

Parameter	Rating	Units
AC Operating Voltage	120	V _{rms}
Load Current	500	mA _{rms}
On-State Voltage Drop (I _L =500mA _{rms})	1.4	V _{rms}

Features

- Load Current up to 0.5A_{rms}
- Blocking Voltages up to 400V_P
- 5mA Sensitivity
- Zero-Crossing Detection
- DC Control, AC Output
- Optically Isolated
- TTL and CMOS Compatible
- Low EMI and RFI Generation
- High Noise Immunity
- VDE compatible
- Machine Insertable, Wave Solderable

Applications

- Programmable Control
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Contactors
- Large Relays
- Solenoids
- Motors
- Heaters

Description

The PM1204 is an AC Solid State Switch using optical coupling with dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. The PM1204 switches are robust enough to provide a blocking voltage of up to 400V_P. In addition, tightly controlled zero-cross circuitry ensures switching of AC loads without the generation of transients. The input and output circuits are optically coupled to provide 3750V_{rms} of isolation and noise immunity between control and load circuits. As a result, the PM1204 is well suited for industrial environments where electromagnetic interference could disrupt the operation of electromechanical relays.

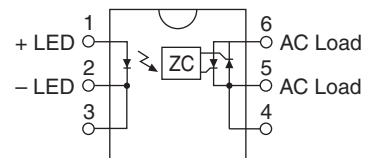
Approvals

- UL Recognized Component: UL 508, File # E69938
- CSA Certified Component: Certificate # LR43639-8

Ordering Information

Part #	Description
PM1204	6-Pin DIP (50/Tube)
PM1204S	6-Pin Surface Mount (50/Tube)
PM1204STR	6-Pin Surface Mount (1000/Reel)

Pin Configuration



Absolute Maximum Ratings (@ 25°C)

Parameter	Min	Max	Units
Blocking Voltage	-	400	V_P
Reverse Input Voltage	-	5	V
Input Control Current	-	100	mA
Peak (10ms)	-	1	A
Input Power Dissipation ¹	-	150	mW
Total Package Dissipation ²	-	800	mW
Isolation Voltage, Input to Output	3750	-	V_{rms}
Operational Temperature	-40	+85	°C
Storage Temperature	-40	+125	°C

