

PC824/PC844

AC Input Photocoupler

* Lead forming type (I type) and taping reel type (P type) are also available.

Features

1. AC input
2. High isolation voltage between input and output ($V_{iso(rms)}$:5kV)
3. Compact dual-in-line package
PC824 (2-channel type)
PC844 (4-channel type)
4. Current transfer ratio
 CTR:MIN. 20% at $I_F=\pm 1mA, V_{CE}=5V$
5. Recognized by UL, file No. E64380

Applications

1. Programmable controllers
2. Telephones
3. Facsimiles

Absolute Maximum Ratings (T_a=25°C)

| | Parameter | Symbol | Rating | Unit |
|--------------------------|-----------------------------|----------------|-------------|------|
| Input | Forward current | I_F | ± 50 | mA |
| | *1 Peak forward current | I_{FM} | ± 1 | A |
| | Power dissipation | P | 70 | mW |
| Output | Collector-emitter voltage | V_{CEO} | 35 | V |
| | Emitter-collector voltage | V_{ECO} | 6 | V |
| | Collector current | I_C | 50 | mA |
| | Collector power dissipation | P_C | 150 | mW |
| | Total power dissipation | P_{tot} | 200 | mW |
| | *2 Isolation voltage | $V_{iso(rms)}$ | 5 | kV |
| | Operating temperature | T_{opr} | -30 to +100 | °C |
| | Storage temperature | T_{stg} | -55 to +125 | °C |
| *3 Soldering temperature | T_{sol} | 260 | °C | |

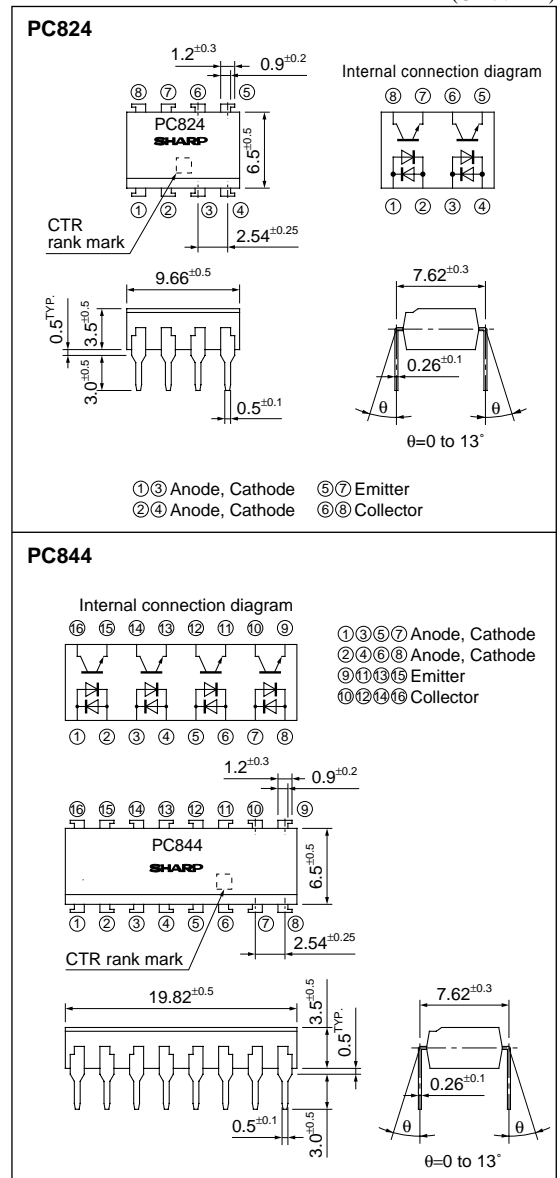
*1 Pulse width $\leq 100\mu s$, Duty ratio:0.001

*2 40 to 60%RH, AC for 1 minute

*3 For 10s

Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

(T_a=25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|--------------------------|--------------------------------------|----------------------|--|--|------------------|------|------|
| Input | Forward voltage | V _F | I _F =±20mA | – | 1.2 | 1.4 | V |
| | Peak forward voltage | V _{FM} | I _{FM} =±0.5V | – | – | 3.0 | V |
| | Terminal capacitance | C _t | V=0, f=1kHz | – | 50 | 250 | pF |
| Output | Collector dark current | I _{CEO} | V _{CE} =20V, I _F =0 | – | – | 100 | nA |
| Transfer characteristics | Collector current | I _C | I _F =±1mA, V _{CE} =5V | 0.2 | – | 3.0 | mA |
| | Collector-emitter saturation voltage | V _{CE(sat)} | I _F =±20mA, I _C =1mA | – | 0.1 | 0.2 | V |
| | Isolation resistance | R _{ISO} | DC500V, 40 to 60%RH | 5×10 ¹⁰ | 10 ¹¹ | – | Ω |
| | Floating capacitance | C _f | V=0, f=1MHz | – | 0.6 | 1.0 | pF |
| | Cut-off frequency | f _c | V _{CE} =5V, I _C =2mA, R _L =100Ω, -3dB | 15 | 80 | – | kHz |
| | Response time | Rise time | t _r | V _{CE} =2V, I _C =2mA, R _L =100Ω | – | 4 | 18 |
| Fall time | | t _f | – | | 3 | 18 | μs |

