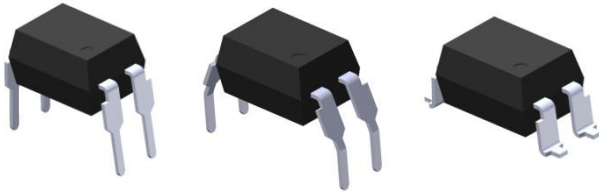
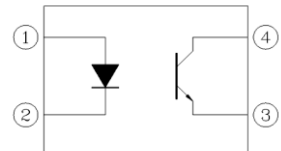




4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER GX817 Series



Schematic



Pin Configuration

1. Anode
2. Cathode
3. Emitter
4. Collector

Features:

- Compliance Halogens Free (Only copper leadframe)
(Br < 900 ppm, Cl < 900 ppm, Br+Cl < 1500 ppm)
- Current transfer ratio
(CTR: 50~600% at $I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$)
- High isolation voltage between input and output (Viso = 5000Vrms)
- Creepage distance > 7.62mm
- Operating temperature up to +110°C
- Compact small outline package
- The product itself will remain within RoHS compliant version
- Compliance with EU REACH
- UL and cUL approved(No.E214129)
- VDE approved (No. 132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CQC approved

Description

The GX817series of devices each consist of an infrared emitting diodes, optically coupled to a phototransistor detector.

They are packaged in a 4-pin DIP package and available in wide-lead spacing and SMD option.

Applications

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as fan heaters, etc.
- Signal transmission between circuits of different potentials and impedances

**Absolute Maximum Ratings (Ta=25°C)**

| | Parameter | Symbol | Rating | Unit |
|-------------------------------------|--|------------|--------|-------|
| Input | Forward current | I_F | 60 | mA |
| | Peak forward current (1us, pulse) | I_{FP} | 1 | A |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P_D | 100 | mW |
| | Derating factor (above $T_a = 100^\circ\text{C}$) | | 2.9 | mW/°C |
| Output | Power dissipation | P_C | 150 | mW |
| | Derating factor (above $T_a = 100^\circ\text{C}$) | | 5.8 | mW/°C |
| | Collector current | I_C | 50 | mA |
| | Collector-Emitter voltage | V_{CEO} | 35 | V |
| | Emitter-Collector voltage | V_{ECO} | 6 | V |
| Total Power Dissipation | P_{TOT} | 200 | mW | |
| Isolation Voltage* ¹ | V_{ISO} | 5000 | V rms | |
| Operating Temperature | T_{OPR} | -55 to 110 | °C | |
| Storage Temperature | T_{STG} | -55 to 125 | °C | |
| Soldering Temperature* ² | T_{SOL} | 260 | °C | |

Notes:

*1 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

*2 For 10 seconds



国芯佳品

深圳市国芯佳品半导体有限公司

Guo Xin Jia Pin SEMICONDUCTOR

GX817

Electro-Optical Characteristics (Ta=25°C unless specified otherwise)

Input

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|-------------------|----------|------|------|------|---------------|--------------------------|
| Forward Voltage | V_F | - | 1.2 | 1.4 | V | $I_F = 20\text{mA}$ |
| Reverse Current | I_R | - | - | 10 | μA | $V_R = 4\text{V}$ |
| Input capacitance | C_{in} | - | 30 | 250 | pF | $V = 0, f = 1\text{kHz}$ |

Output

| Parameter | Symbol | Min | Typ. | Max. | Unit | Condition |
|-------------------------------------|------------|-----|------|------|------|---|
| Collector-Emitter dark current | I_{CEO} | - | - | 100 | nA | $V_{CE} = 20\text{V}, I_F = 0\text{mA}$ |
| Collector-Emitter breakdown voltage | BV_{CEO} | 35 | - | - | V | $I_C = 0.1\text{mA}$ |
| Emitter-Collector breakdown voltage | BV_{ECO} | 6 | - | - | V | $I_E = 0.1\text{mA}$ |

