

EMZ1DXV6T1, EMZ1DXV6T5

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.

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	$^\circ\text{C}$

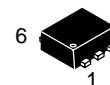
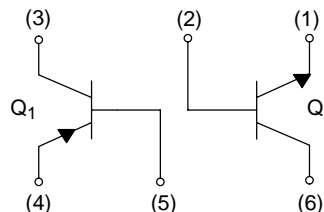
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

1. FR-4 @ Minimum Pad.



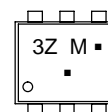
ON Semiconductor®

<http://onsemi.com>



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

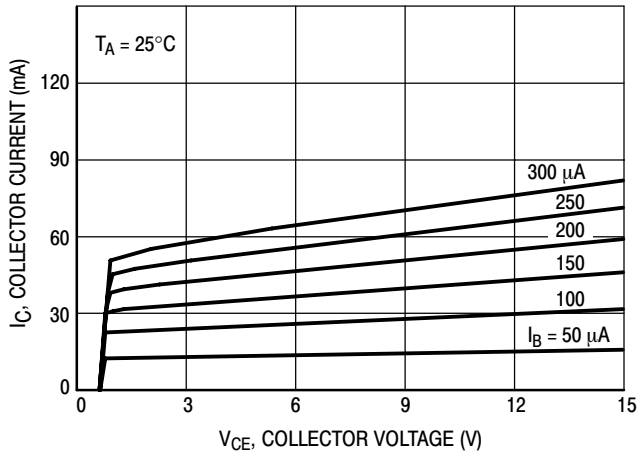


Figure 1. $I_C - V_{CE}$

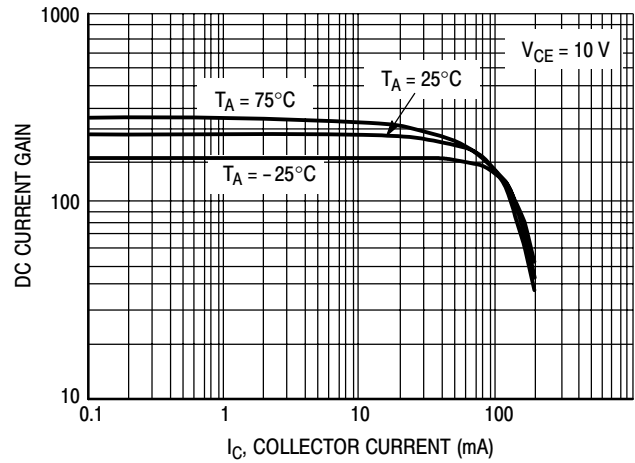


Figure 2. DC Current Gain

