

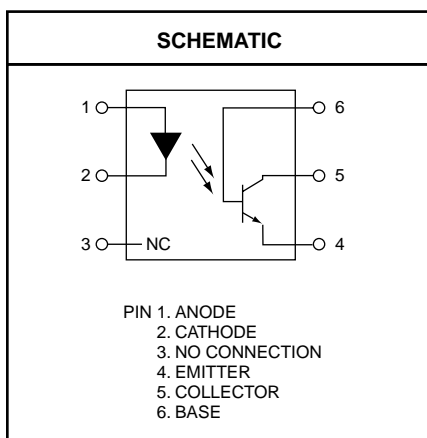
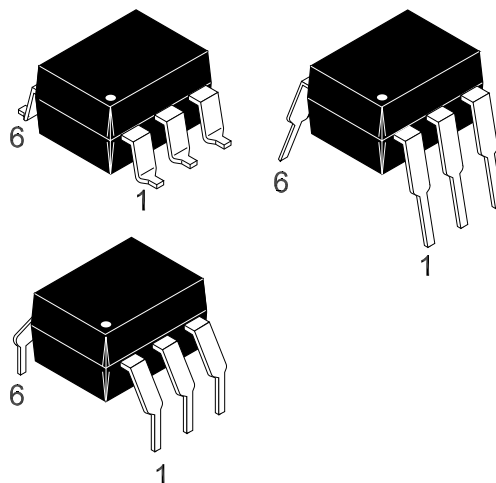
MOC8204

DESCRIPTION

The MOC8204 device consists of a gallium arsenide infrared emitting diode optically coupled to a high voltage, silicon, phototransistor detector in a standard 6-pin DIP package. It is designed for high voltage applications and is particularly useful in copy machines and solid state relays.

APPLICATIONS

- Copy Machines
- Interfacing and coupling systems of different potentials and impedances
- Monitor and Detection Circuits
- Solid State Relays



| Parameter | Symbol | Value | Units |
|--|-----------|----------------|-------------|
| TOTAL DEVICE | | | |
| Storage Temperature | T_{STG} | -55 to +150 | °C |
| Operating Temperature | T_{OPR} | -55 to +100 | °C |
| Lead Solder Temperature | T_{SOL} | 260 for 10 sec | °C |
| Input-Output Isolation Voltage Peak ac Voltage, 60 Hz, 1 Second Duration ⁽¹⁾ | V_{ISO} | 7500 | Vac(pk) |
| Total Device Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 250 2.94 | mW |
| EMITTER | | | |
| DC/Average Forward Input Current | I_F | 60 | mA |
| Forward Current - Peak (Pulse Width = 1µs, 330 pps) | $I_F(pk)$ | 1.2 | A |
| LED Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 120 1.41 | mW mW/°C |
| DETECTOR | | | |
| Collector-Emitter Voltage | V_{CEO} | 400 | V |
| Collector-Base Voltage | V_{CBO} | 400 | V |
| Emitter-Collector Voltage | V_{ECO} | 7 | V |
| Detector Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 150 1.76 | mW mW/°C |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise specified.)

INDIVIDUAL COMPONENT CHARACTERISTICS

| Parameter | Test Conditions | Symbol | Min | Typ ⁽¹⁾ | Max | Unit |
|--|--|------------|-----|--------------------|-----|---------------|
| EMITTER | | | | | | |
| Input Forward Voltage | ($I_F = 10\text{ mA}$) | V_F | — | 1.2 | 15 | V |
| Reverse Leakage Current | ($V_R = 6.0\text{ V}$) | I_R | — | — | 10 | μA |
| Capacitance | ($V = 0, f = 1\text{ MHz}$) | C_J | — | 18 | — | pF |
| DETECTOR | | | | | | |
| Collector-Emitter Breakdown Voltage ($I_C = 1.0\text{ mA}, R_{BE} = 1\text{ M}\Omega$) | | BV_{CEO} | 400 | — | — | V |
| Collector-Base Breakdown Voltage ($I_C = 100\text{ }\mu\text{A}$) | | BV_{CBO} | 400 | — | — | V |
| Emitter-Base Breakdown Voltage ($I_E = 100\text{ }\mu\text{A}$) | | BV_{EBO} | 7 | — | — | V |
| Collector-Emitter Dark Current | | I_{CEO} | — | — | 100 | nA |
| $T_A = 25^\circ\text{C}$ | ($R_{BE} = 1\text{ M}\Omega, V_{CE} = 300\text{ V}$) | | | | 250 | μA |
| $T_A = 100^\circ\text{C}$ | | | | | | |

