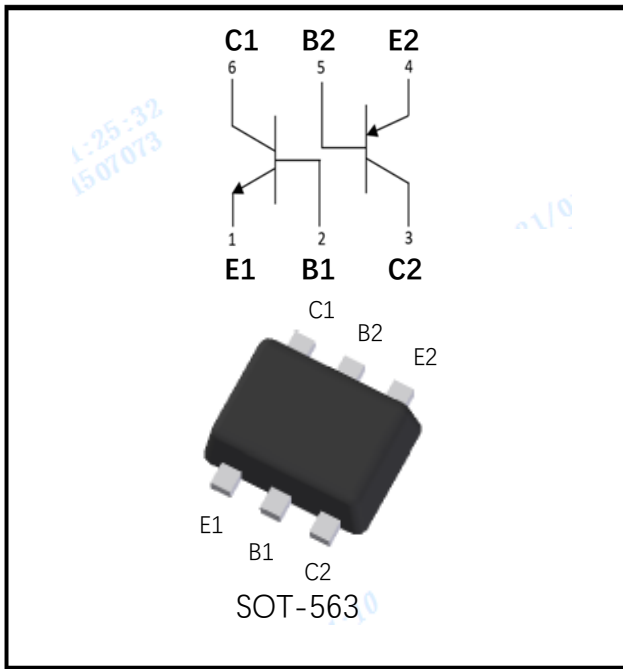


## Dual NPN+PNP Small Signal Transistor



### Features

- Epoxy meets UL-94 V-0 flammability rating
- Surface mount package ideally Suited for Automatic Insertion
- NPN+PNP

### Mechanical Data

- **Package:** SOT-563
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** Z7
- **Solid point:** E1 positioning point

### ■Maximum Ratings (Ta=25°C Unless otherwise specified)

#### DTR1-NPN

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	$V_{CBO}$	V	$I_C=100\mu A, I_E=0$	15
Collector-Emitter Voltage	$V_{CEO}$	V	$I_C=1mA, I_B=0$	12
Emitter-Base Voltage	$V_{EBO}$	V	$I_E=100\mu A, I_C=0$	6
Collector Current -Continuous	$I_C$	mA		500
Collector Power Dissipation	$P_C$	mW		150
Junction Temperature	$T_J$	°C		-55 to +150
Storage Temperature	$T_{STG}$	°C		-55 to +150

#### DTR2-PNP

Item	Symbol	Unit	Conditions	Value
Collector-Base Voltage	$V_{CBO}$	V	$I_C=-100\mu A, I_E=0$	-15
Collector-Emitter Voltage	$V_{CEO}$	V	$I_C=-1mA, I_B=0$	-12
Emitter-Base Voltage	$V_{EBO}$	V	$I_E=-100\mu A, I_C=0$	-6
Collector Current	$I_C$	mA		-500
Total Device Dissipation	$P_C$	mW		150
Junction Temperature	$T_j$	°C		-55 to +150
Storage Temperature	$T_{STG}$	°C		-55 to +150



# EMZ7

## ■Electrical Characteristics (Ta=25°C unless otherwise specified)

### DTR1-NPN

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C=100\mu A, I_E=0$	15		
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C=1mA, I_B=0$	12		
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E=100\mu A, I_C=0$	6		
Collector-Base cut-off current	$I_{CBO}$	nA	$V_{CB}=15V, I_E=0$			100
Emitter-Base Cut-off current	$I_{EBO}$	nA	$V_{EB}=5V, I_C=0$			100
DC current gain	$h_{FE}$		$V_{CE}=2V, I_C=10mA$	200		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=200mA, I_B=10mA$			0.22
Baser-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C=200mA, I_B=10mA$			1
Output Capacitance	$C_{OB}$	pF	$V_{CB}=10V, I_E=0, f=1MHz$			6