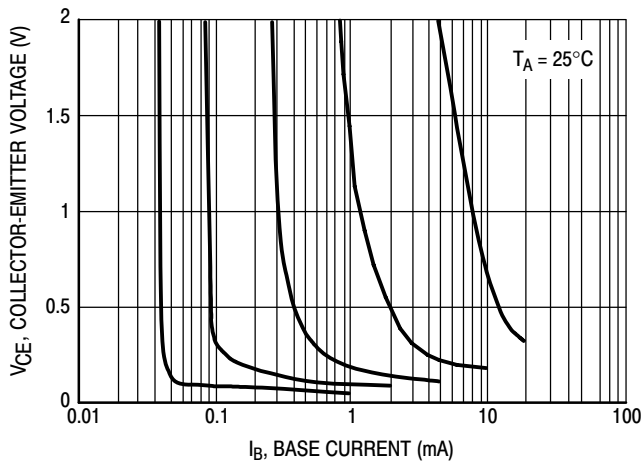


Figure 3. Collector Saturation Region

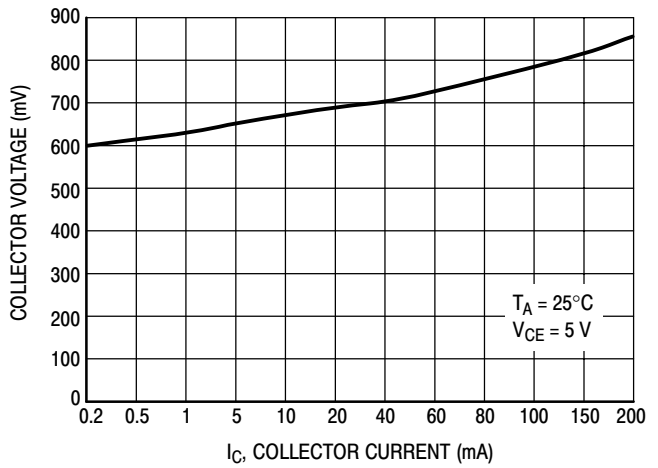


Figure 4. On Voltage

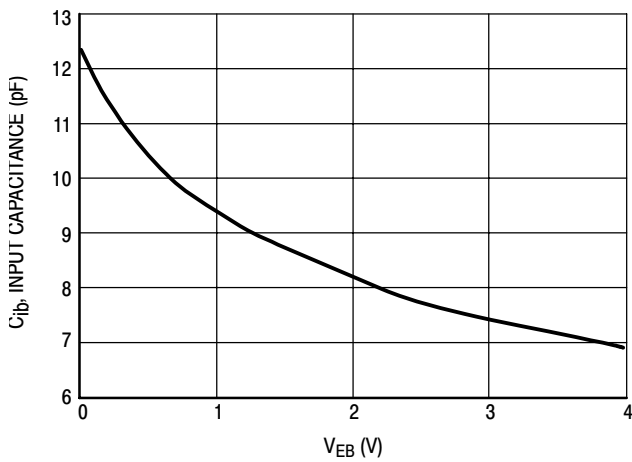


Figure 5. Capacitance

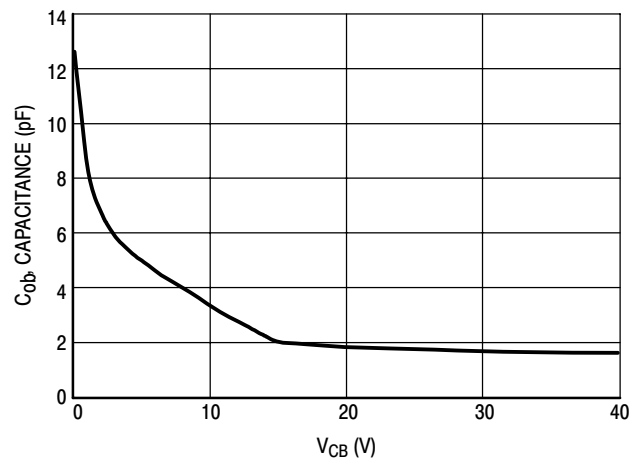


Figure 6. Capacitance

EMZ1DXV6T1, EMZ1DXV6T5

TYPICAL ELECTRICAL CHARACTERISTICS – Q2, NPN

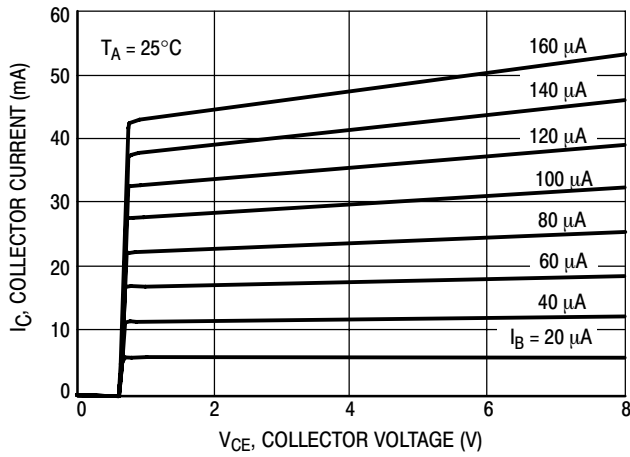


Figure 1. $I_C - V_{CE}$

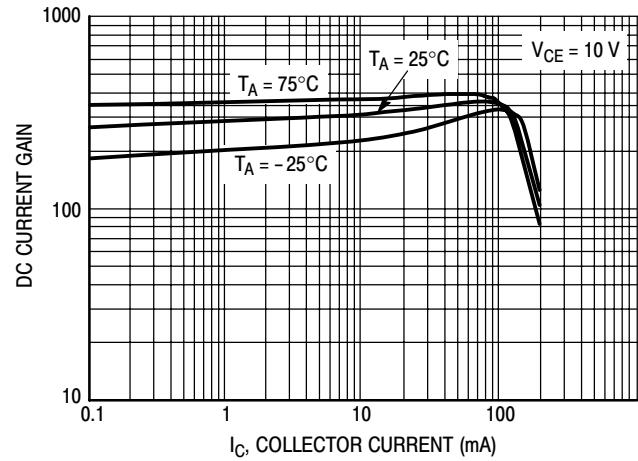


Figure 2. DC Current Gain

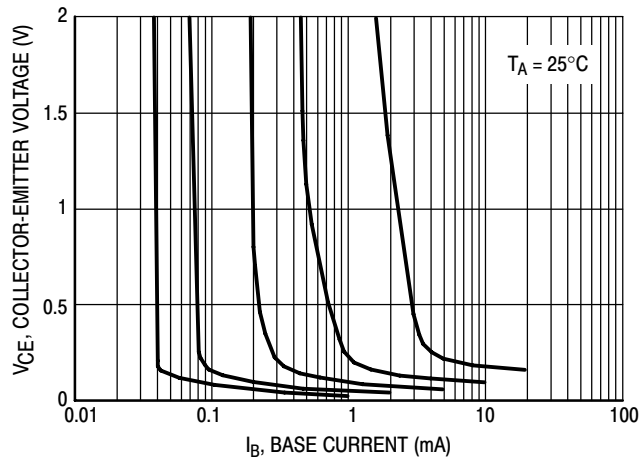


Figure 3. Collector Saturation Region

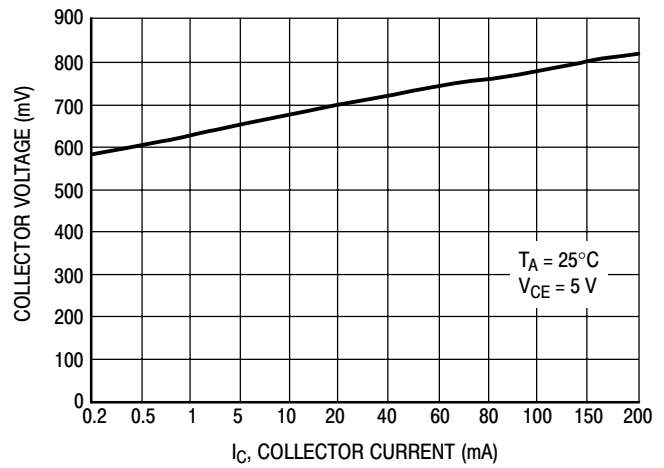


Figure 4. On Voltage

