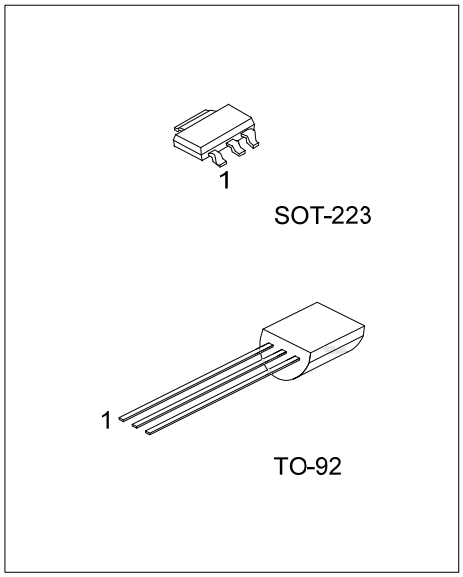
UZ0107

TRIAC

LOGIC LEVEL FOUR-QUADRANT TRIAC



■ DESCRIPTION

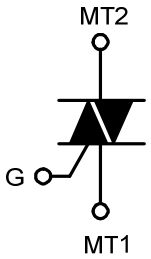
The UTC **UZ0107** is a logic level four-quadrant triac, it uses UTC's advanced technology to provide customers with enhanced current surge capability and high blocking voltage, etc.

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

■ SYMBOL

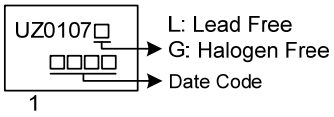
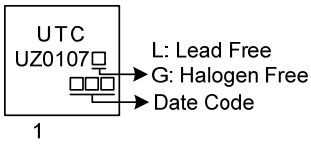


■ ORDERING INFORMATION

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

UZ0107G-x-AA3-R (1)Packing Type (2)Package Type (3)Peak Voltage (4)Green Package	(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AA3: SOT-223, T92: TO-92 (3) 6: 600V, 8: 800V (4) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-223	TO-92
	

■ 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}≤103°C			600	V
					800	V
Non-Repetitive Peak On-State Current	I_{TSM}	Full Sine Wave, $T_{J(init)}$=25°C, t_p=20ms			12.5	A
		Full Sine Wave, $T_{J(init)}$=25°C, t_p=16.7ms			13.8	A
RMS On-State Current	$I_{T(RMS)}$	Full Sine Wave, T_{SP}≤103°C			1	A
Peak Gate Current	I_{GM}				1	A
Peak Gate Power	P_{GM}				2	W
Average Gate Power	$P_{G(AV)}$	Over Any 20ms Period			0.1	W
Junction Temperature	T_J				125	°C
Storage Temperature	T_{STG}		-40		150	°C
I^2t for Fusing	I^2t	t_p=10ms, Sine-Wave Pulse			0.78	A^2s
Rate of Rise Of On-State Current	dI_T/dt	I_T=1A, I_G=20mA, dI_G/dt=100mA/μs, T2+ G+			50	A/μs
		I_T=1A, I_G=20mA, dI_G/dt=100mA/μs, T2+ G-			50	A/μs
		I_T=1A, I_G=20mA, dI_G/dt=100mA/μs, T2- G-			50	A/μs
		I_T=1A, I_G=20mA, dI_G/dt=100mA/μs, T2- G+			20	A/μs

■ THERMAL DATA

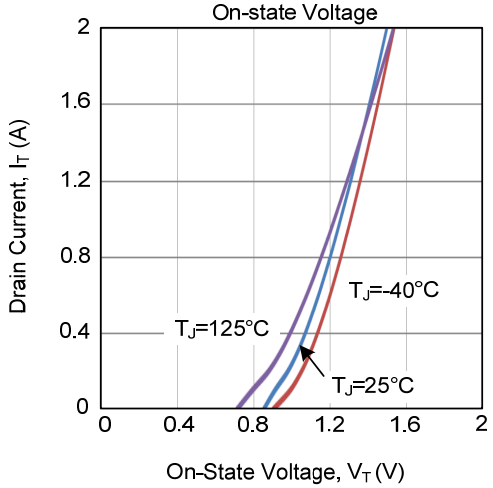
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Thermal Resistance from Junction to Solder Point		θ_{J-SP}	Full Cycle			15	K/W
Thermal resistance from junction to lead		θ_{J-Lead}				6	K/W
Thermal Resistance from Junction to Ambient	SOT-223	θ_{JA}	Minimum Footprint, Printed-Circuit Board Mounted, 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

