

# EMZ1DXV6T1, EMZ1DXV6T5

## Product Preview Dual General Purpose Transistors NPN/PNP Dual (Complimentary)

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.

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

### 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

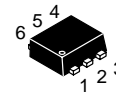
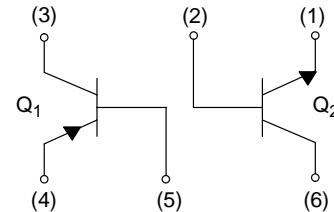
Characteristic (One Junction Heated)	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	357 (Note 1) 2.9 (Note 1)	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	350 (Note 1)	$^\circ\text{C/W}$
Characteristic (Both Junctions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

1. FR-4 @ Minimum Pad.



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SOT-563  
CASE 463A  
PLASTIC

### MARKING DIAGRAM



3Z = Specific Device Code  
D = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
EMZ1DXV6T1	SOT-563	4 mm Pitch 4000/Tape & Reel
EMZ1DXV6T5	SOT-563	2 mm Pitch 8000/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 document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

# EMZ1DXV6T1, EMZ1DXV6T5

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>Q1: PNP</b>					
Collector-Base Breakdown Voltage (I <sub>C</sub> = -50 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	-60	-	-	Vdc
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = -1.0 mAdc, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	-50	-	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = -50 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)EBO</sub>	-6.0	-	-	Vdc
Collector-Base Cutoff Current (V <sub>CB</sub> = -30 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	-	-0.5	nA
Emitter-Base Cutoff Current (V <sub>EB</sub> = -5.0 Vdc, I <sub>B</sub> = 0)	I <sub>EBO</sub>	-	-	-0.5	μA
Collector-Emitter Saturation Voltage (Note 4) (I <sub>C</sub> = -50 mAdc, I <sub>B</sub> = -5.0 mAdc)	V <sub>CE(sat)</sub>	-	-	-0.5	Vdc
DC Current Gain (Note 4) (V <sub>CE</sub> = -6.0 Vdc, I <sub>C</sub> = -1.0 mAdc)	h <sub>FE</sub>	120	-	560	-
Transition Frequency (V <sub>CE</sub> = -12 Vdc, I <sub>C</sub> = -2.0 mAdc, f = 30 MHz)	f <sub>T</sub>	-	140	-	MHz
Output Capacitance (V <sub>CB</sub> = -12 Vdc, I <sub>E</sub> = 0 Adc, f = 1 MHz)	C <sub>OB</sub>	-	3.5	-	pF

## Q2: NPN

Collector-Base Breakdown Voltage (I <sub>C</sub> = 50 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	60	-	-	Vdc
Collector-Emitter Breakdown Voltage (I <sub>C</sub> = 1.0 mAdc, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	50	-	-	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 50 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)EBO</sub>	7.0	-	-	Vdc
Collector-Base Cutoff Current (V <sub>CB</sub> = 60 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	-	-	0.5	μA
Emitter-Base Cutoff Current (V <sub>EB</sub> = 7.0 Vdc, I <sub>B</sub> = 0)	I <sub>EBO</sub>	-	-	0.5	μA
Collector-Emitter Saturation Voltage <sup>(2)</sup> (I <sub>C</sub> = 50 mAdc, I <sub>B</sub> = 5.0 mAdc)	V <sub>CE(sat)</sub>	-	-	0.4	Vdc
DC Current Gain <sup>(2)</sup> (V <sub>CE</sub> = 6.0 Vdc, I <sub>C</sub> = 1.0 mAdc)	h <sub>FE</sub>	120	-	560	-
Transition Frequency (V <sub>CE</sub> = 12 Vdc, I <sub>C</sub> = 2.0 mAdc, f = 30 MHz)	f <sub>T</sub>	-	180	-	MHz
Output Capacitance (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%.
4. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