### DTR2-PNP

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-base breakdown voltage	$V_{CBO}$	V	$I_C=-100\mu A, I_E=0$	-15		
Collector-emitter breakdown voltage	$V_{CEO}$	V	$I_C=-1mA, I_B=0$	-12		
Emitter-base breakdown voltage	$V_{EBO}$	V	$I_E=-100\mu A, I_C=0$	-6		
Collector-Base cut-off current	$I_{CBO}$	nA	$V_{CB}=-15V, I_E=0$			-100
Emitter-Base Cut-off current	$I_{EBO}$	nA	$V_{EB}=-5V, I_C=0$			-100
DC current gain	$h_{FE}$		$V_{CE}=-2V, I_C=-10mA$	200		
Collector-emitter saturation voltage	$V_{CE(sat)}$	V	$I_C=-200mA, I_B=-10mA$			-0.22
Baser-emitter saturation voltage	$V_{BE(sat)}$	V	$I_C=-200mA, I_B=-10mA$			-1
Output Capacitance	$C_{OB}$	pF	$V_{CB}=-10V, I_E=0, f=1MHz$			10

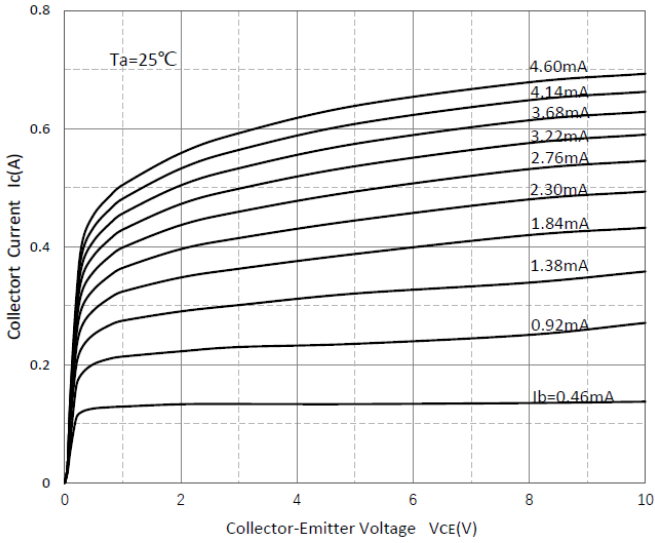
## ■ Ordering Information (Example)

Preferred P/N	Packing Code	Unit Weight(G)	Minimum Package(Pcs)	Inner Box Quantity(Pcs)	Outer Carton Quantity(Pcs)	Delivery Mode
EMZ7	F2	Approximate 0.0035	3000	30000	120000	7" reel

