



## UT136F/G

Preliminary

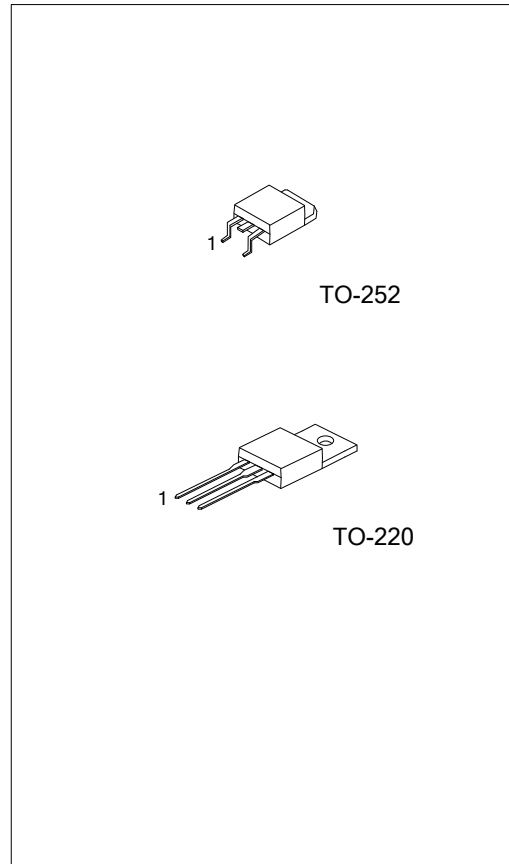
TRIAC

### TRIACS

#### DESCRIPTION

Passivated triacs in a plastic envelope, suitable for surface mounting, intended for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT136FL-x-TA3-R	UT136FP-x-TA3-R	TO-220	MT1	MT2	G	Tube
UT136GL-x-TA3-R	UT136GP-x-TA3-R	TO-220	MT1	MT2	G	Tube
UT136FL-x-TN3-R	UT136FP-x-TN3-R	TO-252	MT1	MT2	G	Tape Reel
UT136GL-x-TN3-R	UT136GP-x-TN3-R	TO-252	MT1	MT2	G	Tape Reel

<p>UT136FL-x-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Peak Voltage</p> <p>(4) Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TA3: TO-220, TN3: TO-252</p> <p>(3) 5: 500V, 6: 600V, 8: 800V</p> <p>(4) P: Halogen Free, L: Lead Free</p>
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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Repetitive Peak Off-State Voltages	UT136F/G-5	$V_{DRM}$	500 (Note 2)	V
	UT136F/G-6		600 (Note 2)	
	UT136F/G-8		800	
RMS On-State Current Full Sine Wave, $T_{mb} \leq 107^\circ\text{C}$		$I_{T(RMS)}$	4	A
Non-Repetitive Peak On-State Current (Full Sine Wave, $T_J=25^\circ\text{C}$ Prior To Surge)	$t = 20\text{ms}$	$I_{TSM}$	25	A
	$t = 16.7\text{ms}$		27	
$I^2t$ For Fusing ( $t = 10\text{ms}$ )		$I^2t$	3.1	$\text{A}^2\text{s}$
Repetitive Rate Of Rise Of On-State Current After Triggering $I_{TM} = 6\text{A}$ , $I_G = 0.2\text{A}$ , $dI_G/dt = 0.2\text{A}/\mu\text{s}$	T2+ G+	$di_T/dt$	50	A/ $\mu\text{s}$
	T2+ G-		50	
	T2- G-		50	
	T2- G+		10	
Peak Gate Voltage		$V_{GM}$	5	V
Peak Gate Current		$I_{GM}$	2	A
Peak Gate Power		$P_{GM}$	5	W
Average Gate Power (Over Any 20ms Period)		$P_{G(AV)}$	0.5	W
Junction Temperature		$T_J$	125	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +150	$^\circ\text{C}$

- Notes: 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.  
 2. Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed  $3\text{A}/\mu\text{s}$ .

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	$\theta_{JA}$	60	K/W
	TO-252		75	

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX		UNIT
					UT136F	UT136G	
Gate Trigger Current	$I_{GT}$	$V_D=12\text{V}$ , $I_T=0.1\text{A}$	T2+G+	5	25	50	mA
			T2+G-	8	25	50	
			T2-G-	11	25	50	
			T2-G+	30	70	100	
Latching Current	$I_L$	$V_D=12\text{V}$ , $I_{GT}=0.1\text{A}$	T2+G+	7	20	30	mA
			T2+G-	16	30	45	
			T2-G-	5	20	30	
			T2-G+	7	30	45	
Holding Current	$I_H$	$V_D=12\text{V}$ , $I_{GT}=0.1\text{A}$		5	15	30	mA
On-State Voltage	$V_T$	$I_T=5\text{A}$		1.4	1.70		V
Gate Trigger Voltage	$V_{GT}$	$V_D=12\text{V}$ , $I_T=0.1\text{A}$		0.7	1.5		V
		$V_D=400\text{V}$ , $I_T=0.1\text{A}$ , $T_J=125^\circ\text{C}$	0.25	0.4			V
Off-State Leakage Current	$I_D$	$V_D=V_{DRM(max)}$ , $T_J=125^\circ\text{C}$		0.1	0.5		mA

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN		TYP	MAX	UNIT
			UT136F	UT136G			
Critical Rate Of Rise Of Off-State Voltage	$dV_D/dt$	$V_{DM}=67\% V_{DRM(max)}$ , $T_J=125^{\circ}\text{C}$ , exponential waveform, gate open circuit	50	200	250		V/ $\mu\text{s}$
Critical Rate Of Change Of Commutating Voltage	$dV_{com}/dt$	$V_{DM}=400\text{V}$ , $T_J=95^{\circ}\text{C}$ , $I_{T(RMS)}=4\text{A}$ , $dI_{com}/dt=1.8\text{A/ms}$ , gate open circuit		10	50		V/ $\mu\text{s}$
Gate Controlled Turn-On Time	$t_{gt}$	$I_{TM}=6\text{A}$ , $V_D=V_{DRM(max)}$ , $I_G=0.1\text{A}$ , $dI_G/dt=5\text{A}/\mu\text{s}$			2		$\mu\text{s}$

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