



2N7002L

Preliminary

Power MOSFET

60V, 115mA, N-CHANNEL MOSFET

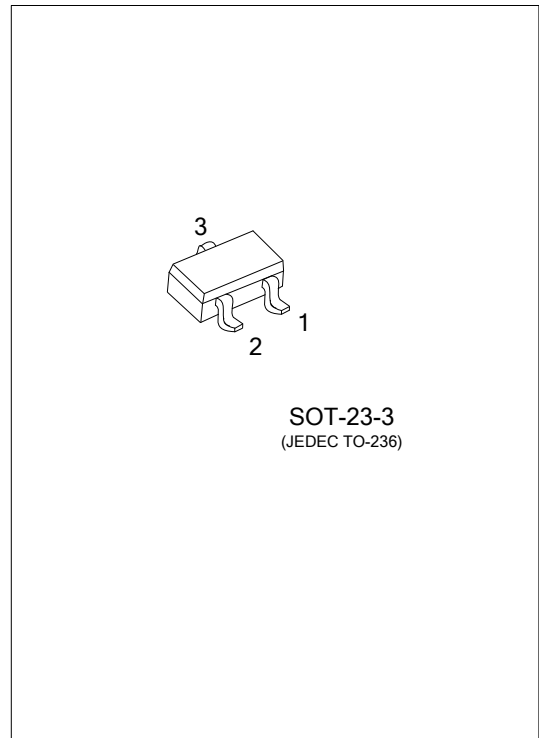
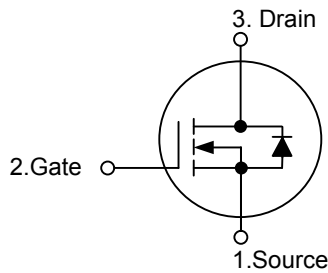
DESCRIPTION

The UTC **2N7002L** 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 ($C_{RSS} = \text{typical } 5\text{ pF}$)
- * Fast Switching Capability
- * Avalanche Energy Specified
- * Improved dv/dt Capability, High Ruggedness

SYMBOL

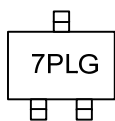


ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
2N7002LG-AE2-R	SOT-23-3	S	G	D	Tape Reel

<p>2N7002LG-AE2-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Halogen Free 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AE2: SOT-23-3 (3) G: Halogen Free
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MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage ($R_G=1.0M\Omega$)	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)	± 800	
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 ~ +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}	$V_{GS}=0\text{V}$, $I_D=10\mu\text{A}$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$ ($T_J=25^\circ\text{C}$)			1.0	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
ON CHARACTERISTICS(Note)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		2.5	V
Drain-Source On-State Voltage	$V_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=500\text{mA}$			3.75	V
		$V_{GS}=5\text{V}$, $I_D=50\text{mA}$			0.375	
On-State Drain Current	$I_{D(ON)}$	$V_{DS} \geq 2.0V_{DS(ON)}$, $V_{GS}=10\text{V}$	500			mA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=500\text{mA}$ ($T_C=25^\circ\text{C}$)			7.5	Ω
		$V_{GS}=5\text{V}$, $I_D=50\text{mA}$ ($T_C=25^\circ\text{C}$)			7.5	
Forward Transconductance	g_{FS}	$V_{DS} \geq 2.0V_{DS(ON)}$, $I_D=200\text{mA}$	80			mS
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$			50	pF
Output Capacitance	C_{OSS}				25	pF
Reverse Transfer Capacitance	C_{RSS}				5.0	pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=25\text{V}$, $I_D=500\text{mA}$,			20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$	$V_{GEN}=10\text{V}$, $R_G=25\Omega$, $R_L=50\Omega$			40	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	$I_S=115\text{mA}$, $V_{GS}=0\text{V}$			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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