■ Rank Table

(I_F=±1mA, V_{CE}=5V, T_a=25°C)

| Model No. | Rank mark | I _C (mA) |
|-----------|--------------|---------------------|
| PC824A | A | 0.5 to 1.5 |
| PC844A | | |
| PC824 | A or no mark | 0.2 to 3.0 |
| PC844 | | |

Fig.1 Forward Current vs. Ambient Temperature

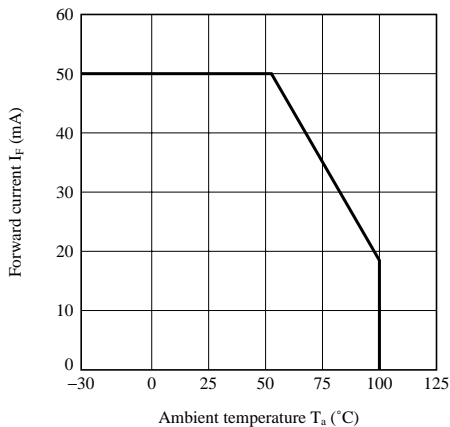


Fig.2 Collector Power Dissipation vs. Ambient Temperature

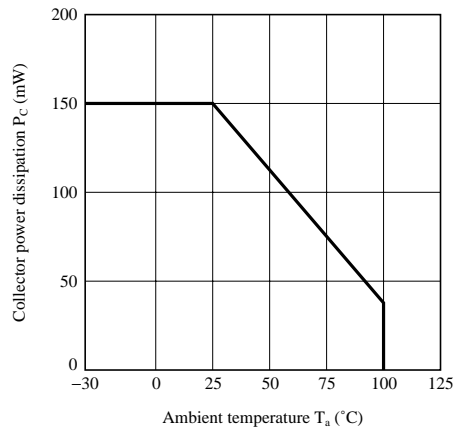


Fig.3 Peak Forward Current vs. Duty Ratio

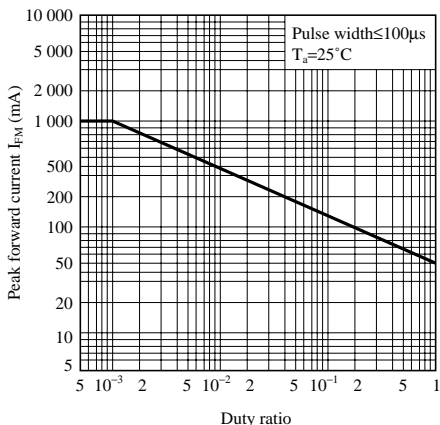


Fig.4 Forward Current vs. Forward Voltage

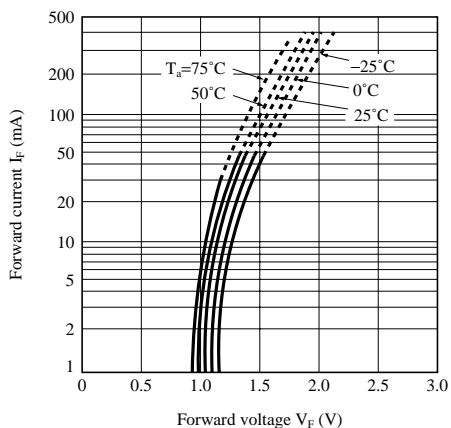


Fig.5 Current Transfer Ratio vs. Forward Current

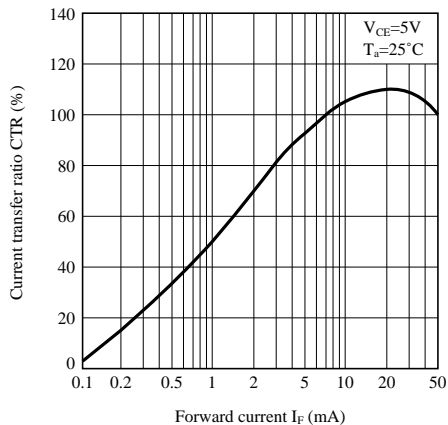


Fig.6 Collector Current vs. Collector-emitter Voltage

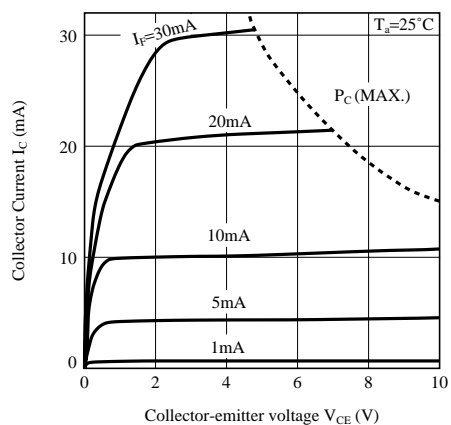


