

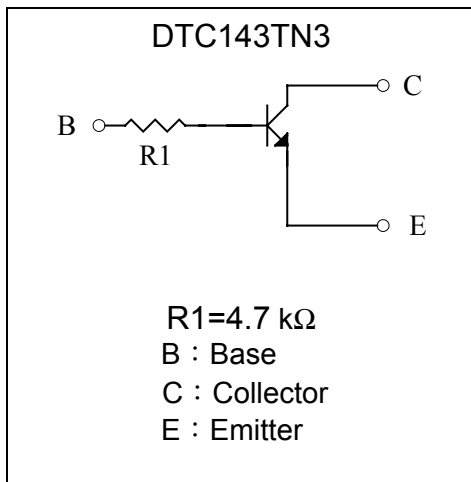
NPN Digital Transistors (Built-in Resistors)

DTC143TN3

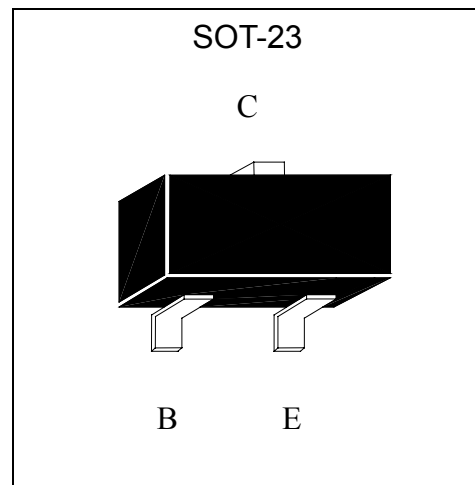
Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, making device design easy.
- Complements the DTA143TN3
- Pb-free lead plating and halogen-free package

Equivalent Circuit



Outline



Ordering Information

| Device | Package | Shipping |
|------------------|---|------------------------|
| DTC143TN3-0-T1-G | SOT-23 (Pb-free lead plating and halogen-free package) | 3000 pcs / tape & reel |

- ↑ Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products
- ↑ Packing spec, T1 : 3000 pcs / tape & reel, 7" reel
- ↑ Product rank, zero for no rank products
- ↑ Product name

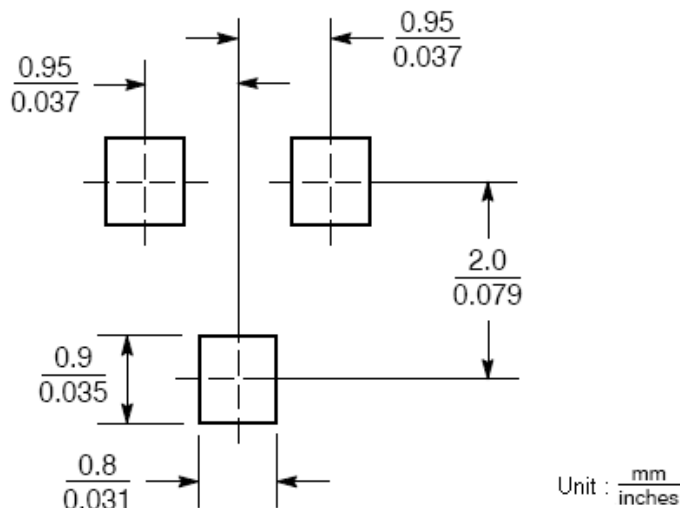
Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|---------------------------|------------------|----------|------|
| Collector-Base Voltage | V _{CBO} | 50 | V |
| Collector-Emitter Voltage | V _{CEO} | 50 | V |
| Emitter-Base Voltage | V _{EBO} | 5 | V |
| Collector Current | I _C | 100 | mA |
| Power Dissipation | P _d | 200 | mW |
| Junction Temperature | T _j | 150 | °C |
| Storage Temperature | T _{stg} | -55~+150 | °C |

Electrical Characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-Base Breakdown Voltage | V _{CBO} | 50 | - | - | V | I _C =50μA |
| Collector-Emitter Breakdown Voltage | V _{CEO} | 50 | - | - | V | I _C =1mA |
| Emitter-Base Breakdown Voltage | V _{EBO} | 5 | - | - | V | I _E =50μA |
| Collector-Base Cutoff Current | I _{CBO} | - | - | 0.5 | μA | V _{CB} =50V |
| Emitter-Base Cutoff Current | I _{EBO} | - | - | 0.5 | μA | V _{EB} =4V |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | - | - | 0.3 | V | I _C =5mA, I _B =0.25mA |
| DC Current Gain | h _{FE} | 100 | - | 600 | - | V _{CE} =5V, I _C =1mA |
| Input Resistance | R | 3.29 | 4.7 | 6.11 | kΩ | - |
| Transition Frequency | f _T | - | 250 | - | MHz | V _{CE} =10V, I _C =5mA, f=100MHz * |

