



## 3LN01M

Preliminary

Power MOSFET

### N CHANNEL SILICON MOSFET GENERAL-PURPOSE SWITCHING DEVICE APPLICATIONS

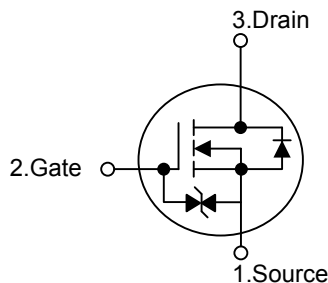
#### DESCRIPTION

The **3LN01M** uses UTC advanced technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with low gate voltages. This device's general purpose is for switching device applications.

#### FEATURES

- \*  $R_{DS(ON)} = 3.7\Omega @ V_{GS} = 4V$
- \* Ultra low gate charge ( typical 1.58 nC )
- \* Low reverse transfer capacitance (  $C_{RSS}$  = typical 2.3 pF )
- \* Fast switching capability
- \* Avalanche energy specified
- \* Improved dv/dt capability, high ruggedness

#### SYMBOL

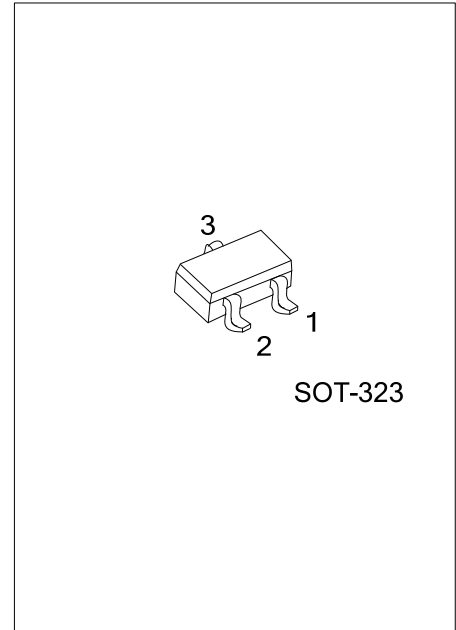
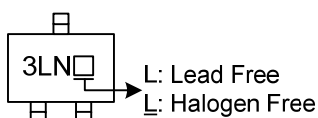


#### ORDERING INFORMATION

Ordering Number			Package	Pin Assignment			Packing
Normal	Lead Free	Halogen-Free		1	2	3	
3LN01M-AL3-R	3LN01ML-AL3-R	3LN01MG-AL3-R	SOT-323	S	G	D	Tape Reel

<div>3LN01ML-AL3-R</div> <div>(1)Packing Type</div> <div>(2)Package Type</div> <div>(3)Lead Plating</div>	<div>(1) R: Tape Reel</div> <div>(2) AL3: SOT-323</div> <div>(3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn</div>
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#### MARKING



Lead-free: 3LN01ML  
Halogen-free: 3LN01MG

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DS}$	30	V
Gate-Source Voltage		$V_{GS}$	$\pm 10$	V
Drain Current	DC	$I_D$	0.15	A
	Pulse(Note 2)		0.6	
Power Dissipation		$P_D$	0.15	W
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.

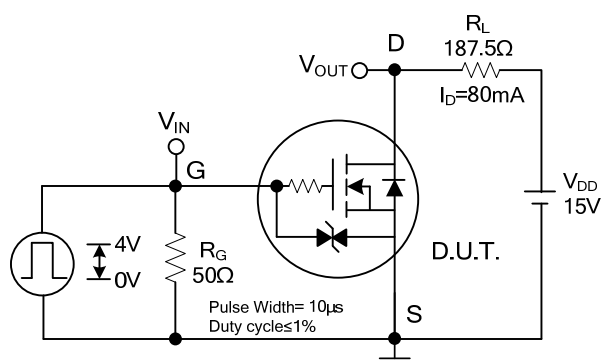
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse width  $\leq 10\mu\text{s}$ , Duty cycle  $\leq 1\%$

■ 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	$BV_{DSS}$	$V_{GS}=0V, I_D=1mA$	30			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$			$\pm 10$	$\mu A$
ON CHARACTERISTICS						
Cutoff Threshold Voltage	$V_{GS(OFF)}$	$V_{DS}=10V, I_D=100\mu A$	0.4		1.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4V, I_D=80mA$		2.9	3.7	$\Omega$
		$V_{GS}=2.5V, I_D=40mA$		3.7	5.2	
		$V_{GS}=1.5V, I_D=10mA$		6.4	12.8	
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=80mA$	0.15	0.22		S
DYNAMIC PARAMETERS						
Input Capacitance	$C_{ISS}$	$V_{DS}=10V, V_{GS}=0V, f=1.0MHz$		7.0		pF
Output Capacitance	$C_{OSS}$			5.9		pF
Reverse Transfer Capacitance	$C_{RSS}$			2.3		pF
SWITCHING PARAMETERS						
Total Gate Charge	$Q_G$	$V_{DS}=10V, V_{GS}=10V, I_D=150mA$		1.58		nC
Gate Source Charge	$Q_{GS}$			0.26		nC
Gate Drain Charge	$Q_{GD}$			0.31		nC
Turn-ON Delay Time	$t_{D(ON)}$	See specified Test Circuit		19		ns
Turn-ON Rise Time	$t_R$			65		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			155		ns
Turn-OFF Fall-Time	$t_F$			120		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	$V_{SD}$	$I_S=150mA, V_{GS}=0V$		0.87	1.2	V

■ Switching Time Test Circuit



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