

# EMX1DXV6T1, EMX1DXV6T5

Preferred Devices

## Dual NPN General Purpose Amplifier Transistor

This NPN transistor is designed for general purpose amplifier applications. This device is housed in the SOT-563 package which is designed for low power surface mount applications, where board space is at a premium.

### Features

- Reduces Board Space
- High  $h_{FE}$ , 210–460 (Typical)
- Low  $V_{CE(sat)}$ , < 0.5 V
- These are Pb-Free Devices

### MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

| Rating                         | Symbol        | Value | Unit |
|--------------------------------|---------------|-------|------|
| Collector-Base Voltage         | $V_{(BR)CBO}$ | 60    | Vdc  |
| Collector-Emitter Voltage      | $V_{(BR)CEO}$ | 50    | Vdc  |
| Emitter-Base Voltage           | $V_{(BR)EBO}$ | 7.0   | Vdc  |
| Collector Current – Continuous | $I_C$         | 100   | mAdc |

### THERMAL CHARACTERISTICS

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

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

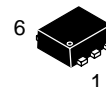
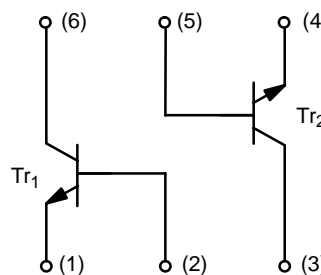
1. FR-4 @ Minimum Pad



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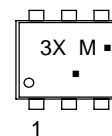
<http://onsemi.com>

## DUAL NPN GENERAL PURPOSE AMPLIFIER TRANSISTORS SURFACE MOUNT



SOT-563  
CASE 463A  
STYLE 1

### MARKING DIAGRAM



3X = 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.

# EMX1DXV6T1, EMX1DXV6T5

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

| Characteristic   | Symbol               | Min | Typ | Max | Unit |
|--|----------------------|-----|-----|-----|------|
| Collector-Base Breakdown Voltage<br>(I <sub>C</sub> = 50 μAdc, I <sub>E</sub> = 0)                     | V <sub>(BR)CBO</sub> | 60  | –   | –   | Vdc  |
| Collector-Emitter Breakdown Voltage<br>(I <sub>C</sub> = 1.0 mAdc, I <sub>B</sub> = 0)                 | V <sub>(BR)CEO</sub> | 50  | –   | –   | Vdc  |
| Emitter-Base Breakdown Voltage<br>(I <sub>E</sub> = 50 μAdc, I <sub>E</sub> = 0)                       | V <sub>(BR)EBO</sub> | 7.0 | –   | –   | Vdc  |
| Collector-Base Cutoff Current<br>(V <sub>CB</sub> = 60 Vdc, I <sub>E</sub> = 0)                        | I <sub>CBO</sub>     | –   | –   | 0.5 | μA   |
| Emitter-Base Cutoff Current<br>(V <sub>EB</sub> = 7.0 Vdc, I <sub>B</sub> = 0)                         | I <sub>EBO</sub>     | –   | –   | 0.5 | μA   |
| Collector-Emitter Saturation Voltage (Note 2)<br>(I <sub>C</sub> = 50 mAdc, I <sub>B</sub> = 5.0 mAdc) | V <sub>CE(sat)</sub> | –   | –   | 0.4 | Vdc  |
| DC Current Gain (Note 3)<br>(V <sub>CE</sub> = 6.0 Vdc, I <sub>C</sub> = 1.0 mAdc)                     | h <sub>FE</sub>      | 120 | –   | 560 | –    |
| Transition Frequency<br>(V <sub>CE</sub> = 12 Vdc, I <sub>C</sub> = 2.0 mAdc, f = 30 MHz)              | f <sub>T</sub>       | –   | 180 | –   | MHz  |
| Output Capacitance<br>(V <sub>CB</sub> = 12 Vdc, I <sub>C</sub> = 0 Adc, f = 1 MHz)                    | C <sub>OB</sub>      | –   | 2.0 | –   | pF   |

2. Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.  
 3. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

## ORDERING INFORMATION

| Device      | Package  | Shipping <sup>†</sup>    |
|-------------|----------|--------------------------|
| EMX1DXV6T1  | SOT-563* | 4000 Units / Tape & Reel |
| EMX1DXV6T1G | SOT-563* | 4000 Units / Tape & Reel |
| EMX1DXV6T5  | SOT-563* | 8000 Units / Tape & Reel |
| EMX1DXV6T5G | SOT-563* | 8000 Units / Tape & Reel |

<sup>†</sup>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.

