

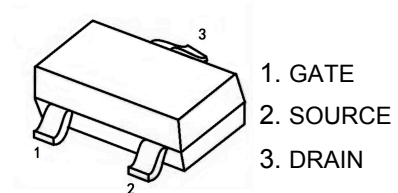
# KY2301S

-20V P-Channel Mosfet

## FEATURES

- $R_{DS(ON)} \leq 150m\Omega$  ( 120m $\Omega$  Typ.)  
@ $V_{GS}=-4.5V$
- $R_{DS(ON)} \leq 230m\Omega$  ( 160m $\Omega$  Typ.)  
@ $V_{GS}=-2.5V$

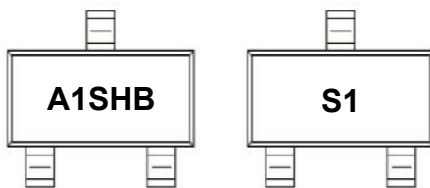
## SOT-23



## APPLICATIONS

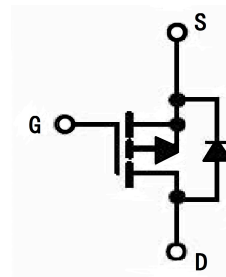
- PWM Applications
- Load Switch
- DC/DC

## MARKING



Other mark : "A19T"

## P-CHANNEL MOSFET



## MAXIMUM RATINGS ( $T_a=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	-20	V
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Continuous Drain Current	$T_a= 25^\circ C$	-2
		$T_a= 100^\circ C$	-1.3
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-8	A
$P_D$	Power Dissipation	$T_a= 25^\circ C$	0.96
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	130	$^\circ C/W$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

# KY2301S

## MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

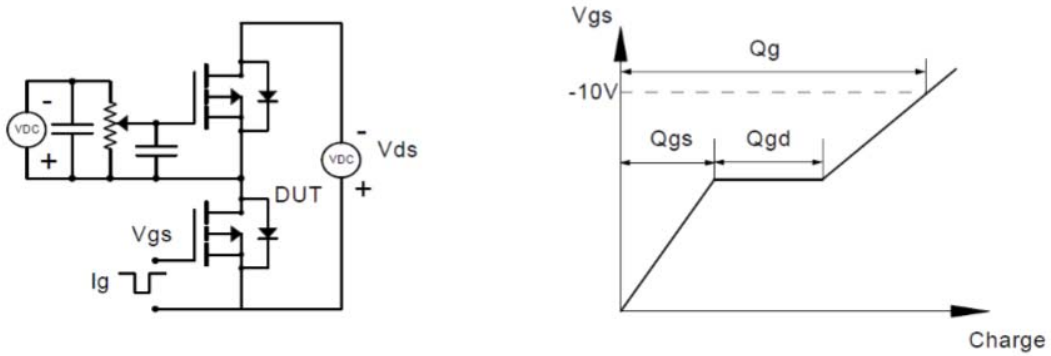
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu A$	-20	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = -20V, V_{GS} = 0V,$	-	-	-1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS} = -4.5V, I_D = -2A$	-	120	150	m $\Omega$
		$V_{GS} = -2.5V, I_D = -1A$	-	160	230	
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1.0MHz$	-	250	-	pF
$C_{oss}$	Output Capacitance		-	43	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	24	-	pF
$Q_g$	Total Gate Charge	$V_{DS} = -10V, I_D = -2A,$ $V_{GS} = -4.5V$	-	2.3	-	nC
$Q_{gs}$	Gate-Source Charge		-	0.41	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	0.62	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -10V, R_L = 5\Omega$ $R_{GEN} = 3\Omega, V_{GS} = -4.5V$	-	10.2	-	ns
$t_r$	Turn-on Rise Time		-	5.3	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	20.8	-	ns
$t_f$	Turn-off Fall Time		-	8	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	-2	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-8	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -2A$	-	-	-1.2	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

