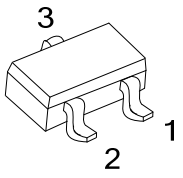
SSM3K333R **Preliminary** ***Power MOSFET***

6A, 30V N-CHANNEL POWER MOSFET



SOT-23
(EIAJ SC-59)

■ DESCRIPTION

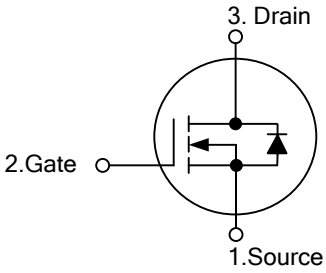
The UTC **SSM3K333R** is an N-channel power MOSFET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

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

■ FEATURES

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

■ SYMBOL



■ ORDERING INFORMATION

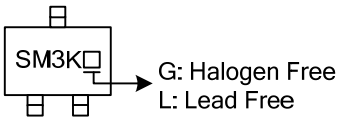
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
SSM3K333RL-AE3-R	SSM3K333RG-AE3-R	SOT-23	S	G	D	Tape Reel

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

SSM3K333RL-AE3-R
(1)Packing Type
(2)Package Type
(3)Lead Free

(1) R: Tape Reel
(2) AE3: SOT-23
(3) G: Halogen Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	±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=10s		2	W
Channel Temperature		T_{CH}	150	°C
Storage Temperature		T_{STG}	-55~+150	°C

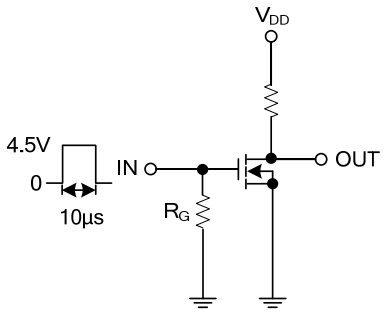
Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. The channel temperature should not exceed 150°C during use.
3. Mounted on a FR4 board.(25.4mm×25.4mm×1.6mm, Cu Pad: 645mm^2)

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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

Notes: 1. The channel temperature should not exceed 150°C during use.
2. Pulse test

■ TEST CIRCUITS AND WAVEFORMS



V_{DD}=15V
R_G=10Ω
Duty≤1%
V_{IN}: t_r, t_f<5ns
Common Source
Ta = 25□

Test Circuit