# EMX1DXV6T1, EMX1DXV6T5

## TYPICAL ELECTRICAL CHARACTERISTICS

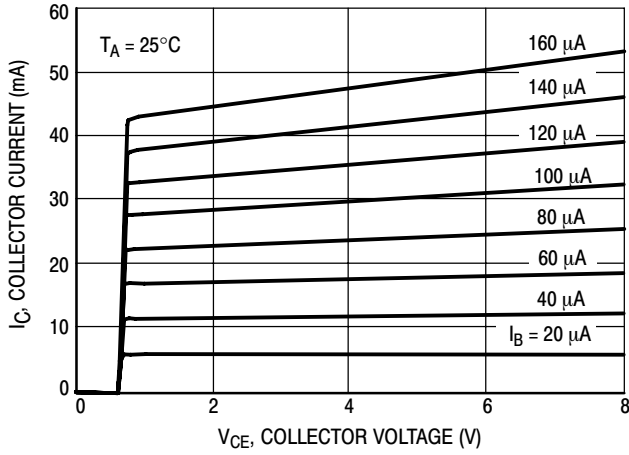


Figure 1.  $I_C - V_{CE}$

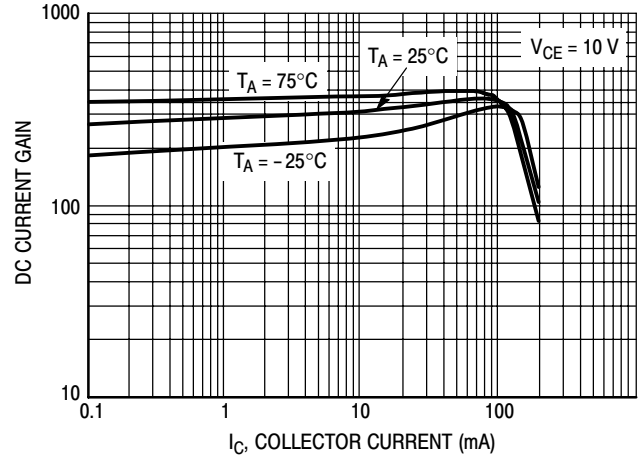


Figure 2. DC Current Gain

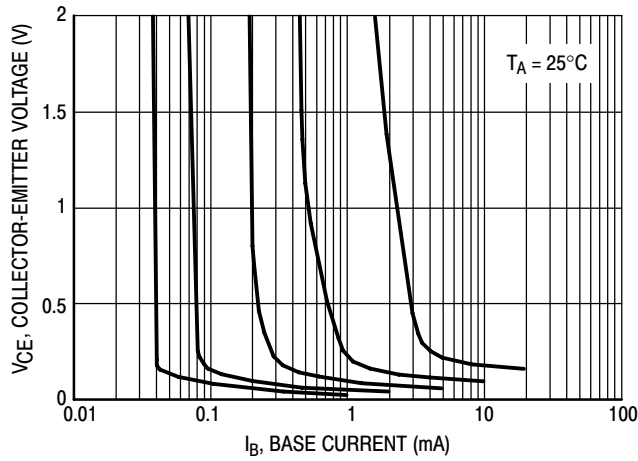


Figure 3. Collector Saturation Region

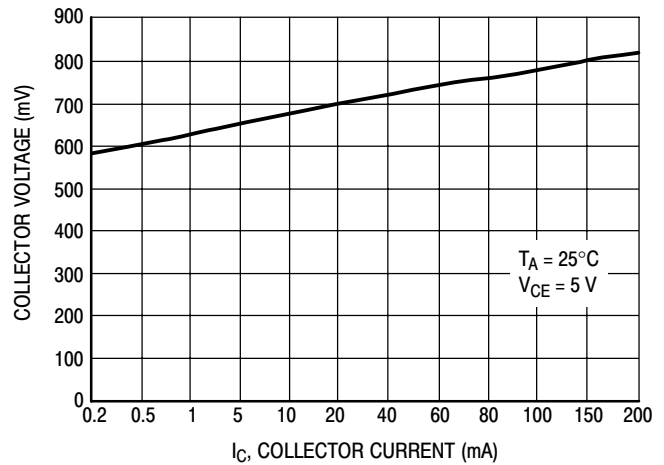


Figure 4. On Voltage

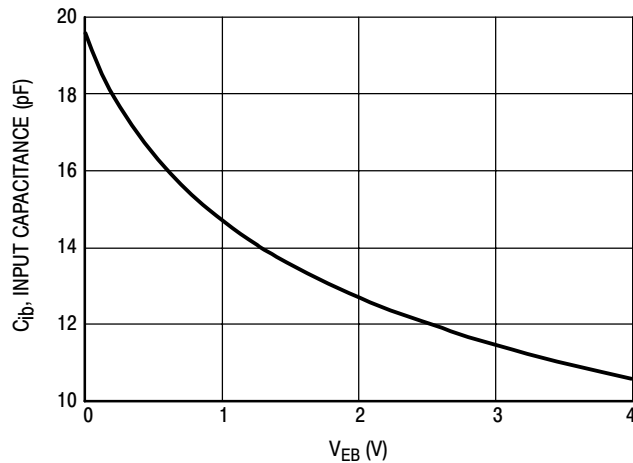


Figure 5. Capacitance

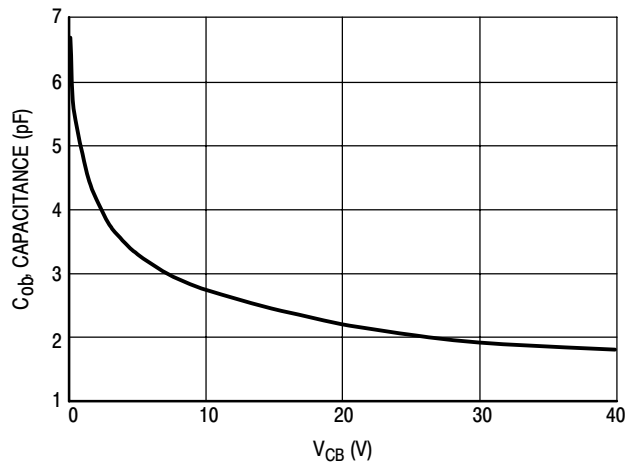
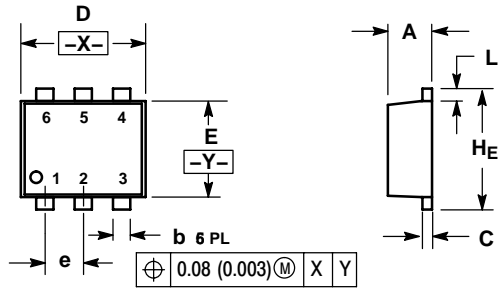


Figure 6. Capacitance

# EMX1DXV6T1, EMX1DXV6T5

## PACKAGE DIMENSIONS

SOT-563, 6 LEAD  
CASE 463A-01  
ISSUE F



NOTES:

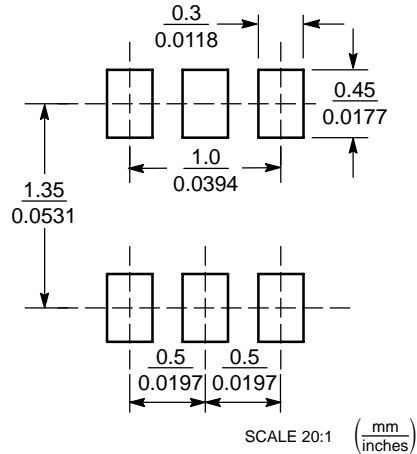
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM            | MILLIMETERS |      |      | INCHES   |       |       |
|----------------|-------------|------|------|----------|-------|-------|
|                | MIN         | NOM  | MAX  | MIN      | NOM   | MAX   |
| A              | 0.50        | 0.55 | 0.60 | 0.020    | 0.021 | 0.023 |
| b              | 0.17        | 0.22 | 0.27 | 0.007    | 0.009 | 0.011 |
| C              | 0.08        | 0.12 | 0.18 | 0.003    | 0.005 | 0.007 |
| D              | 1.50        | 1.60 | 1.70 | 0.059    | 0.062 | 0.066 |
| E              | 1.10        | 1.20 | 1.30 | 0.043    | 0.047 | 0.051 |
| e              | 0.5 BSC     |      |      | 0.02 BSC |       |       |
| L              | 0.10        | 0.20 | 0.30 | 0.004    | 0.008 | 0.012 |
| H <sub>E</sub> | 1.50        | 1.60 | 1.70 | 0.059    | 0.062 | 0.066 |

STYLE 1:

- PIN 1. EMITTER 1  
2. BASE 1  
3. COLLECTOR 2  
4. EMITTER 2  
5. BASE 2  
6. COLLECTOR 1

### SOLDERING FOOTPRINT\*



SCALE 20:1 (mm/inches)

\*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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