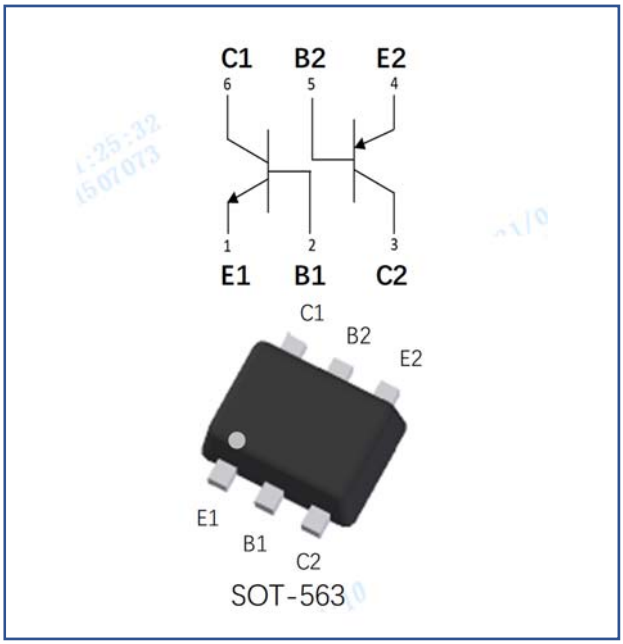
Dual NPN+PNP Small Signal Transistor



Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for auto matic Insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package**: SOT-563
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ **Maximum Ratings** (T_a=25℃ Unless otherwise specified)

TR1-NPN

Item	Symbol	Unit	Conditions	Value
Device marking code				Z7
Collector-base voltage	V_{CBO}	V	I_C=100uA,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=100uA,I_C=0	6
Collector current	I_C	mA		500
Power dissipation	P_D	mW		150
Junction temperature	T_J	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

TR2-PNP

Item	Symbol	Unit	Conditions	Value
Collector-base voltage	V_{CBO}	V	I_C=-100uA,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=-100uA,I_C=0	-6
Collector current	I_C	mA		-500
Power dissipation	P_D	mW		150
Junction temperature	T_J	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

■ Electrical Characteristics (Ta=25℃ Unless otherwise specified)

TR1-NPN

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	I_C=100uA,I_E=0	15		
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	I_C=1mA,I_B=0	12		
Emitter-base breakdown voltage	$V_{(BR)EBO}$	V	I_E=100uA,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	Cob	pF	V_{CB}=10V, I_E=0, f=1MHz			6

TR2-PNP

Item	Symbol	Unit	Conditions	Min	Typ	Max
Collector-base breakdown voltage	$V_{(BR)CBO}$	V	I_C=-100uA,I_E=0	-15		
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	V	I_C=-1mA,I_B=0	-12		
Emitter-base breakdown voltage	$V_{(BR)EBO}$	V	I_E=-100uA,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	Cob	pF	V_{CB}=-10V, I_E=0, f=1MHz			10

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	$R_{\theta J-A}$(1)	℃/W	833
Thermal resistance, junction-to-case	$R_{\theta J-C}$(1)	℃/W	667

Note:

（1）Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 25.4mm*25.4mm copper pad areas

