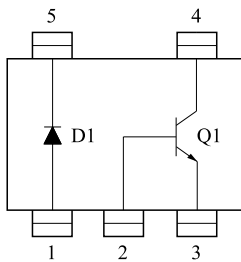


SWITCHING APPLICATION.
LOW VOLTAGE HIGH SPEED SWITCHING.

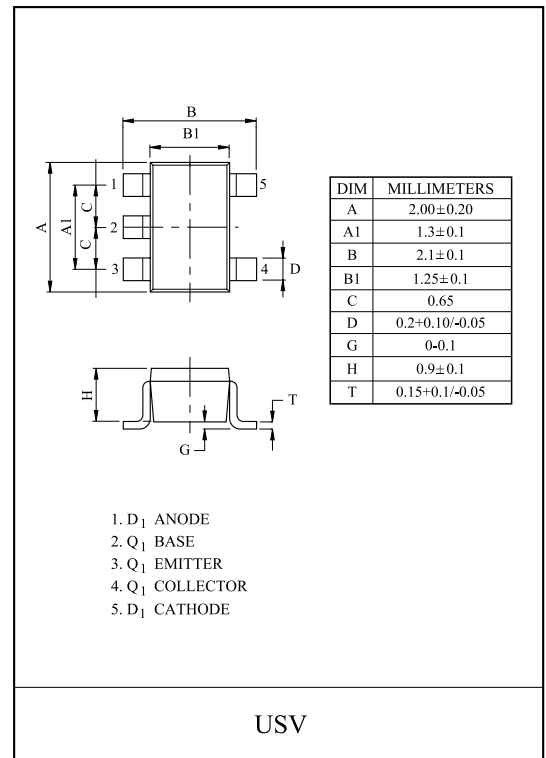
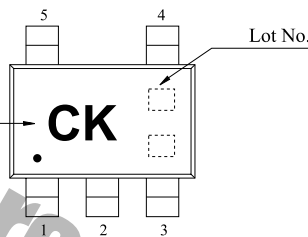
FEATURES

- Including two(TR, Diode) devices in USV.
(Ultra Super Mini type with 5 leads)
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.

EQUIVALENT CIRCUIT (TOP VIEW)



Marking



MAXIMUM RATINGS (Ta=25) TRANSISTOR Q₁

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V _{CB0}	15	V
Collector-Emitter Voltage	V _{CEO}	12	V
Emitter-Base Voltage	V _{EBO}	6	mA
Collector Current	I _C	500	mA
	I _{CP} *	1	A
Collector Power Dissipation	P _C	100	mW
Junction Temperature	T _j	150	
Storage Temperature Range	T _{stg}	-55~125	

DIODE (SBD) D₁

CHARACTERISTIC	SYMBOL	RATING	UNIT
Maximum (Peak) Reverse Voltage	V _{RM}	30	V
Reverse Voltage	V _R	30	V
Maximum (Peak) Forward Current	I _{FM}	300	mA
Average Forward Current	I _O	200	mA
Surge Current (10mS)	I _{FSM}	1	A
Junction Temperature	T _j	125	
Storage Temperature Range	T _{stg}	-55 125	

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ELECTRICAL CHARACTERISTICS (Ta=25) TRANSISTOR Q₁

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CB0}	V _{CB} =15V, I _E =0	-	-	100	nA
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _E =10μA	15	-	-	V
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =1mA	12	-	-	V
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E =10μA	6	-	-	V
DC Current Gain	h _{FE}	V _{CE} =2V, I _C =10mA	270	-	680	-
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _C =200mA, I _B =10mA	-	90	250	mV
Transition Frequency	f _T	V _{CE} =2V, I _C =10mA, f=100MHz	-	320	-	MHz
Collector Output Capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=1MHz	-	7.5	-	pF

