

**2N7002LL**

Preliminary

Power MOSFET**60V, 115mA N-CHANNEL
POWER MOSFET**

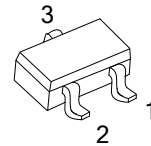
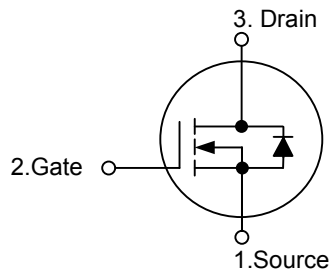
■ DESCRIPTION

The UTC **2N7002LL** uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

- * $R_{DS(ON)} = 7.5\Omega$ @ $V_{GS} = 10V$
- * Low Reverse Transfer Capacitance (C_{RSS} = typical 5 pF)
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness

■ SYMBOL



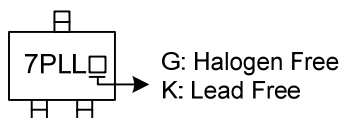
SOT-23-3
(JEDEC TO-236)

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2N7002LLK-AE2-R	2N7002LLG-AE2-R	SOT-23-3	S	G	D	Tape Reel

2N7002LLK-AE2-R	(1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel (2) AE2: SOT-23-3 (3) G: Halogen Free, K: Lead Free
-----------------	--	--

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	60	V
Drain-Gate Voltage ($R_G=1.0\text{M}\Omega$)	V_{DGR}	60	V
Gate-Source Voltage	Continuous	± 20	V
	Non-repetitive ($t_p \leq 50\mu\text{s}$)	± 40	V
Drain Current	Continuous($T_C=25^{\circ}\text{C}$)	115	mA
	Pulse(Note 2)	460	
Power Dissipation ($T_A = 25^{\circ}\text{C}$)	P_D	225	mW
Derate above 25°C		1.8	mW/ $^{\circ}\text{C}$
Junction Temperature	T_J	$+150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Note: 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. Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	556	$^{\circ}\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =10μA	60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V (T _J =25°C)			1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS(Note)						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	1.0		2.5	V
Drain-Source On-State Voltage	V _{DS(ON)}	V _{GS} =10V, I _D =115mA			3.75	V
		V _{GS} =5V, I _D =50mA			0.375	
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =115mA(T _C =25°C)			7.5	Ω
		V _{GS} =5V, I _D =50mA(T _C =25°C)			7.5	
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz			50	pF
Output Capacitance	C _{OSS}				25	pF
Reverse Transfer Capacitance	C _{RSS}				5.0	pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =25V, I _D =115mA, V _{GEN} =10V, R _G =25Ω, R _L =50Ω			20	ns
Turn-OFF Delay Time	t _{D(OFF)}				40	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V _{SD}	I _S =115mA, V _{GS} =0V			1.5	V
Maximum Body-Diode Continuous Current	I _S				115	mA
Source Current Pulsed	I _{SM}				115	mA

Note: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.