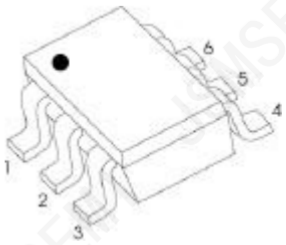
FEATURES

Epitaxial Die Construction

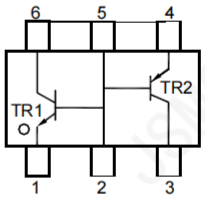
Two isolated NPN/PNP(BC847W+BC857W)

Transistors in one package



MAXIMUM RATINGS TR1 (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	45	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current –Continuous	0.1	A
P_C	Collector Power Dissipation	200	mW
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55-150	℃



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CHARACTERISTICS of TR1 (NPN Transistor) (Ta=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=10μA,I_E=0	50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=10mA,I_B=0	45			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=1μA,I_C=0	6			V
Collector cut-off current	I_{CBO}	V_{CB}=30V,I_E=0			15	nA
Emitter cut-off current	I_{EBO}	V_{EB}=5V,I_C=0			15	nA
DC current gain	h_{FE}	V_{CE}=5V,I_C=2mA	200		450	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=10mA,I_B=0.5mA			0.25	V
	$V_{CE(sat)}$	I_C=100mA,I_B=5mA			0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=10mA,I_B=0.5mA		0.7		V
	$V_{BE(sat)}$	I_C=100mA,I_B=5mA		0.9		V
Base-emitter voltage	$V_{BE(on)}$	V_{CE}=5V,I_C=2mA	0.58		0.7	V
	$V_{BE(on)}$	V_{CE}=5V,I_C=10mA			0.72	V
Collector output capacitance	C_{ob}	V_{CB}=10V,I_E=0,f=1MHz			6.0	pF
Transition frequency	f_T	V_{CE}=5V,I_C=10mA,f=100MHz	100			MHz
Noise figure	NF	V_{CE}=5V,I_c=0.2mA, f=1kHz, Rg=2KΩ,Δf=200Hz			10	dB

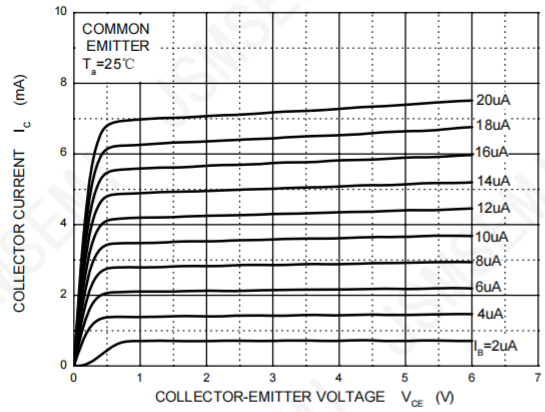
MAXIMUM RATINGS TR2 (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	-50	V
V_{CEO}	Collector-Emitter Voltage	-45	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current –Continuous	-0.1	A
P_{C*}	Collector Power Dissipation	200	mW
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55-150	℃

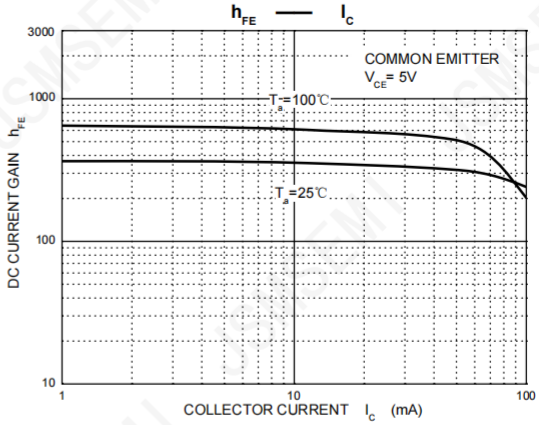
CHARACTERISTICS of TR2 (PNP Transistor) (Ta=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-10μA,I_E=0	-50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-10mA,I_B=0	-45			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-1μA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-30V,I_E=0			-15	nA
Emitter cut-off current	I_{EBO}	V_{EB}=-5V,I_C=0			-15	nA
DC current gain	h_{FE1}	V_{CE}=-5V,I_C=-2mA	220		475	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-10mA,I_B=-0.5mA			-0.3	V
	$V_{CE(sat)}$	I_C=-100mA,I_B=-5mA			-0.65	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=-10mA,I_B=-0.5mA		-0.7		V
	$V_{BE(sat)}$	I_C=-100mA,I_B=-5mA			-0.95	V
Base-emitter voltage	$V_{BE(on)}$	V_{CE}=-5V,I_C=-2mA	-0.6		-0.75	V
	$V_{BE(on)}$	V_{CE}=-5V,I_C=-10mA			-0.82	V
Collector output capacitance	C_{ob}	V_{CB}=-10V,I_E=0,f=1MHz			4.5	pF
Transition frequency	f_T	V_{CE}=-5V,I_C=-10mA,f=100MHz	100			MHz
Noise figure	NF	V_{CE}=-5V,I_c=-0.2mA, f=1kHz ,Rg=2KΩ, Δf=200Hz			10	dB