¹ Derate Linearly 1.33 mW / °C

² Derate Linearly 6.67 mW / °C

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

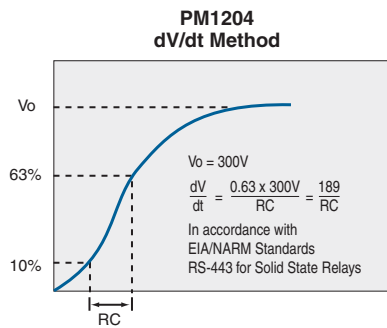
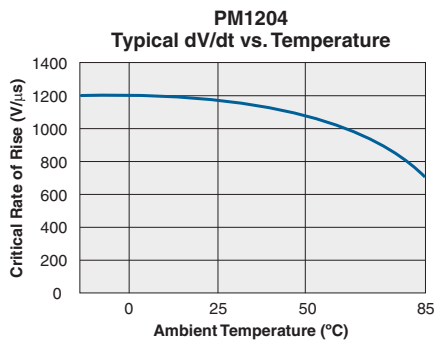
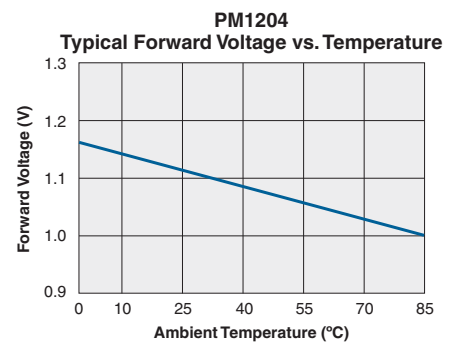
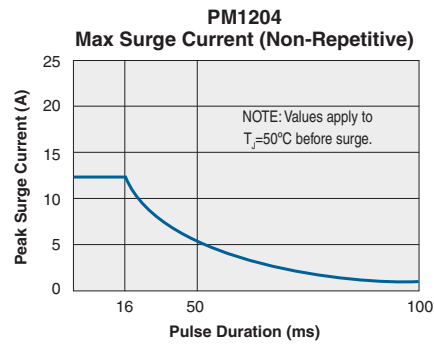
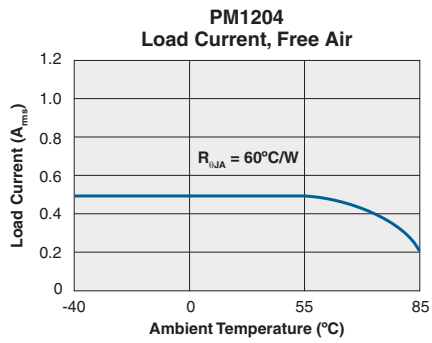
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
AC Operating Voltage	$I_F=5mA$	V_{OP}	20	-	120	V_{rms}
Load Current (Continuous)	$V_L=120-240VAC$	I_L	0.005	-	0.5	A_{rms}
Maximum Surge Current	$t \leq 16ms$	I_{PEAK}	-	-	12	A
Off-State Leakage Current	$V_L=400V_{DC}$	I_{LEAK}	-	-	1	mA
On-State Voltage Drop	$I_L=0.5A_{rms}$	-	-	-	1.4	V_{rms}
Critical Rate of Rise	-	dV/dt	1000	1200	-	V/ μs
Switching Speeds						
Turn-On	$I_F=5mA$	T_{ON}	-	-	0.5	Cycles
Turn-Off		T_{OFF}	-	-	0.5	
Zero-Cross Turn-On Voltage	1 st Half-Cycle	-	-	2	5	V
Sub Half-Cycle		-	-	-	1	V
Operating Frequency ¹	-	-	20	-	500	Hz
Load Power Factor for Guaranteed Turn-On ²	-	PF	0.25	-	-	-
Capacitance Input-To-Output	-	C_{IO}	-	3	-	pF
Input Characteristics @ 25°C						
Input Control Current						
For Normal Environment	-	I_F	-	-	5	mA
For High Noise Environment	-		-	-	10	
Input Voltage Drop	$I_F=5mA$	V_F	0.9	1.2	1.4	V
Input Dropout Voltage	-	-	0.8	-	-	V
Reverse Input Current	$V_R=5V$	I_R	-	-	10	μA

¹ Zero Cross 1st half-cycle @ < 100Hz.

² Snubber circuits may be required at low power factors.

PERFORMANCE DATA*



*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

MANUFACTURING INFORMATION

Soldering

For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

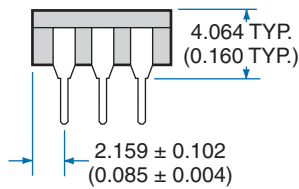
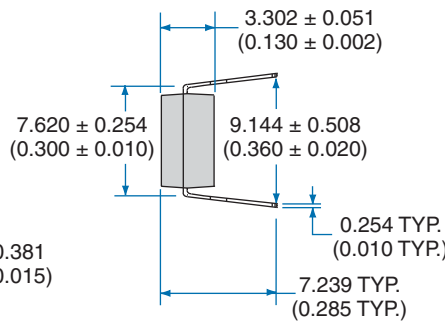
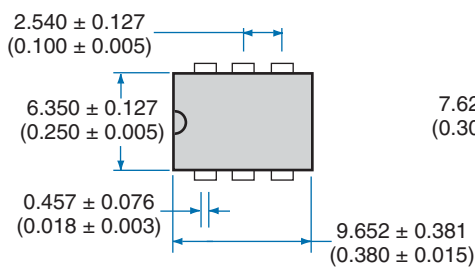
Washing