■Characteristics

TR1-NPN

Fig 1：Static Characteristics

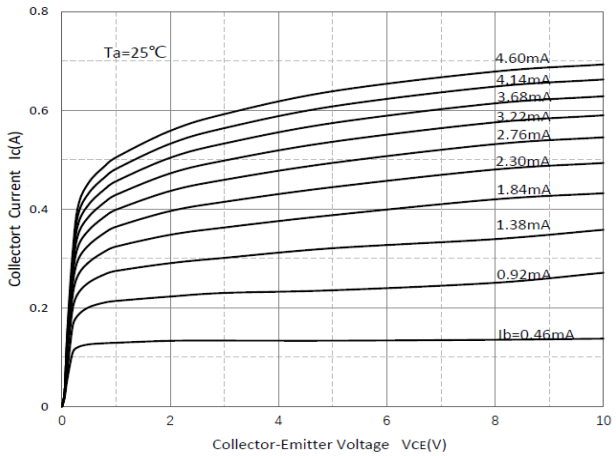


Fig 2：DC Current Gain Characteristics

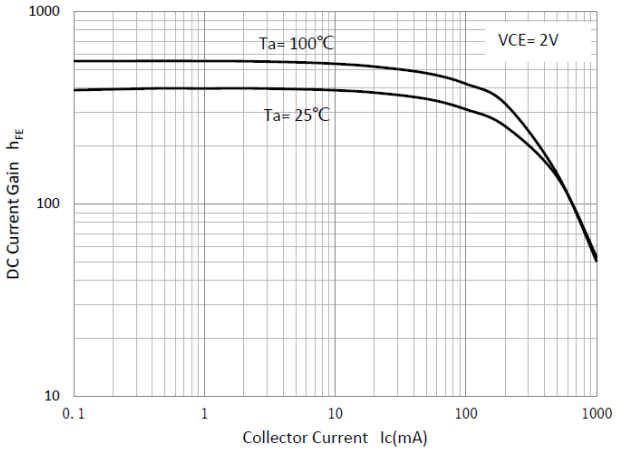


Fig 3：Collector-Emitter Saturation Voltage

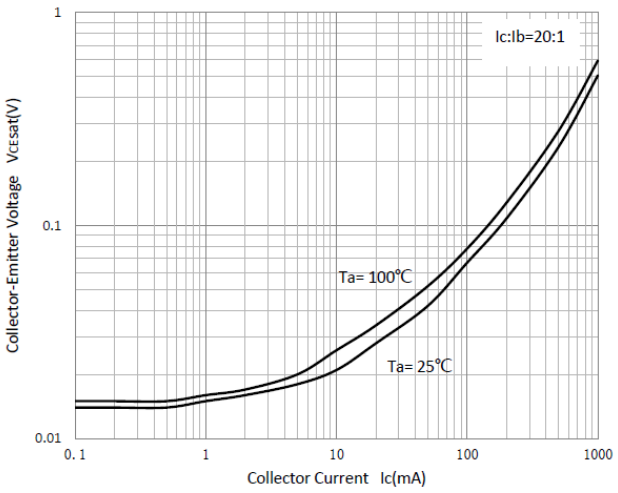


