

EMZ1DXV6T1, EMZ1DXV6T5

Dual General Purpose Transistors

NPN/PNP Dual (Complementary)

This transistor is designed for general purpose amplifier applications. It is housed in the SOT-563 which is designed for low power surface mount applications.

Features

- Lead-Free Solder Plating
- Low $V_{CE(SAT)}$, < 0.5 V
- These are Pb-Free Devices

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector-Emitter Voltage | V_{CEO} | -60 | V |
| Collector-Base Voltage | V_{CBO} | -50 | V |
| Emitter-Base Voltage | V_{EBO} | -6.0 | V |
| Collector Current - Continuous | I_C | -100 | mAdc |

THERMAL CHARACTERISTICS

| Characteristic (One Junction Heated) | Symbol | Max | Unit |
|---|-----------------|------------------------------|----------------------------|
| Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 357 (Note 1) 2.9 (Note 1) | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 350 (Note 1) | $^\circ\text{C}/\text{W}$ |
| Characteristic (Both Junctions Heated) | Symbol | Max | Unit |
| Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 500 (Note 1) 4.0 (Note 1) | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 250 (Note 1) | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

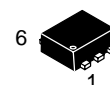
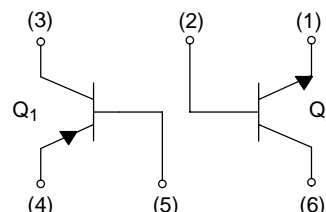
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-4 @ Minimum Pad.



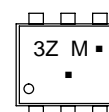
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SOT-563
CASE 463A
STYLE 1

MARKING DIAGRAM



3Z = Specific Device Code
M = Month Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

EMZ1DXV6T1, EMZ1DXV6T5

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|----------------------|------|-----|------|------|
| Q1: PNP | | | | | |
| Collector-Base Breakdown Voltage (I _C = -50 μAdc, I _E = 0) | V _{(BR)CBO} | -60 | - | - | Vdc |
| Collector-Emitter Breakdown Voltage (I _C = -1.0 mAdc, I _B = 0) | V _{(BR)CEO} | -50 | - | - | Vdc |
| Emitter-Base Breakdown Voltage (I _E = -50 μAdc, I _E = 0) | V _{(BR)EBO} | -6.0 | - | - | Vdc |
| Collector-Base Cutoff Current (V _{CB} = -30 Vdc, I _E = 0) | I _{CBO} | - | - | -0.5 | nA |
| Emitter-Base Cutoff Current (V _{EB} = -5.0 Vdc, I _B = 0) | I _{EBO} | - | - | -0.5 | μA |
| Collector-Emitter Saturation Voltage (Note 2) (I _C = -50 mAdc, I _B = -5.0 mAdc) | V _{CE(sat)} | - | - | -0.5 | Vdc |
| DC Current Gain (Note 2) (V _{CE} = -6.0 Vdc, I _C = -1.0 mAdc) | h _{FE} | 120 | - | 560 | - |
| Transition Frequency (V _{CE} = -12 Vdc, I _C = -2.0 mAdc, f = 30 MHz) | f _T | - | 140 | - | MHz |
| Output Capacitance (V _{CB} = -12 Vdc, I _E = 0 Adc, f = 1 MHz) | C _{OB} | - | 3.5 | - | pF |

Q2: NPN

| | | | | | |
|--|----------------------|-----|-----|-----|-----|
| Collector-Base Breakdown Voltage (I _C = 50 μAdc, I _E = 0) | V _{(BR)CBO} | 60 | - | - | Vdc |
| Collector-Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B = 0) | V _{(BR)CEO} | 50 | - | - | Vdc |
| Emitter-Base Breakdown Voltage (I _E = 50 μAdc, I _E = 0) | V _{(BR)EBO} | 7.0 | - | - | Vdc |
| Collector-Base Cutoff Current (V _{CB} = 60 Vdc, I _E = 0) | I _{CBO} | - | - | 0.5 | μA |
| Emitter-Base Cutoff Current (V _{EB} = 7.0 Vdc, I _B = 0) | I _{EBO} | - | - | 0.5 | μA |
| Collector-Emitter Saturation Voltage (Note 3) (I _C = 50 mAdc, I _B = 5.0 mAdc) | V _{CE(sat)} | - | - | 0.4 | Vdc |
| DC Current Gain (Note 3) (V _{CE} = 6.0 Vdc, I _C = 1.0 mAdc) | h _{FE} | 120 | - | 560 | - |
| Transition Frequency (V _{CE} = 12 Vdc, I _C = 2.0 mAdc, f = 30 MHz) | f _T | - | 180 | - | MHz |
| Output Capacitance (V _{CB} = 12 Vdc, I _C = 0 Adc, f = 1 MHz) | C _{OB} | - | 2.0 | - | pF |

2. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

3. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|----------|--------------------------|
| EMZ1DXV6T1 | SOT-563* | 4000 Units / Tape & Reel |
| EMZ1DXV6T1G | SOT-563* | 4000 Units / Tape & Reel |
| EMZ1DXV6T5 | SOT-563* | 8000 Units / Tape & Reel |
| EMZ1DXV6T5G | SOT-563* | 8000 Units / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*This package is inherently Pb-Free.

EMZ1DXV6T1, EMZ1DXV6T5

TYPICAL ELECTRICAL CHARACTERISTICS – Q1, PNP

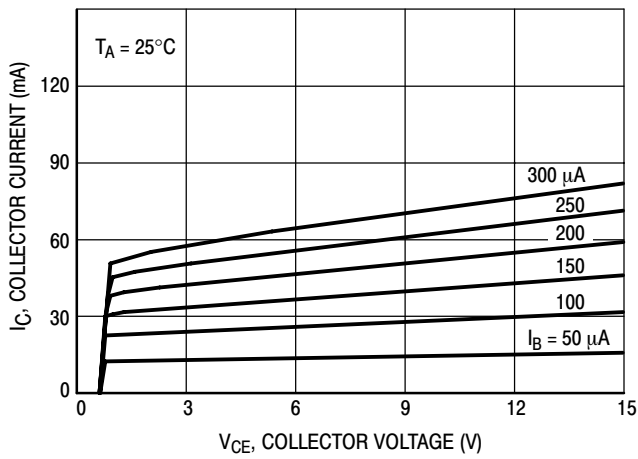


Figure 1. $I_C - V_{CE}$

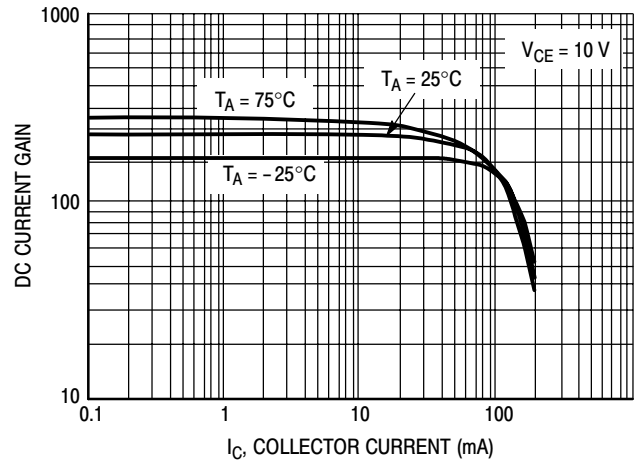


Figure 2. DC Current Gain

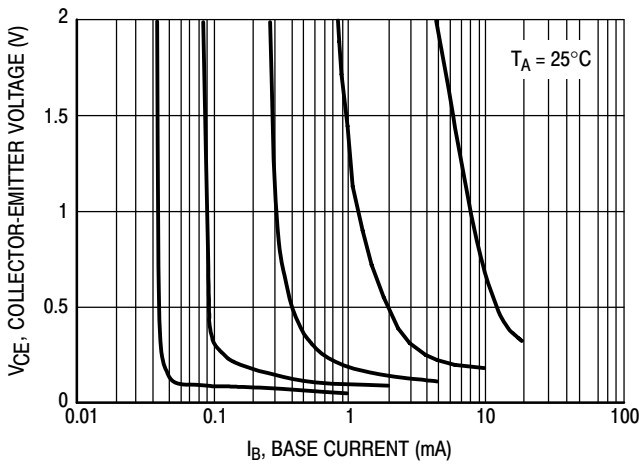


Figure 3. Collector Saturation Region

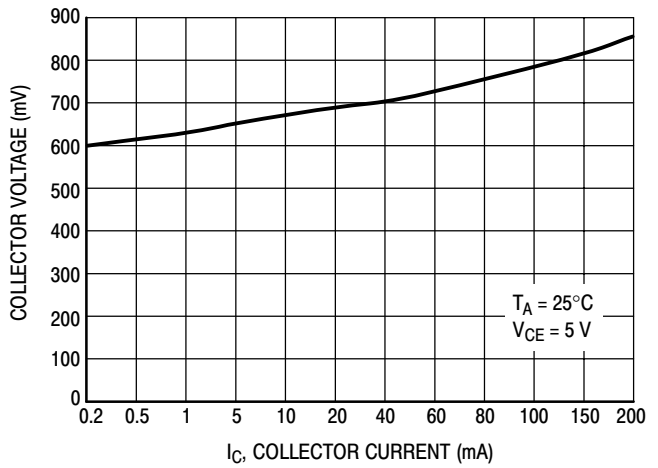


Figure 4. On Voltage

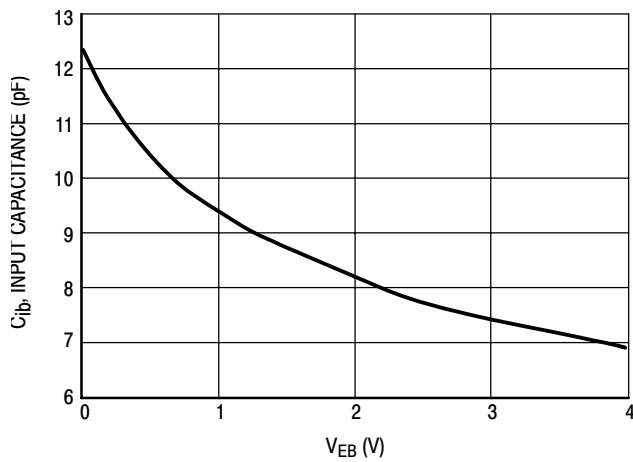