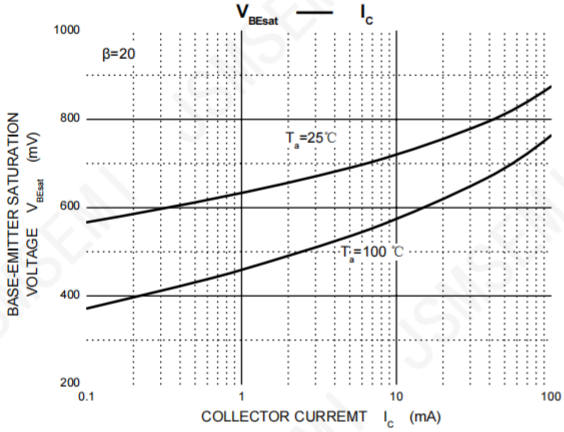
Static Characteristic



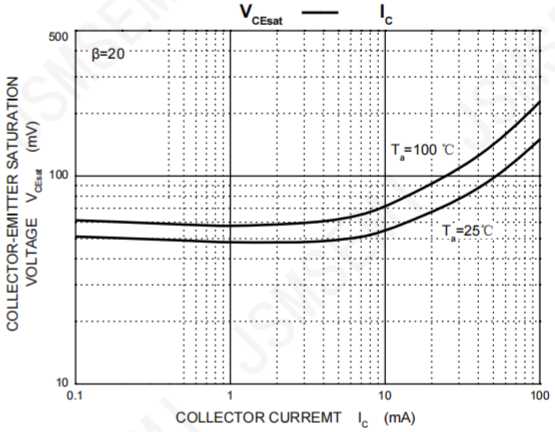
h_{FE} — I_C



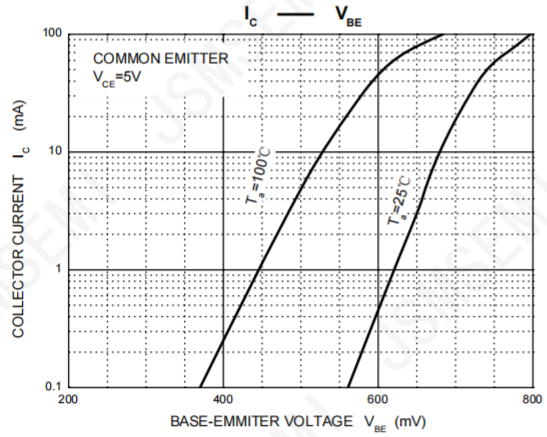
V_{BEsat} — I_C



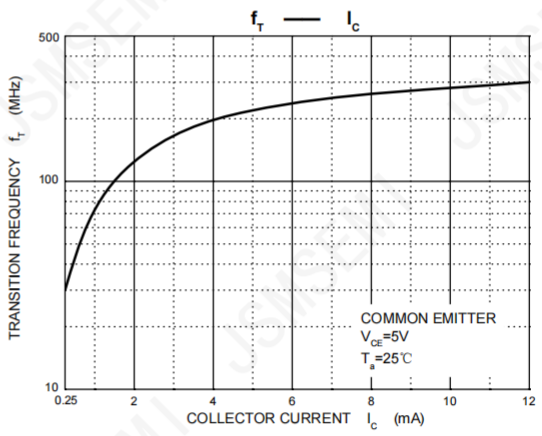
V_{CEsat} — I_C



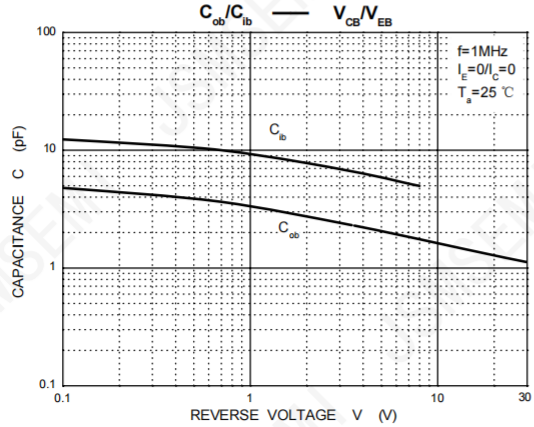
I_C — V_{BE}



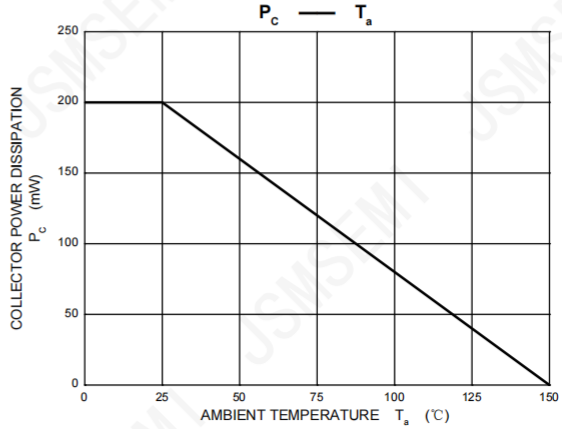
f_T — I_C

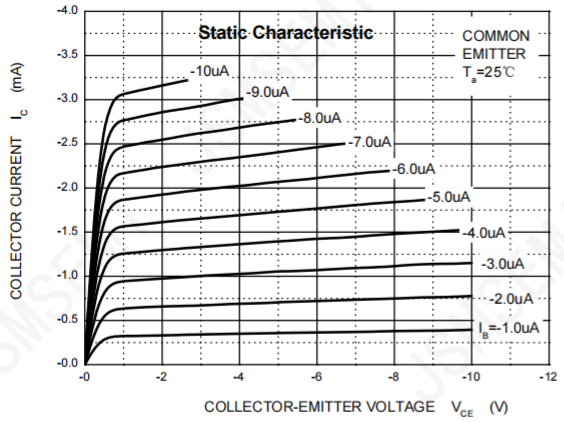


