V	---	---	80	A
<b>I<sub>SM</sub></b>	Pulsed Drain Current		---	---	340	A

**Notes:**

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition: Starting T<sub>J</sub>=25C, V<sub>DD</sub>=30V, V<sub>G</sub>=10V, R<sub>G</sub>=25ohm, L=0.5mH, I<sub>AS</sub>=27A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.



Typical Characteristics:

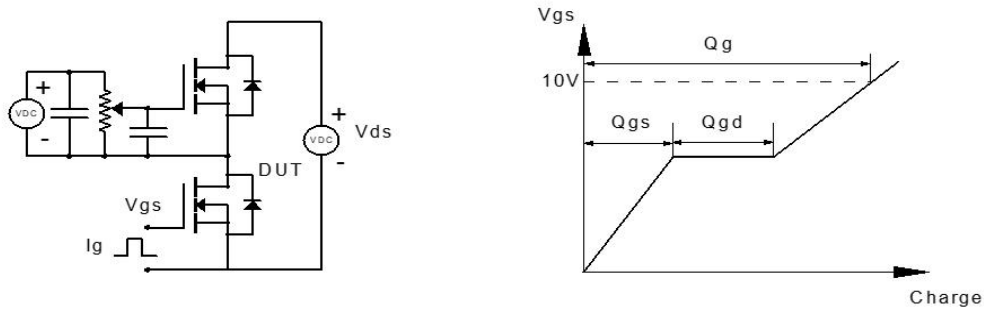


Figure 1: Gate Charge Test Circuit & Waveform

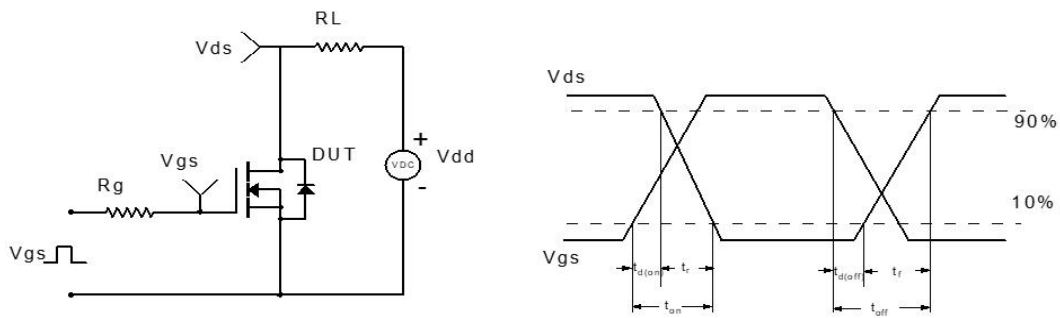


Figure 2: Resistive Switching Test Circuit & Waveform

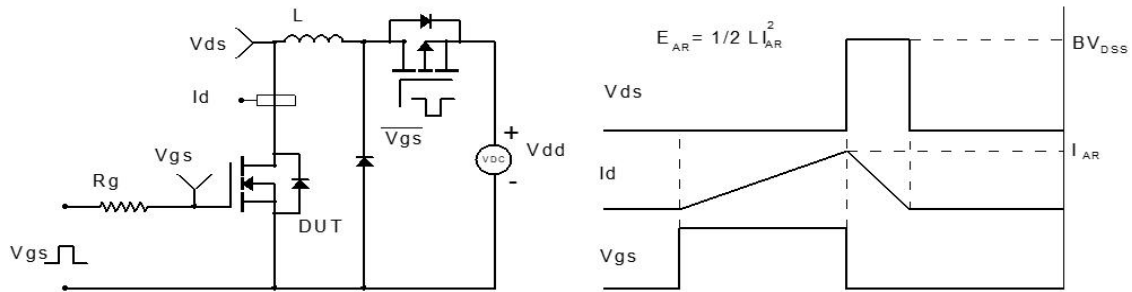


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

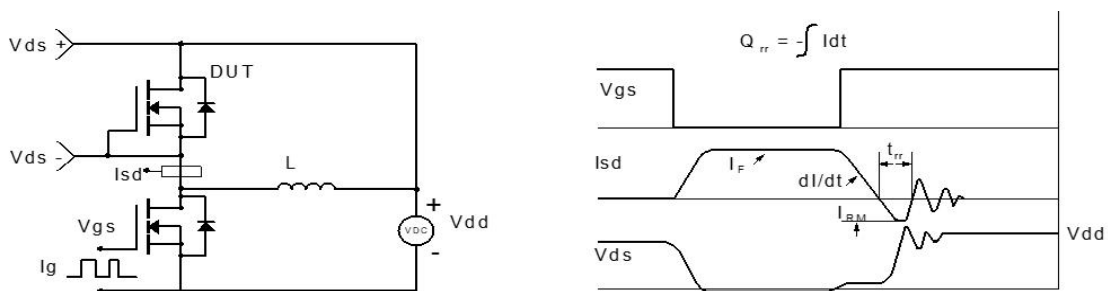
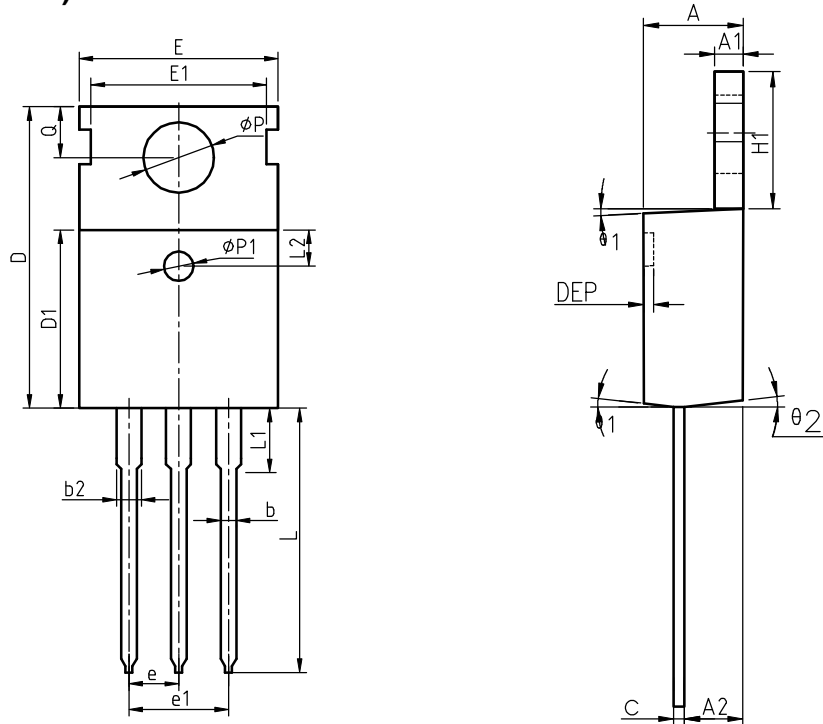


Figure 4: Diode Recovery Test Circuit & Waveform



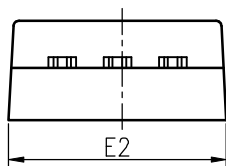
Package Information

TO-220(TO-220AB)



COMMON DIMENSIONS

