

PHOTO TRIAC COUPLER

T-41-87

MT30610, MT30620, MT30630

APPLICATIONS

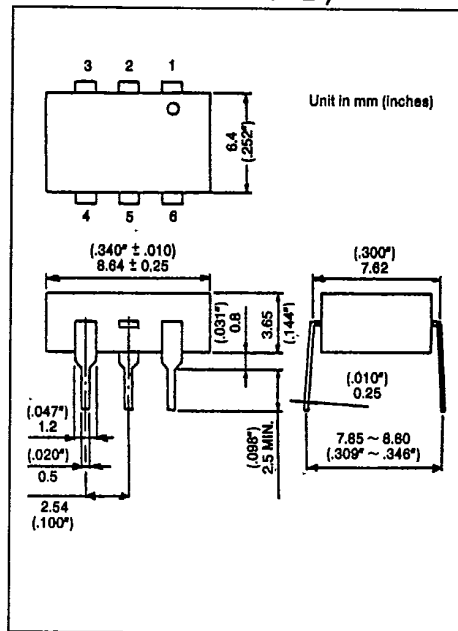
- OFFICE MACHINERY
- HOUSEHOLD APPLIANCES
- TRIAC DRIVER
- SOLID STATE RELAY
- TELECOMMUNICATIONS
- FACSIMILE
- LAMP & RELAY DRIVE CIRCUIT

The MARKTECH MT30610, MT30620 and MT30630 consist of a zero voltage crossing turn on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

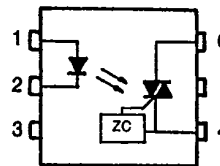
FEATURES

- Peak Off-State Voltage : 600V Min.
- Trigger LED Current : 15mA Max. (MT30610)
10mA Max. (MT30620)
5mA Max. (MT30630)
- On-State Current : 100mA Max.
- Isolation Voltage : 5000V_{rms} Min.
- Guaranteed Requirements of IEC380/VDE0806.
- Climatic Test Class : 55/150/21
- Isolation Creepage Path : 8.0mm Min.
- Isolation Clearance : 7.3mm Min.
- Isolation Operating Voltage : 500V_{ac} or 600V_{dc} for Isolation Group C. *1
- Creeping Current Resistance : Group I *2

*1 : According to VDE0110, table 4
*2 : According to VDE0110, table 3



PIN CONFIGURATIONS (TOP VIEW)



- 1: ANODE
- 2: CATHODE
- 3: NC
- 4: TERMINAL 1
- 6: TERMINAL 2

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	50	mA
	Forward Current Derating (Ta ≥ 53°C)	ΔI _F /°C	-0.7	mA/°C
	Peak Forward Current (100μs pulse, 100pps)	I _{FP}	1	A
	Power Dissipation	P _D	100	mW
	Power Dissipation Derating (Ta ≥ 25°C)	ΔP _D /°C	-1.0	mW/°C
	Reverse Voltage	V _R	5	V
	Junction Temperature	T _J	125	°C
DETECTOR	Off-State Output Terminal Voltage	V _{DRM}	600	V
	On-State RMS Current	Ta=25°C	100	mA
		Ta=70°C	50	
	On-State Current Derating (Ta ≥ 25°C)	ΔI _T /°C	-1.1	mA/°C
	Peak On-State Current (100μs pulse, 120pps)	I _{TP}	2	A
	Peak Nonrepetitive Surge Current (P _w =10ms, DC=10%)	I _{TSM}	1.2	A
	Power Dissipation	P _D	300	mW
	Power Dissipation Derating (Ta ≥ 25°C)	ΔP _D /°C	-4.0	mW/°C
Junction Temperature	T _J	100	°C	
Storage Temperature Range	T _{stg}	-55 ~ 150	°C	
Operating Temperature Range	T _{opr}	-40 ~ 100	°C	
Lead Soldering Temperature (10 sec.)	T _{sold}	260	°C	
Total Package Power Dissipation	P _T	330	mW	
Total Package Power Dissipation Derating (Ta ≥ 25°C)	ΔP _T /°C	-4.4	mW/°C	
Isolation Voltage (AC, 1 min., RH ≤ 60%)	BV _S	5000	V _{rms}	

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INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F=10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R=5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V=0, f=1\text{MHz}$	—	10	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	$V_{DRM}=400\text{V}$	—	10	100	nA
	Peak On-State Voltage	V_{TM}	$I_{TM}=100\text{mA}$	—	1.7	3.0	V
	Holding Current	I_H	—	—	0.2	—	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{in}=240V_{rms}, Ta=85^\circ\text{C}$ (Fig. 1)	200	500	—	$V/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{in}=60V_{rms}, I_T=15\text{mA}$ (Fig. 1)	—	0.2	—	$V/\mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	MT30610	I_{FT}	$V_T=6\text{V}$	—	—	15	mA
	MT30620			—	5	10	
	MT30630			—	—	5	
Inhibit Voltage	V_{IH}	$I_F=\text{Rated } I_{FT}$	—	—	40	V	
Leakage in Inhibited State	I_{IH}	$I_F=\text{Rated } I_{FT}, V_T=\text{Rated } V_{DRM}$	—	100	300	μA	
Capacitance Input to Output	C_S	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF	
Isolation Resistance	R_S	$V_S=500\text{V}$	5×10^{10}	10^{11}	—	Ω	
Isolation Voltage	BV_S	AC, 1 minute	5000	—	—	V_{rms}	
		AC, 1 second	—	10000	—		
		DC, 1 minute	—	10000	—		V_{dc}

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	240	V_{ac}
Forward Current	I_F^*	15	20	25	mA
Peak On-State Current	I_{TP}	—	—	1	A
Operating Temperature	T_{opr}	-25	—	85	$^\circ\text{C}$

*In the case of MT30620

Fig. 1 dv/dt TEST CIRCUIT

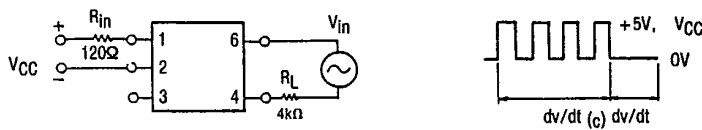


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