



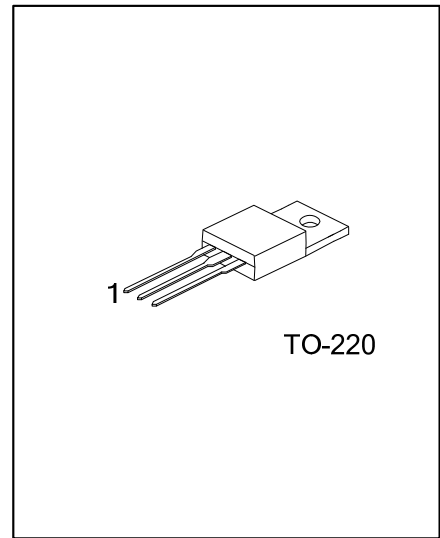
US112S/N

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



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
US112SL-4-TA3-T	US112SG-4-TA3-T	TO-220	K	A	G	Tube
US112SL-6-TA3-T	US112SG-6-TA3-T	TO-220	K	A	G	Tube
US112SL-8-TA3-T	US112SG-8-TA3-T	TO-220	K	A	G	Tube
US112NL-4-TA3-T	US112NG-4-TA3-T	TO-220	K	A	G	Tube
US112NL-6-TA3-T	US112NG-6-TA3-T	TO-220	K	A	G	Tube
US112NL-8-TA3-T	US112NG-8-TA3-T	TO-220	K	A	G	Tube

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

<p>US112SL-4-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltages	US112S/N-4	400	V
	US112S/N-6	600	
	US112S/N-8	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 ($T_J = 25^\circ\text{C}$)	$t_p=8.3\text{ms}$	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	A ² 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	A/ μs
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	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 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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	60	K/W
Junction to Case	θ_{JC}	1.3	K/W

■ 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	μA
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			V/ μs
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 Ω
Off-State Leakage Current	I_{DRM}	$V_{DRM} = V_{RRM}$, $R_{GK} = 220\Omega$			5	μA
	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/ μs
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 Ω
Off-State Leakage Current	I_{DRM}	$V_{DRM} = V_{RRM}$			5	μA
	I_{RRM}	$V_{DRM} = V_{RRM}, T_J = 125^\circ\text{C}$			2	mA

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