SYMBOL	MIN	NOM	MAX	MIN	NOM	MAX
A	4.40	4.57	4.70	0.173	0.180	0.185
A1	1.27	1.30	1.33	0.050	0.051	0.052
A2	2.35	2.40	2.50	0.093	0.094	0.098
b	0.77	0.80	0.90	0.030	0.031	0.035
b2	1.17	1.27	1.36	0.046	0.050	0.054
c	0.48	0.50	0.56	0.019	0.020	0.022
D	15.40	15.60	15.80	0.606	0.614	0.622
D1	9.00	9.10	9.20	0.354	0.358	0.362
DEP	0.05	0.10	0.20	0.002	0.004	0.008
E	9.80	10.00	10.20	0.386	0.394	0.402
E1	-	8.70	-	-	0.343	-
E2	9.80	10.00	10.20	0.386	0.394	0.402
e		2.54	BSC		0.100	BSC
e1		5.08	BSC		0.200	BSC
H1	6.40	6.50	6.60	0.252	0.256	0.260
L	12.75	13.50	13.65	0.502	0.531	0.537
L1	-	3.10	3.30	-	0.122	0.130
L2		2.50	REF		0.098	REF
P	3.50	3.60	3.63	0.138	0.142	0.143
P1	3.50	3.60	3.63	0.138	0.142	0.143
Q	2.73	2.80	2.87	0.107	0.110	0.113
theta 1	5°	7°	9°	5°	7°	9°
theta 2	1°	3°	5°	1°	3°	5°
theta 3	1°	3°	5°	1°	3°	5°





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