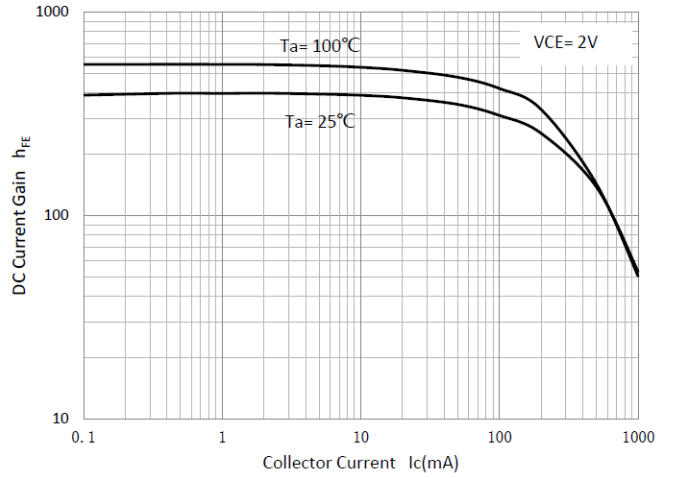


■ Characteristics (Typical)  
DTR1-NPN

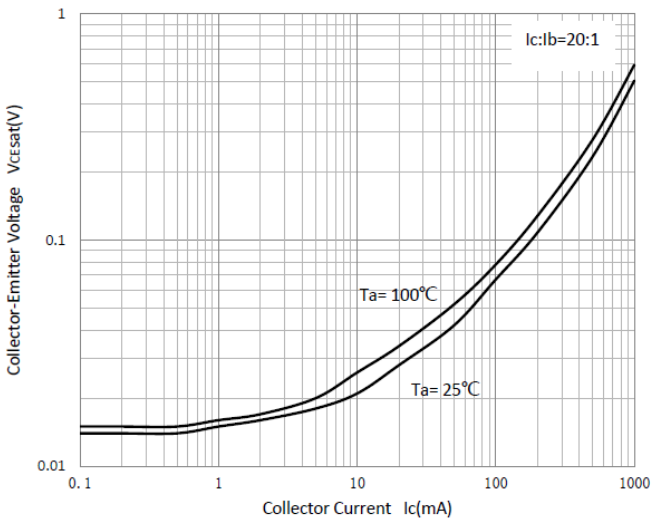
Static Characteristic



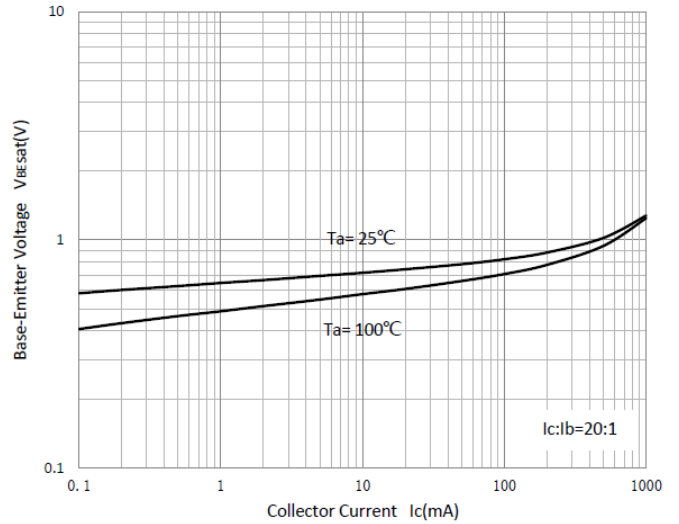
DC Current Gain



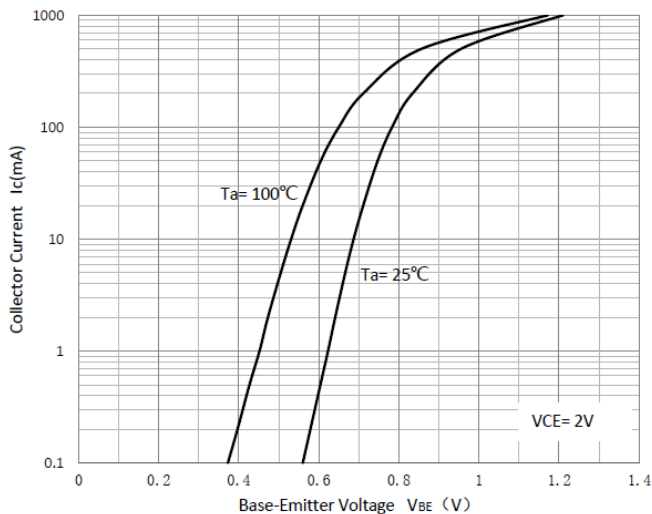
Collector-Emitter Saturation Voltage



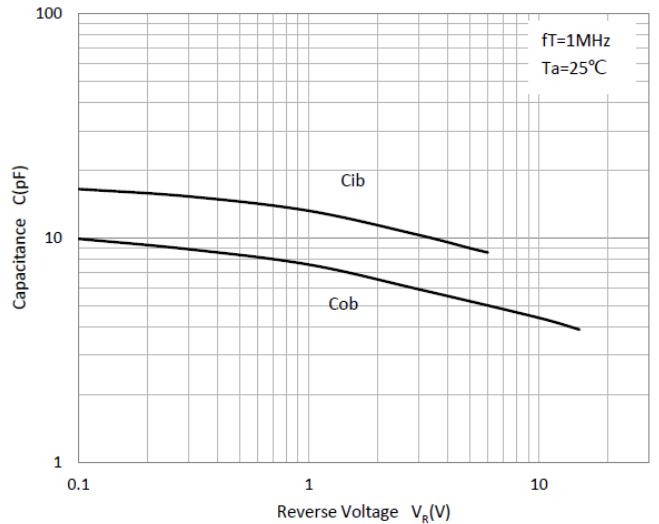
Base-Emitter Saturation Voltage



Base-Emitter On Voltage



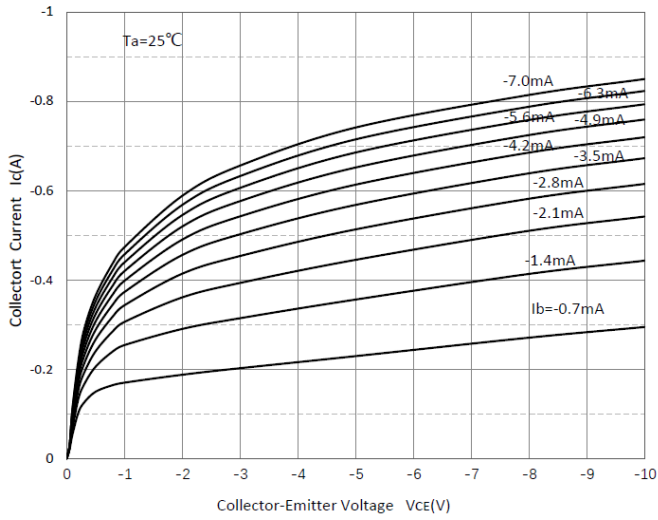
$C_{ob}/C_{ib}-V_{CB}/V_{EB}$



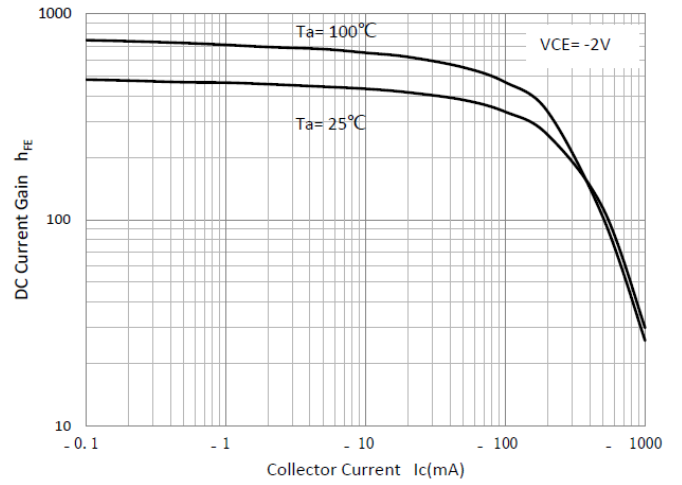


