

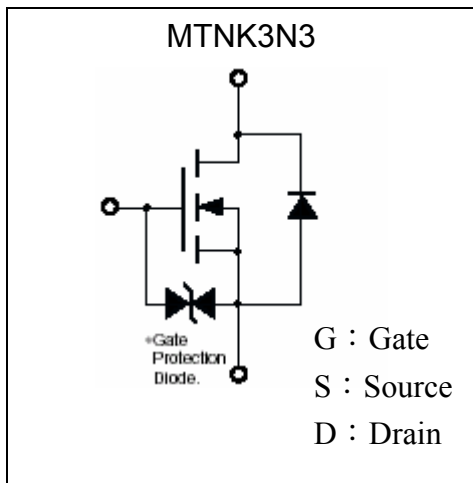
ESD protected N-CHANNEL MOSFET
MTNK3N3

| | |
|---------------------|-------|
| BV _{DSS} | 20V |
| I _D | 100mA |
| R _{DS(on)} | 3Ω |

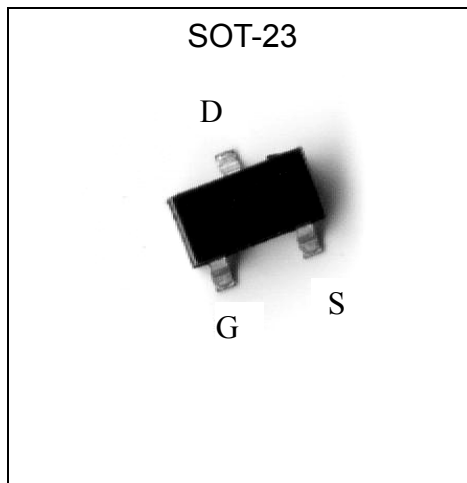
Description

- Low voltage drive, 1.8V
- Easy to use in parallel
- High speed switching
- ESD protected device
- Pb-free lead plating and halogen-free package

Symbol

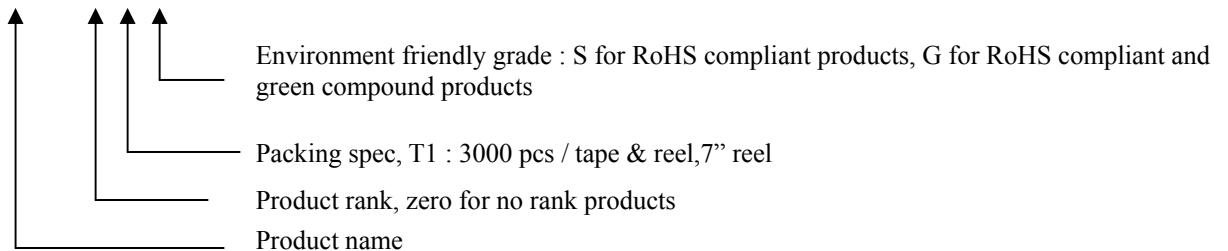


Outline



Ordering Information

| Device | Package | Shipping |
|----------------|---|------------------------|
| MTNK3N3-0-T1-G | SOT-23 (Pb-free lead plating and halogen-free package) | 3000 pcs / tape & reel |





Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|--|--------------------|----------|------|
| Drain-Source Voltage | BV _{DSS} | 20 | V |
| Gate-Source Voltage | V _{GS} | ±8 | V |
| Continuous Drain Current | I _D | 100 | mA |
| Pulsed Drain Current | I _{DM} | 400 *1 | mA |
| Total Power Dissipation | P _D | 300 | mW |
| ESD susceptibility | | 350 *2 | V |
| Operating Junction and Storage Temperature Range | T _j | -55~+150 | °C |
| Thermal Resistance, Junction-to-Ambient | R _{th,ja} | 417 | °C/W |

Note : *1. Pulse Width ≤ 300μs, Duty cycle ≤2%
 *2. Human body model, 1.5kΩ in series with 100pF