Fig 4：Base-Emitter Saturation Voltage

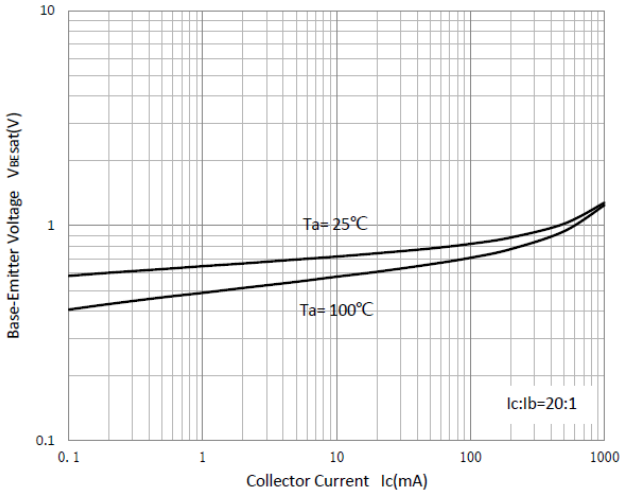


Fig 5：Base-Emitter On Voltage

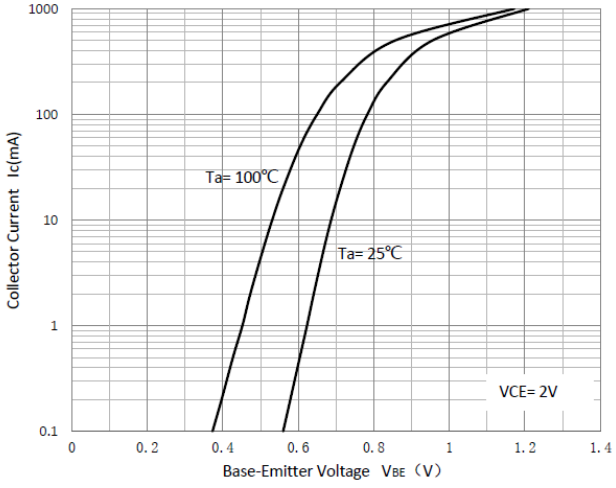
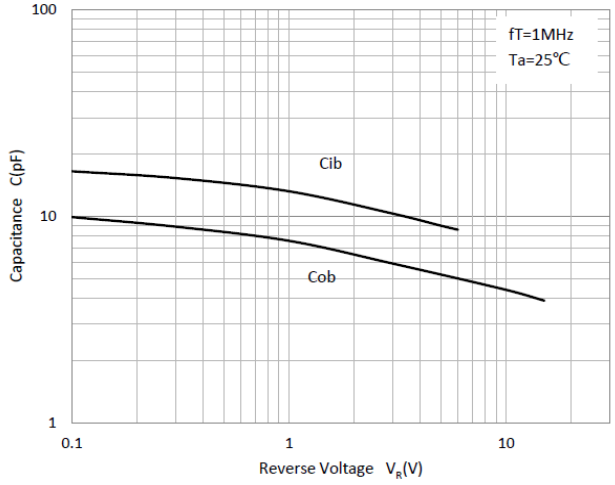
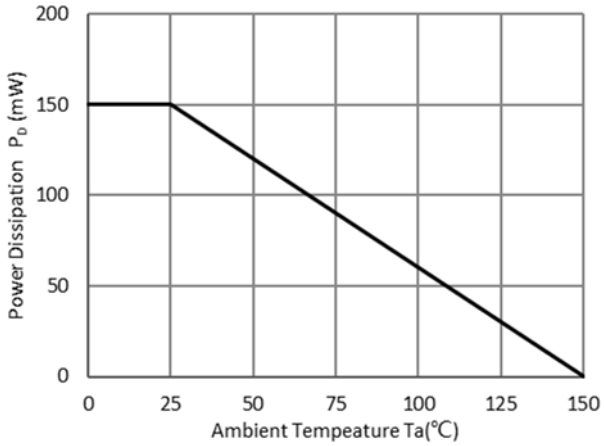