# EMZ1DXV6T1, EMZ1DXV6T5

## TYPICAL ELECTRICAL CHARACTERISTICS – Q1, PNP

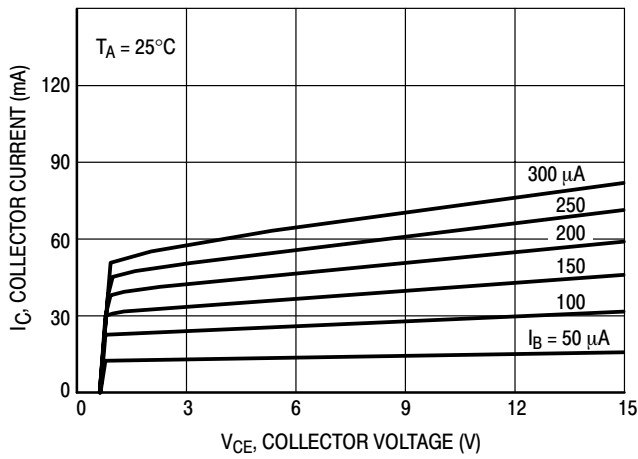


Figure 1.  $I_C - V_{CE}$

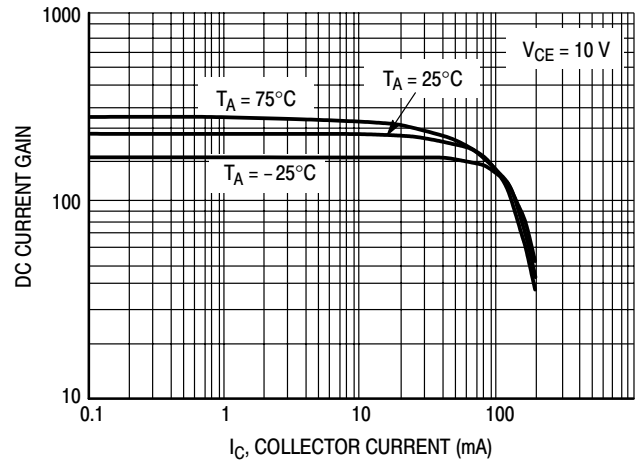


Figure 2. DC Current Gain

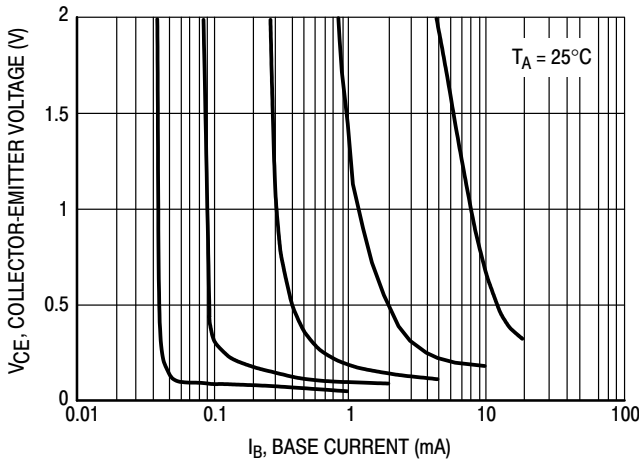


Figure 3. Collector Saturation Region

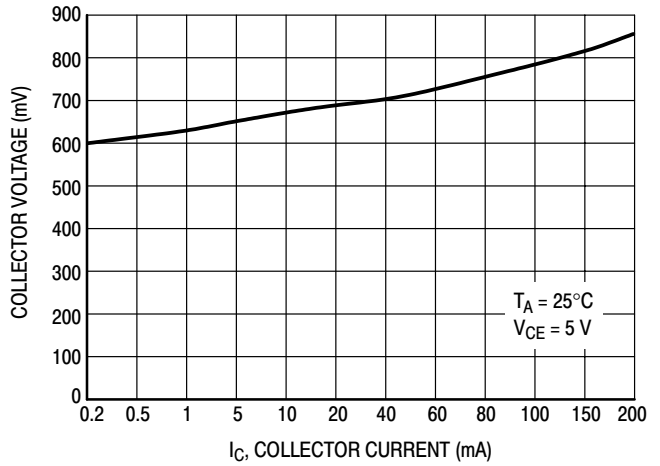


Figure 4. On Voltage

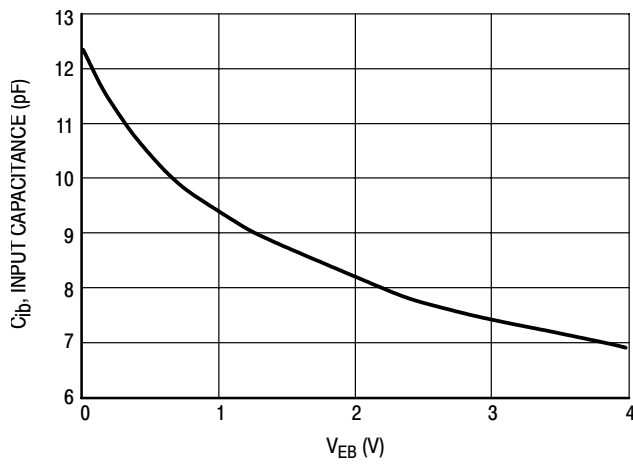


Figure 5. Capacitance

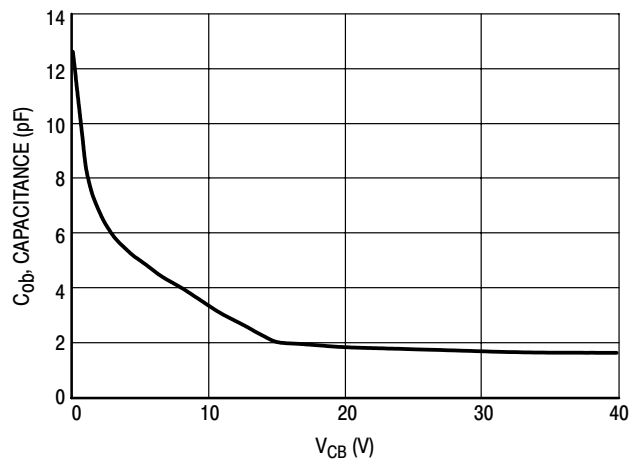


Figure 6. Capacitance

# EMZ1DXV6T1, EMZ1DXV6T5

## TYPICAL ELECTRICAL CHARACTERISTICS – Q2, NPN

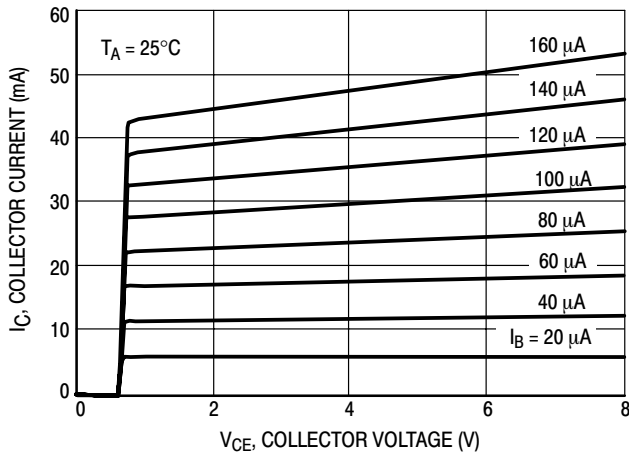