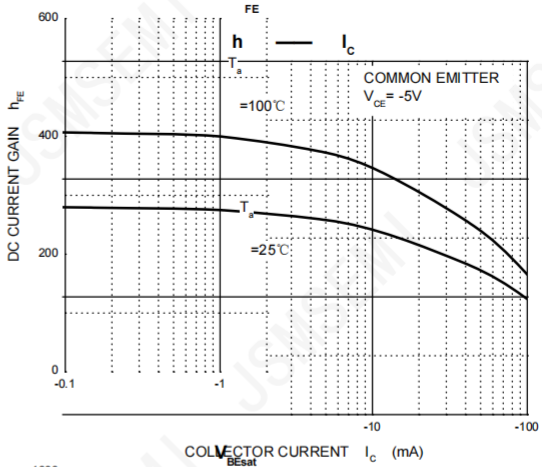
C_{ob}/C_{ib} — V_{CB}/V_{EB}

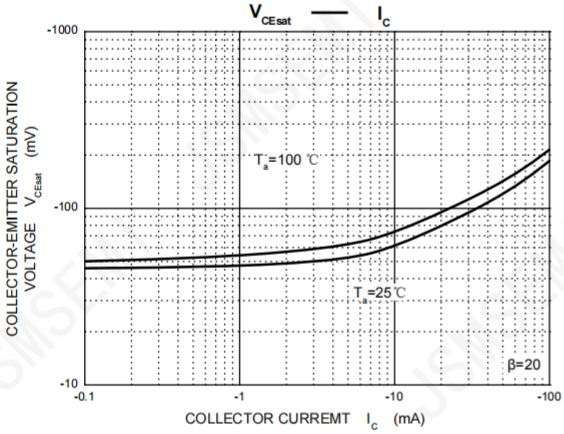


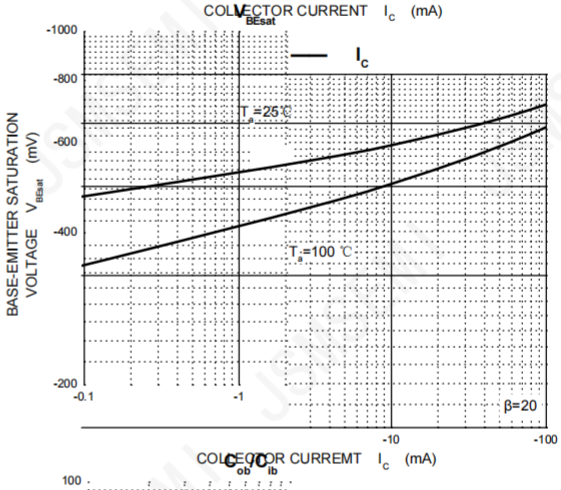
P_C — T_a

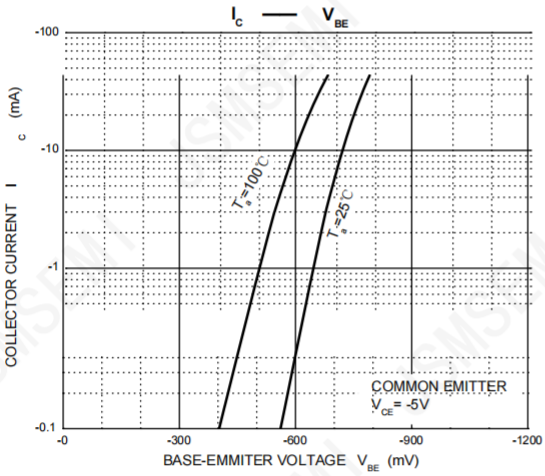


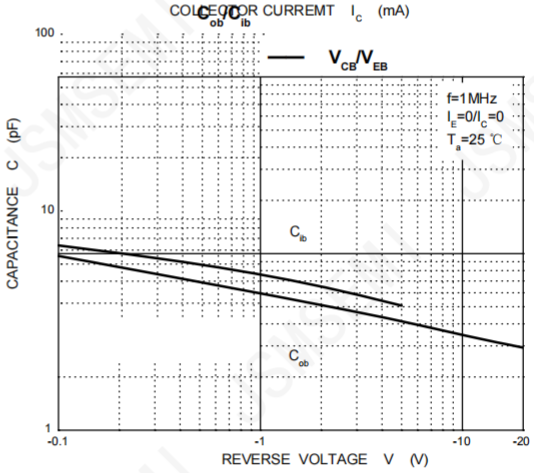

Static Characteristic
COMMON EMITTER
T_a=25℃
-10uA
-9.0uA
-8.0uA
-7.0uA
-6.0uA
-5.0uA
-4.0uA
-3.0uA
-2.0uA