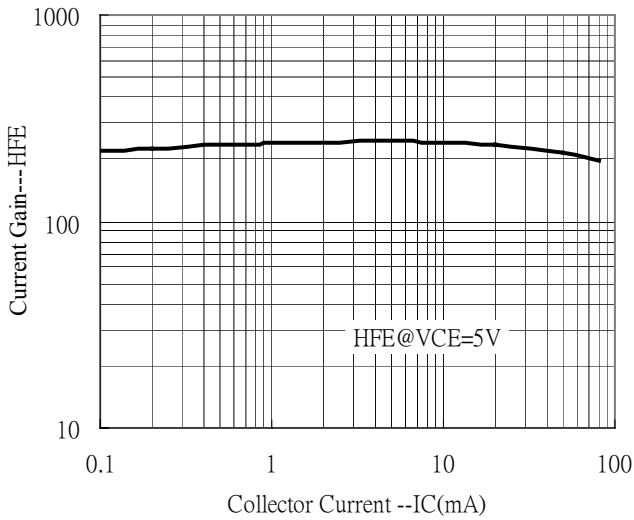
* Transition frequency of the device

Recommended Soldering Footprint


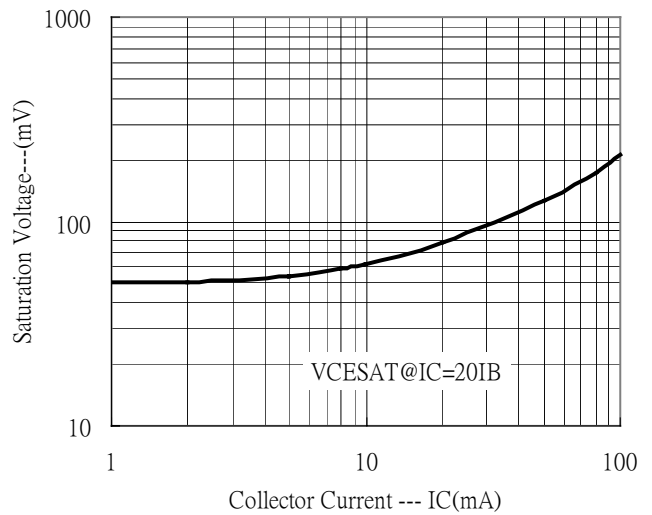


Typical Characteristics

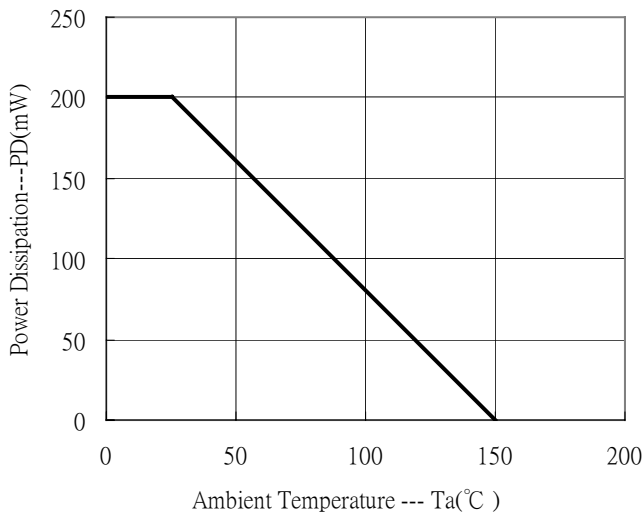
Current Gain vs Collector Current