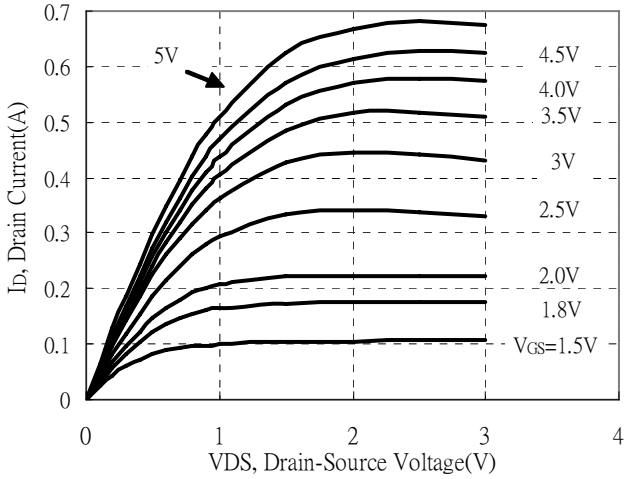
Electrical Characteristics (Ta=25°C)

| Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---------------------------|------|------|------|------|--|
| Static | | | | | |
| BV _{DSS} | 20 | - | - | V | V _{GS} =0, I _D =100μA |
| V _{GS(th)} | 0.5 | - | 1.0 | V | V _{DS} =V _{GS} , I _D =250μA |
| I _{GSS} | - | - | ±1 | μA | V _{GS} =±8V, V _{DS} =0 |
| I _{DSS} | - | - | 500 | nA | V _{DS} =20V, V _{GS} =0 |
| R _{DS(ON)} | - | 1.7 | 3 | Ω | V _{GS} =4.5V, I _D =100mA |
| | - | 3.5 | 6 | | V _{GS} =1.8V, I _D =20mA |
| G _{FS} | 100 | - | - | mS | V _{DS} =5V, I _D =100mA |
| Dynamic | | | | | |
| C _{iss} | - | 23 | 50 | pF | V _{DS} =10V, V _{GS} =0, f=1MHz |
| C _{oss} | - | 7.7 | 25 | | |
| C _{rss} | - | 5.8 | 5 | | |
| Source-Drain Diode | | | | | |
| *V _{SD} | - | - | 1 | V | V _{GS} =0V, I _S =10mA |

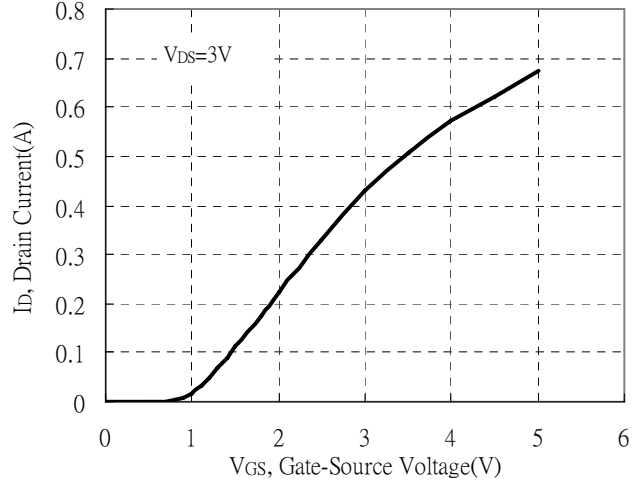
*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%