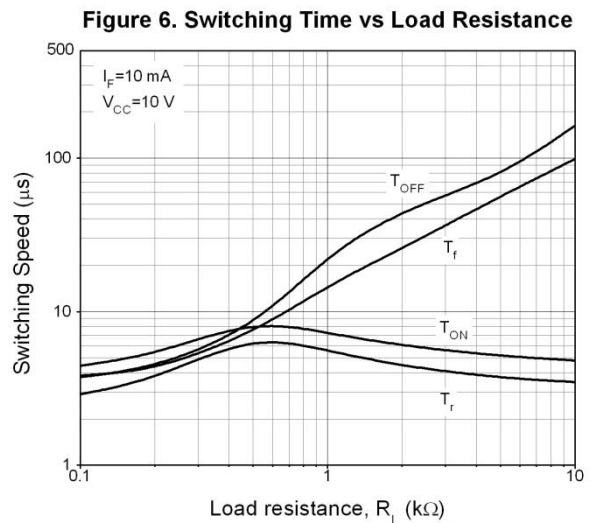
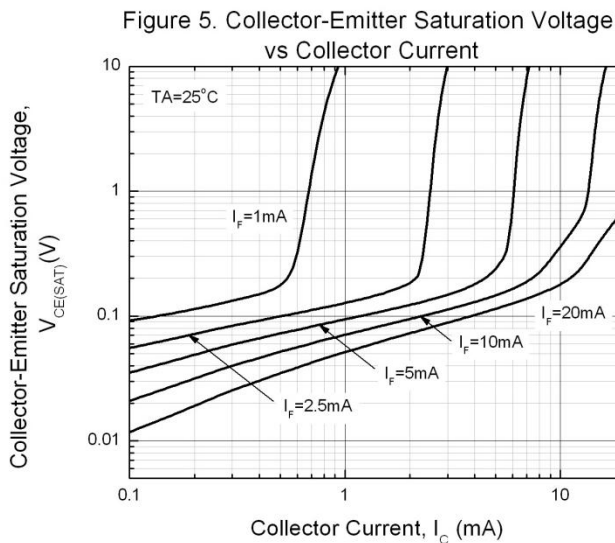
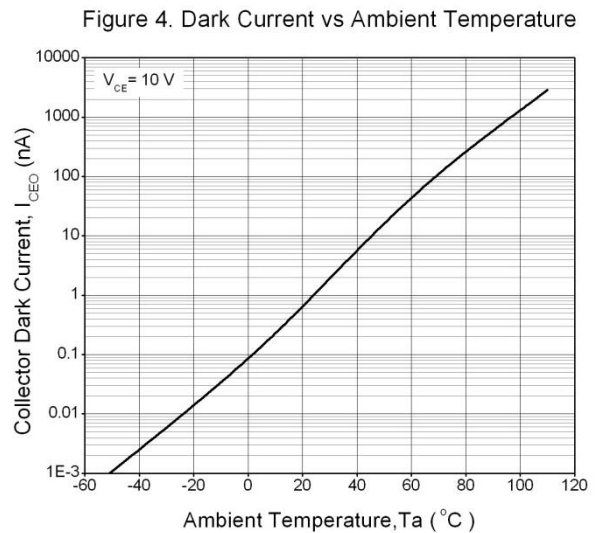
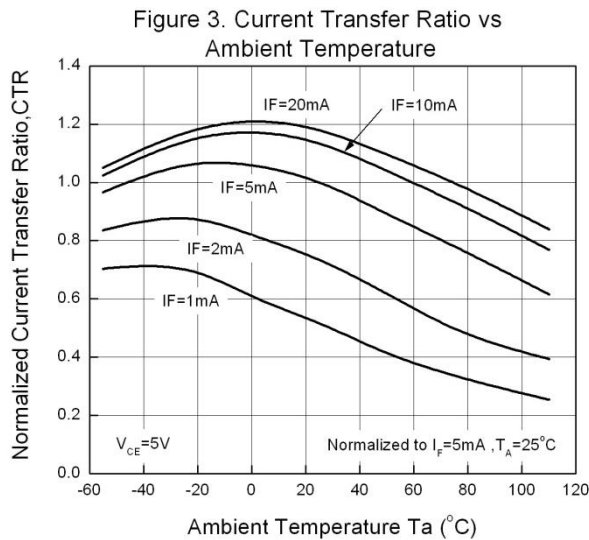
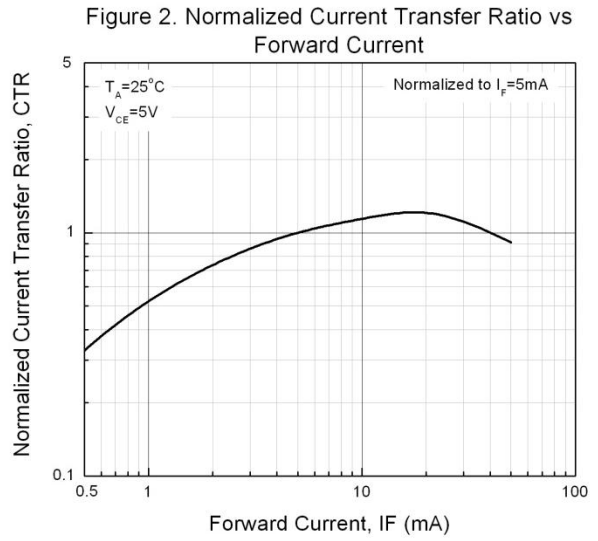
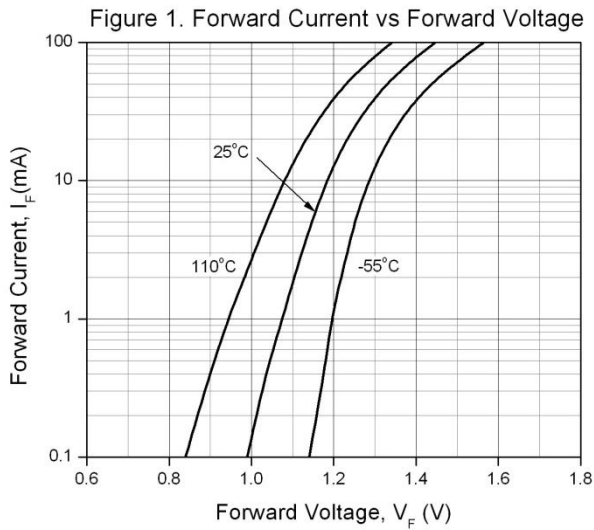
Transfer Characteristics