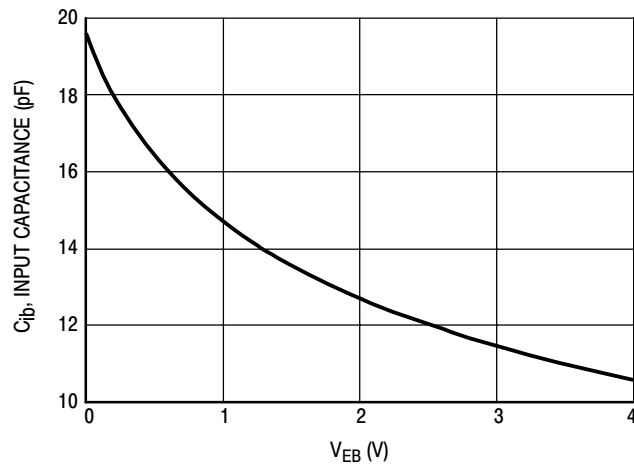


Figure 5. Capacitance

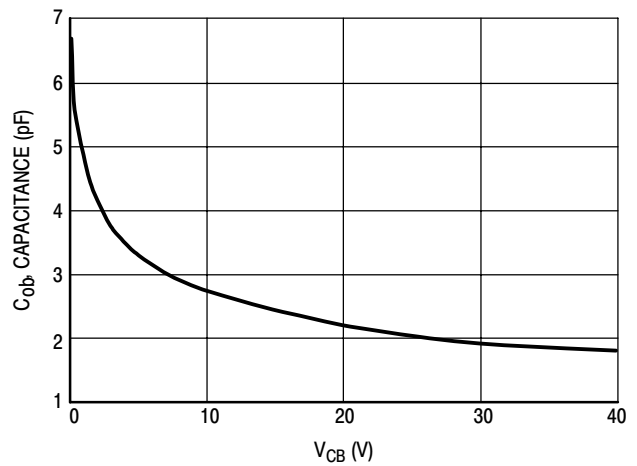
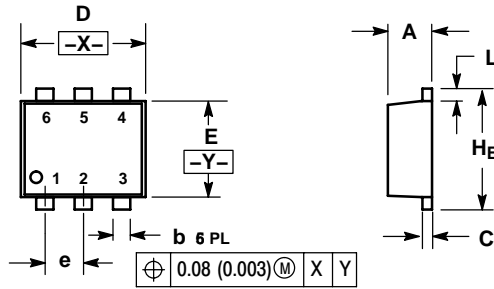


Figure 6. Capacitance

EMZ1DXV6T1, EMZ1DXV6T5

PACKAGE DIMENSIONS

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



NOTES:

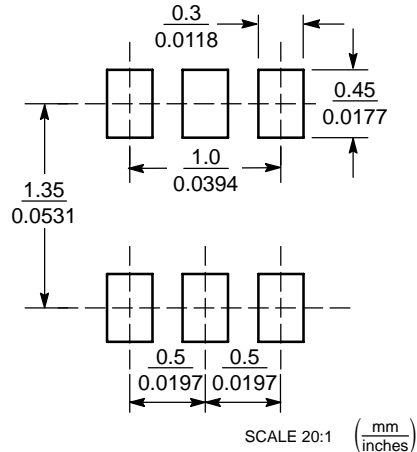
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

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 _E	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*



*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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