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

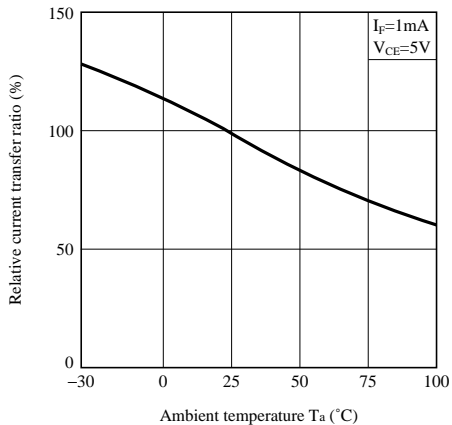


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

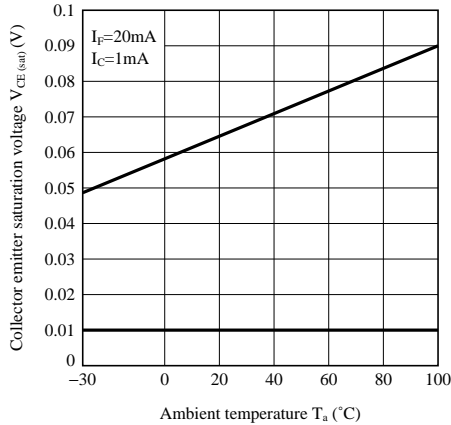


Fig.9 Collector Dark Current vs. Ambient Temperature

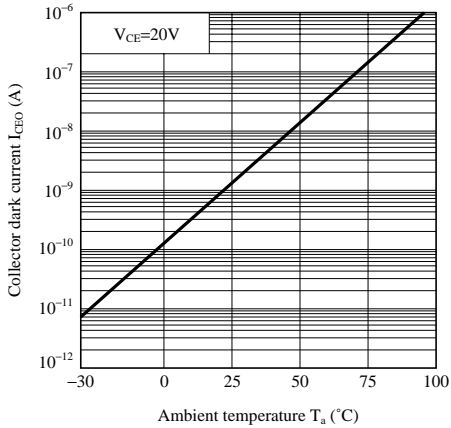


Fig.10 Collector-emitter Saturation Voltage vs. Forward Current

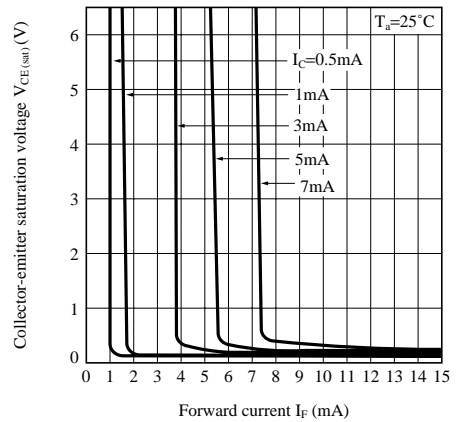
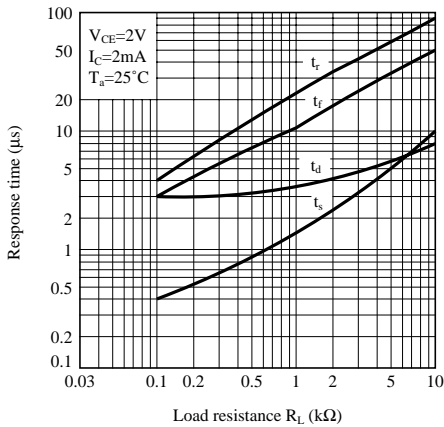


Fig.11 Response Time vs. Load Resistance



Test Circuit for Response Time

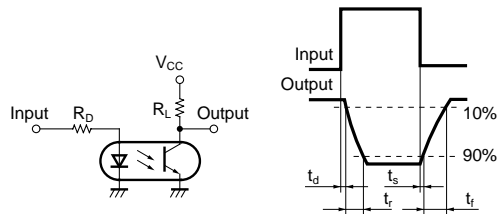
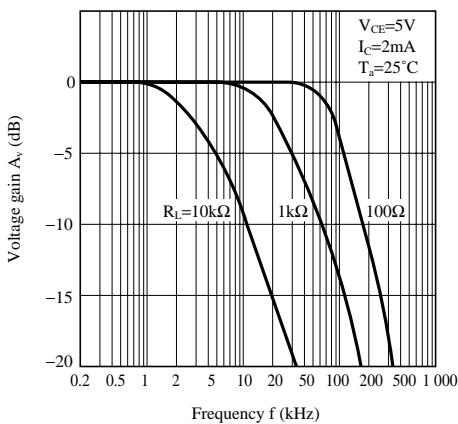
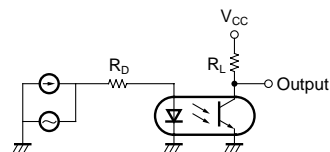


Fig.12 Frequency Response



Test Circuit for Frequency Response



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