



## UZ0107

TRIAC

### LOGIC LEVEL FOUR-QUADRANT TRIAC

#### DESCRIPTION

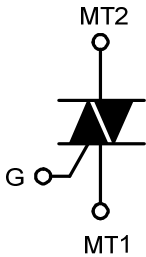
The UTC **UZ0107** is a logic level four-quadrant triac, it uses UTC's advanced technology to provide customers with enhanced current surge capability and high blocking voltage, etc.

The UTC **UZ0107** is suitable for low power AC Fan controllers, industrial process control and general purpose low power motor control, etc.

#### FEATURES

- \*  $I_{GT} \leq 5\text{mA}$ ,  $I_{GT} \leq 10\text{mA}$  (T2- G+),  $I_{TSM} \leq 12.5\text{A}$  ( $t_p=20\text{ms}$ )
- $I_{TSM} \leq 13.8\text{A}$  ( $t_p=16.7\text{ms}$ ),  $I_{T(RMS)} \leq 1\text{A}$
- \* Enhanced current surge capability
- \* Direct interfacing to logic level ICs
- \* High blocking voltage of 800V
- \* Enhanced noise immunity
- \* Sensitive gate in four quadrants

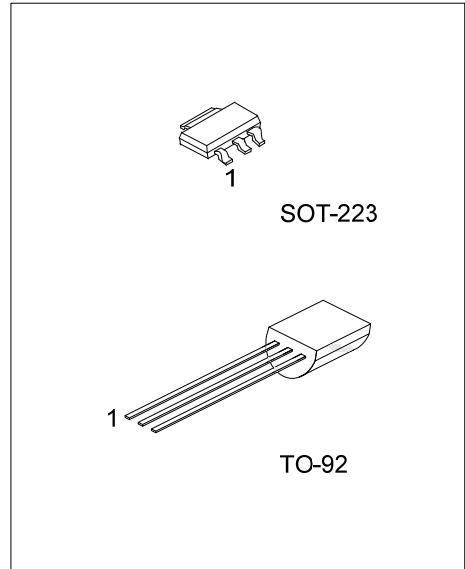
#### SYMBOL



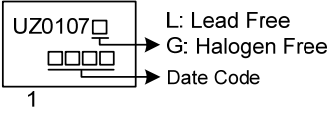
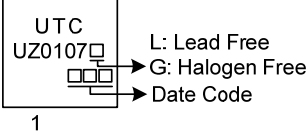
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UZ0107L-x-AA3-R	UZ0107G-x-AA3-R	SOT-223	MT1	MT2	GATE	Tape Reel
UZ0107L-x-T92-B	UZ0107G-x-T92-B	TO-92	MT1	GATE	MT2	Tape Box
UZ0107L-x-T92-K	UZ0107G-x-T92-K	TO-92	MT1	GATE	MT2	Bulk

<p>UZ0107G-x-AA3-R</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) R: Tape Reel, B: Tape Box, K: Bulk</li> <li>(2) AA3: SOT-223, T92: TO-92</li> <li>(3) 6: 600V, 8: 800V</li> <li>(4) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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## ■ MARKING

SOT-223	TO-92
 <p>The diagram shows a SOT-223 package with the marking 'UZ0107' at the top, a date code '1' at the bottom, and two small squares between them. Arrows point from the text 'L: Lead Free', 'G: Halogen Free', and 'Date Code' to the corresponding parts of the marking.</p>	 <p>The diagram shows a TO-92 package with the marking 'UTC' at the top, 'UZ0107' below it, a date code '1' at the bottom, and two small squares between 'UZ0107' and '1'. Arrows point from the text 'L: Lead Free', 'G: Halogen Free', and 'Date Code' to the corresponding parts of the marking.</p>

## ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Repetitive Peak Off-State Voltage	$V_{DRM}/V_{RRM}$	Full Sine Wave, $T_{SP} \leq 103^{\circ}\text{C}$			600	V
					800	V
Non-Repetitive Peak On-State Current	$I_{TSM}$	Full Sine Wave, $T_{J(\text{init})} = 25^{\circ}\text{C}$ , $t_p = 20\text{ms}$ Full Sine Wave, $T_{J(\text{init})} = 25^{\circ}\text{C}$ , $t_p = 16.7\text{ms}$			12.5	A
					13.8	A
RMS On-State Current	$I_{T(\text{RMS})}$	Full Sine Wave, $T_{SP} \leq 103^{\circ}\text{C}$			1	A
Peak Gate Current	$I_{GM}$				1	A
Peak Gate Power	$P_{GM}$				2	W
Average Gate Power	$P_{G(\text{AV})}$	Over Any 20ms Period			0.1	W
Junction Temperature	$T_J$				125	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$		-40		150	$^{\circ}\text{C}$
$I^2t$ for Fusing	$I^2t$	$t_p = 10\text{ms}$ , Sine-Wave Pulse			0.78	$\text{A}^2\text{s}$
Rate of Rise Of On-State Current	$di_T/dt$	$I_T = 1\text{A}$ , $I_G = 20\text{mA}$ , $di_G/dt = 100\text{mA}/\mu\text{s}$ , T2+ G+			50	$\text{A}/\mu\text{s}$
		$I_T = 1\text{A}$ , $I_G = 20\text{mA}$ , $di_G/dt = 100\text{mA}/\mu\text{s}$ , T2+ G-			50	$\text{A}/\mu\text{s}$
		$I_T = 1\text{A}$ , $I_G = 20\text{mA}$ , $di_G/dt = 100\text{mA}/\mu\text{s}$ , T2- G-			50	$\text{A}/\mu\text{s}$
		$I_T = 1\text{A}$ , $I_G = 20\text{mA}$ , $di_G/dt = 100\text{mA}/\mu\text{s}$ , T2- G+			20	$\text{A}/\mu\text{s}$