DIODE (SBD) D₁

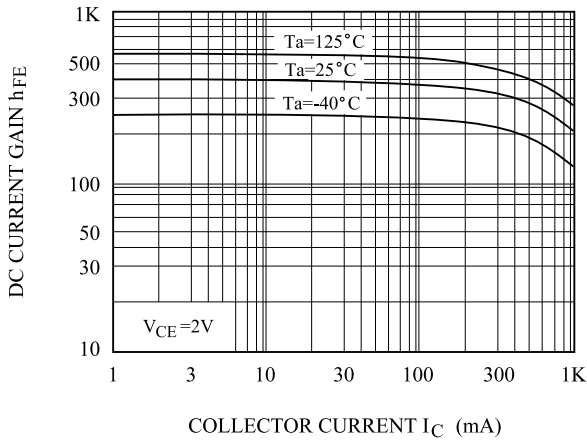
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Forward Voltage	V _{F(1)}	I _F =1mA	-	0.22	-	V
	V _{F(2)}	I _F =10mA	-	0.29	-	
	V _{F(3)}	I _F =100mA	-	0.38	-	
	V _{F(4)}	I _F =200mA	-	0.43	0.55	
Reverse Current	I _R	V _R =30V	-	-	50	μA
Total Capacitance	C _T	V _R =0, f=1MHz	-	50	-	pF

Not recommended
for new design

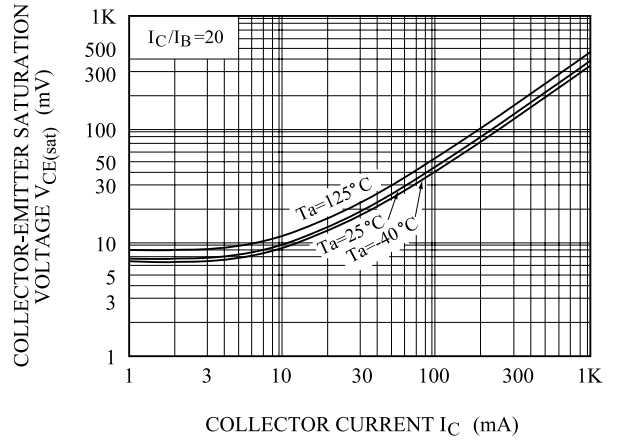
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Q₁ (NPN TRANSISTOR)