Fig 6：Cob/Cib-V_{CB}/V_{EB}





TR2-PNP

Fig 1：Static Characteristics

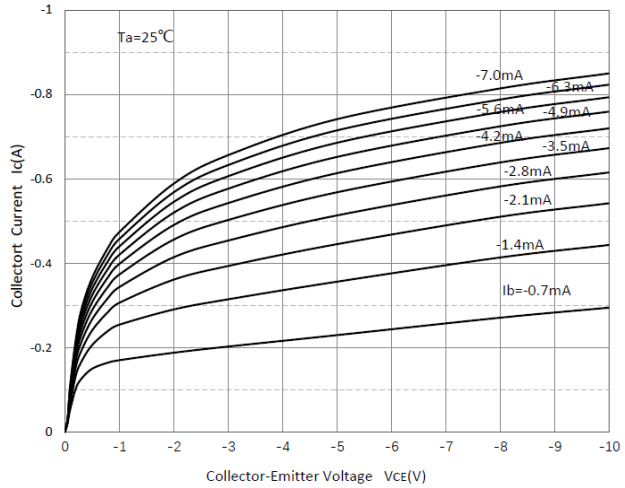


Fig 2：DC Current Gain Characteristics

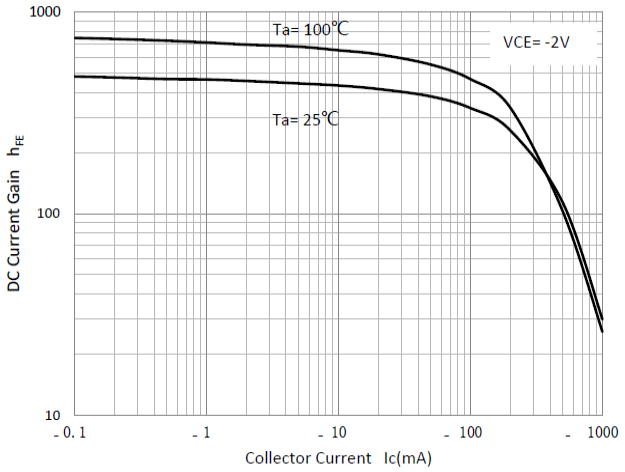


Fig 3：Collector-Emitter Saturation Voltage

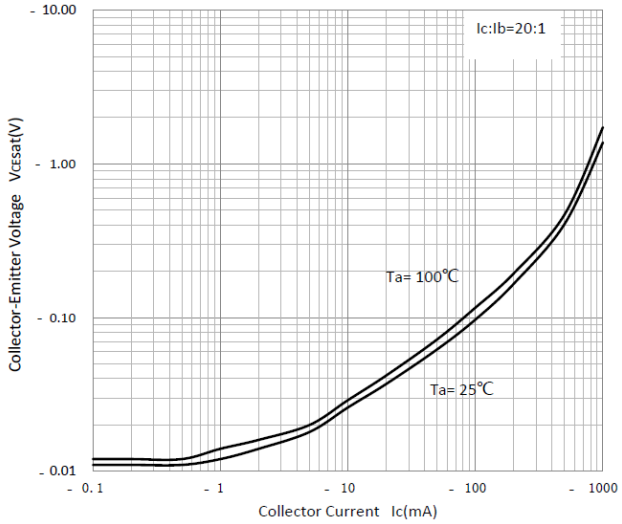
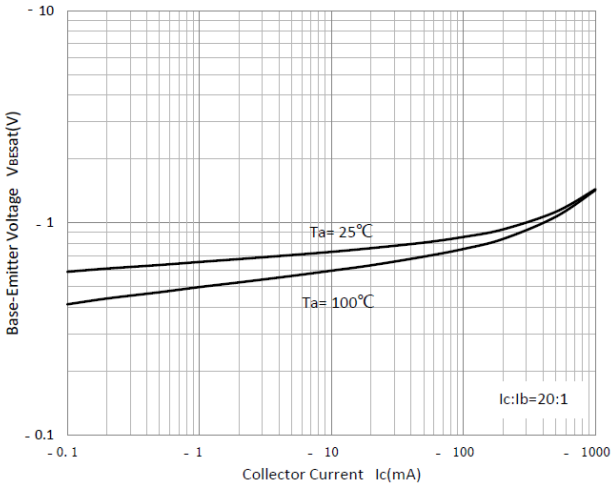
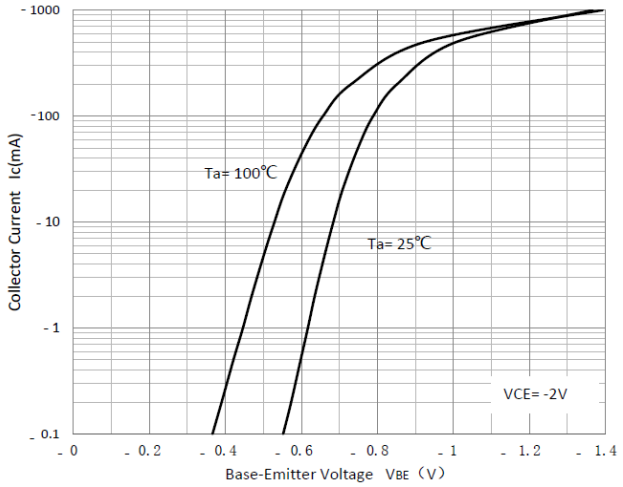


