MATELIGHT

MATELIGHT DCC
RELEASE

Product Specification
产品规格书

Customer Name:
客户名称 _____

Customer P/N:
客户料号 _____

Product Name:
产品名称 可控硅光耦

Product P/N:
产品型号 MT-MOC3022

Sending Date:
制定日期 2026/04/16

☐ **Technical Reference** 技术参考 ☐ **Sample** 样品 ■ **Mass Product** 量产供货

Customer approval 客户审核			**Supplier approval** 供方审核		
Approved 核准	**Audit** 确认	**Confirmation** 制作	**Approved** 核准	**Audit** 确认	**Confirmation** 制作
☐ **Qualified** 接受 ☐ **Disqualified** 不接受			**Date:** 日期：		

RoHS

ISO 9001

ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
SENSITIVE DEVICES

SHENZHEN MATELIGHT ELECTRONICS CO.,LTD.

Address：5th Floor, No. 8-5 Factory, Tongfu Industrial Zone, Aiqun Road, Shangwu Community, Shiyan Street, Bao'an District, Shenzhen

公司地址： 深圳市宝安区石岩街道上屋社区爱群路同富裕工业区 8-5 号厂房 5 楼

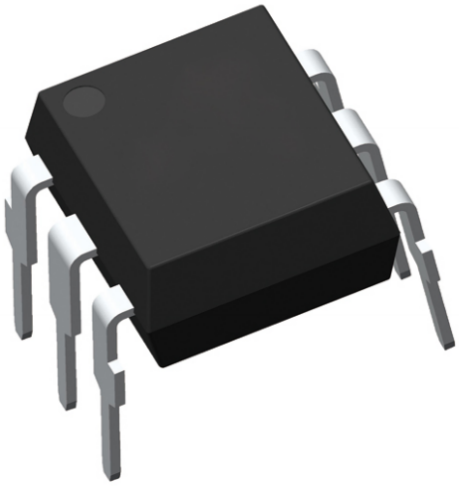
Tel(电话)：+86-13420946693 QQ：3001291430 Skype/邮箱:hedy.xu@matelight.com

Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

MATELIGHT

MATELIGHT DCC
RELEASE

MT-MOC3022



1. DESCRIPTION

1.1 Features

- Isolation voltage between input and output V_{iso} : 5,000V_{rms}
- 6pin DIP photocoupler, triac driver output
- High repetitive peak off-state voltage V_{DRM} : Min. 400V
- High critical rate of rise of off-state voltage(dV/dt : MIN. 1000V / μs)
- Dual-in-line package : MT-MOC3020, MT-MOC3021, MT-MOC3022, MT-MOC3023
- Wide lead spacing package : MT-MOC3020M, MT-MOC3021M, MT-MOC3022M, MT-MOC3023M
- Surface mounting package : MT-MOC3020S, MT-MOC3021S, MT-MOC3022S, MT-MOC3023S
- Tape and reel packaging : MT-MOC3020S-TA, MT-MOC3021S-TA, MT-MOC3022S-TA, MT-MOC3023S-TA
  MT-OC3020S-TA1, MT-MOC3021S-TA1, MT-MOC3022S-TA1, MT-MOC3023S-TA1
- Safety approval
  UL 1577, Cert. No.E113898
  CSA CA5A, Cert. No. 1020087 (CA 91533-1)
  FIMKO EN/IEC 60950-1, EN/IEC 60065; Cert. No.NCS/FI 24426 M3
  VDE DIN EN60747-5-2, Cert. No. 40015248
  CQC GB4943.1-2011/ GB8898-2011
- RoHS Compliance
  All materials be used in device are followed EU RoHS directive (No.2002/95/EC).
- MSL class1

