

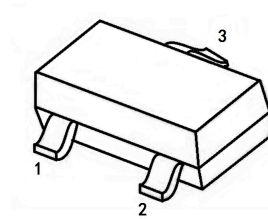
# KY1012

## 20V N-Channel Mosfet

### FEATURES

- $R_{DS(ON)} \leq 0.7\Omega$  (0.41 $\Omega$  Typ.)  
@ $V_{GS}=4.5V$
- $R_{DS(ON)} \leq 0.85\Omega$  (0.53 $\Omega$  Typ.)  
@ $V_{GS}=2.5V$
- $R_{DS(ON)} \leq 1.25\Omega$  (0.7 $\Omega$  Typ.)  
@ $V_{GS}=1.8V$

### SOT-523

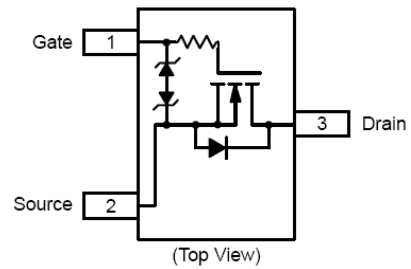


1. GATE
2. SOURCE
3. DRAIN

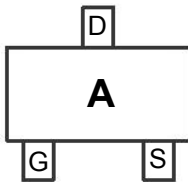
### APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, agers

### N-CHANNEL MOSFET



### MARKING



### MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

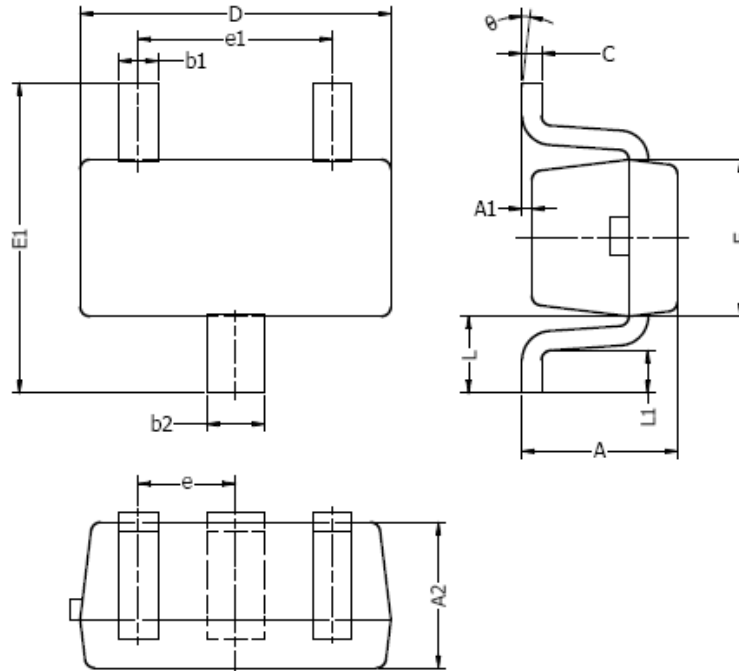
Symbol	Parameter	5 secs	Steady State	Units	
$V_{DS}$	Drain-Source Voltage	20		V	
$V_{GS}$	Gate-Source Voltage	$\pm 6V$		V	
$I_D$	Continuous Drain Current	$T_a=25^\circ C$	600	500	mA
		$T_a=85^\circ C$	400	350	
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	1000		mA	
$I_S$	Continuous Source Current	275	250	mA	
$P_D$	Power Dissipation	$T_a=25^\circ C$	175	150	mW
		$T_a=85^\circ C$	90	80	
$T_{STG}$	Storage Temperature Range	-55 to +150		$^\circ C$	
$T_J$	Operating Junction Temperature	+150		$^\circ C$	
ESD	Gate-source ESD Rating (HBM, Method 3015)	2000		V	

**KY1012****MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C	-	0.3	100	nA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>GS</sub> =±4.5V, V <sub>DS</sub> =0V	-	±0.5	±1	μA
I <sub>D(ON)</sub>	On-state Drain Current	V <sub>DS</sub> =5V, V <sub>GS</sub> =4.5V	700	-	-	mA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 100μA	0.45	-	0.9	V
R <sub>DS(on)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =600mA	-	0.41	0.70	Ω
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =500mA	-	0.53	0.85	
		V <sub>GS</sub> =1.8V, I <sub>D</sub> =350mA	-	0.70	1.25	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =400mA	1	-	-	mS
<b>Dynamic Characteristics</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =10V, I <sub>D</sub> =250mA V <sub>GS</sub> =4.5V	-	750	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	75	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	225	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, R <sub>G</sub> =10Ω, I <sub>D</sub> =200mA R <sub>L</sub> =47Ω	-	5	-	ns
t <sub>r</sub>	Turn-On Rise Time		-	5	-	ns
t <sub>d(off)</sub>	Turn-Off Delay Time		-	25	-	ns
t <sub>f</sub>	Turn-Off Fall Time		-	11	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> = 0V, T <sub>J</sub> = 25 °C I <sub>SD</sub> =150mA	-	0.8	1.2	V

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## SOT-523 PACKAGE OUTLINE DRAWING



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
$\theta$	0°	8°	0°	8°