

PHOTO THYRISTOR COUPLER

MT6450J

T-41-87

APPLICATIONS

- OFFICE MACHINERY
- HOUSEHOLD APPLIANCES
- SOLID STATE RELAY
- SWITCHING POWER SUPPLY
- OVERVOLTAGE/CURRENT DETECTOR CIRCUIT

The MARKTECH MT6450J consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

FEATURES

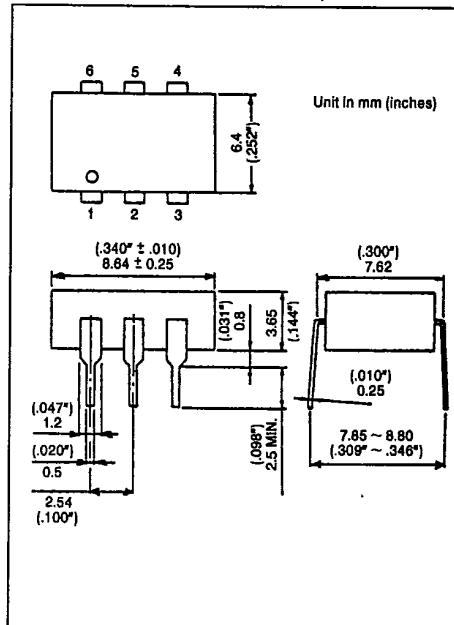
- Peak Off-State Voltage : 600V Min.
- Trigger LED Current : 10mA Max.
- On-State Current : 150mA Max.
- Isolation Voltage : 5000V_{rms} Min.
- Guaranteed Requirements of IEC380/VDE0806
- Climatic Test Class : 55/150/21
- Isolation Creepage Path : 8.0mm Min.
- Isolation Clearance : 7.3mm Min.
- Isolation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

*1 : According to VDE0110, table 4

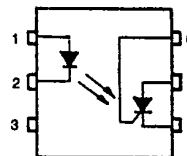
*2 : According to VDE0110, table 3

CONTAINS ALL MECHANICAL & OPTO ELECTRICAL PARAMETERS AS THE MTPC5450J, WITH HIGHER ISOLATION VOLTAGE.

CONTAINS ALL MECHANICAL & OPTO ELECTRICAL PARAMETERS AS THE MTPC6410J, WITH SAFETY FEATURES ADDED.



PIN CONFIGURATIONS (TOP VIEW)



- 1: ANODE
- 2: CATHODE
- 3: NC
- 4: COLLECTOR
- 5: ANODE
- 6: GATE

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MAXIMUM RATINGS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	RATING	UNIT
LED	Forward Current	I _F	60	mA
	Forward Current Derating (Ta ≥ 39°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	Peak Forward Voltage (R _{GK} = 27kΩ)	V _{DRM}	600	V
	Peak Reverse Voltage (R _{GK} = 27kΩ)	V _{RRM}	600	V
	On-State Current	I _{T(RMS)}	150	mA
	On-State Current Derating (Ta ≥ 25°C)	ΔI _T /°C	-2.0	mA/°C
	Peak On-State Current (100μs pulse, 120pps)	I _{TP}	3	A
	Peak One Cycle Surge Current	I _{TSM}	2	A
	Peak Reverse Gate Voltage	V _{GM}	5	V
	Power Dissipation	P _D	150	mW
	Power Dissipation Derating (Ta ≥ 25°C)	ΔP _D /°C	-2.0	mW/°C
	Junction Temperature	T _J	100	°C
Storage Temperature Range		T _{stg}	-55 ~ 150	°C
Operating Temperature Range		T _{opr}	-55 ~ 100	°C
Lead Soldering Temperature (10 sec.)		T _{sold}	260	°C
Total Package Power Dissipation		P _T	250	mW
Total Package Power Dissipation Derating (Ta ≥ 25°C)		ΔP _T /°C	-3.3	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	—	30	—	pF
DETECTOR	Off-State Current	I _{DRM}	V _{AK} =600V R _{GK} =27kΩ	Ta=25°C Ta=85°C	— 1	10 150	nA μA
	Reverse Current	I _{RRM}	V _{KA} =600V R _{GK} =27kΩ	Ta=25°C Ta=85°C	— 1	10 150	nA μA
	On-State Voltage	V _{TM}	I _{TM} =100mA	—	0.9	1.3	V
	Holding Current	I _H	R _{GK} =27kΩ	—	0.2	—	mA
	Off-State dv/dt	dv/dt	V _D =420V, R _{GK} =27kΩ	—	10	—	V/μs
	Capacitance	C _J	V=0, f=1MHz Anode to Gate	—	20	—	pF
			Gate to Cathode	—	350	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I _{FT}	V _{AK} =6V, R _{GK} =27kΩ	—	5	10	mA
Turn-on Time	t _{on}	I _F =30mA, V _{AA} =50V R _{GK} =27kΩ	—	10	—	μs
Coupled dv/dt	dv/dt	V _S =500V, R _{GK} =27kΩ	500	—	—	V/μs
Capacitance Input to Output	C _S	V _S =0, f=1MHz	—	0.8	—	pF
Isolation Resistance	R _S	V _S =500V	5x10 ¹⁰	10 ¹⁴	—	Ω
Isolation Voltage	BV _S	AC, 1 minute	5000	—	—	V _{rms}
		AC, 1 second	—	10000	—	V _{rms}
		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
Operating Temperature	T _{opr}	-25	—	85	°C
Gate to Cathode Resistance	R _{GK}	—	10	27	kΩ
Gate to Cathode Capacity	C _{GK}	—	0.01	0.1	μF

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