| Parameter | Symbol | Min | Typ. | Max. | Unit | Condition |
|--------------------------------------|---------------|--------------------|------|------|---------------|--|
| Current Transfer ratio | GX817 | 50 | - | 600 | % | $I_F = 5\text{mA}, V_{CE} = 5\text{V}$ |
| | GX817A | 80 | - | 160 | | |
| | GX817B | 130 | - | 260 | | |
| | GX817C | 200 | - | 400 | | |
| | GX817D | 300 | - | 600 | | |
| | GX817X | 100 | - | 200 | | |
| | GX817Y | 150 | - | 300 | | |
| Collector-Emitter saturation voltage | $V_{CE(sat)}$ | - | 0.1 | 0.2 | V | $I_F = 20\text{mA}, I_C = 1\text{mA}$ |
| Isolation resistance | R_{IO} | 5×10^{10} | - | - | Ω | $V_{IO} = 500\text{Vdc}, 40\sim 60\% \text{ R.H.}$ |
| Floating capacitance | C_{IO} | - | 0.6 | 1.0 | pF | $V_{IO} = 0, f = 1\text{MHz}$ |
| Cut-off frequency | f_c | - | 80 | - | kHz | $V_{CE} = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega, -3\text{dB}$ |
| Rise time | t_r | - | - | 18 | μs | $V_{CE} = 2\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$ |
| Fall time | t_f | - | - | 18 | μs | |