Figure 5. Capacitance

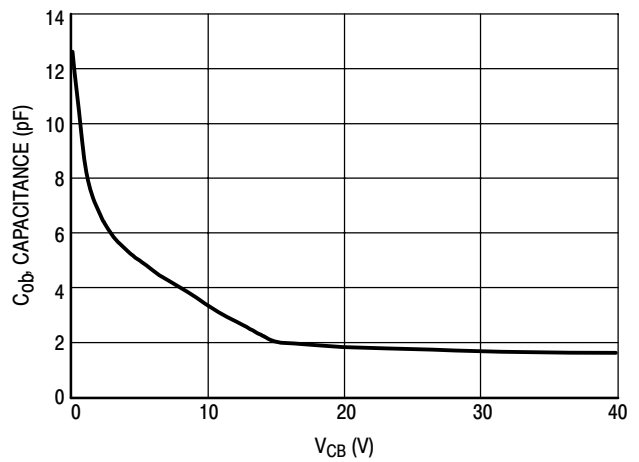


Figure 6. Capacitance

EMZ1DXV6T1, EMZ1DXV6T5

TYPICAL ELECTRICAL CHARACTERISTICS – Q2, NPN

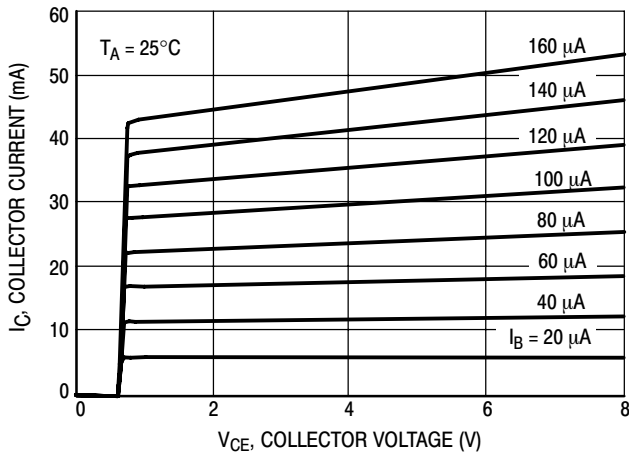


Figure 1. $I_C - V_{CE}$

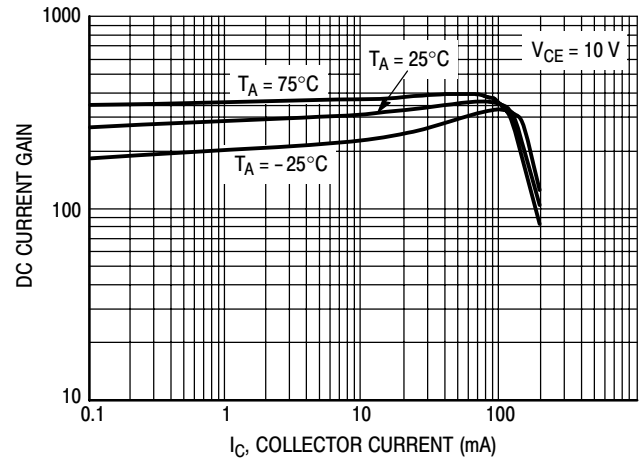


Figure 2. DC Current Gain

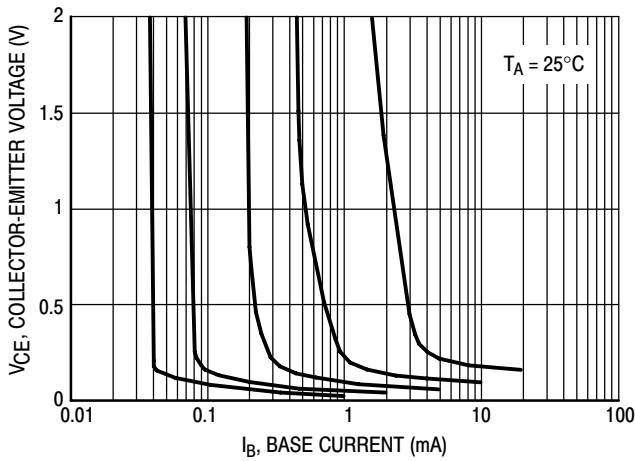


Figure 3. Collector Saturation Region

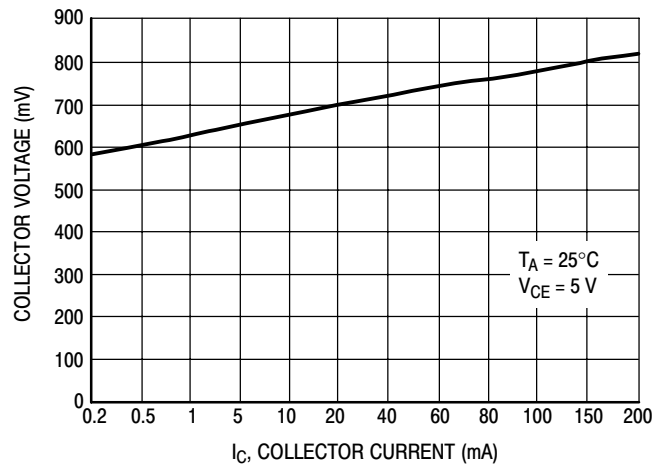


Figure 4. On Voltage

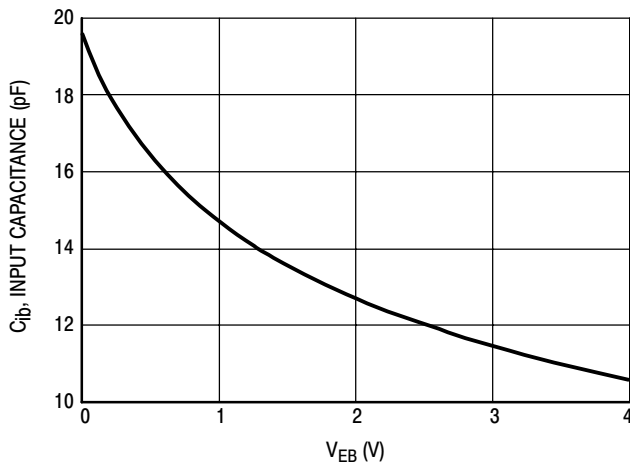


Figure 5. Capacitance

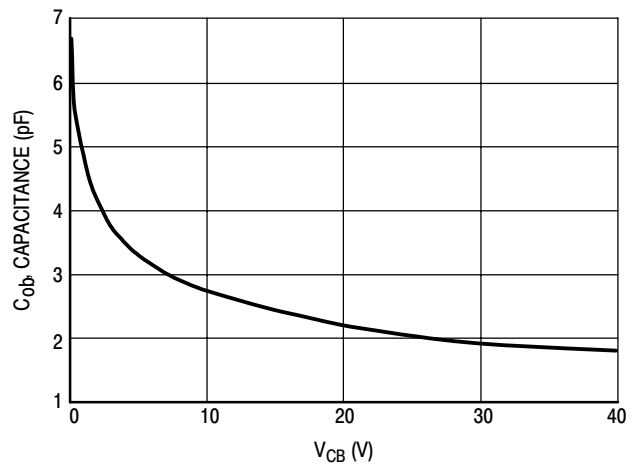


Figure 6. Capacitance

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

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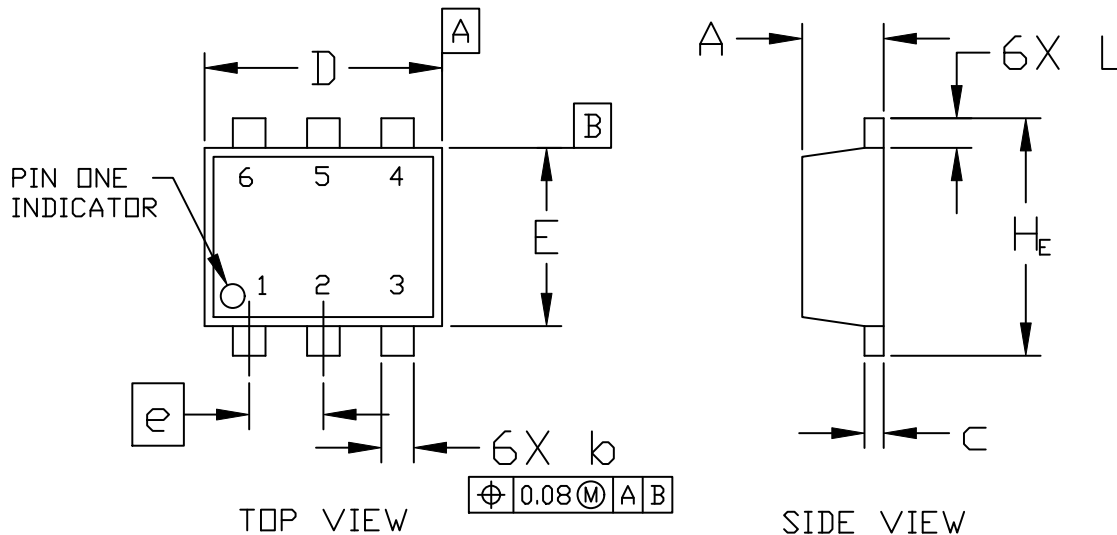
SCALE 4:1

SOT-563, 6 LEAD
CASE 463A
ISSUE H

DATE 26 JAN 2021

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.