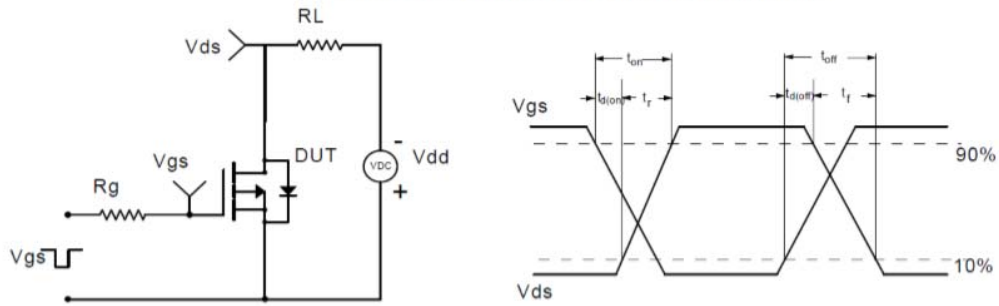
2. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

## TYPICAL PERFORMANCE CHARACTERISTICS

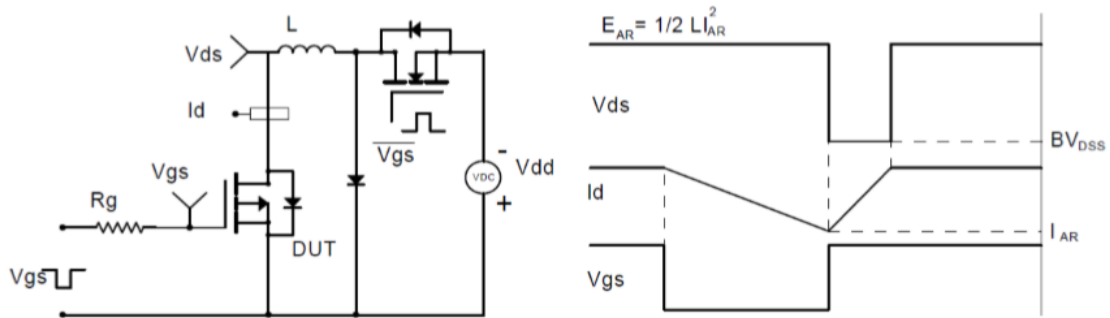
Gate Charge Test Circuit & Waveform



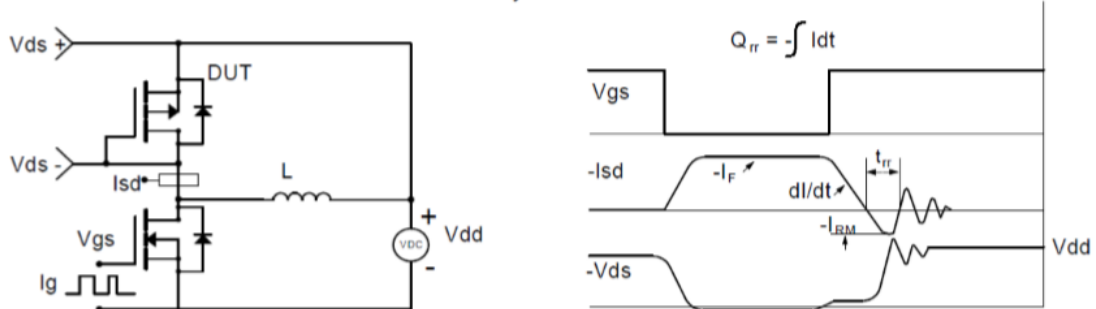
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

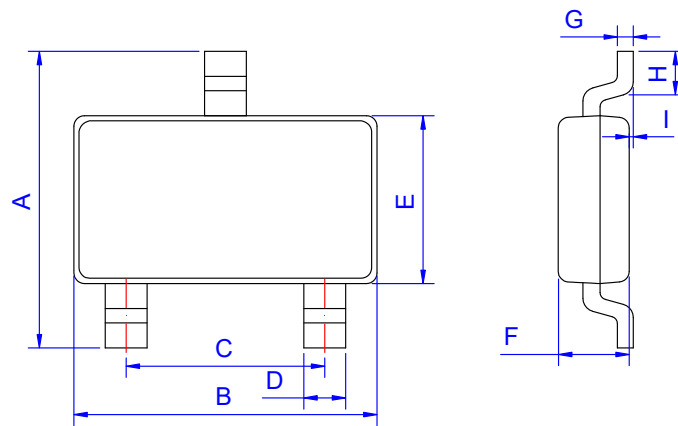


Diode Recovery Test Circuit & Waveforms



# KY2301S

## SOT-23 PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004