ISOLATION CHARACTERISTICS

| Characteristic | Test Conditions | Symbol | Min | Typ ⁽¹⁾ | Max | Units |
|---|---|----------------------------|--------|--------------------|-----|----------------|
| Output Collector Current | ($V_{CE} = 10\text{ V}, I_F = 10\text{ mA}, R_{BE} = 1\text{ M}\Omega$) | I_C (CTR) ⁽²⁾ | 2 (20) | — | — | mA(%) |
| Collector-Emitter Saturation Voltage ($I_C = 0.5\text{ mA}, I_F = 10\text{ mA}, R_{BE} = 1\text{ M}\Omega$) | | $V_{(SAT)}$ | — | — | 0.4 | V |
| Input-Output Isolation Voltage ⁽³⁾ | (I _{I-O} ≤ 1 μA , Time = 1min) | V_{ISO} | 5300 | — | — | $V_{AC(RMS)}$ |
| | | | 7300 | — | — | $V_{AC(PEAK)}$ |
| Isolation Resistance ⁽³⁾ | | R_{ISO} | — | 10^{11} | — | Ω |
| Isolation Capacitance ⁽¹⁾ | | C_{ISO} | — | 0.2 | — | pf |
| Turn-On Time | (V _{CC} = 10 V, I _C = 2 mA, R _L = 100 Ω) | t_{ON} | — | 5 | — | μs |
| Turn-Off Time | | t_{OFF} | — | 5 | — | |

Notes

1. Always design to the specified minimum/maximum electrical limits (where applicable).
2. Current Transfer Ratio (CTR) = $I_C / I_F \times 100\%$.
3. For this test LED pins 1 and 2 are common and phototransistor Pins 4,5 and 6 are common.