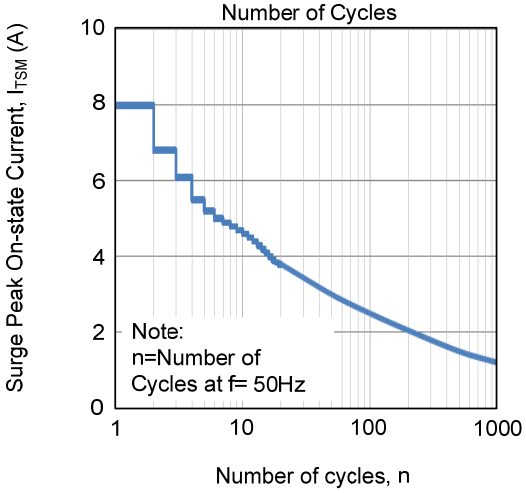
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current (T_J=25°C)	I_{GT}	V_D=12V, I_T=0.1A, T2+ G+	0.3		5	mA
		V_D=12V, I_T=0.1A, T2+ G-	0.3		5	mA
		V_D=12V, I_T=0.1A, T2- G-	0.3		5	mA
		V_D=12V, I_T=0.1A, T2- G+	0.3		10	mA
Latching Current (T_J=25°C)	I_L	V_D=12V, I_G=0.1A, T2+ G+			10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

■ TYPICAL CHARACTERISTICS

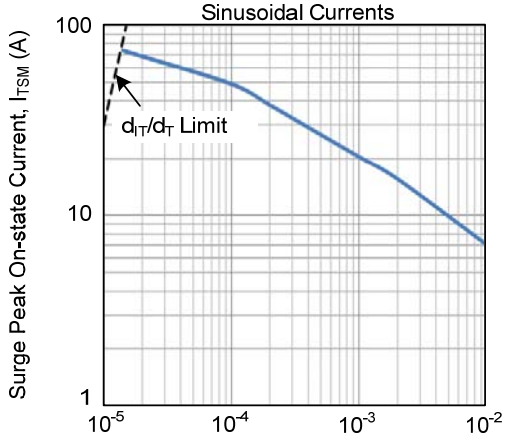
On State Current as a Function of On-state Voltage



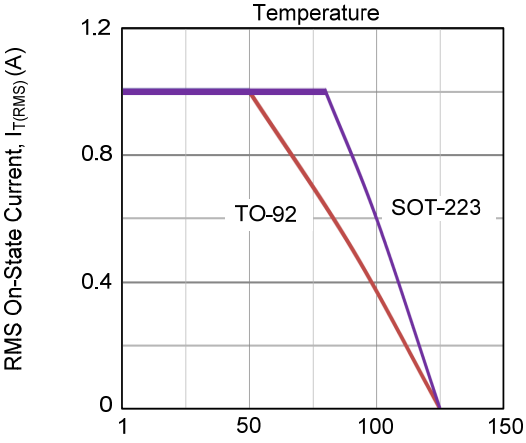
Surge Peak On-state Current vs. Number of Cycles



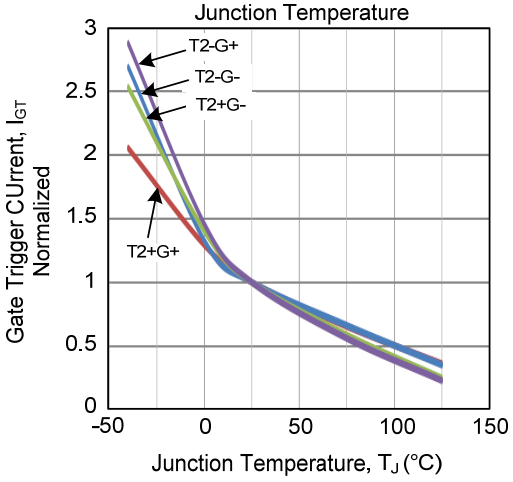
Surge Peak On-state Current vs. Function of Surge Duration for Sinusoidal Currents



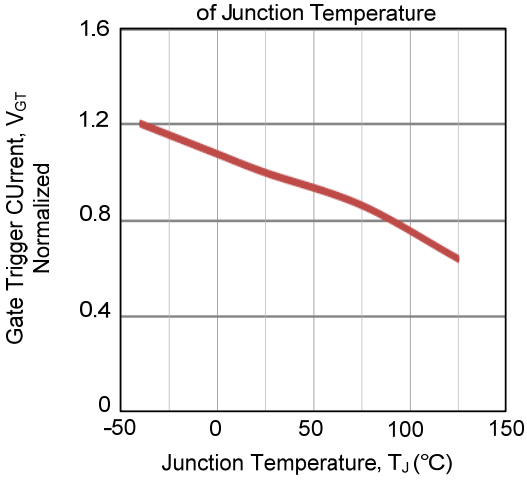
RMS On-State Current vs. Case Temperature



Gate Trigger Current as a Funtion of Junction Temperature



Gate Trigger Voltage as a Function of Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)