Figure 1.  $I_C - V_{CE}$

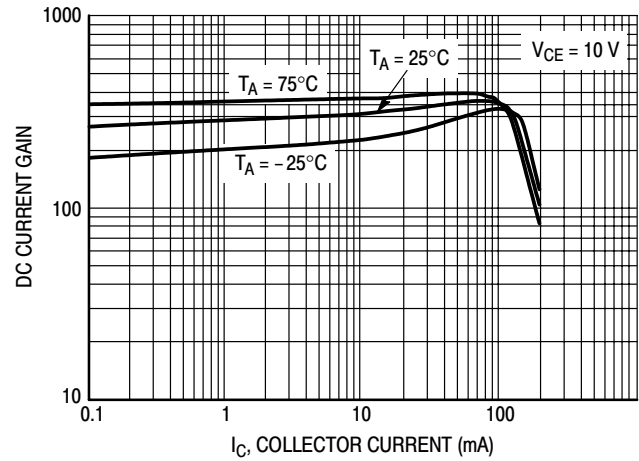


Figure 2. DC Current Gain

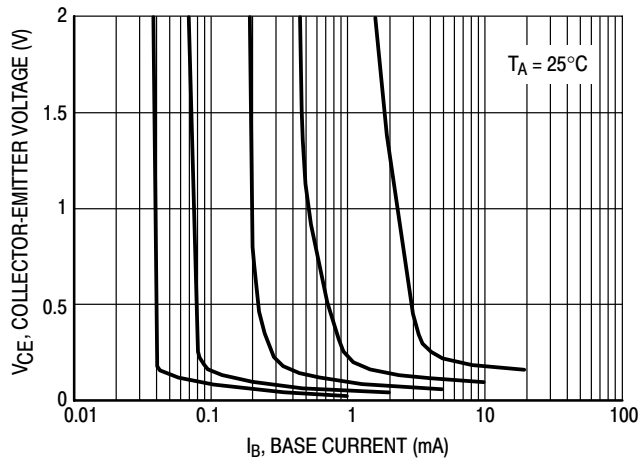


Figure 3. Collector Saturation Region

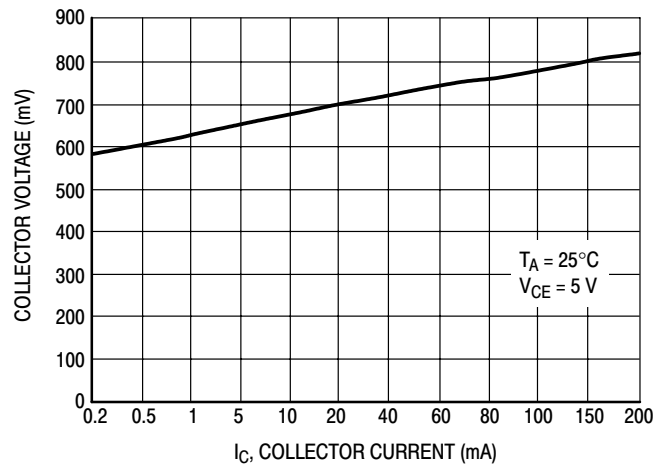


Figure 4. On Voltage

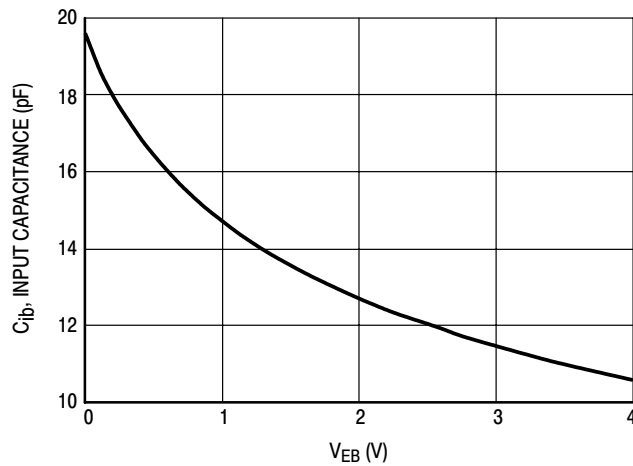


Figure 5. Capacitance

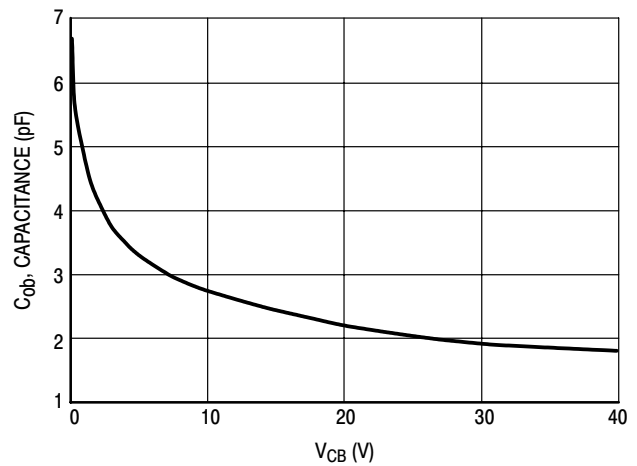
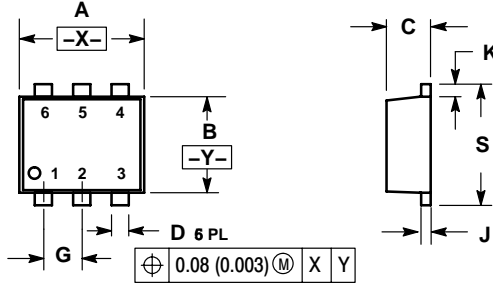


Figure 6. Capacitance

# EMZ1DXV6T1, EMZ1DXV6T5

## PACKAGE DIMENSIONS

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



### NOTES:

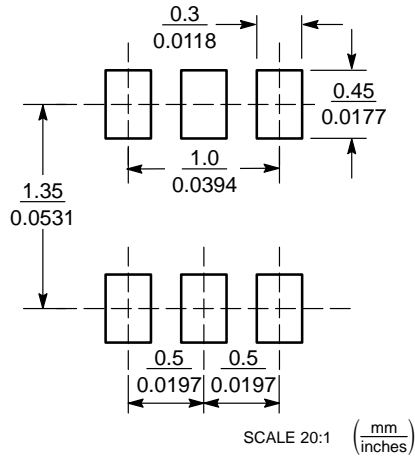
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.70	0.059	0.067
B	1.10	1.30	0.043	0.051
C	0.50	0.60	0.020	0.024
D	0.17	0.27	0.007	0.011
G	0.50 BSC		0.020 BSC	
J	0.08	0.18	0.003	0.007
K	0.10	0.30	0.004	0.012
S	1.50	1.70	0.059	0.067

### STYLE 1:

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

## SOLDER FOOTPRINT\*



\*For information on soldering specifications, please refer to our Soldering Reference Manual, SOLDERRM/D.

# EMZ1DXV6T1, EMZ1DXV6T5

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**EMZ1DXV6T1/D**