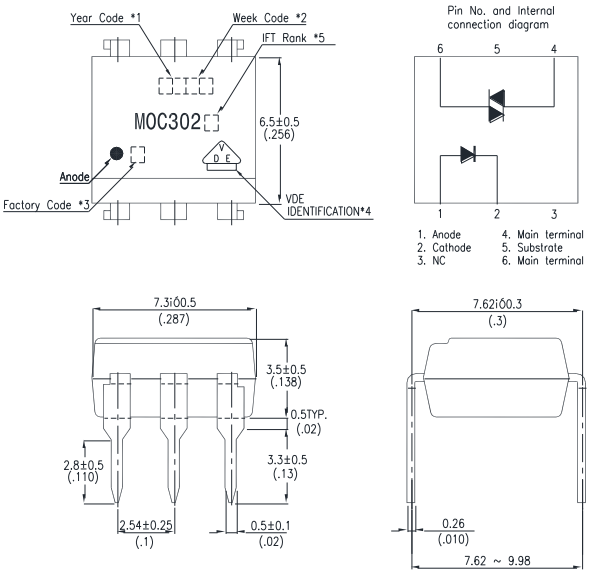
1.2 Applications

- AC Motor Drives
- AC Motor Starters
- E.M. Contactors
- Lighting Controls
- Solenoid/Valve Controls
- Solid State Relays
- Static Power Switches
- Temperature Controls

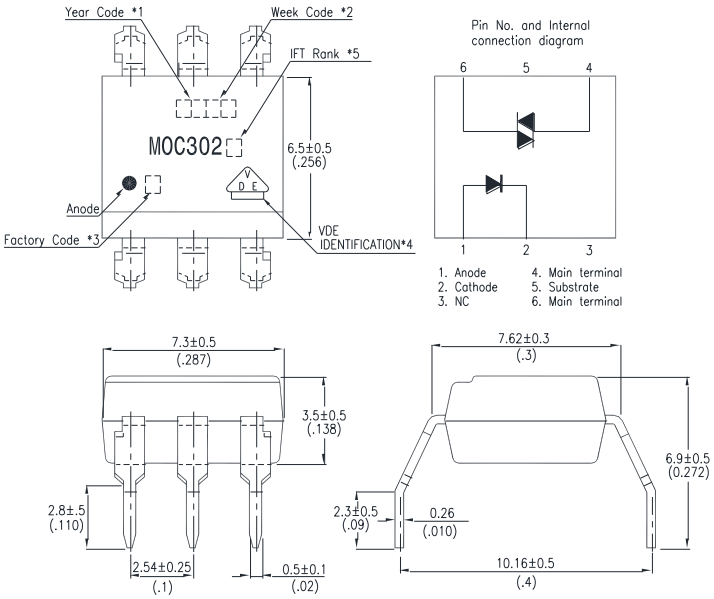
Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

2. PACKAGE DIMENSIONS

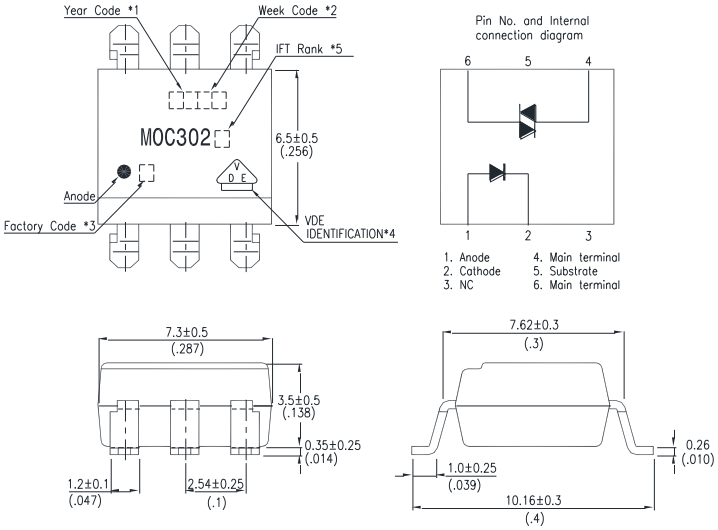
2.1 MT-MOC302X



2.2 MT-MOC302XM



2.3 MT-MOC302XS



Notes :

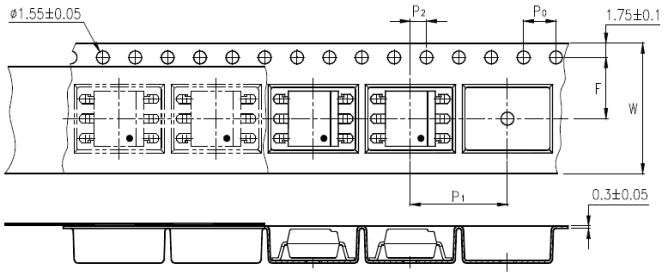
1. Year date code.
2. 2-digit work week.
3. Factory identification mark shall be marked (W: China-CZ, Y: Thailand)
4. VDE option
5. I_{FT} rank

* Dimensions are in Millimeters and (Inches).

