



**US112S/N**

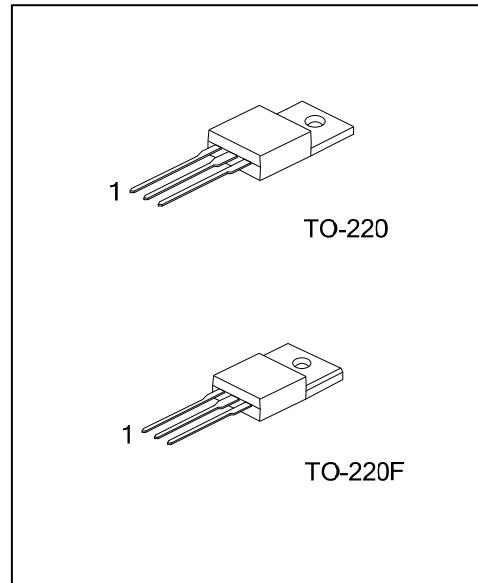
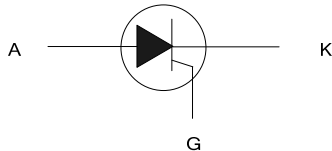
**SCR**

**SCRS**

■ **DESCRIPTION**

The UTC **US112S/N** is suitable to fit all modes of control found in applications such as overvoltage crowbar protection, motor control circuits in power tools and kitchen aids, in-rush current limiting circuits, capacitive discharge ignition, voltage regulation circuits.

■ **SYMBOL**



■ **ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
US112SL-x-TA3-T	US112SG-x-TA3-T	TO-220	K	A	G	Tube
US112SL-x-TF3-T	US112SG-x-TF3-T	TO-220F	K	A	G	Tube
US112NL-x-TA3-T	US112NG-x-TA3-T	TO-220	K	A	G	Tube
US112NL-x-TF3-T	US112NG-x-TF3-T	TO-220F	K	A	G	Tube

Note: Pin Assignment: K: Cathode A: Anode G: Gate

<p>US112SG-x-TA3-T</p> <ul style="list-style-type: none"> <li>(1)Packing Type</li> <li>(2)Package Type</li> <li>(3)Peak Voltage</li> <li>(4)Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) T: Tube</li> <li>(2) TA3: TO-220, TF3: TO-220F</li> <li>(3) 4: 400V, 6: 600V, 8: 800V</li> <li>(4) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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■ **MARKING INFORMATION**

US112S	US112N

### ■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltages	US112S/N-4	$V_{DRM}$	400	V
	US112S/N-6		600	
	US112S/N-8	$V_{RRM}$	800	
RMS On-State Current (180° Conduction Angle) ( $T_C = 110^\circ\text{C}$ )		$I_{T(RMS)}$	12	A
Average On-State Current (180° Conduction Angle) ( $T_C = 110^\circ\text{C}$ )		$I_{T(AV)}$	8	A
Non Repetitive Surge Peak On-State Current ( $T_J = 25^\circ\text{C}$ )	$t_p=8.3\text{ms}$	$I_{TSM}$	146	A
	$t_p=10\text{ms}$		140	
$I^2t$ Value For Fusing ( $t_p = 10 \text{ ms}$ , $T_J = 25^\circ\text{C}$ )		$I^2t$	98	$\text{A}^2\text{S}$
Critical Rate Of Rise Of On-State Current ( $I_G = 2 \times I_{GT}$ , $t_R \leq 100 \text{ ns}$ , $T_J = 125^\circ\text{C}$ )		$di/dt$	50	$\text{A}/\mu\text{s}$
Peak Gate Current ( $t_p=20\mu\text{s}$ , $F = 60 \text{ Hz}$ , $T_J = 125^\circ\text{C}$ )		$I_{GM}$	4	A
Peak Reverse Gate Voltage	US112N	$V_{RGM}$	5	V
Average Gate Power Dissipation ( $T_J = 125^\circ\text{C}$ )		$P_{G(AV)}$	1	W
Storage Temperature		$T_{STG}$	-40 ~ +150	$^\circ\text{C}$
Junction Temperature		$T_J$	+125	$^\circ\text{C}$

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.