* Typical values at $T_a = 25^\circ\text{C}$



Typical Electro-Optical Characteristics Curves



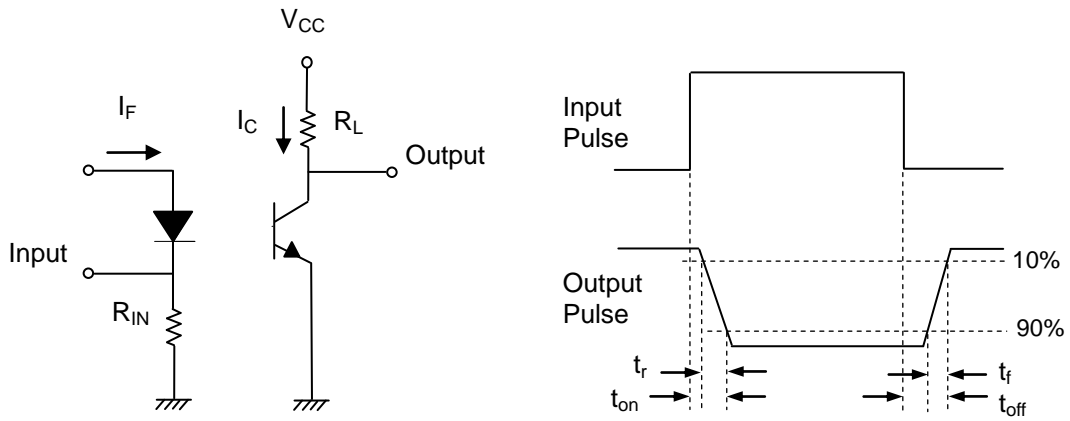


Figure 7. Switching Time Test Circuit & Waveforms



Order Information

Part Number

GX817X(Y)(Z)-FV

Note

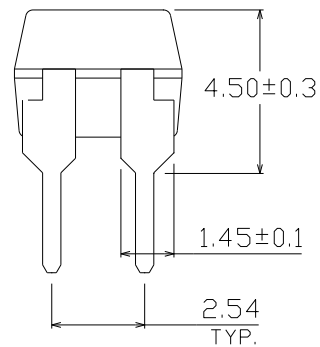
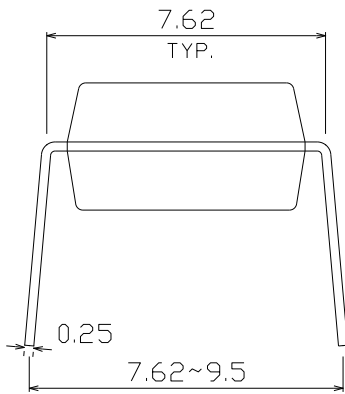
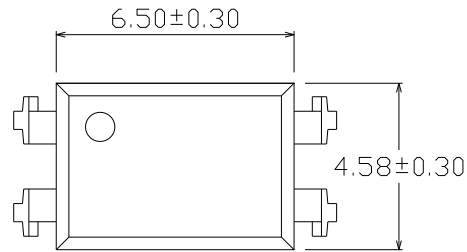
- X = Lead form option (S1, S2, M or none)
- Y = CTR Rank (A, B, C, D, X, Y or none)
- Z = Tape and reel option (TU, TD or none)
- F = Lead frame option (F: Iron, None: copper)
- V = VDE safety (optional)

| Option | Description | Packing quantity |
|---------|---|---------------------|
| None | Standard DIP-4 | 100 units per tube |
| M | Wide lead bend (0.4 inch spacing) | 100 units per tube |
| S1 (TU) | Surface mount lead form (low profile) + TU tape & reel option | 1500 units per reel |
| S1 (TD) | Surface mount lead form (low profile) + TD tape & reel option | 1500 units per reel |
| S2 (TU) | Surface mount lead form (low profile) + TU tape & reel option | 2000 units per reel |
| S2 (TD) | Surface mount lead form (low profile) + TD tape & reel option | 2000 units per reel |