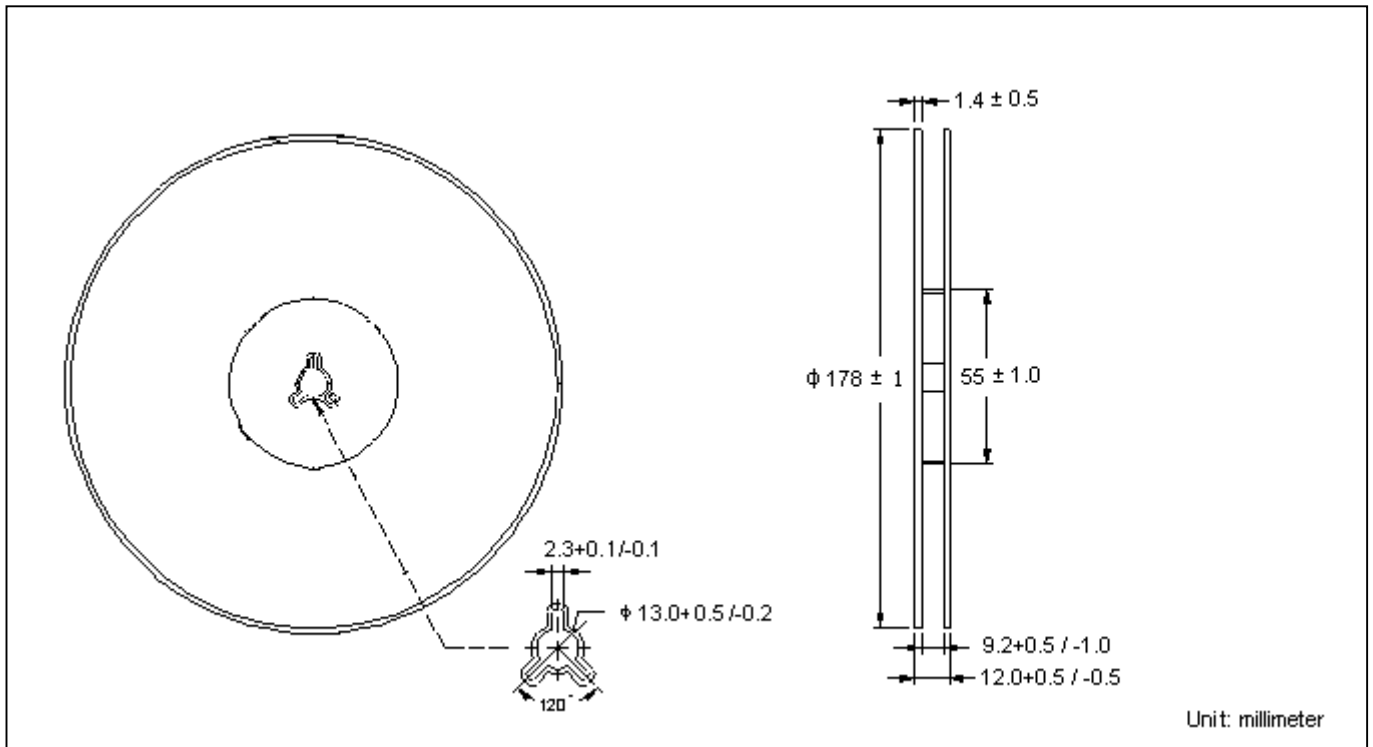
Saturation Voltage vs Collector Current



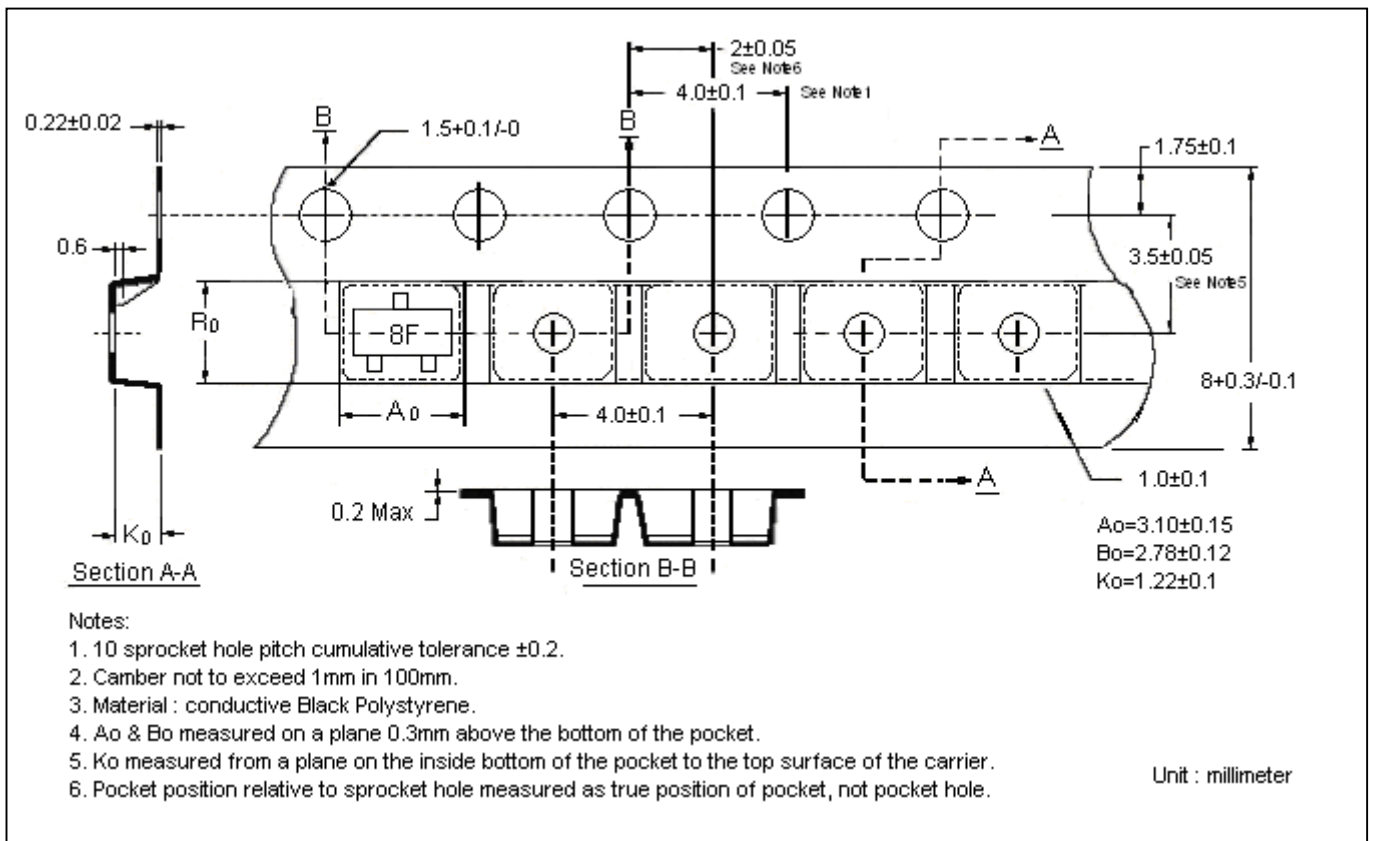
Power Derating Curve



Reel Dimension



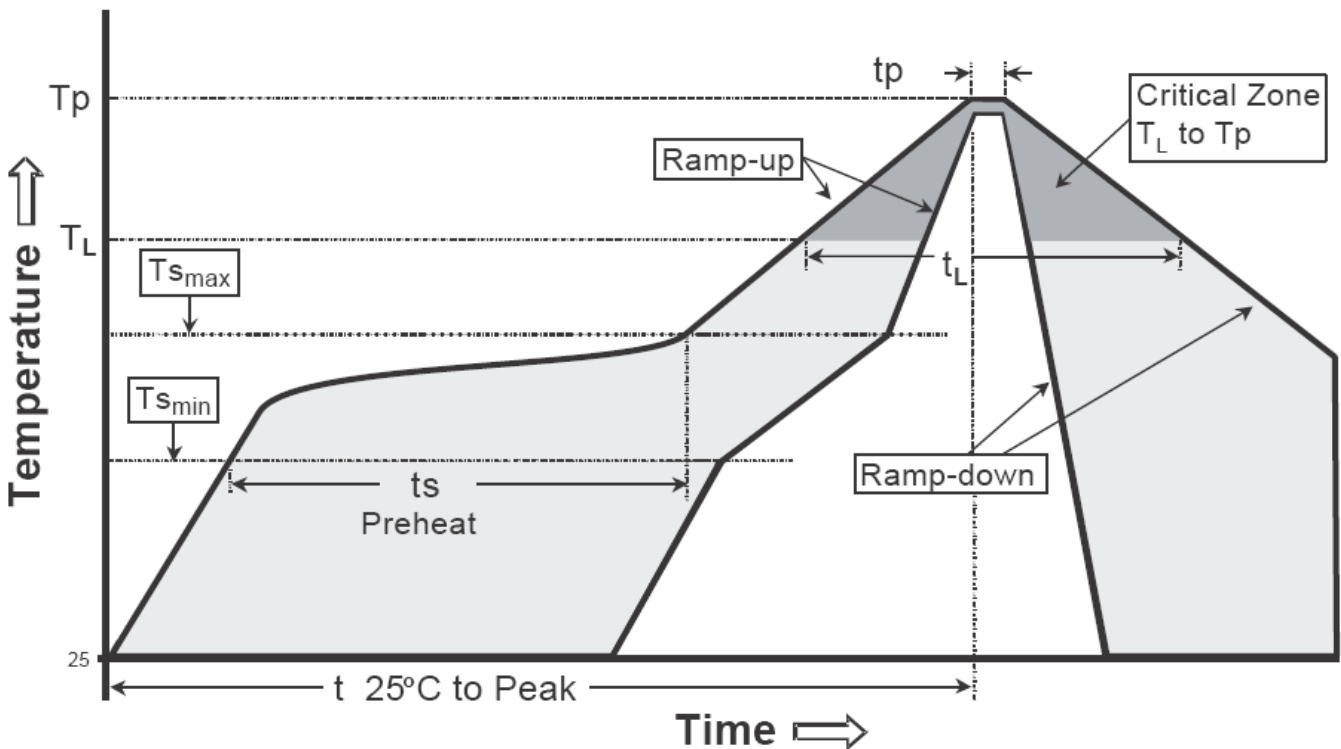
Carrier Tape Dimension



Recommended wave soldering condition