### ■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case		$\theta_{JA}$	60	K/W
Junction to Ambient	TO-220	$\theta_{JC}$	1.3	K/W
	TO-220F		2.3	

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

#### US112S(SENSITIVE)

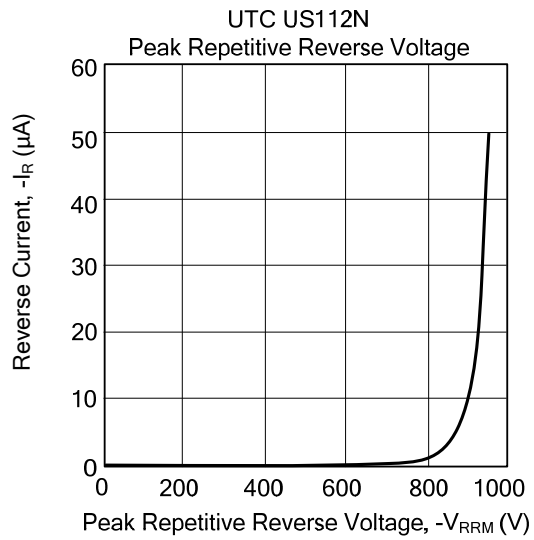
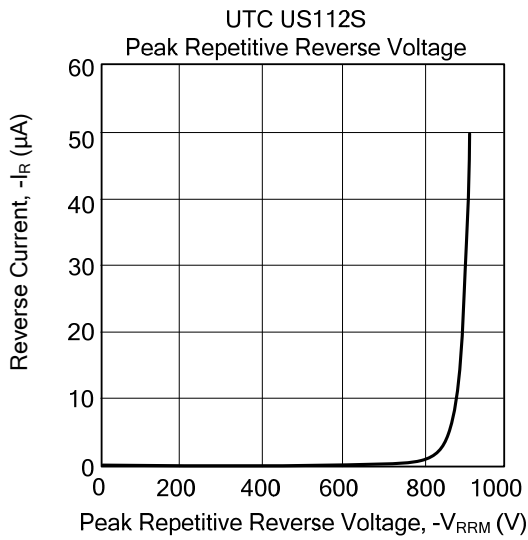
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	$I_{GT}$	$V_D = 12\text{V}$ , $R_L = 140\Omega$			200	$\mu\text{A}$
Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{V}$ , $R_L = 140\Omega$			0.8	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = V_{DRM}$ , $R_L = 3.3\text{k}\Omega$ , $R_{GK} = 1\text{k}\Omega$ , $T_J = 125^\circ\text{C}$	0.1			V
Reverse Gate Voltage	$V_{RG}$	$I_{RG} = 10 \mu\text{A}$	8			V
Holding Current	$I_H$	$I_T = 50\text{mA}$ , $R_{GK} = 1\text{k}\Omega$			5	mA
Latching Current	$I_L$	$I_G = 1\text{mA}$ , $R_{GK} = 1\text{k}\Omega$			6	mA
Circuit Rate of Change of Off-State Voltage	$dV/dt$	$V_D = 67\% V_{DRM}$ , $R_{GK} = 220\Omega$	5			$\text{V}/\mu\text{s}$
On-State Voltage	$V_{TM}$	$I_{TM} = 24\text{A}$ , $t_p = 380 \mu\text{s}$			1.6	V
Threshold Voltage	$V_{T0}$	$T_J = 125^\circ\text{C}$			0.85	V
Dynamic Resistance	$R_D$	$T_J = 125^\circ\text{C}$			30	m $\Omega$
Off-State Leakage Current	$I_{DRM}$	$V_{DRM} = V_{RRM}$ , $R_{GK} = 220\Omega$			5	$\mu\text{A}$
	$I_{RRM}$	$V_{DRM} = V_{RRM}$ , $R_{GK} = 220\Omega$ , $T_J = 125^\circ\text{C}$			2	mA

■ ELECTRICAL CHARACTERISTICS(Cont.)

**US112N(SENSITIVE)**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current	$I_{GT}$	$V_D = 12\text{ V}, R_L = 33\Omega$	2		15	mA
Gate Trigger Voltage	$V_{GT}$	$V_D = 12\text{ V}, R_L = 33\Omega$			1.3	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = V_{DRM}, R_L = 3.3k\Omega, T_J = 125^\circ\text{C}$	0.2			V
Holding Current	$I_H$	$I_T = 500\text{mA}$ Gate open			30	mA
Latching Current	$I_L$	$I_G = 1.2 I_{GT}$			60	mA
Circuit Rate of Change of Off-State Voltage	$dV/dt$	$V_D = 67\% V_{DRM}$ Gate open, $T_J = 125^\circ\text{C}$	200			V/ $\mu\text{s}$
On-State Voltage	$V_{TM}$	$I_{TM} = 24\text{ A}, t_p = 380\ \mu\text{s}$			1.6	V
Threshold Voltage	$V_{T0}$	$T_J = 125^\circ\text{C}$			0.85	V
Dynamic Resistance	$R_D$	$T_J = 125^\circ\text{C}$			30	m $\Omega$
Off-State Leakage Current	$I_{DRM}$	$V_{DRM} = V_{RRM}$			5	$\mu\text{A}$
	$I_{RRM}$	$V_{DRM} = V_{RRM}, T_J = 125^\circ\text{C}$			2	mA

■ TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.