

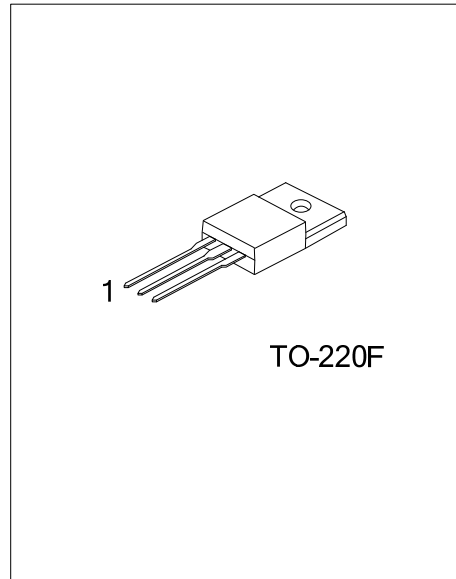


AC LINE SWITCH

■ **DESCRIPTION**

The UTC **USS120** high performance switch circuit is able to control a load up to 2A.

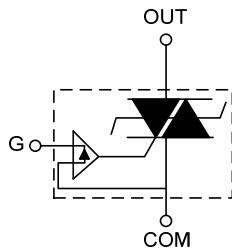
The UTC **USS120** switch embeds a high voltage clamping structure to absorb the inductive turn off energy and a gate level shifter driver to separate the digital controller from the main switch. It is triggered with a negative gate current flowing out of the gate pin.



■ **FEATURES**

- * Blocking voltage: $V_{DRM} / V_{RRM} = +/-700V$
- * Switch integrated driver
- * High noise immunity: static $dV/dt > 500V/\mu s$
- * Enables equipment to meet IEC 61000-4-5 Standard

■ **SYMBOL**

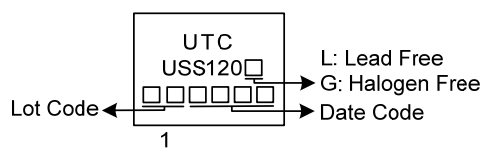


■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
USS120L-TF3-T	USS120G-TF3-T	TO-220F	C	O	G	Tube

<p>USS120G-TF3-T</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Green Package 	<ul style="list-style-type: none"> (1) T: Tube (2) TF3: TO-220F (3) G: Halogen Free and Lead Free, L: Lead Free
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■ **MARKING**



■ PIN DESCRIPTION

PIN No.	PIN NAME	Description
1	COM	Common drive reference to connect to the power line neutral
2	G	Switch Gate input to connect to the digital controller
3	OUT	Switch Output to connect to the load

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Peak Repetitive Off-State Voltage	V_{DRM}, V_{RRM}	700	V
RMS on-state current full cycle sine wave 50 to 60 Hz ($T_J = -10^\circ\text{C}$)	$I_{T(RMS)}$	2	A
Peak Non-Repetitive Surge Current (T_J initial = 25°C , full cycle sine wave)	$t_p=20\text{ms}$	20	A
	$t_p=16.7\text{ms}$	21	A
Circuit Fusing Considerations	$t_p=10\text{ms}$	I^2t	A^2s
Non repetitive on-state current critical rate of rise $I_G = 10\text{mA}$ ($t_r < 100\text{ns}$) ($F=120\text{Hz}$) ($T_J=125^\circ\text{C}$)	di/dt	50	A/s
Non repetitive line peak pulse voltage	V_{PP}	2	kV
Operating Junction Temperature Range (Rated V_{RRM} and V_{DRM})	T_J	-40 ~ +125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-40 ~ +150	$^\circ\text{C}$

Note: 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.

■ GATE CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Average gate power dissipation	$P_{G(AV)}$	0.1	W
Peak gate power dissipation ($t_p = 20\mu\text{s}$)	V_{GM}	5	W
Peak gate current (in respect to pin COM)	I_{GM}	1	A

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	60	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	3.5	$^\circ\text{C/W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Peak Forward or Reverse Blocking Current	I_{DRM}, I_{RRM}	$V_{OUT}=700\text{V}$			2	μA
					$T_C=25^\circ\text{C}$	200
$T_C=125^\circ\text{C}$						
ON CHARACTERISTICS						
Peak Forward On-State Voltage	V_{TM}	$I_{OUT}=2.8\text{A}, t_p=380\mu\text{s}$			1.3	V
On state characteristic threshold voltage ($T_C=125^\circ\text{C}$)	V_{TO}				0.85	V
Gate Trigger Current (Continuous DC) II-III	I_{GT}	$V_{OUT}=12\text{V(DC)}, R_L=140\Omega$			10	mA
Holding Current	I_H	$I_{OUT}=100\text{mA}$ Gate Open			45	mA
Latch Current	I_L	$I_G=20\text{mA}$			65	mA
Non triggering voltage ($T_C=125^\circ\text{C}$)	V_{GD}	$V_{OUT}=V_{DRM}, R_L=3.3\text{k}\Omega$			0.15	V
Gate Trigger Voltage (continuous dc) II-III	V_{GT}	$V_{OUT}=12\text{V(DC)}, R_L=140\Omega$			1	V
On state characteristic dynamic resistance ($T_C=125^\circ\text{C}$)	R_D				200	$\text{m}\Omega$
DYNAMIC CHARACTERISTICS						
Critical Rate of Rise of Off-State Voltage ($T_C=110^\circ\text{C}$)	d_v/dt	$V_{OUT}=460\text{V}$ Gate Open	500			V/ μs
Critical Rate of Rise of On-State Current ($T_C=125^\circ\text{C}$)	$(di/dt)_c$	Without snubber	1			A/ms

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