



2N7002LL

Preliminary

Power MOSFET

60V, 115mA, N-CHANNEL MOSFET

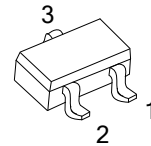
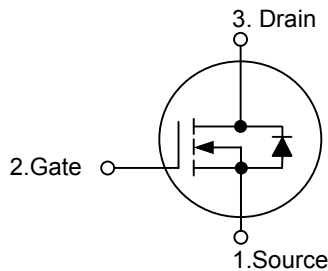
DESCRIPTION

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



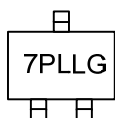
SOT-23-3
(JEDEC TO-236)

ORDERING INFORMATION

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

2N7002LLG-AE2-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE2: SOT-23-3
	(3)Halogen Free	(3) G: Halogen Free

MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	60	V
Drain-Gate Voltage (R _G =1.0MΩ)		V _{DGR}	60	V
Gate-Source Voltage	Continuous	V _{GSS}	±20	V
	Non-repetitive (t _P ≤ 50μs)	V _{GSM}	±40	V
Drain Current	Continuous(T _C =25°C)	I _D	±115	mA
	Pulse(Note 2)		±800	
Power Dissipation (T _a = 25°C)		P _D	225	mW
Derate above 25°C			1.8	mW / °C
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°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	$^{\circ}\text{C/W}$

■ 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 =500 mA			3.75	V
		V _{GS} =5V, I _D =50mA			0.375	
On-State Drain Current	I _{D(ON)}	V _{DS} ≧ 2.0V _{DS(ON)} , V _{GS} =10V	500			mA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =500mA(T _C =25°C)			7.5	Ω
		V _{GS} =5V, I _D =50mA(T _C =25°C)			7.5	
Forward Transconductance	g _{FS}	V _{DS} ≧ 2.0V _{DS(ON)} , I _D =200mA	80			mS
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 =500mA,			20	ns
Turn-OFF Delay Time	t _{D(OFF)}	V _{GEN} =10V, R _G =25Ω, R _L =50Ω			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}				800	mA

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

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