



## UM6K1N

Power MOSFET

### SILICON N-CHANNEL MOSFET

#### DESCRIPTION

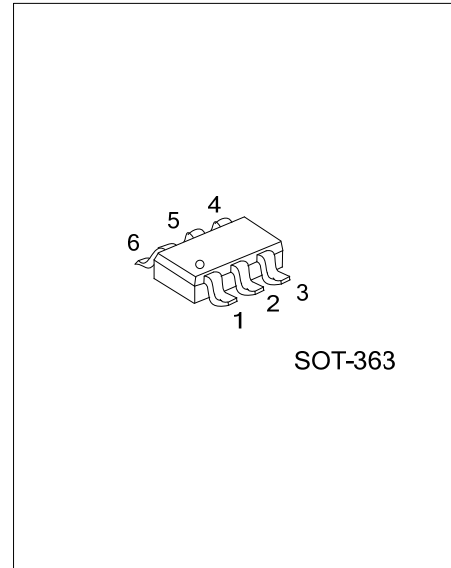
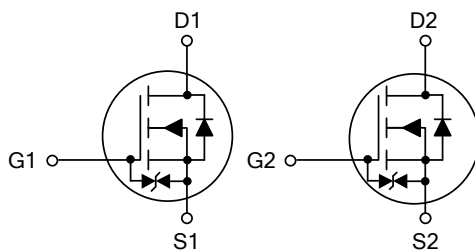
The UTC **UM6K1N** is a silicon N-channel MOSFET. it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate threshold voltage.

The UTC **UM6K1N** is suitable for switching and interfacing applications.

#### FEATURES

- \*  $R_{DS(on)} < 8 \Omega @ V_{GS}=4V, I_D=10mA$
- \*  $R_{DS(on)} < 13 \Omega @ V_{GS}=2.5V, I_D=1mA$
- \* High switching speed
- \* Low gate threshold voltage

#### SYMBOL



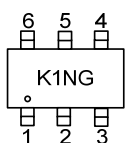
#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
UM6K1NG-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

<p>UM6K1NG-AL6-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AL6: SOT-363</li> <li>(3) G: Halogen Free and Lead Free</li> </ul>
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#### MARKING



## ■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	30	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Drain Current	Continuous	I <sub>D</sub>	100	mA
	Pulsed (Note 1)	I <sub>DM</sub>	200	mA
Power Dissipation (Note 2)	T <sub>C</sub> =25°C	P <sub>D</sub>	150	mW
Channel Temperature		T <sub>CH</sub>	150	°C
Storage Temperature Range		T <sub>STG</sub>	-55~+150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

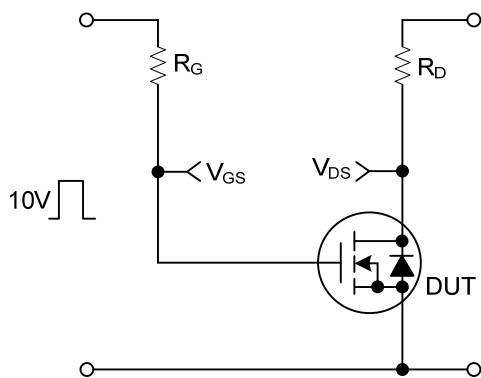
2. P<sub>w</sub>≤10μs, Duty cycle≤50%.

3. With each pin mounted on the recommended lands.

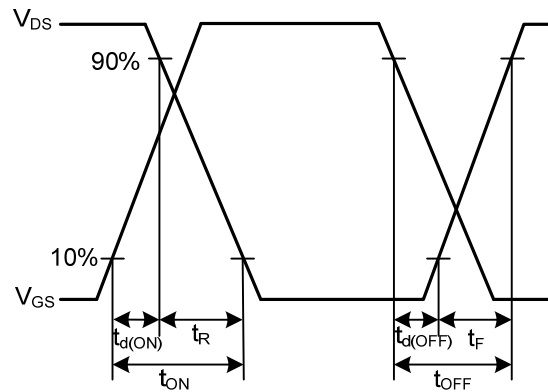
## ■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>								
Drain-Source Breakdown Voltage		BV <sub>DSS</sub>	I <sub>D</sub> =10μA, V <sub>GS</sub> =0V	30			V	
Drain-Source Leakage Current		I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1.0	μA	
Gate-Source Leakage Current	Forward	I <sub>GSS</sub>	V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V			+1	μA	
	Reverse		V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V			-1	μA	
<b>ON CHARACTERISTICS</b>								
Gate Threshold Voltage		V <sub>GS(TH)</sub>	V <sub>DS</sub> =3V, I <sub>D</sub> =100μA	0.8		1.5	V	
Static Drain-Source On-State Resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> =4V, I <sub>D</sub> =10mA		5	8	Ω	
			V <sub>GS</sub> =2.5V, I <sub>D</sub> =1mA		7	13	Ω	
Forward Transfer Admittance		Y <sub>FS</sub>	V <sub>DS</sub> =3V, I <sub>D</sub> =10mA	20			mS	
<b>DYNAMIC PARAMETERS</b>								
Input Capacitance		C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =5V, f=1.0MHz		13		pF	
Output Capacitance		C <sub>OSS</sub>				9		pF
Reverse Transfer Capacitance		C <sub>RSS</sub>				4		pF
<b>SWITCHING PARAMETERS</b>								
Turn-ON Delay Time		t <sub>D(ON)</sub>	V <sub>DD</sub> ≈5V, V <sub>GS</sub> =5V, I <sub>D</sub> =10mA, R <sub>GS</sub> =10Ω, R <sub>L</sub> =500Ω		15		ns	
Rise Time		t <sub>R</sub>				35		ns
Turn-OFF Delay Time		t <sub>D(OFF)</sub>				80		ns
Fall-Time		t <sub>F</sub>				80		ns

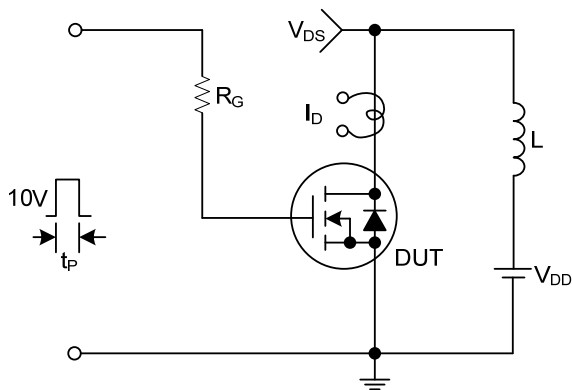
## ■ TEST CIRCUITS AND WAVEFORMS



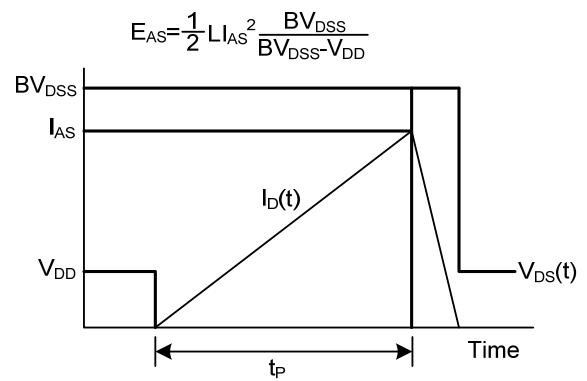
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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