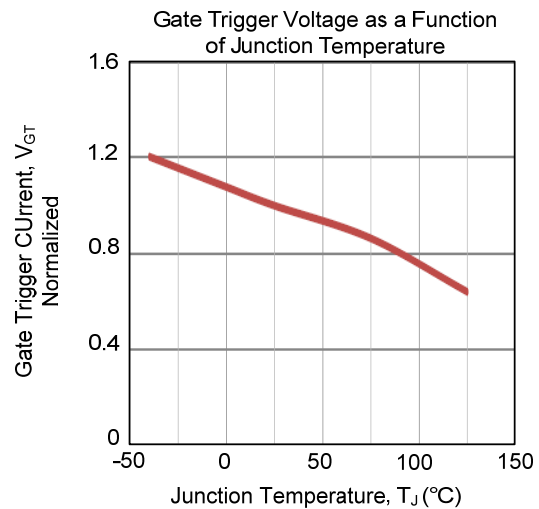
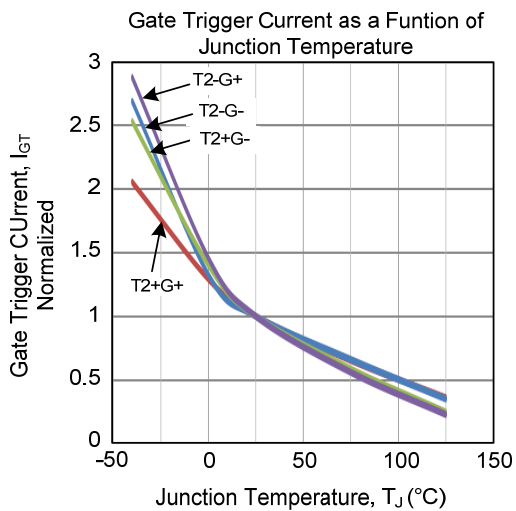
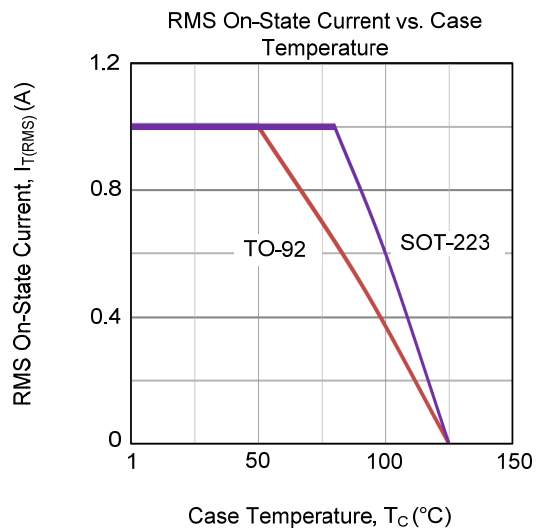
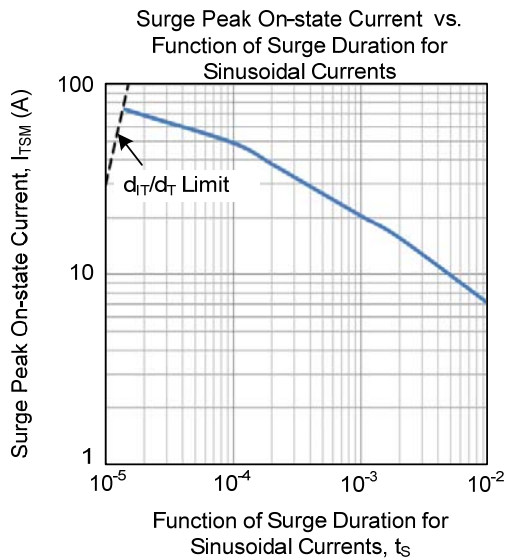
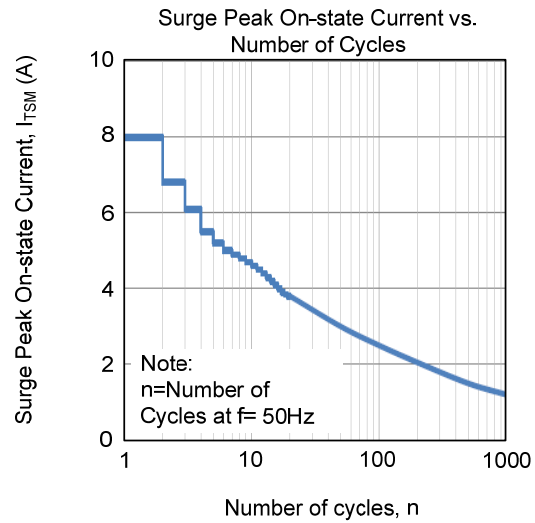
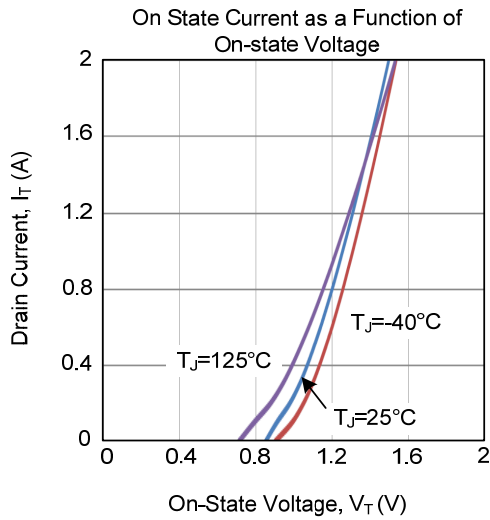
## ■ THERMAL DATA

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Thermal Resistance from Junction to Solder Point	$\theta_{J-SP}$	Full Cycle			15	K/W
Thermal resistance from junction to lead	$\theta_{J-Lead}$				6	K/W
Thermal Resistance from Junction to Ambient	SOT-223	Minimum Footprint, Printed-Circuit Board Mounted, in Free Air		156		K/W
		Pad Area, Printed-Circuit Board Mounted, in Free Air		70		K/W
	TO-92	Vertical in Free Air		150		K/W