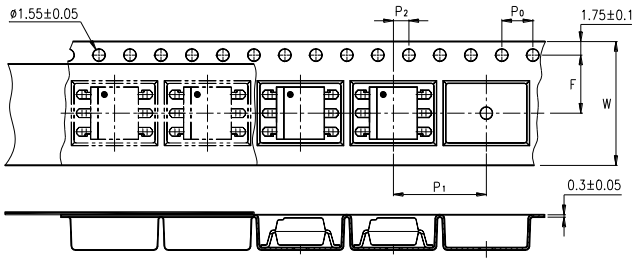
Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

3. TAPING DIMENSIONS

3.1 MT-MOC302XS-TA



3.2 MT-MOC302XS-TA1



Description	Symbol	Dimension in mm (inch)
Tape wide	W	16±0.3 (0.63)
Pitch of sprocket holes	P_0	4±0.1 (0.15)
Distance of compartment	F	7.5±0.1 (0.295)
	P_2	2±0.1 (0.079)
Distance of compartment to compartment	P_1	12±0.1 (0.472)

3.3 Quantities Per Reel

Package Type	MOC302XS series
Quantities (pcs)	1000

Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

4. RATING AND CHARACTERISTICS

4.1 Absolute Maximum Ratings at Ta=25°C

	Parameter	Symbol	Rating	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Junction Temperature	T_J	125	°C
	Power Dissipation	P	100	mW
Output	Off-State Output Terminal Voltage	V_{DRM}	400	V
	Peak Repetitive Surge Current (PW=1ms, 120pps)	I_{TSM}	1	A
	Junction Temperature	T_J	125	°C
	Collector Power Dissipation	P_C	300	mW
	Total Power Dissipation	P_{tot}	330	mW
1.	Isolation Voltage	V_{iso}	5000	V_{rms}
	Operating Temperature	T_{opr}	-40 ~ +100	°C
	Storage Temperature	T_{stg}	-55 ~ +150	°C
2.	Soldering Temperature	T_{sol}	260	°C

1. AC For 1 Minute, R.H. = 40 ~ 60%

   Isolation voltage shall be measured using the following method.

   (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.

   (2) The isolation voltage tester with zero-cross circuit shall be used.

   (3) The waveform of applied voltage shall be a sine wave.

2. For 10 Seconds

Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

4.2 ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

Parameter			Symbol	Min.	Typ.	Max.	Unit	Test Condition
Input		Forward Voltage	V_F	—	1.15	1.5	V	I_F=20mA
		Reverse Current	I_R	—	0.05	10	μA	V_R=6V
Output	1	Peak Blocking Current, Either Direction	I_{DRM}	—	10	100	nA	V_{DRM} = 400V
		Peak On-State Voltage, Either Direction	V_{TM}	—	1.7	3.0	V	I_{TM}=100 mA Peak
	2	Critical rate of Rise of Off-State Voltage	dv/dt	1000	—	—	V/μs	Vin=240Vrms
Couple	3	Led Trigger Current, Current Required to Latch Output, MT-MOC3020	I_{FT}	—	—	30	mA	Main Terminal Voltage = 3V
		MT-MOC3021		—	—	15		
		MT-MOC3022		—	—	10		
		MT-MOC3023		—	—	5		
		Holding Current, Either Direction	I_H	—	200	—	μA	

*1. Test voltage must be applied within dv/dt rating.

*2. This is static dv/dt. Commutating dv/dt is a function of the load-driving thyristor(s) only.