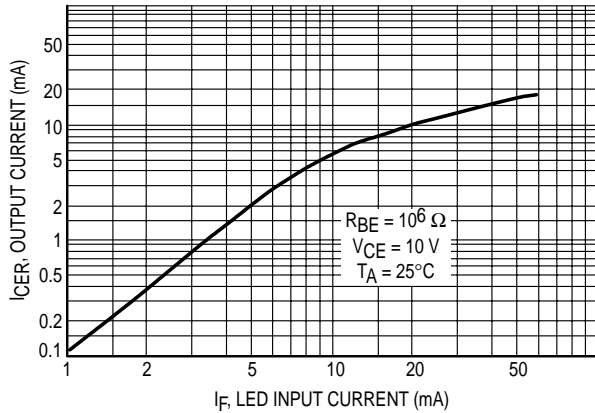


Figure 1. Output Current versus LED Input Current

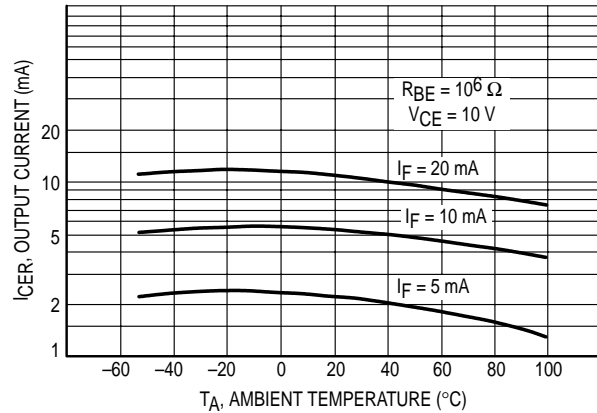


Figure 2. Output Current versus Temperature

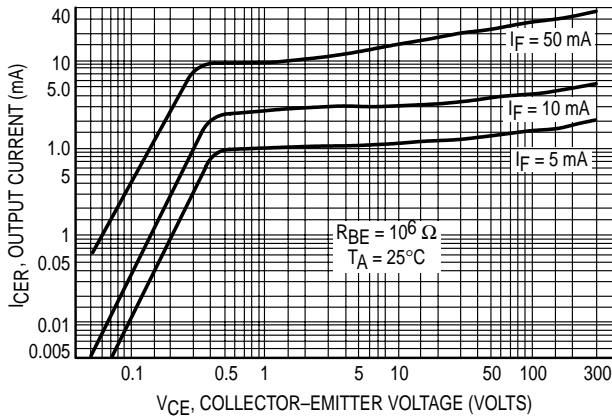


Figure 3. Output Characteristics

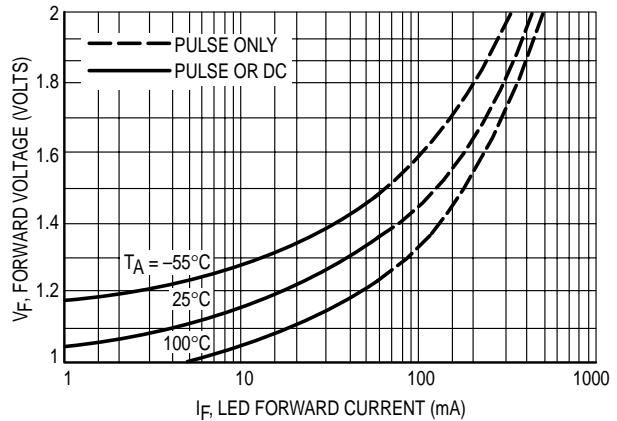


Figure 4. Forward Characteristics