Typical Characteristics

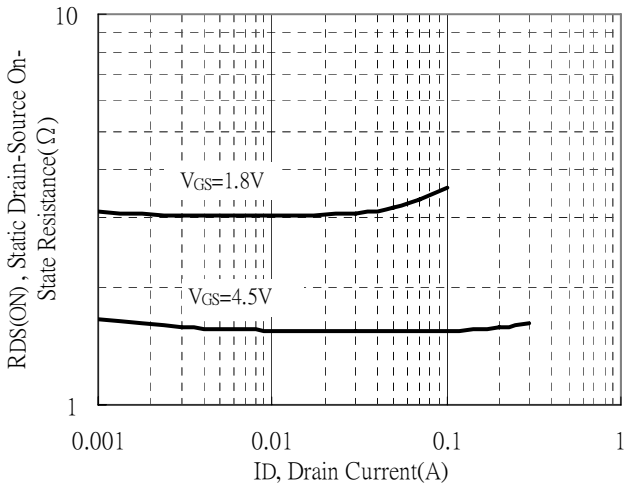
Typical Output Characteristics



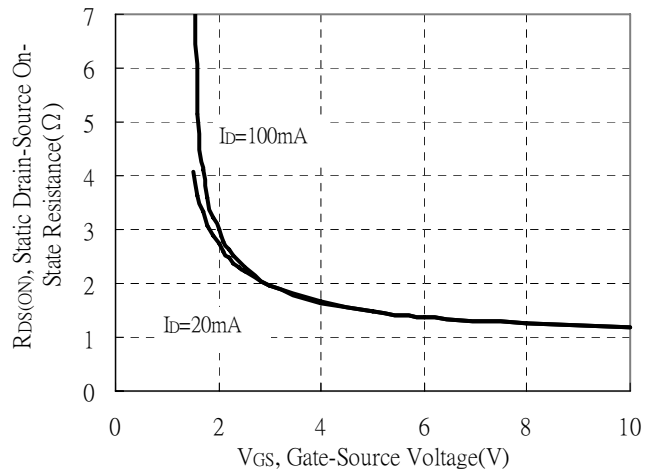
Typical Transfer Characteristics



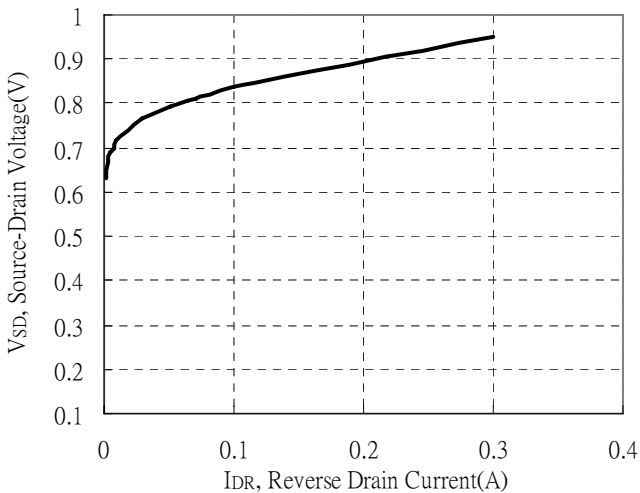
Static Drain-Source On-State resistance vs Drain Current



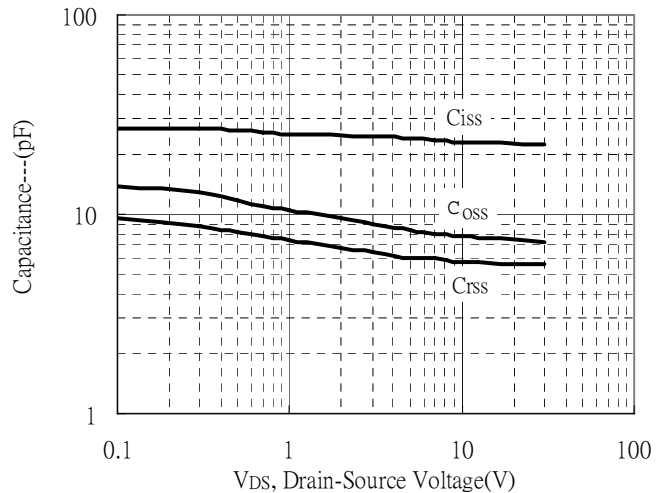
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Reverse Drain Current vs Source-Drain Voltage