I_B=-1.0uA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

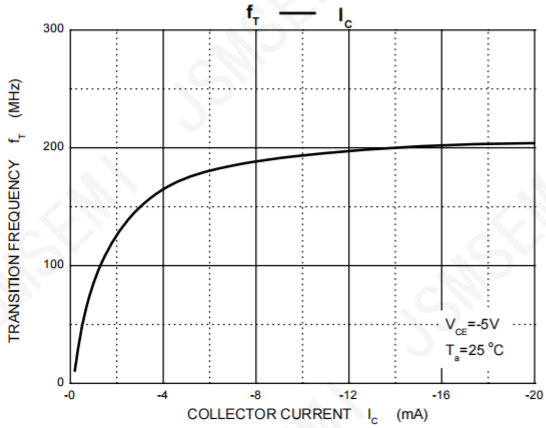

h_{FE} — I_C
T_a =100℃
T_a =25℃
COMMON EMITTER
V_{CE}= -5V
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)

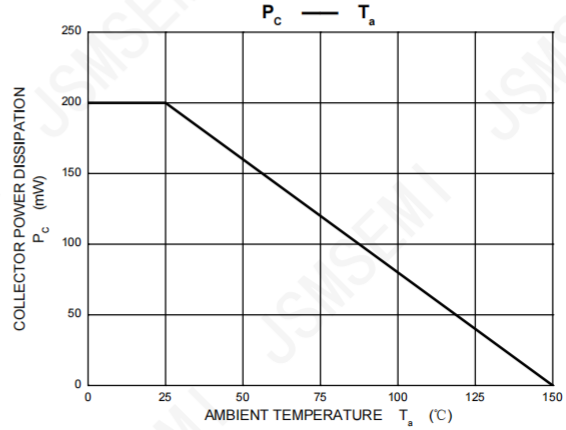

V_{CEsat} — I_C
T_a=100 ℃
T_a=25℃
β=20
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURREMT I_C (mA)


