

# PHOTO TRIAC COUPLER

## MT30200, MT30210, MT30220, MT30230

T-41-87

### APPLICATIONS

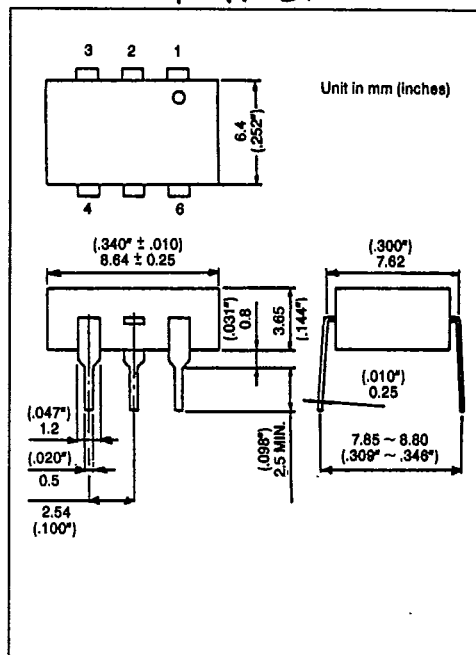
- OFFICE MACHINERY
- HOUSEHOLD APPLIANCES
- TRIAC DRIVER
- SOLID STATE RELAY
- TELECOMMUNICATIONS
- FACSIMILE
- LAMP & RELAY DRIVE CIRCUIT

The MARKTECH TRIAC SERIES consists of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

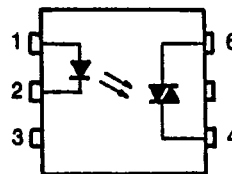
### FEATURES

- Peak Off-State Voltage : 400V Min.
  - Trigger LED Current : 30mA Max. (MT30200)  
15mA Max. (MT30210)  
10mA Max. (MT30220)  
5mA Max. (MT30230)
  - On-State Current : 100mA Max.
  - Isolation Voltage : 500V<sub>rms</sub> Min.
  - Climatic Test Class : 55/150/21
  - Isolation Creepage Path : 8.0mm Min.
  - Isolation Clearance : 7.3mm Min.
  - Isolation Operating Voltage : 500V<sub>ac</sub> or 600V<sub>dc</sub> for Isolation Group C. \*1
  - Creeping Current Resistance : Group I \*2
- \*1 : According to VDE0110, table 4  
\*2 : According to VDE0110, table 3

THE MT30220 CONTAINS ALL MECHANICAL & OPTO ELECTRICAL PARAMETERS AS THE MTPC5600G, WITH A HIGHER ISOLATION.  
THE MT30230 CONTAINS ALL MECHANICAL & OPTO ELECTRICAL PARAMETERS AS THE MTPC6600G, WITH A HIGHER ISOLATION AND A LOWER TRIGGER CURRENT (I<sub>FT</sub>).



### 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 <sub>F</sub>	50	mA
	Forward Current Derating (Ta ≥ 53°C)	ΔI <sub>F</sub> /°C	-0.7	mA/°C
	Peak Forward Current (100μs pulse, 100pps)	I <sub>FP</sub>	1	A
	Power Dissipation	P <sub>D</sub>	100	mW
	Power Dissipation Derating (Ta ≥ 25°C)	ΔP <sub>D</sub> /°C	-1.0	mW/°C
	Reverse Voltage	V <sub>R</sub>	5	V
	Junction Temperature	T <sub>J</sub>	125	°C
DETECTOR	Off-State Output Terminal Voltage	V <sub>DRM</sub>	400	V
	On-State RMS Current	Ta=25°C	100	mA
		Ta=70°C	50	
	On-State Current Derating (Ta ≥ 25°C)	ΔI <sub>T</sub> /°C	-1.1	mA/°C
	Peak On-State Current (100μs pulse, 120pps)	I <sub>TP</sub>	2	A
	Peak Nonrepetitive Surge Current (P <sub>w</sub> =10ms, DC=10%)	I <sub>TSM</sub>	1.2	A
	Total Power Dissipation	P <sub>D</sub>	300	mW
	Total Power Dissipation Derating (Ta ≥ 25°C)	ΔP <sub>D</sub> /°C	-4.0	mW/°C
	Junction Temperature	T <sub>J</sub>	100	°C
Storage Temperature Range	T <sub>stg</sub>	-55 ~ 150	°C	
Operating Temperature Range	T <sub>opr</sub>	-40 ~ 100	°C	
Lead Soldering Temperature (10 sec.)	T <sub>sold</sub>	260	°C	
Total Package Power Dissipation	P <sub>T</sub>	330	mW	
Total Package Power Dissipation Derating (Ta ≥ 25°C)	ΔP <sub>T</sub> /°C	-4.4	mW/°C	
Isolation Voltage (AC, 1 min., RH ≤ 60%)	BV <sub>S</sub>	5000	V <sub>rms</sub>	

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## INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	$V_F$	$I_F=10mA$	1.0	1.15	1.3	V
	Reverse Current	$I_R$	$V_R=5V$	—	—	10	$\mu A$
	Capacitance	$C_T$	$V=0, f=1MHz$	—	10	—	pF
DETECTOR	Peak Off-State Current	$I_{DRM}$	$V_{DRM}=400V$	—	10	100	nA
	Peak On-State Voltage	$V_{TM}$	$I_{TM}=100mA$	—	1.7	3.0	V
	Holding Current	$I_H$	—	—	0.2	—	mA
	Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{in}=120V_{rms}, Ta=85^\circ C$ (Fig. 1)	200	500	—	V/ $\mu s$
	Critical Rate of Rise of Commutating Voltage	$dv/dt_{(c)}$	$I_T=15mA, V_{in}=30V_{rms}$ (Fig. 1)	—	0.2	—	V/ $\mu s$

## COUPLED ELECTRICAL CHARACTERISTICS (Ta=25°C)

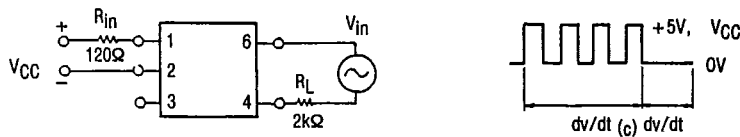
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	MT30200	$I_{FT}$	$V_T=3V$	—	—	30	mA
	MT30210			—	—	15	
	MT30220			—	5	10	
	MT30230			—	—	5	
Capacitance Input to Output		$C_S$	$V_S=0, f=1MHz$	—	0.8	—	pF
Isolation Resistance		$R_S$	$V_S=500V$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
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	$V_{AC}$	—	—	120	$V_{ac}$
Forward Current	$I_F^*$	15	20	25	mA
Peak On-State Current	$I_{TP}$	—	—	1	A
Operating Temperature	$T_{opr}$	-25	—	85	$^\circ C$

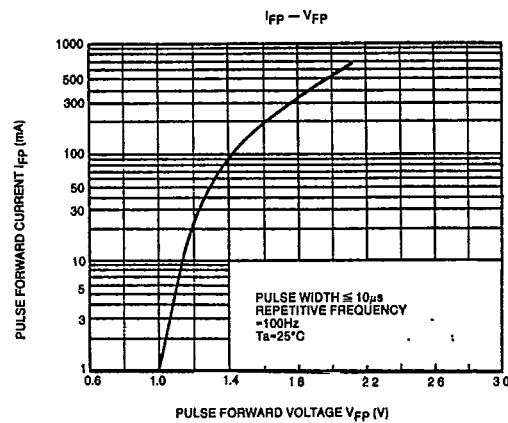
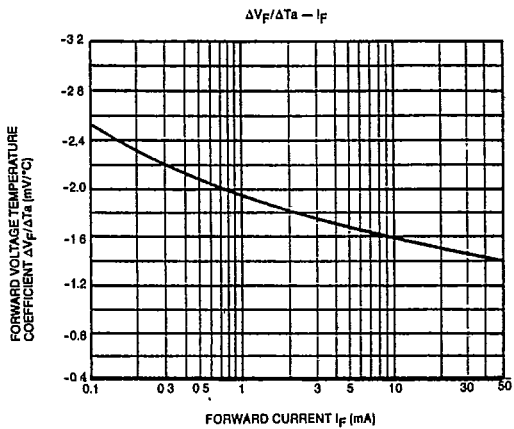
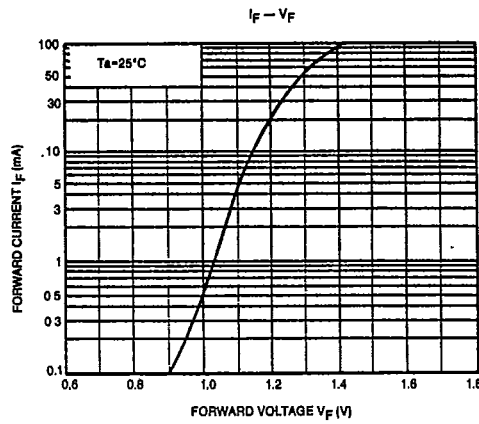
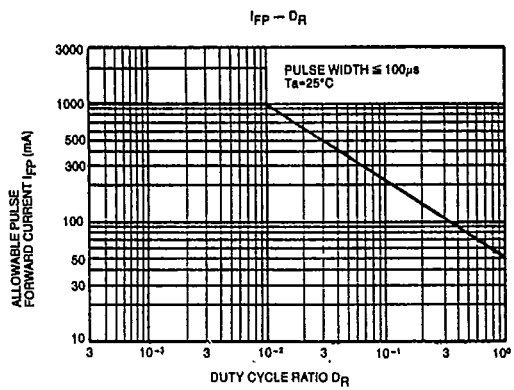
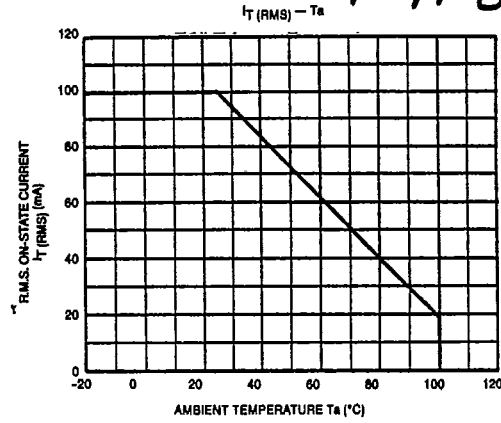
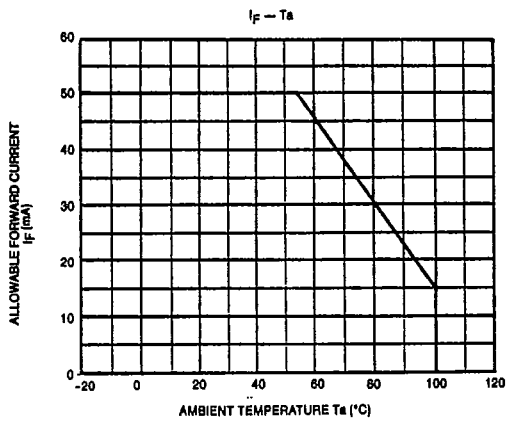
\*In the case of MT30220

Fig. 1 dv/dt TEST CIRCUIT



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