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

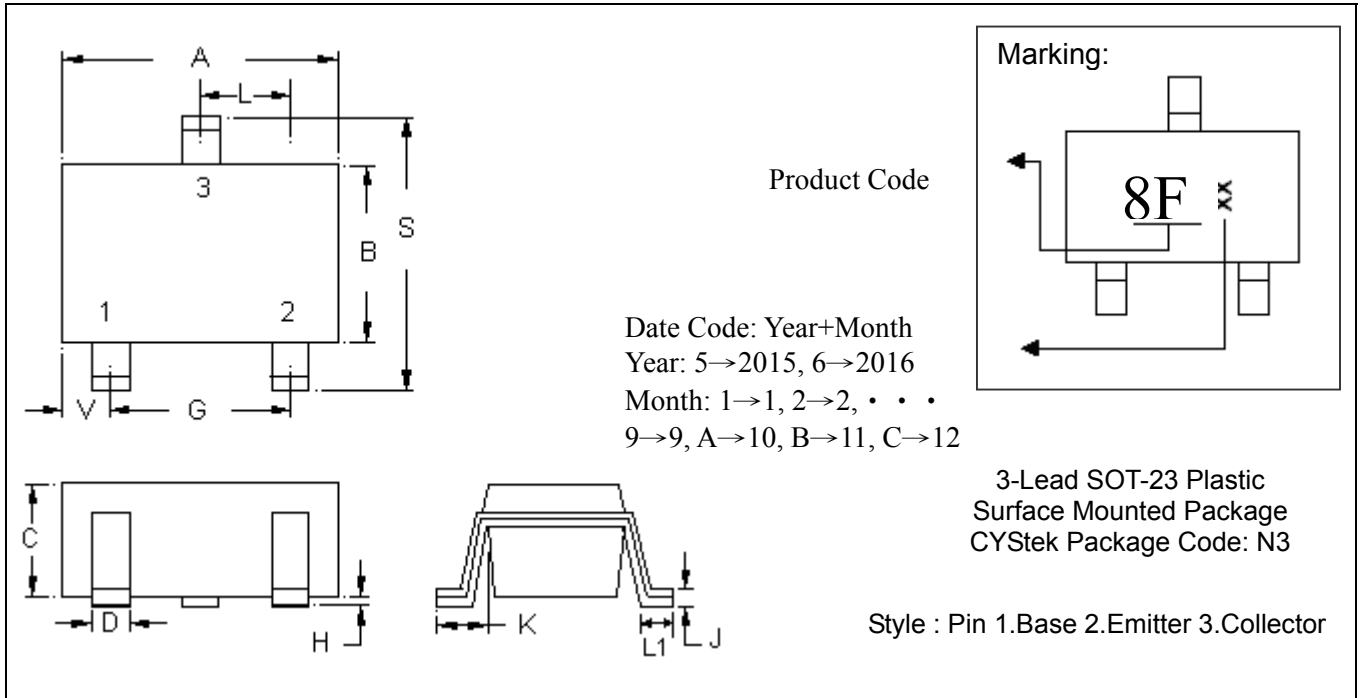
Recommended temperature profile for IR reflow



| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|--|-------------------------|------------------|
| Average ramp-up rate (Tsmax to Tp) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| -Temperature Min(Ts min) | 100°C | 150°C |
| -Temperature Max(Ts max) | 150°C | 200°C |
| -Time(ts min to ts 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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