DTR2-PNP

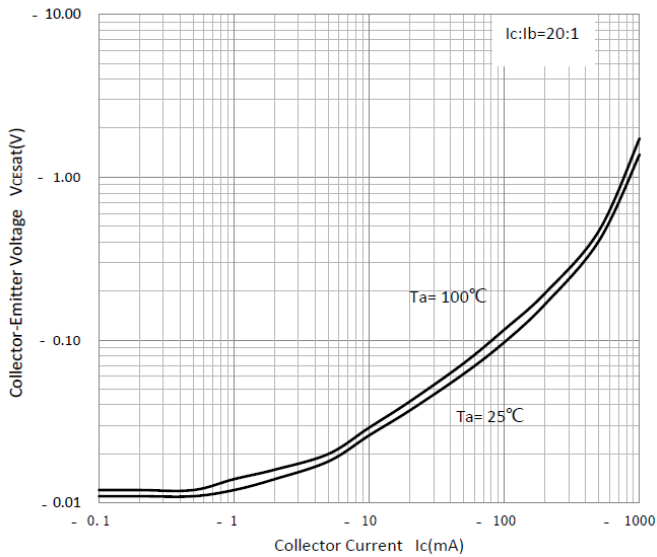
Static Characteristic



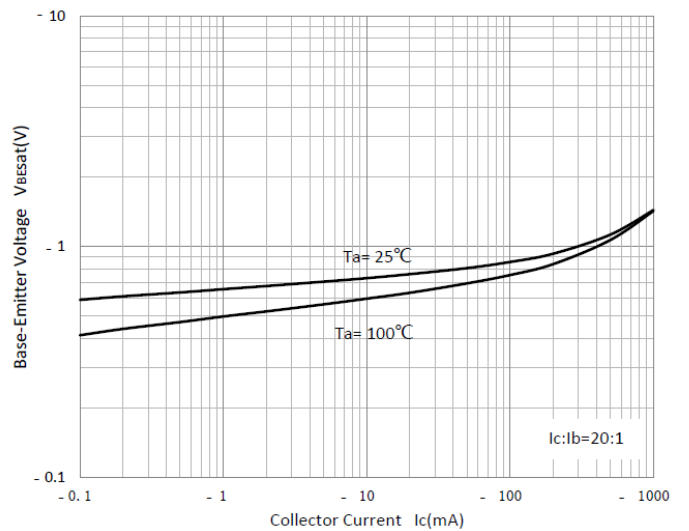
DC Current Gain



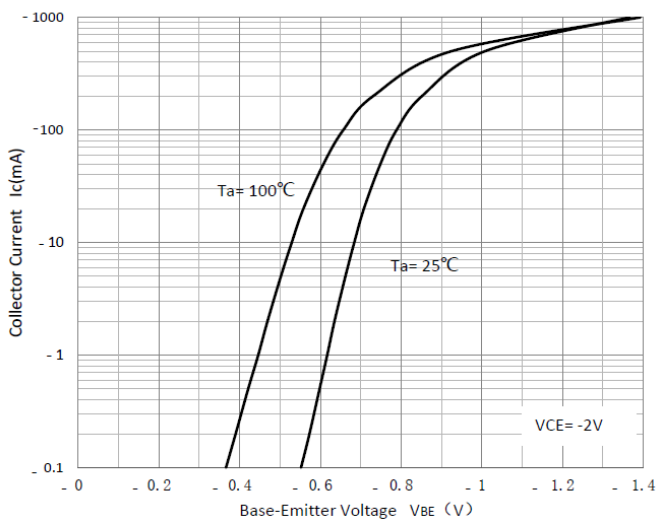
Collector-Emitter Saturation Voltage



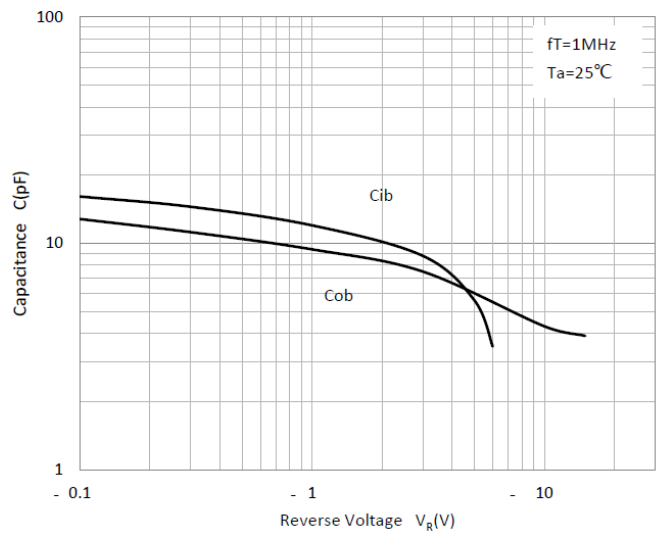
Base-Emitter Saturation Voltage



Base-Emitter On Voltage

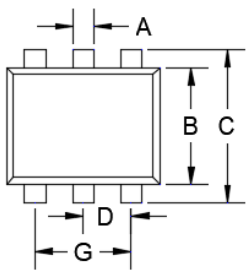


Cob/Cib-V<sub>CB</sub>/V<sub>EB</sub>

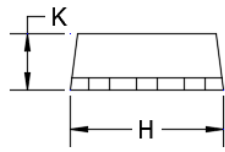


## ■ Outline Dimensions

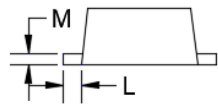
SOT-563



TOP VIEW



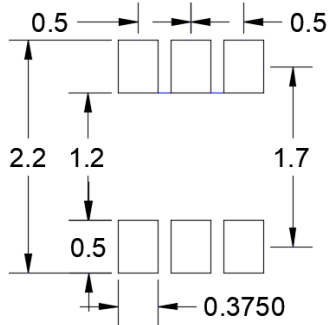
SIDE VIEW



SIDE VIEW

DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.006	0.011	0.150	0.300
B	0.043	0.051	1.100	1.300
C	0.059	0.067	1.500	1.700
D	0.016	0.024	0.400	0.600
G	0.035	0.043	0.900	1.100
H	0.059	0.067	1.500	1.700
K	0.021	0.026	0.550	0.650
L	0.004	0.011	0.100	0.300
M	0.004	0.007	0.100	0.180

## ■ Suggested Pad Layout



单位: mm

SUGGESTED SOLDER PAD LAYOUT



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