Fig 4：Base-Emitter Saturation Voltage





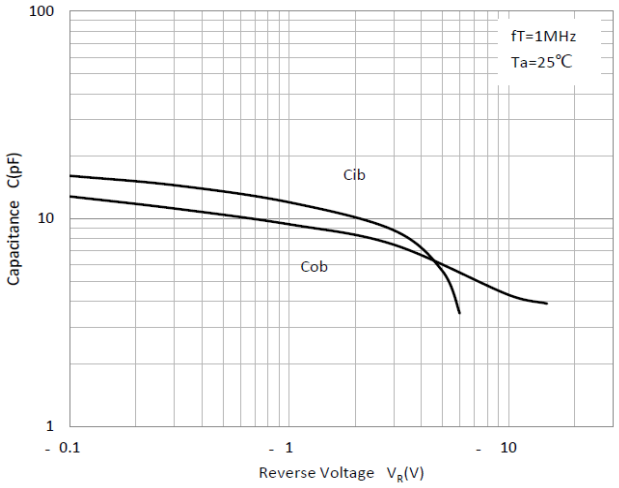
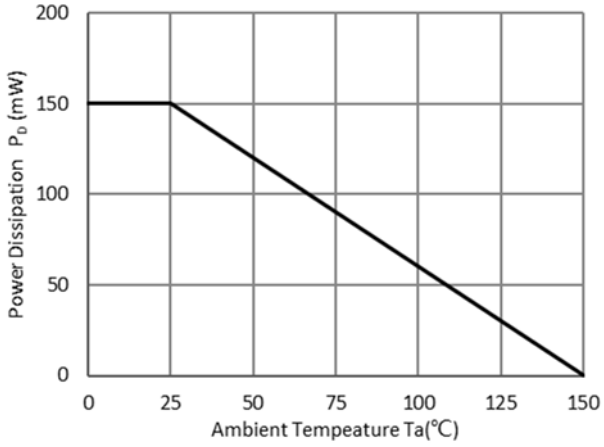


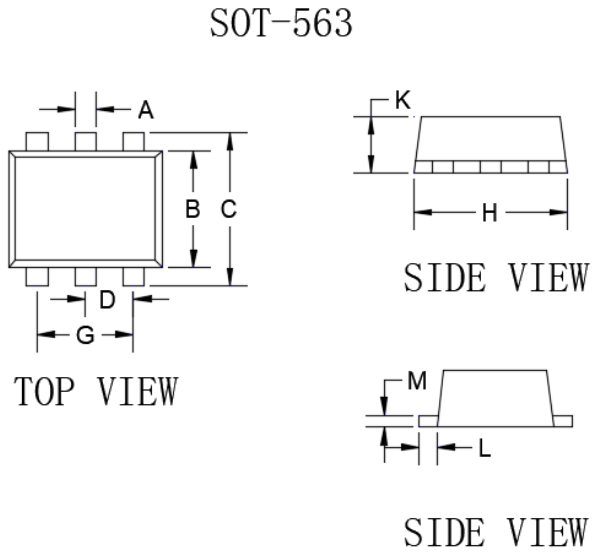
Fig 7：P_D-Ta Curve



■Ordering Information

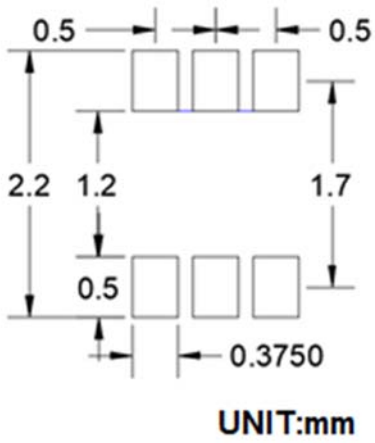
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
EMZ7	F2	Approximate 0.0035	3000	30000	120000	7” reel

■ Outline Dimensions



DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MN	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



UNIT:mm

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