V_{BEsat} — I_C
T_a=25℃
T_a=100 ℃
β=20
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
COLLECTOR CURREMT I_C (mA)


I_C — V_{BE}
T_a=100℃
T_a=25℃
COMMON EMITTER
V_{CE}= -5V
COLLECTOR CURRENT I_C (mA)
BASE-EMMITER VOLTAGE V_{BE} (mV)


C_{ob} C_{ib} — V_{CB}/V_{EB}
f=1MHz
I_E=0/I_C=0
T_a=25 ℃
C_{ib}
C_{ob}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


f_T — I_C
V_{CE}=-5V
T_a=25 °C
TRANSITION FREQUENCY f_T (MHz)
COLLECTOR CURRENT I_C (mA)


P_C — T_a
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE T_a (℃)

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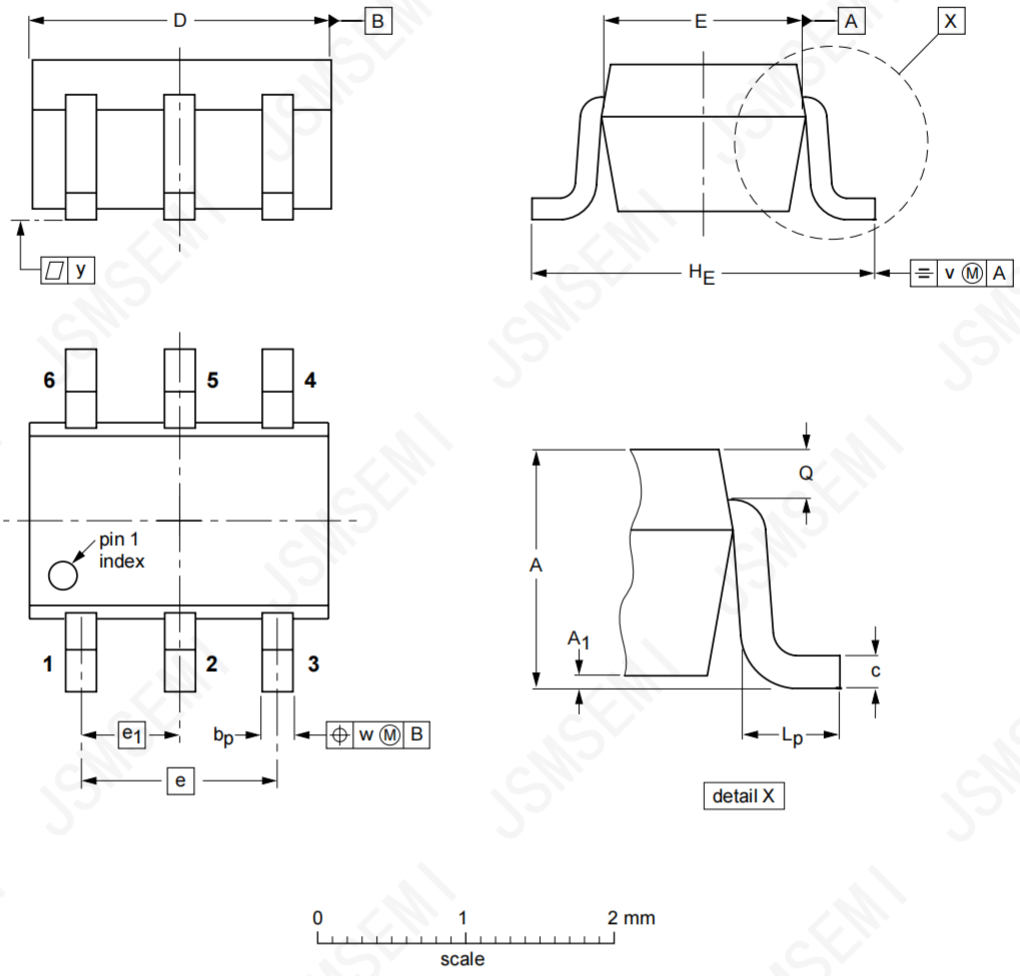

DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.4 2.15	0.45 0.15	0.25 0.15	0.2	0.2	0.1