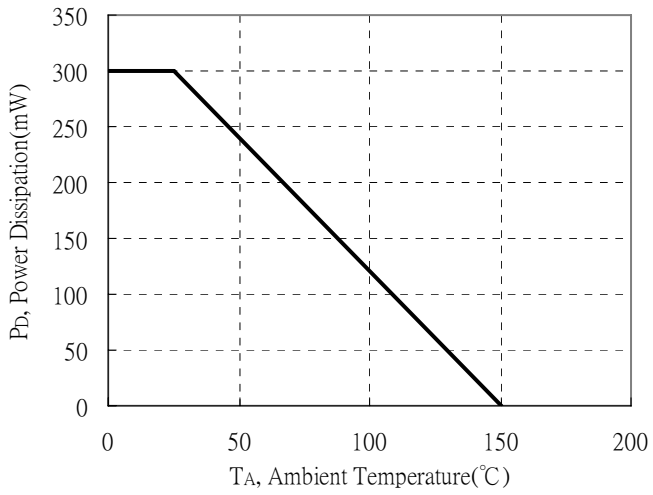


Capacitance vs Drain-to-Source Voltage

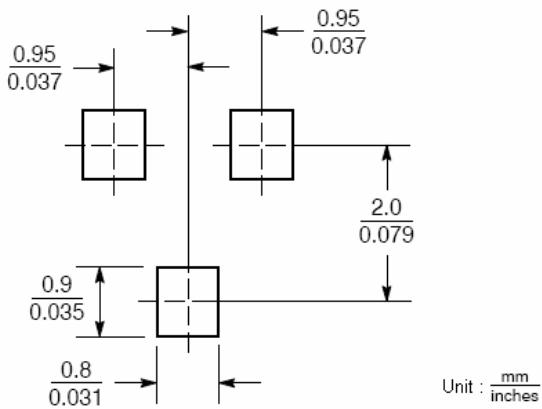


Typical Characteristics(Cont.)