| DIM | MILLIMETERS | | |
|----------------|-------------|------|------|
| | MIN. | NOM. | MAX. |
| A | 0.50 | 0.55 | 0.60 |
| b | 0.17 | 0.22 | 0.27 |
| c | 0.08 | 0.13 | 0.18 |
| D | 1.50 | 1.60 | 1.70 |
| E | 1.10 | 1.20 | 1.30 |
| e | 0.50 BSC | | |
| L | 0.10 | 0.20 | 0.30 |
| H _E | 1.50 | 1.60 | 1.70 |

RECOMMENDED MOUNTING FOOTPRINT*

* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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CASE 463A
ISSUE H

DATE 26 JAN 2021

STYLE 1:
PIN 1. EMITTER 1
2. BASE 1
3. COLLECTOR 2
4. EMITTER 2
5. BASE 2
6. COLLECTOR 1

STYLE 2:
PIN 1. EMITTER 1
2. EMITTER 2
3. BASE 2
4. COLLECTOR 2
5. BASE 1
6. COLLECTOR 1

STYLE 3:
PIN 1. CATHODE 1
2. CATHODE 1
3. ANODE/ANODE 2
4. CATHODE 2
5. CATHODE 2
6. ANODE/ANODE 1

STYLE 4:
PIN 1. COLLECTOR
2. COLLECTOR
3. BASE
4. EMITTER
5. COLLECTOR
6. COLLECTOR

STYLE 5:
PIN 1. CATHODE
2. CATHODE
3. ANODE
4. ANODE
5. CATHODE
6. CATHODE

STYLE 6:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. CATHODE
6. CATHODE

STYLE 7:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. CATHODE
5. ANODE
6. CATHODE

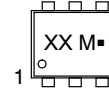
STYLE 8:
PIN 1. DRAIN
2. DRAIN
3. GATE
4. SOURCE
5. DRAIN
6. DRAIN

STYLE 9:
PIN 1. SOURCE 1
2. GATE 1
3. DRAIN 2
4. SOURCE 2
5. GATE 2
6. DRAIN 1

STYLE 10:
PIN 1. CATHODE 1
2. N/C
3. CATHODE 2
4. ANODE 2
5. N/C
6. ANODE 1

STYLE 11:
PIN 1. EMITTER 2
2. BASE 2
3. COLLECTOR 1
4. EMITTER 1
5. BASE 1
6. COLLECTOR 2

**GENERIC
MARKING DIAGRAM***



XX = Specific Device Code
M = Month Code
■ = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

| | | |
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