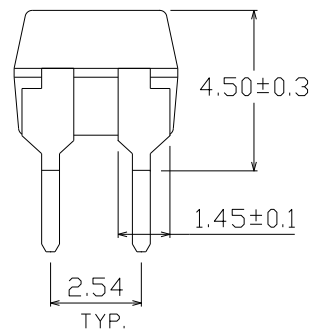
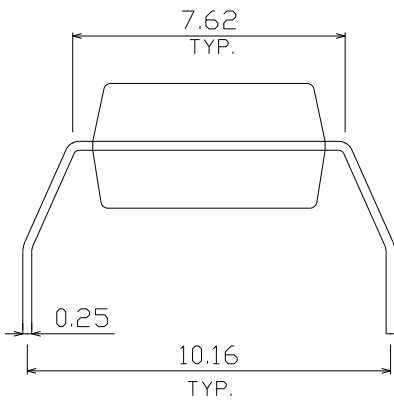
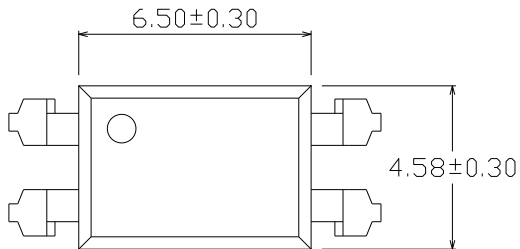


Package Dimension (Dimensions in mm)