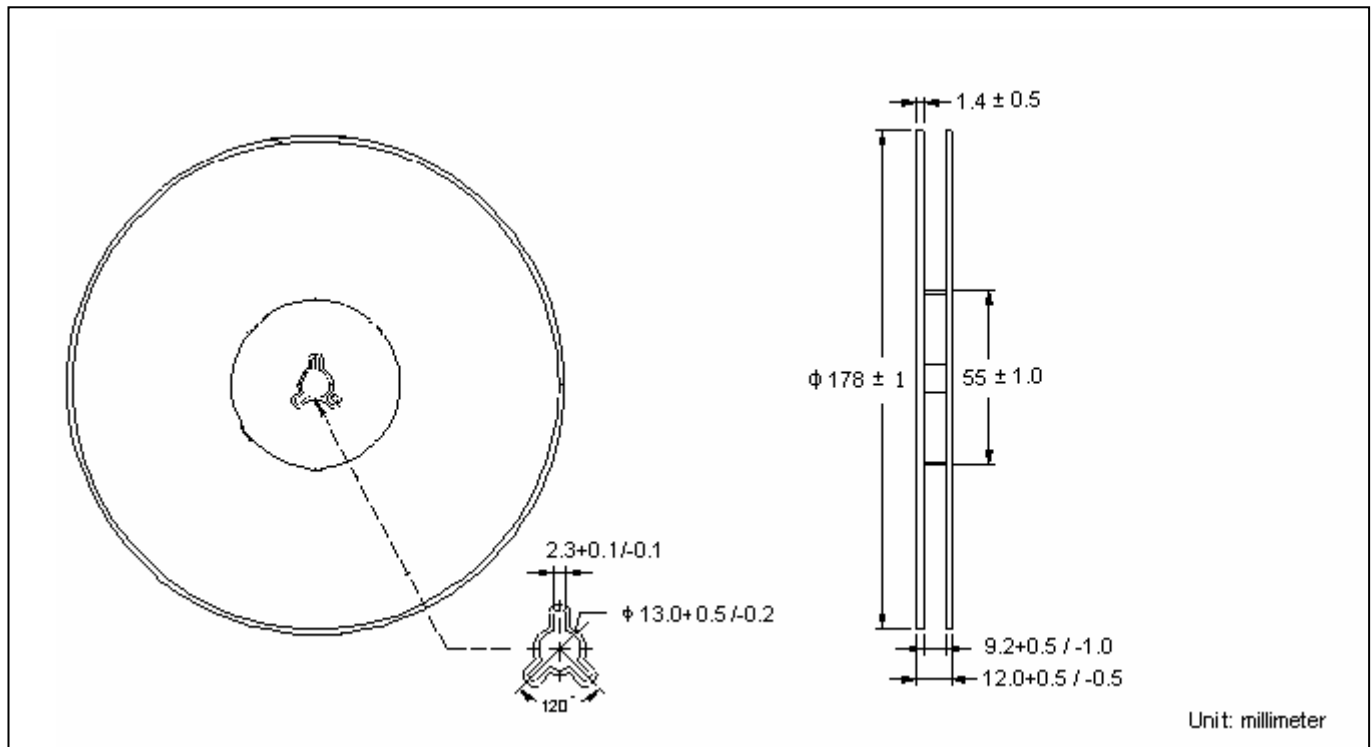
Power Derating Curves



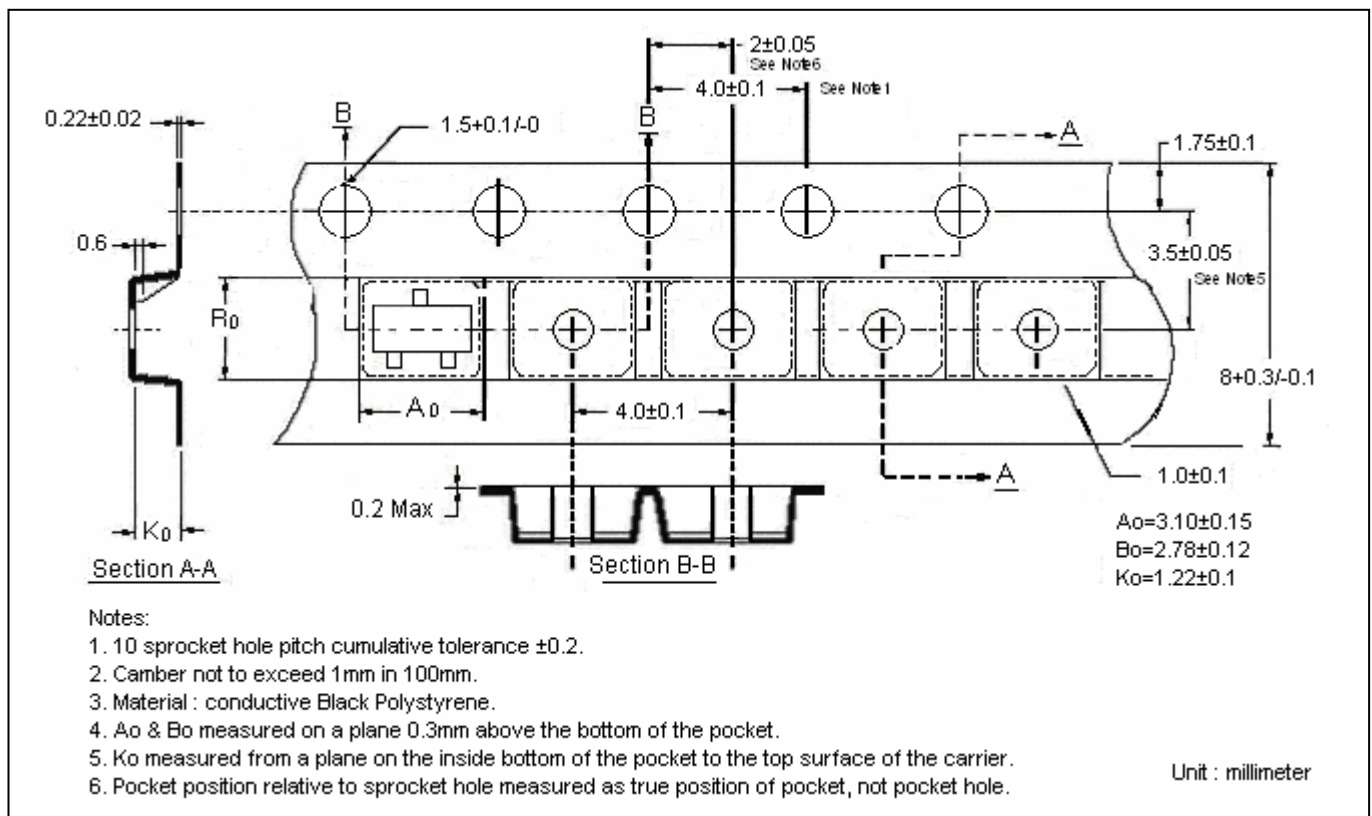
Recommended Soldering Footprint



Reel Dimension



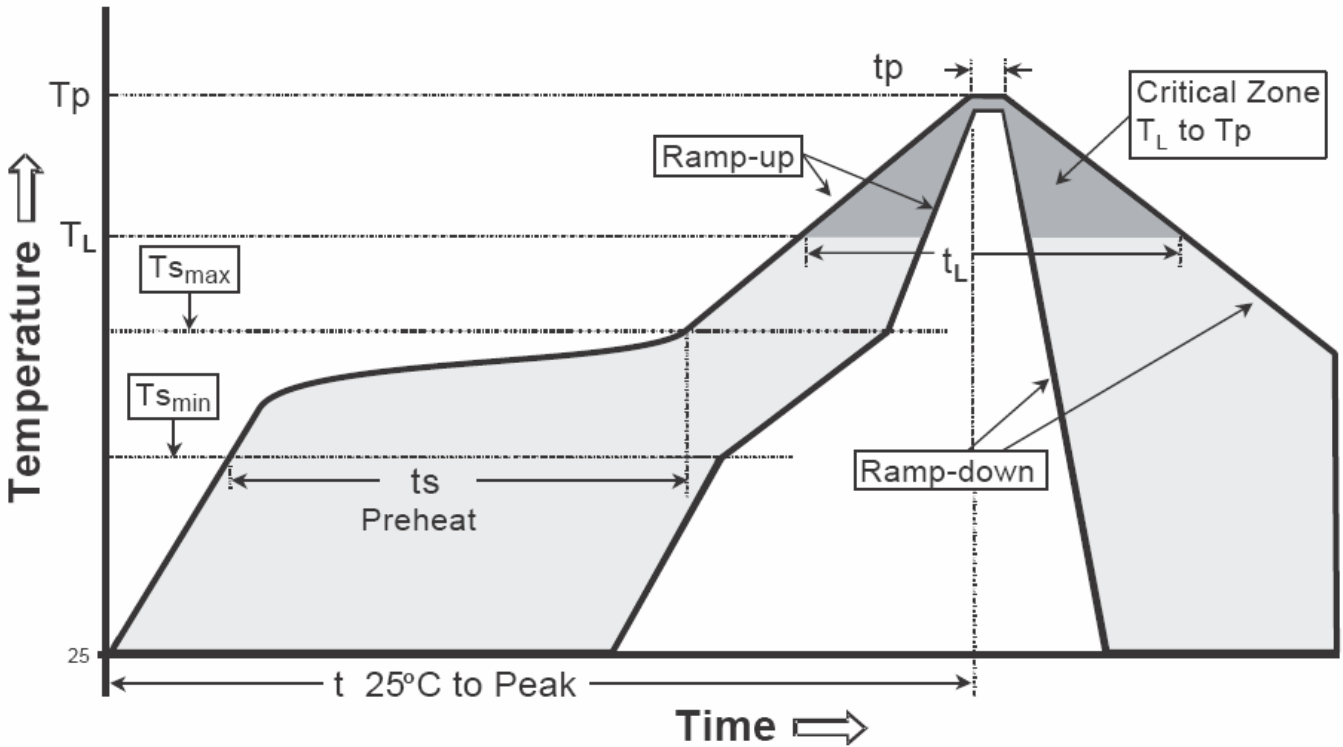
Carrier Tape Dimension



Recommended wave soldering condition

| | | |
|-----------------|------------------|-----------------|
| Product | Peak Temperature | Soldering Time |
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