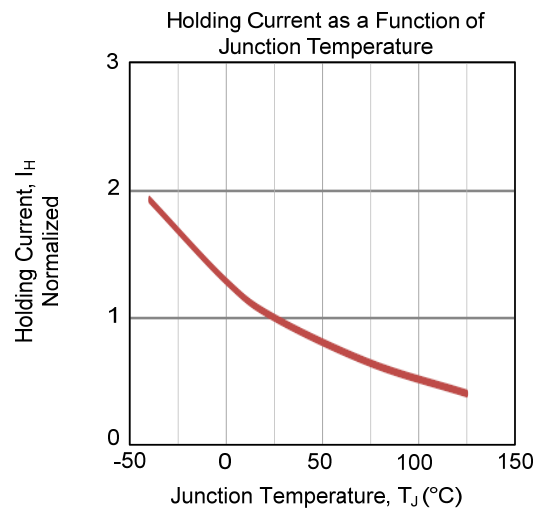
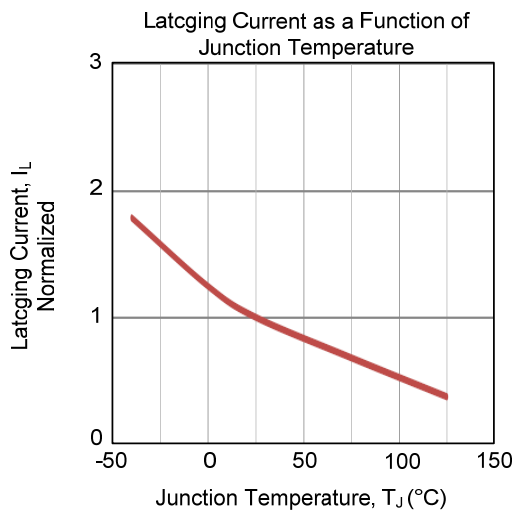
■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current ( $T_J=25^\circ\text{C}$ )	$I_{GT}$	$V_D=12\text{V}$ , $I_T=0.1\text{A}$ , T2+ G+	0.3		5	mA
		$V_D=12\text{V}$ , $I_T=0.1\text{A}$ , T2+ G-	0.3		5	mA
		$V_D=12\text{V}$ , $I_T=0.1\text{A}$ , T2- G-	0.3		5	mA
		$V_D=12\text{V}$ , $I_T=0.1\text{A}$ , T2- G+	0.3		10	mA
Latching Current ( $T_J=25^\circ\text{C}$ )	$I_L$	$V_D=12\text{V}$ , $I_G=0.1\text{A}$ , T2+ G+			10	mA
		$V_D=12\text{V}$ , $I_G=0.1\text{A}$ , T2+ G-			25	mA
		$V_D=12\text{V}$ , $I_G=0.1\text{A}$ , T2- G-			10	mA
		$V_D=12\text{V}$ , $I_G=0.1\text{A}$ , T2- G+			10	mA
Holding Current	$I_H$	$V_D=12\text{V}$ , $T_J=25^\circ\text{C}$			10	mA
On-State Voltage	$V_T$	$I_T=1\text{A}$ , $T_J=25^\circ\text{C}$		1.3	1.6	V
Gate Trigger Voltage	$V_{GT}$	$V_D=12\text{V}$ , $I_T=0.1\text{A}$ , $T_J=25^\circ\text{C}$			1.3	V
		$V_D=V_{DRM}=\text{Rated } V_{DRM} \text{ and } V_{RRM}$ $I_T=0.1\text{A}$ , $T_J=125^\circ\text{C}$	0.2			V
Off-State Current	$I_D$	$V_D=V_{DRM}=\text{Rated } V_{DRM} \text{ and } V_{RRM}$ $R_{GK}=1\text{k}\Omega$ , $T_J=125^\circ\text{C}$			0.5	mA
Rate of Rise of Off-State Voltage	$dV_D/dt$	$V_{DM}=402\text{V}$ , $T_J=110^\circ\text{C}$ , Gate Open Circuit	100			V/ $\mu\text{s}$
Rate of Change of Commutating Voltage	$dV_{com}/dt$	$V_{DM}=400\text{V}$ , $T_J=110^\circ\text{C}$ , $dI_{com}/dt=0.44\text{A/ms}$ , Gate Open Circuit	0.5			V/ $\mu\text{s}$

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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