Standard DIP Type

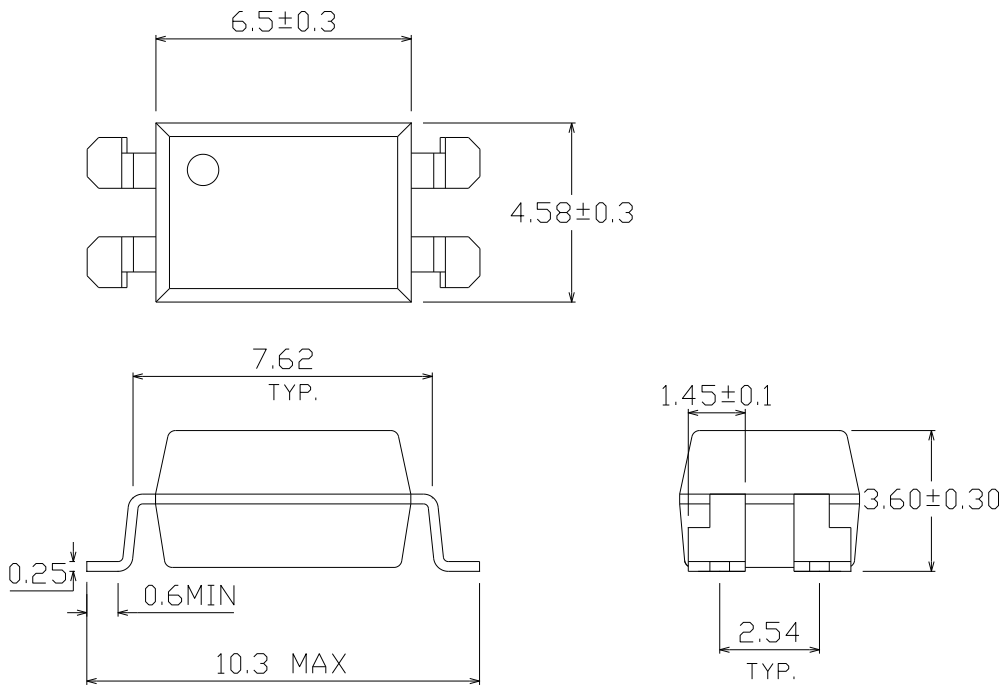


Option M Type

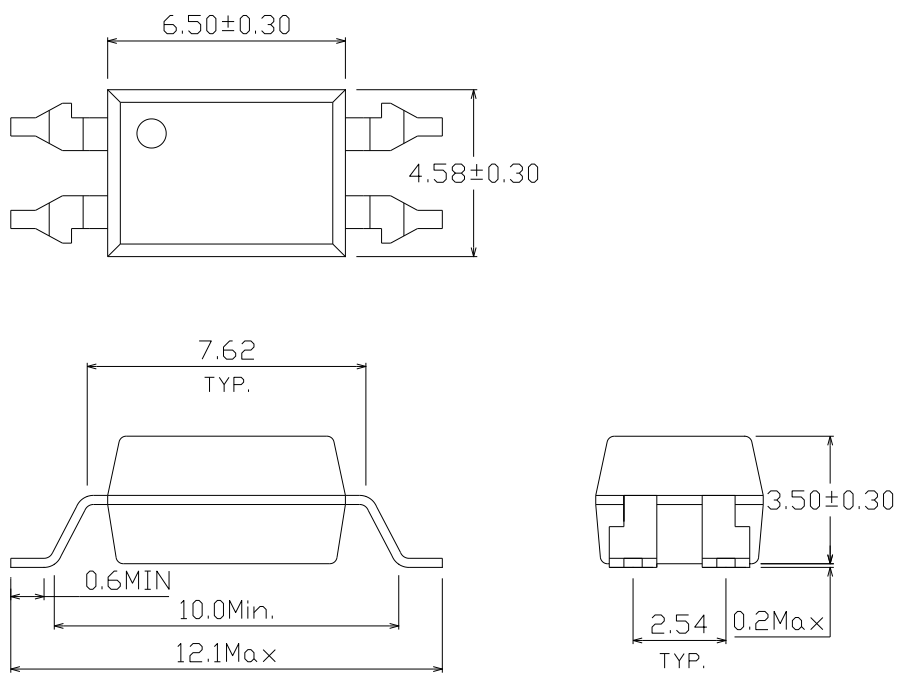




Option S1 Type

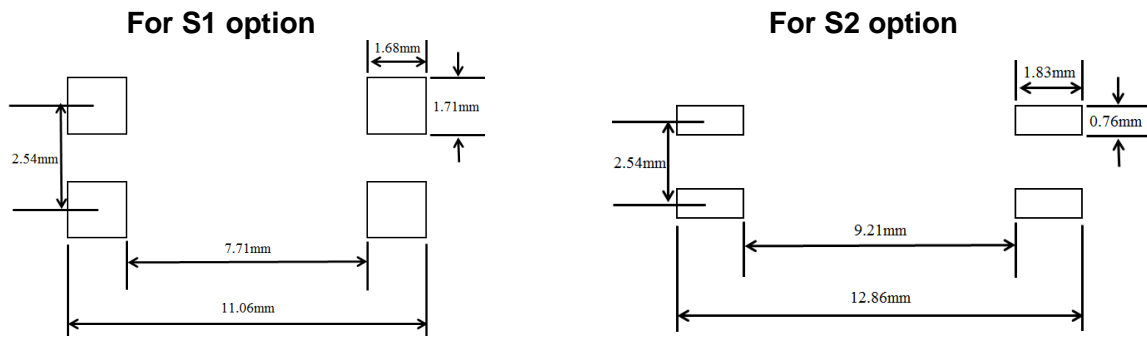


Option S2 Type





Recommended pad layout for surface mount leadform



Notes

Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.



Device Marking

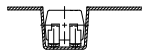
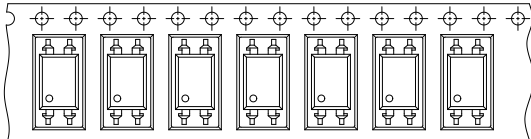


Notes

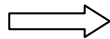
| | |
|-----|--|
| 817 | denotes Device Number |
| F | denotes Factory Code (G: China and Green part) |
| R | denotes CTR Rank (A, B, C, D, X, Y or none) |
| Y | denotes 1 digit Year code |
| WW | denotes 2 digit Week code |
| V | denotes VDE (optional) |