*3. All devices are guaranteed to trigger at an I_F value less than or equal to max I_{FT}. Therefore, recommended operating I_F lies between max I_{FT}, 30 mA for MOC3020, 15 mA for MOC3021, 10 mA for MOC3022, 5 mA for MOC3023, and absolute max I_F (50mA)

Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

5. CHARACTERISTICS CURVES (TYPICAL PERFORMANCE)

Fig.1 Forward Current vs. Ambient Temperature

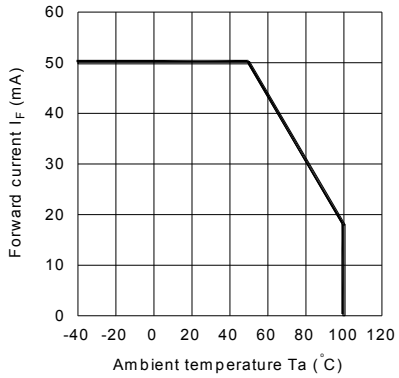


Fig.2 On-state Current vs. Ambient Temperature

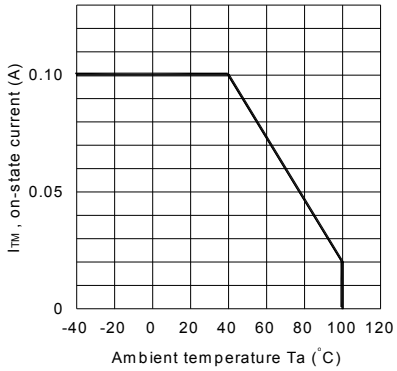


Fig.3 Minimum Trigger Current vs. Ambient Temperature

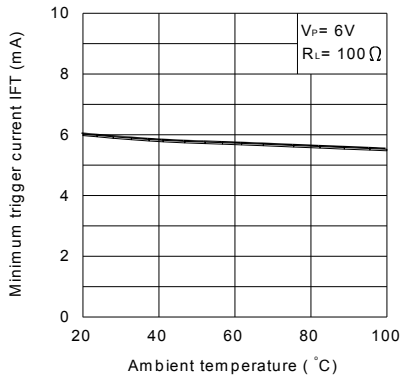


Fig.4 Forward Current vs. Forward Voltage

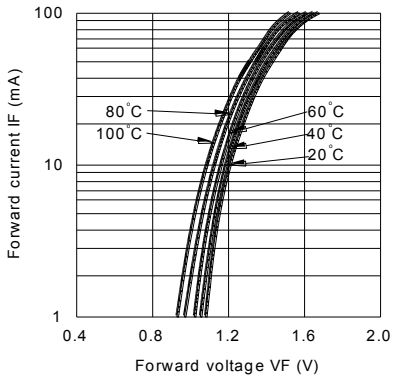


Fig.5 On-state Voltage vs. Ambient Temperature

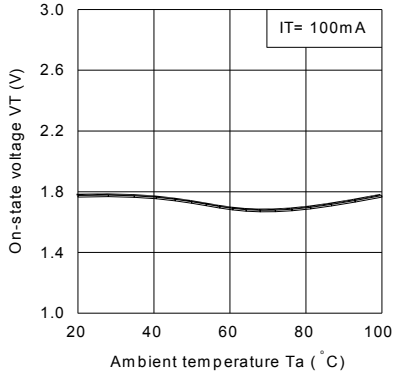
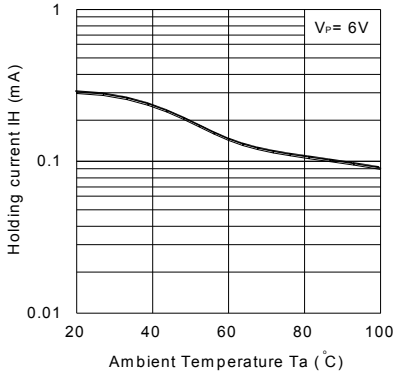