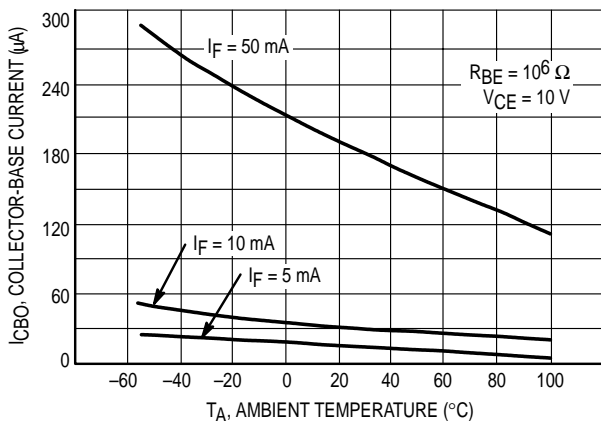


Figure 5. Collector-Base Current versus Temperature

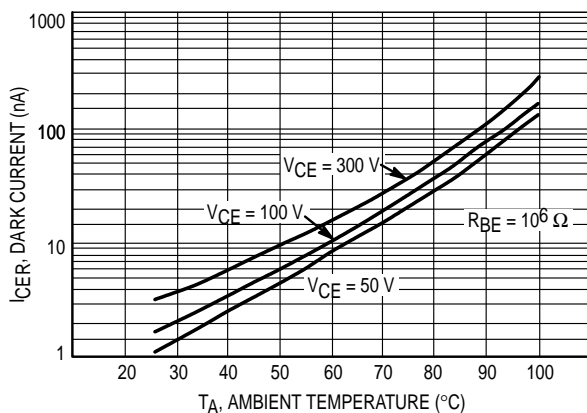
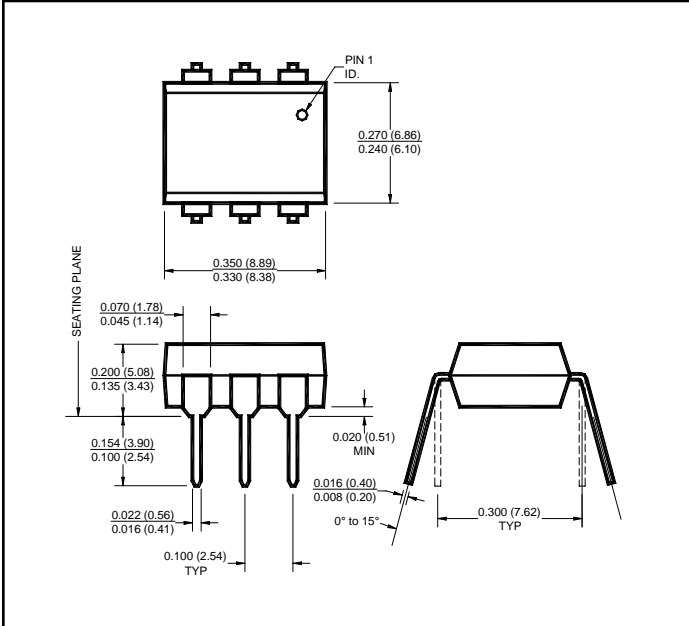


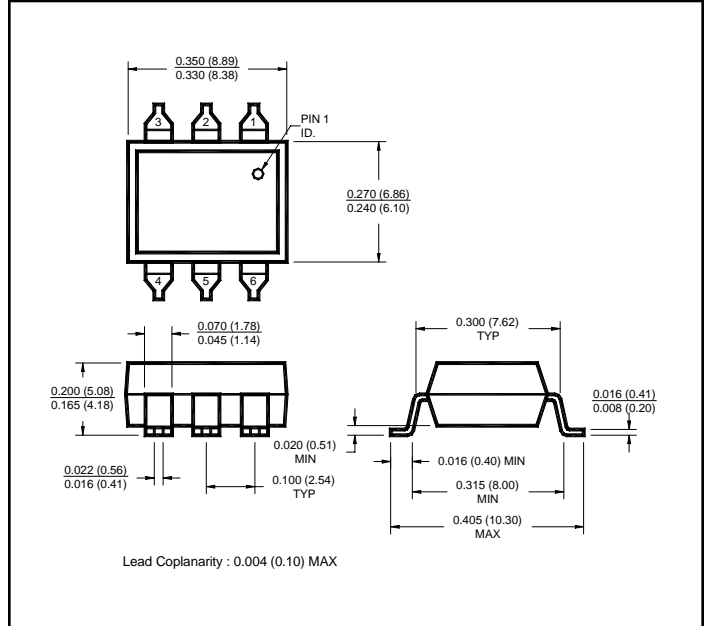
Figure 6. Dark Current versus Temperature

MOC8204

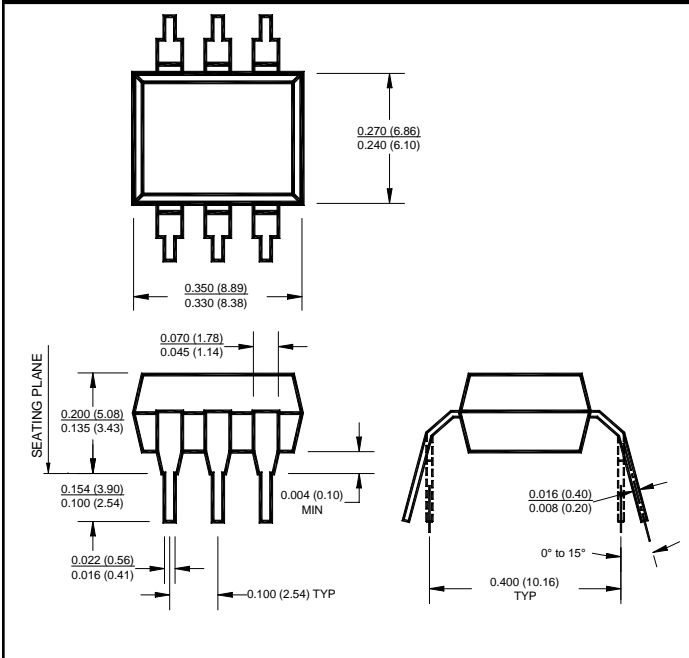
Package Dimensions (Through Hole)



