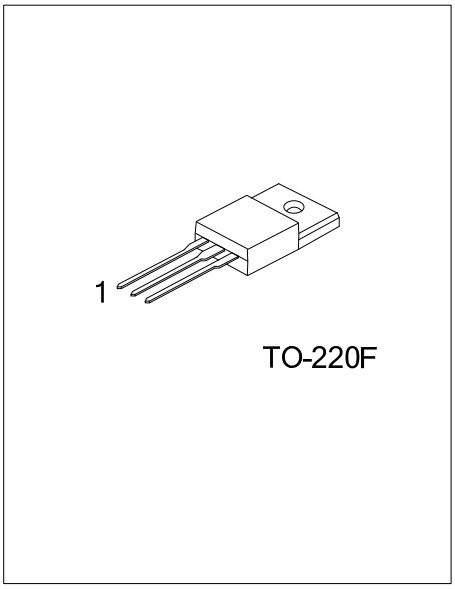
AC LINE SWITCH



■ DESCRIPTION

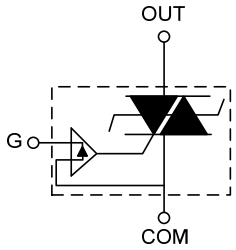
The UTC **USS120** high performance switch circuit is able to control a load up to 2A.

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/μs
* Enables equipment to meet IEC 61000-4-5 Standard

■ SYMBOL

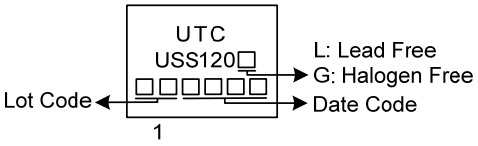


■ ORDERING INFORMATION

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

USS120G-TF3-T (1)Packing Type (2)Package Type (3)Green Package	(1) T: Tube (2) TF3: TO-220F (3) G: Halogen Free and Lead Free, L: Lead Free

■ 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°C)		$I_{T(RMS)}$	2	A
Peak Non-Repetitive Surge Current (T_J initial = 25°C, full cycle sine wave)	t_P=20ms	I_{TSM}	20	A
	t_P=16.7ms		21	A
Circuit Fusing Considerations	t_P=10ms	I^2t	2.6	A^2s
Non repetitive on-state current critical rate of rise I_G = 10mA (tr < 100ns) (F=120Hz) (T_J= 125°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	°C
Storage Temperature Range		T_{STG}	-40 ~ +150	°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 (tp = 20μs)	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	°C/W
Junction to Case	θ_{JC}	3.5	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C, unless otherwise stated)

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