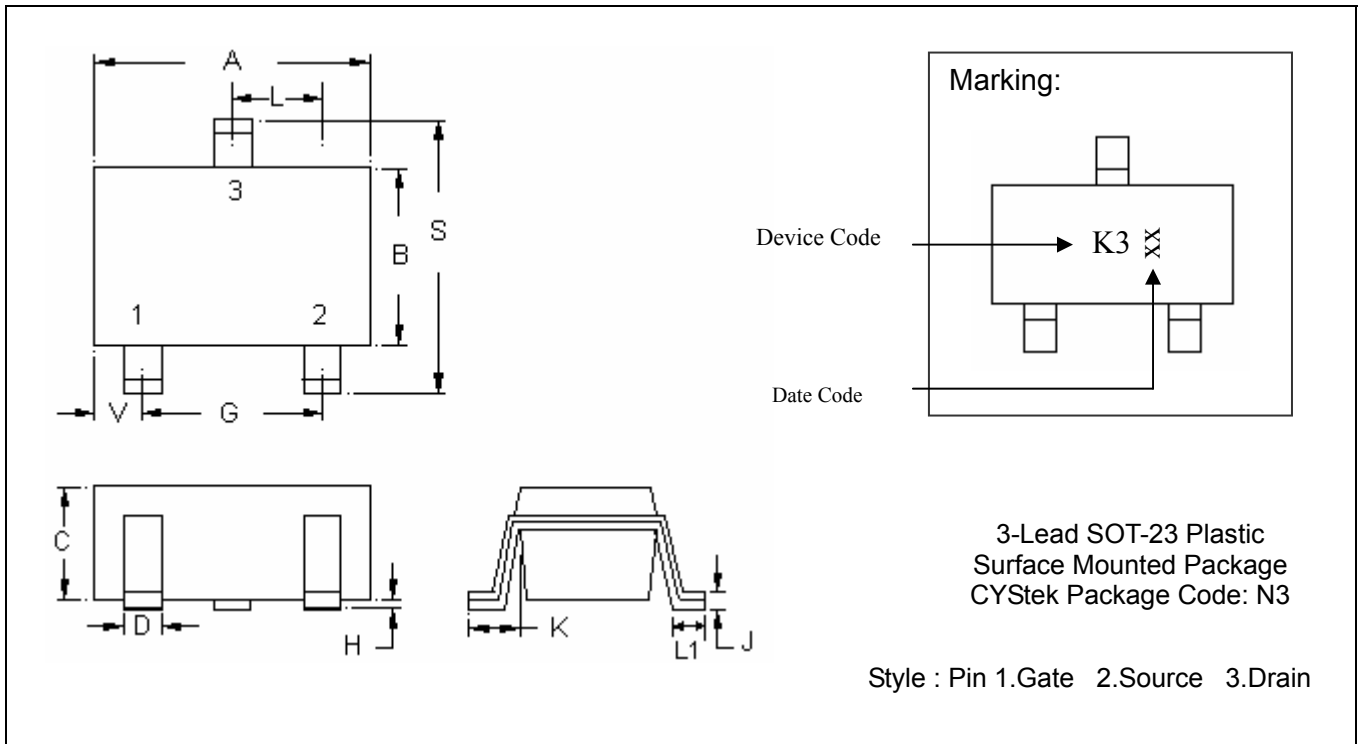
Recommended temperature profile for IR reflow



| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|-------------------------|------------------|
| Average ramp-up rate (T _{smax} to T _p) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| -Temperature Min(T _{s min}) | 100°C | 150°C |
| -Temperature Max(T _{s max}) | 150°C | 200°C |
| -Time(t _{s min} to t _{s max}) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| -Temperature (T _L) | 183°C | 217°C |
| - Time (t _L) | 60-150 seconds | 60-150 seconds |
| Peak Temperature(T _P) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5°C of actual peak temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp down rate | 6°C/second max. | 6°C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-23 Dimension



*:Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|--------|-------------|------|-----|--------|--------|-------------|------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.1102 | 0.1204 | 2.80 | 3.04 | J | 0.0032 | 0.0079 | 0.08 | 0.20 |
| B | 0.0472 | 0.0669 | 1.20 | 1.70 | K | 0.0118 | 0.0266 | 0.30 | 0.67 |
| C | 0.0335 | 0.0512 | 0.89 | 1.30 | L | 0.0335 | 0.0453 | 0.85 | 1.15 |
| D | 0.0118 | 0.0197 | 0.30 | 0.50 | S | 0.0830 | 0.1161 | 2.10 | 2.95 |
| G | 0.0669 | 0.0910 | 1.70 | 2.30 | V | 0.0098 | 0.0256 | 0.25 | 0.65 |
| H | 0.0000 | 0.0040 | 0.00 | 0.10 | L1 | 0.0118 | 0.0197 | 0.30 | 0.50 |

Notes : 1.Controlling dimension : millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.

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