



## SSM3K333R

Preliminary

Power MOSFET

### 6A, 30V N-CHANNEL POWER MOSFET

#### DESCRIPTION

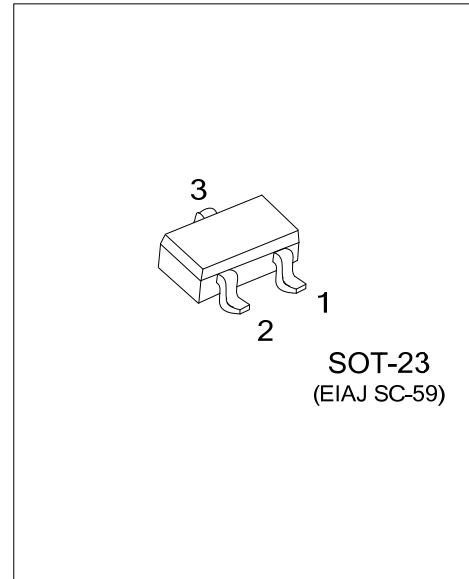
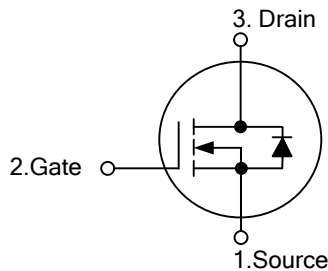
The UTC **SSM3K333R** is an N-channel power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

The UTC **SSM3K333R** is usually used in power management switching applications.

#### FEATURES

- \*  $R_{DS(ON)} < 42m\Omega @ V_{GS}=4.5V$
- \*  $R_{DS(ON)} < 28m\Omega @ V_{GS}=10V$
- \* High switching speed
- \* Low gate charge (Typ.=3.4nC)
- \* Low  $C_{RSS}$  (Typ.=28pF)

#### SYMBOL



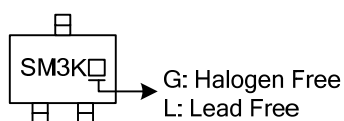
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
SSM3K333RL-AE3-R	SSM3K333RG-AE3-R	SOT-23	S	G	D	Tape Reel

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

<p>SSM3K333RL-AE3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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#### MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current	Continuous	$I_D$ (Note 2)	6	A
	Pulsed	$I_{DM}$ (Note 2)	12	A
Power Dissipation		$P_D$ (Note 3)	1	W
	$t=10\text{s}$		2	W
Channel Temperature		$T_{CH}$	150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-55~+150	$^\circ\text{C}$

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. The channel temperature should not exceed  $150^\circ\text{C}$  during use.

3. Mounted on a FR4 board.(25.4mm×25.4mm×1.6mm, Cu Pad: 645mm<sup>2</sup>)

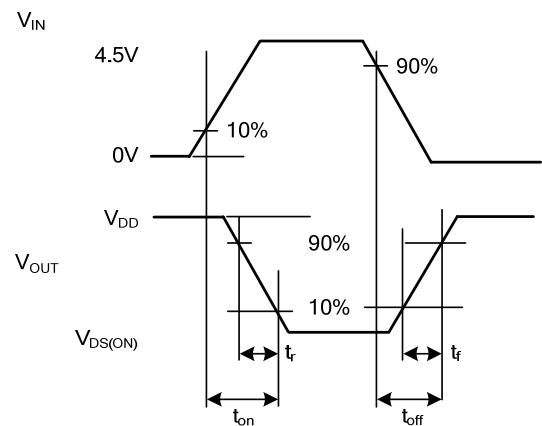
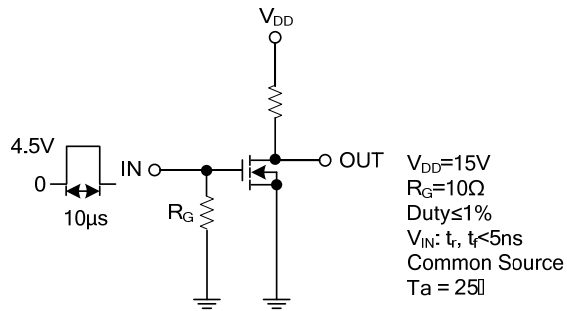
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>								
Drain-Source Breakdown Voltage		$BV_{DSS}$	$I_D=10\text{mA}$ , $V_{GS}=0\text{V}$	30			V	
Drain-Source Leakage Current		$I_{DSS}$	$V_{DS}=30\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$	
Gate-Source Leakage Current	Forward	$I_{GSS}$	$V_{GS}=+20\text{V}$ , $V_{DS}=0\text{V}$			+100	nA	
	Reverse		$V_{GS}=-20\text{V}$ , $V_{DS}=0\text{V}$			-100	nA	
<b>ON CHARACTERISTICS</b>								
Gate Threshold Voltage		$V_{GS(TH)}$	$V_{DS}=V_{GS}$ , $I_D=0.1\text{mA}$	1.3		2.5	V	
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	$V_{GS}=4.5\text{V}$ , $I_D=3\text{A}$ (Note 2)		25.7	42	m $\Omega$	
			$V_{GS}=10\text{V}$ , $I_D=5\text{A}$ (Note 2)		18.7	28	m $\Omega$	
<b>DYNAMIC PARAMETERS</b>								
Input Capacitance		$C_{ISS}$	$V_{GS}=0\text{V}$ , $V_{DS}=15\text{V}$ , $f=1.0\text{MHz}$		436		pF	
Output Capacitance		$C_{OSS}$				77		pF
Reverse Transfer Capacitance		$C_{RSS}$				28		pF
<b>SWITCHING PARAMETERS</b>								
Total Gate Charge		$Q_G$	$V_{GS}=4.5\text{V}$ , $V_{DD}=15\text{V}$ , $I_D=6\text{A}$		3.4		nC	
Gate to Source Charge		$Q_{GS}$				1.8		nC
Gate to Drain Charge		$Q_{GD}$				1.0		nC
Turn-ON Delay Time		$t_{D(ON)}$	$V_{DD}=15\text{V}$ , $I_D=3\text{A}$ , $V_{GS}=0\sim 4.5\text{V}$ ,		12		ns	
Turn-OFF Delay Time		$t_{D(OFF)}$	$R_G=10\Omega$		9		ns	
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>								
Drain-Source Diode Forward Voltage		$V_{SD}$	$I_{SD}=6\text{A}$ , $V_{GS}=0\text{V}$		0.85	1.2	V	

Notes: 1. The channel temperature should not exceed  $150^\circ\text{C}$  during use.

2. Pulse test

■ TEST CIRCUITS AND WAVEFORMS



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