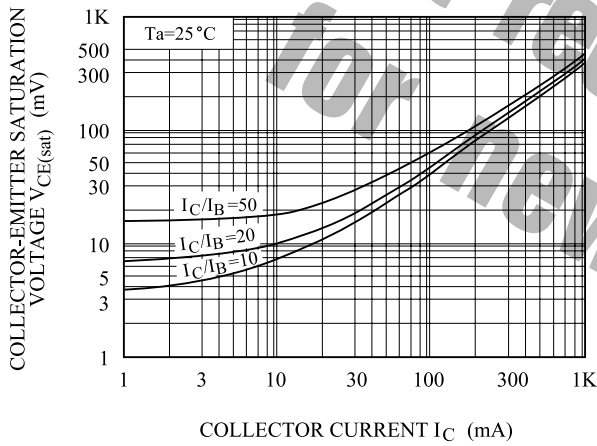
$h_{FE} - I_C$



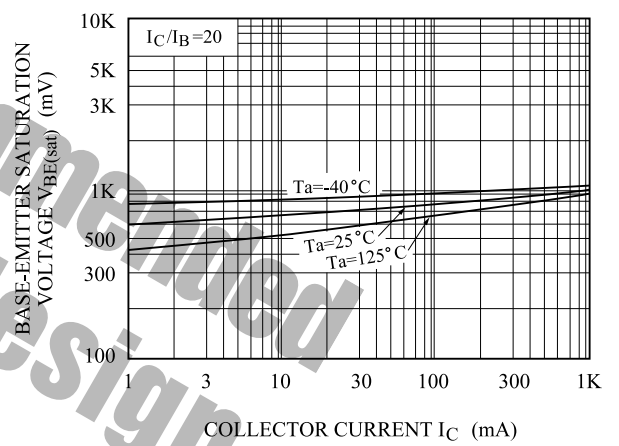
$V_{CE(sat)} - I_C$



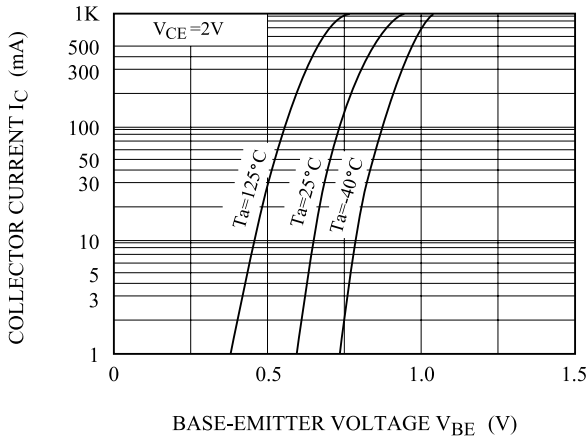
$V_{CE(sat)} - I_C$



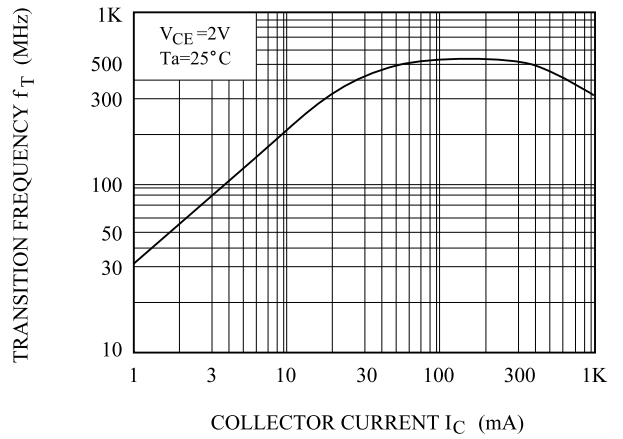
$V_{BE(sat)} - I_C$



$I_C - V_{BE}$

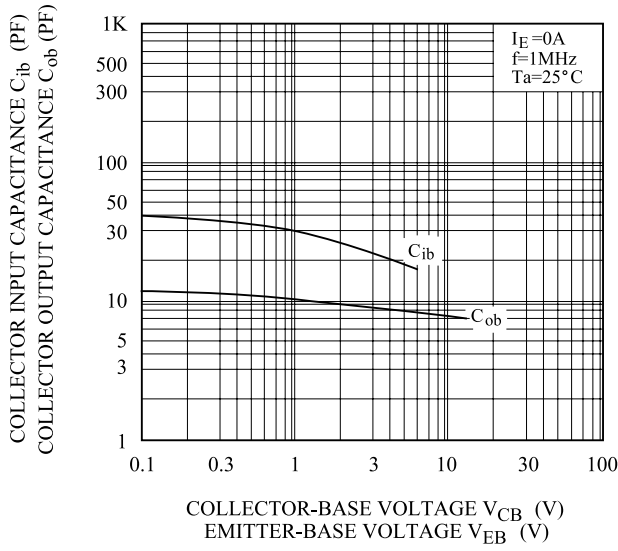


$f_T - I_C$

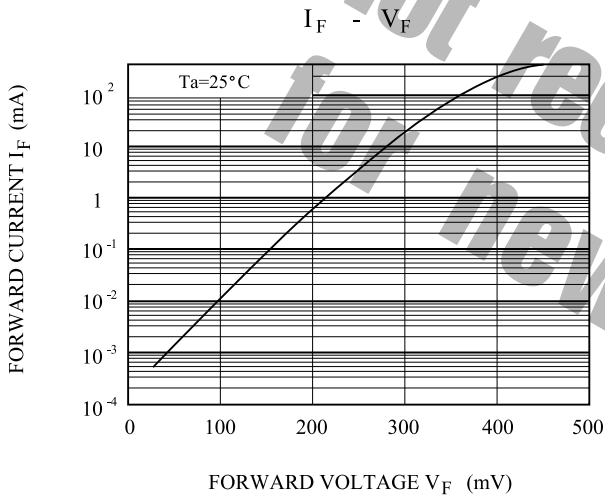


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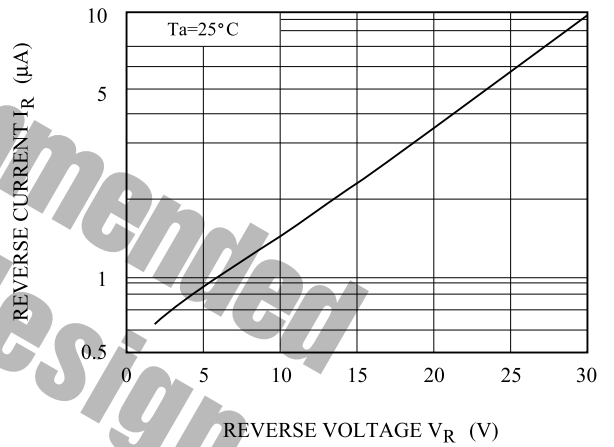
$C_{ob} - V_{CB}$, $C_{ib} - V_{EB}$



D_1 (SBD)



$I_R - V_R$



$C_T - V_R$

