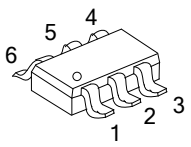
UM6K1N

Power MOSFET

SILICON N-CHANNEL MOSFET



SOT-363

■ DESCRIPTION

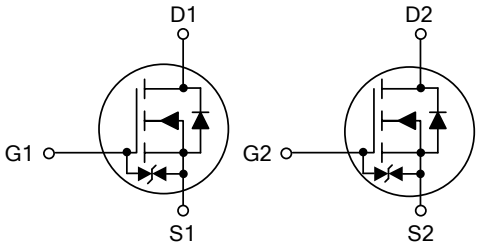
The UTC **UM6K1N** is a silicon N-channel MOSFET. it uses UTC's advanced technology to provide the customers with a minimum on state resistance, high switching speed and low gate threshold voltage.

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

■ FEATURES

* $R_{DS(on)}$ ≤ 8.0 Ω @ V_{GS}=4V, I_D=10mA
  $R_{DS(on)}$ ≤ 13 Ω @ V_{GS}=2.5V, I_D=1.0mA
* High switching speed
* Low gate threshold voltage

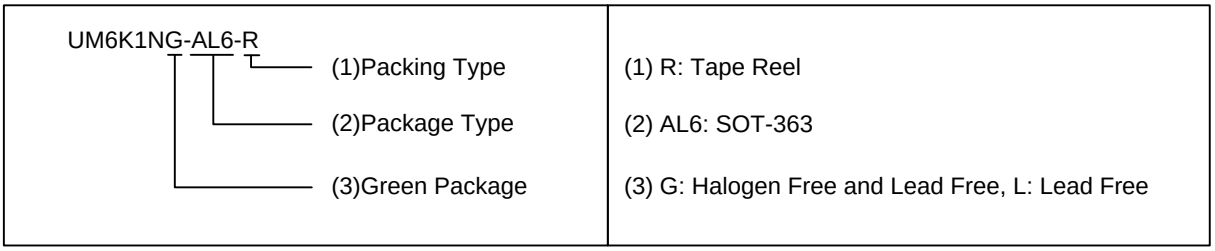
■ SYMBOL



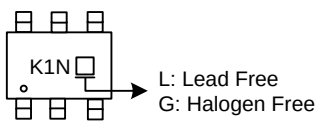
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UM6K1NL-AL6-R	UM6K1NG-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

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



■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

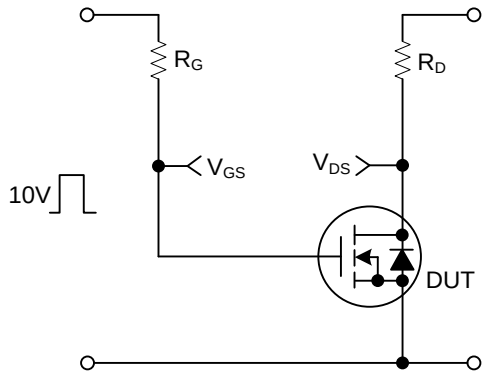
PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	20	V
			-12	V
Drain Current	Continuous	I_D	100	mA
	Pulsed (Note 1)	I_{DM}	200	mA
Power Dissipation (Note 2)	T_C=25°C	P_D	150	mW
Channel Temperature		T_{CH}	150	°C
Storage Temperature Range		T_{STG}	-55~+150	°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. Pw ≤ 10μs, Duty cycle ≤ 50%.
3. With each pin mounted on the recommended lands.

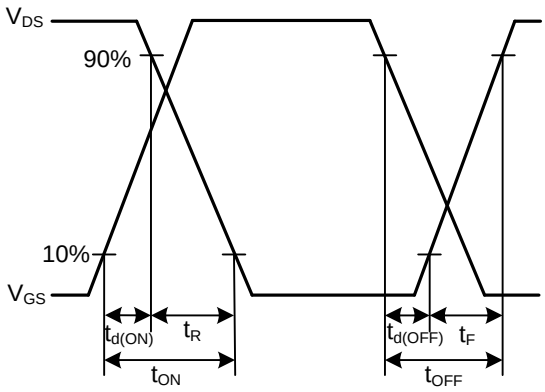
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=10μA, V_{GS}=0V	30			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=30V, V_{GS}=0V			1.0	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V, V_{DS}=0V			+5	μA
	Reverse		V_{GS}=-12V, V_{DS}=0V			-5	μA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=3V, I_D=100μA	0.8		1.5	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=4V, I_D=10mA		5	8	Ω
			V_{GS}=2.5V, I_D=1mA		7	13	Ω
Forward Transfer Admittance		$\|Y_{FS}\|$	V_{DS}=3V, I_D=10mA	20			mS
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=5V, f=1.0MHz		13		pF
Output Capacitance		C_{OSS}			9		pF
Reverse Transfer Capacitance		C_{RSS}			4		pF
SWITCHING PARAMETERS							
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}≈5V, V_{GS}=5V, I_D=10mA, R_{GS}=10Ω, R_L=500Ω		15		ns
Rise Time		t_R			35		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			80		ns
Fall-Time		t_F			80		ns

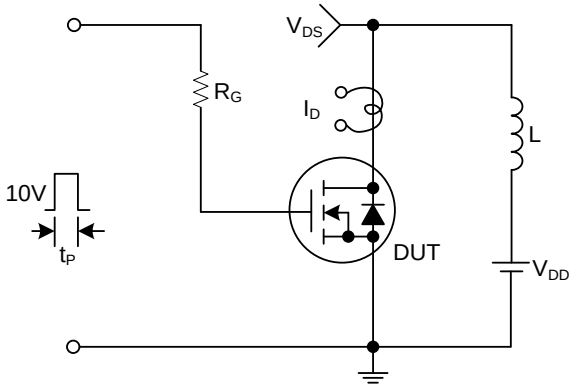
■ TEST CIRCUITS AND WAVEFORMS



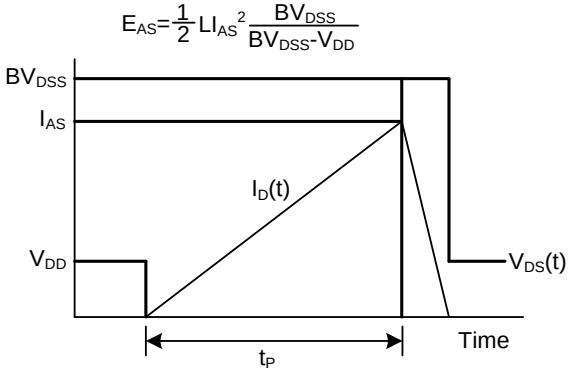
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms