

PHOTO TRIAC COUPLER

MT30200, MT30210, MT30220, MT30230

T-41-87

APPLICATIONS

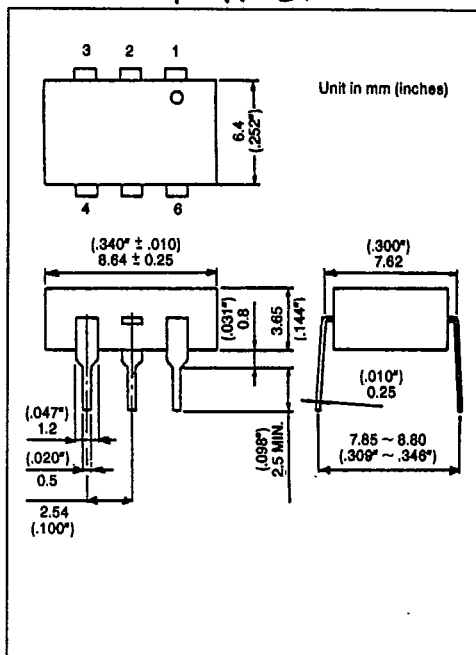
- OFFICE MACHINERY
- HOUSEHOLD APPLIANCES
- TRIAC DRIVER
- SOLID STATE RELAY
- TELECOMMUNICATIONS
- FACSIMILE
- LAMP & RELAY DRIVE CIRCUIT

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_{rms} Min.
 - 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

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_{FT}).



PIN CONFIGURATIONS (TOP VIEW)

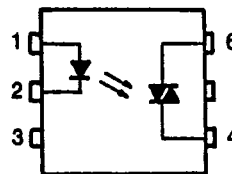


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MAXIMUM RATINGS (Ta = 25°C)

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}	400	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
	Total Power Dissipation	P _D	300	mW
	Total 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	$I_F=10mA$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R=5V$	—	—	10	μA
	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/ μs
	Critical Rate of Rise of Commutating Voltage	$dv/dt_{(c)}$	$I_T=15mA, V_{in}=30V_{rms}$ (Fig. 1)	—	0.2	—	V/ μs

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	$V_S=500V$	5×10^{10}	10^{14}	—	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}	—	—	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

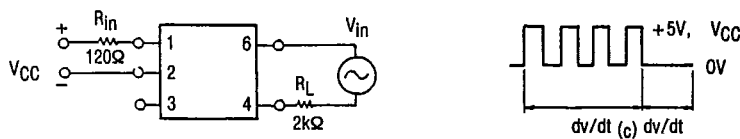


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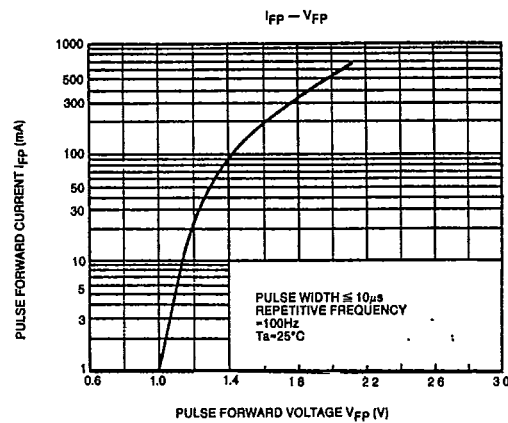
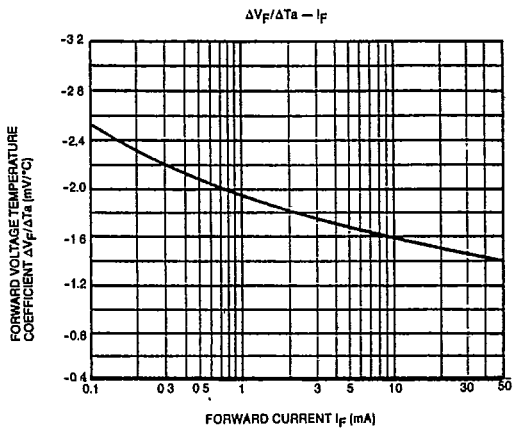
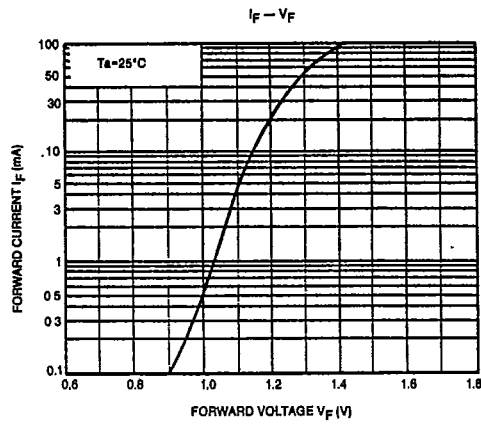
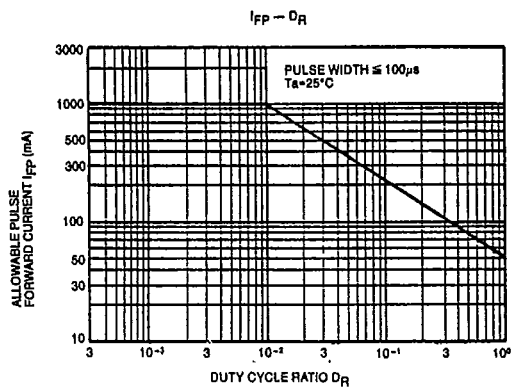
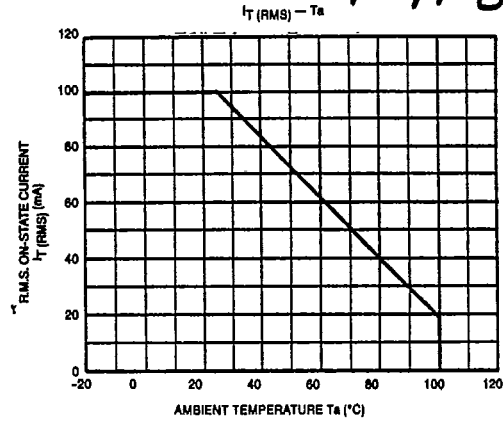
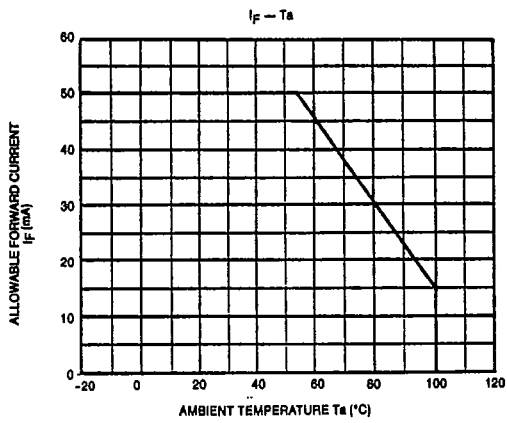


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