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

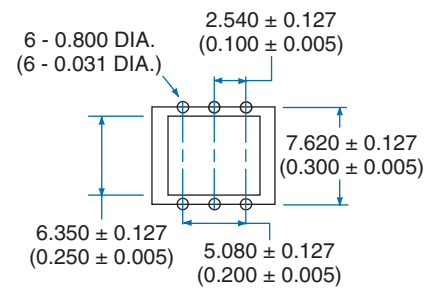


MECHANICAL DIMENSIONS

6-Pin DIP Package

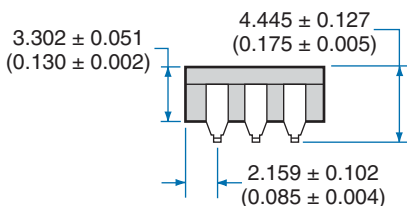
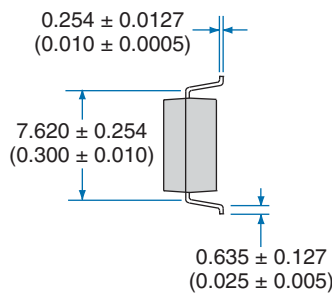
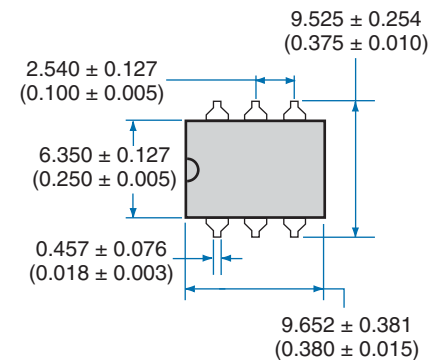


PC Board Pattern (Top View)

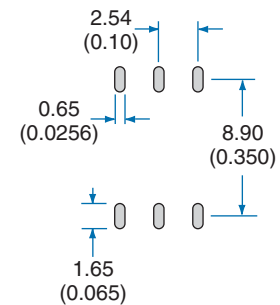


Dimensions
mm
(inches)

6-Pin Surface Mount Package

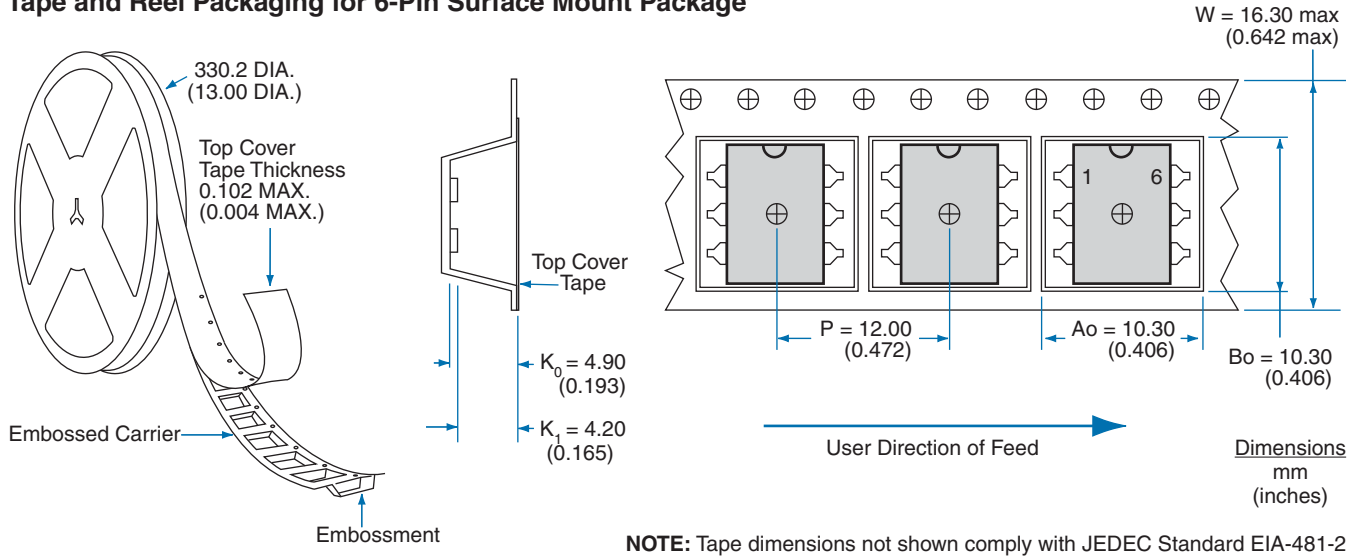


Recommended PCB Land Pattern



Dimensions
mm
(inches)

Tape and Reel Packaging for 6-Pin Surface Mount Package



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