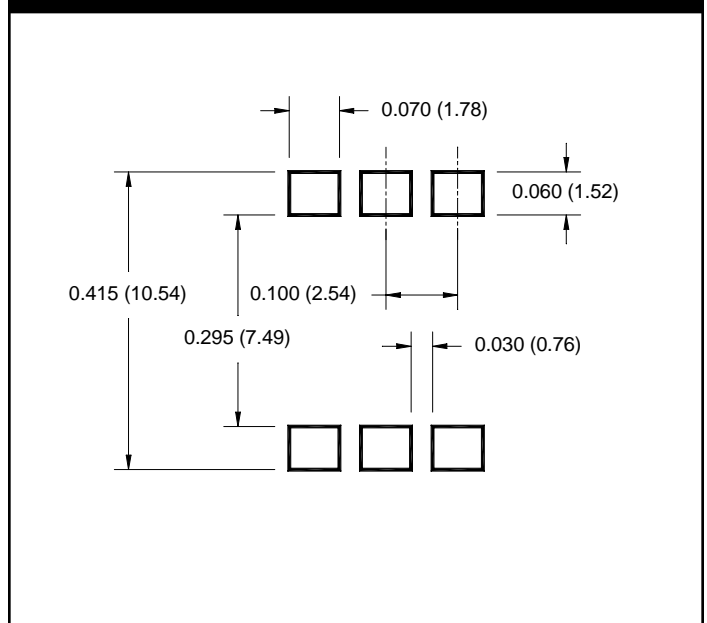
Package Dimensions (Surface Mount)



Package Dimensions (0.4" Lead Spacing)



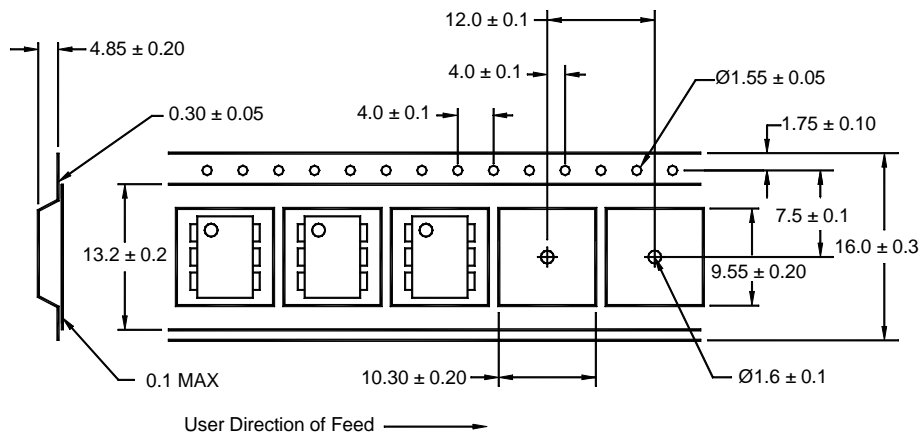
**Recommended Pad Layout for
Surface Mount Leadform**



ORDERING INFORMATION

| Option | Order Entry Identifier | Description |
|--------|------------------------|--------------------------------------|
| R2 | .R2 | Opto Plus Reliability Conditioning |
| S | .S | Surface Mount Lead Bend |
| SD | .SD | Surface Mount; Tape and reel |
| SDL | .SDL | Surface Mount; Tape and reel |
| W | .W | 0.4" Lead Spacing |
| 300 | .300 | VDE 0884 |
| 300W | .300W | VDE 0884, 0.4" Lead Spacing |
| 3S | .3S | VDE 0884, Surface Mount |
| 3SD | .3SD | VDE 0884, Surface Mount, Tape & Reel |

QT Carrier Tape Specifications



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