Fig.6 Holding Current vs. Ambient Temperature



Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

Fig.7 Repetitive Peak Off-state Current vs. Temperature

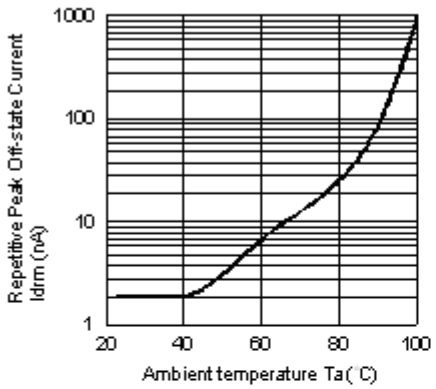
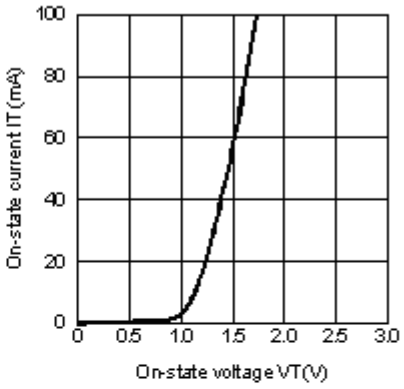
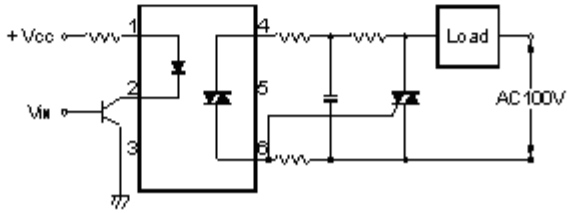


Fig.8 On-state Current vs. On-state Voltage



Basic Operation Circuit
Medium/High Power Triac Drive Circuit



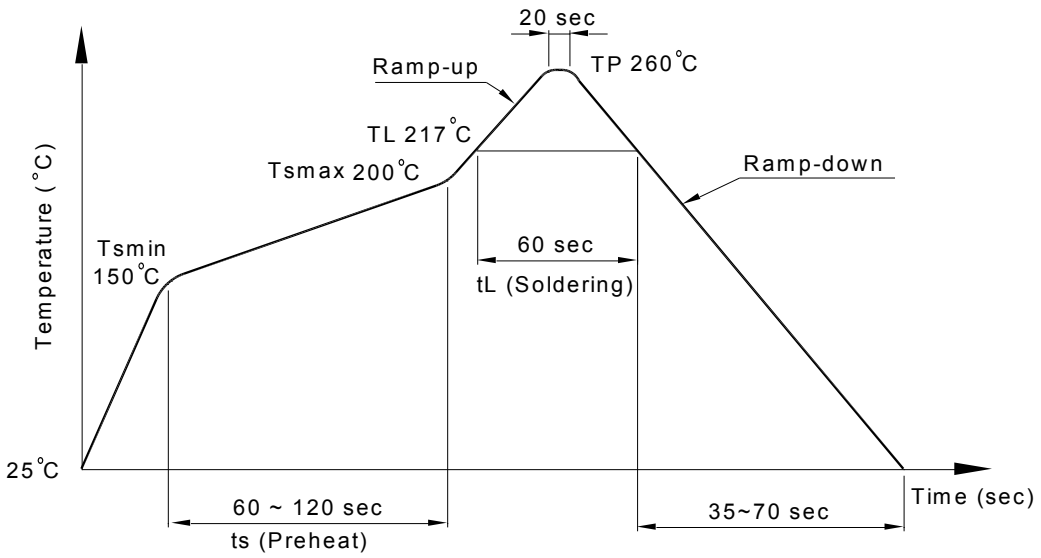
Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

6. TEMPERATURE PROFILE OF SOLDERING

6.1 IR Reflow soldering (JEDEC-STD-020C compliant)

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

Profile item	Conditions
Preheat	
- Temperature Min (T_{Smin})	150˚C
- Temperature Max (T_{Smax})	200˚C
- Time (min to max) (ts)	90±30 sec
Soldering zone	
- Temperature (T_L)	217˚C
- Time (t_L)	60 sec
Peak Temperature (T_P)	260˚C
Ramp-up rate	3˚C / sec max.
Ramp-down rate	3~6˚C / sec



Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

6.2 Wave soldering (JEDEC22A111 compliant)

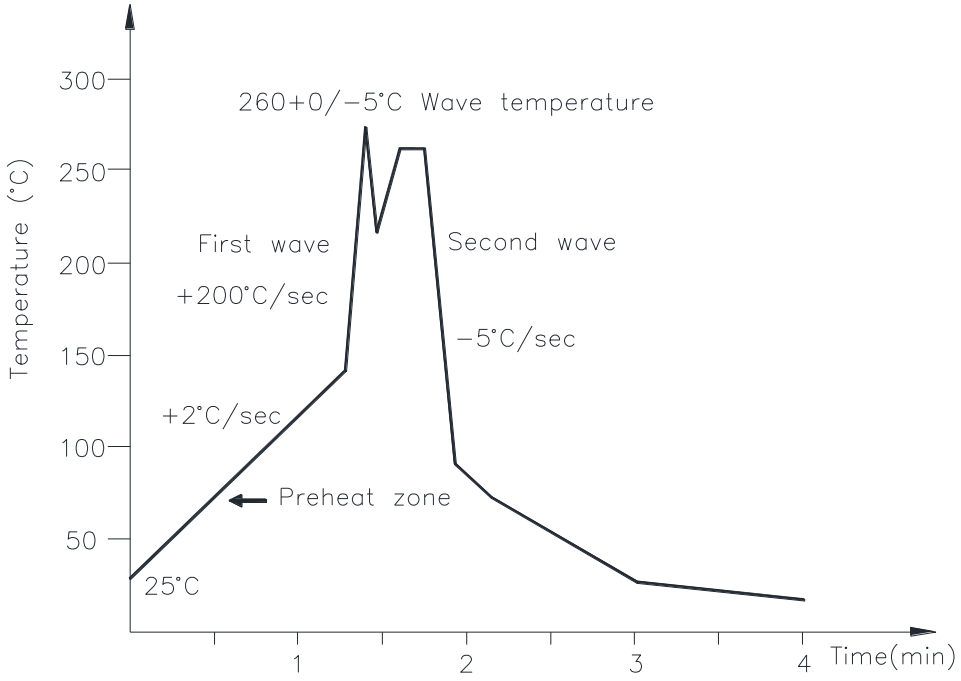
One time soldering is recommended within the condition of temperature.

Temperature: 260+0/-5˚C

Time: 10 sec.

Preheat temperature:25 to 140˚C

Preheat time: 30 to 80 sec.



6.3 Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.

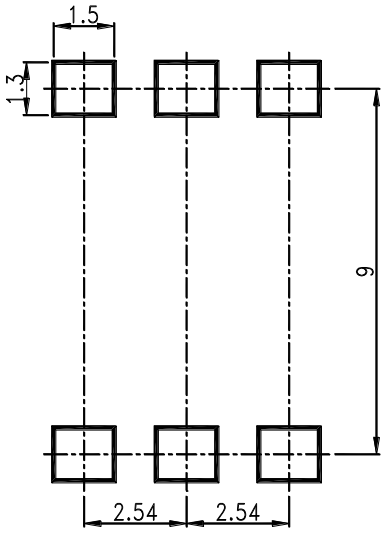
Temperature: 380+0/-5˚C

Time: 3 sec max.

Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

7. RRECOMMENDED FOOT PRINT PATTERNS (MOUNT PAD)

Unit: mm



Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice

8. NAMING RULE

MT-MOC302(X)(1)-(2)

DEVICE PART NUMBER (MT-MOC302X)

Please refer to Electrical Optical Characteristics Table on Page P5

(1) FORM TYPE (S, M or none)

(2) TAPING TYPE (TA, TA1)

Example : MOC3021S-TA1

MT-MOC302(X)(1)(2)-V

DEVICE PART NUMBER (MOC302X)

Please refer to Electrical Optical Characteristics Table on Page P5

(1) FORM TYPE (S, M or none)

(2) TAPING TYPE (TA, TA1)

(3) VDE option

Example : MT-MOC3021STA1-V

9. NOTES

- MT is continually improving the quality, reliability, function or design and MT reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.
- When requiring a device for any ”specific” application, please contact our sales in advice.
- If there are any questions about the contents of this publication, please contact us at your convenience.
- The contents described herein are subject to change without prior notice.
- Immerge unit’s body in solder paste is not recommended.

Copyright © 2022 MTGDZ . All rights reserved . Subject to change without notice