Tape & Reel Packing Specifications

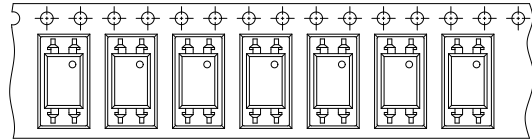
Option TD



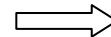
Direction of feed from reel



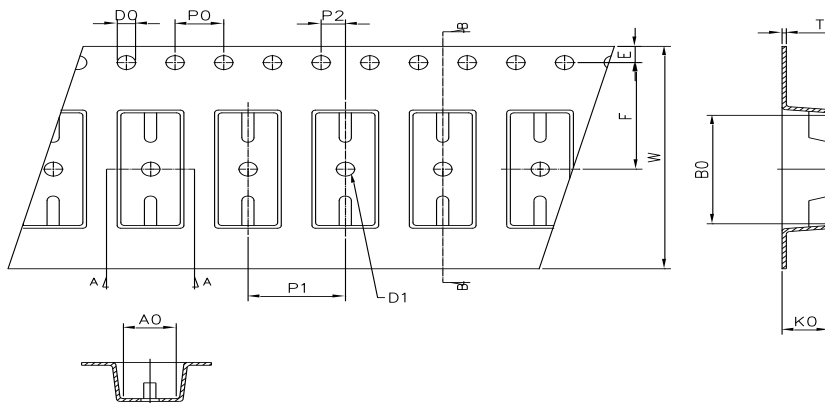
Option TU



Direction of feed from reel



Tape dimensions



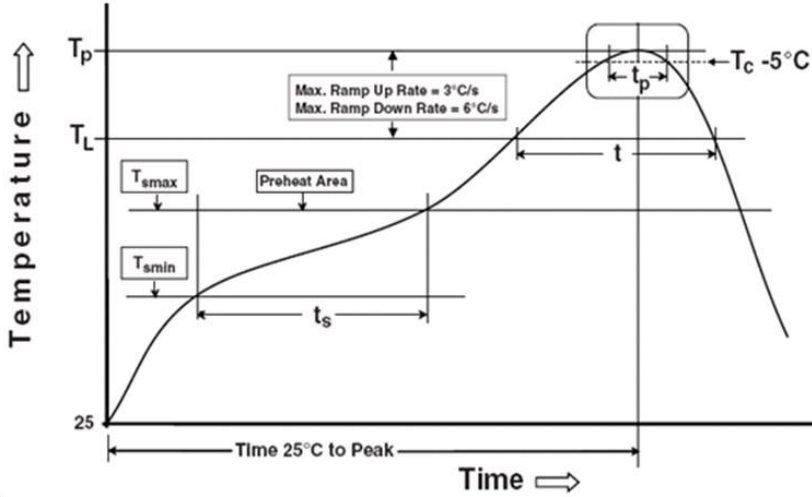
| Dimension No. | Ao | Bo | Do | D1 | E | F |
|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Dimension (mm) S1 | 4.90±0.1 | 10.40±0.1 | 1.5±0.1 | 1.50±0.1 | 1.75±0.1 | 7.50±0.1 |
| Dimension (mm) S2 | 4.88±0.1 | 12.55±0.1 | 1.5±0.1 | 1.50±0.1 | 1.75±0.1 | 11.5±0.1 |
| Dimension No. | Po | P1 | P2 | t | W | Ko |
| Dimension (mm) S1 | 4.00±0.1 | 8.00±0.1 | 2.00±0.1 | 0.40±0.1 | 16.00±0.3 | 4.60±0.1 |
| Dimension (mm) S2 | 4.00±0.1 | 8.00±0.1 | 2.00±0.1 | 0.40±0.1 | 24.00±0.3 | 4.00±0.1 |



Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note:

Reference: IPC/JEDEC J-STD-020D

Preheat

| | |
|--|-----------------|
| Temperature min (T_{smin}) | 150 °C |
| Temperature max (T_{smax}) | 200°C |
| Time (T_{smin} to T_{smax}) (t_s) | 60-120 seconds |
| Average ramp-up rate (T_{smax} to T_p) | 3 °C/second max |

Other

| | |
|--|------------------|
| Liquidus Temperature (T_L) | 217 °C |
| Time above Liquidus Temperature (t_L) | 60-100 sec |
| Peak Temperature (T_p) | 260°C |
| Time within 5 °C of Actual Peak Temperature: $T_p - 5^\circ\text{C}$ | 30 s |
| Ramp- Down Rate from Peak Temperature | 6°C /second max. |
| Time 25°C to peak temperature | 8 minutes max. |
| Reflow times | 3 times |



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2. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
3. When using this product, please observe the absolute maximum ratings and the instructions for use outlined in these specification sheets. GXJP assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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