

GENERAL PURPOSE APPLICATION.
SWITCHING APPLICATION.

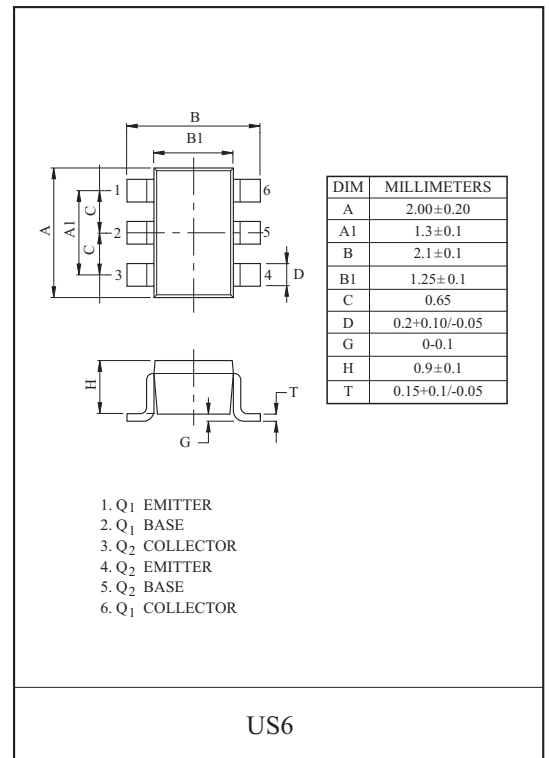
FEATURES

- Low Leakage Current
: $I_{CEX} = -50\text{nA}(\text{Max.})$, $I_{BL} = -50\text{nA}(\text{Max.})$
@ $V_{CE} = -30\text{V}$, $V_{EB} = -3\text{V}$.
- Excellent DC Current Gain Linearity.
- Low Saturation Voltage
: $V_{CE(\text{sat})} = -0.4\text{V}(\text{Max.})$ @ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$.
- Low Collector Output Capacitance
: $C_{ob} = 4.5\text{pF}(\text{Max.})$ @ $V_{CB} = 5\text{V}$.

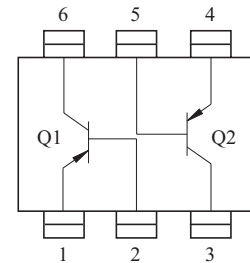
MAXIMUM RATING (Ta=25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-200	mA
Base Current	I_B	-50	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55 ~ 150	°C

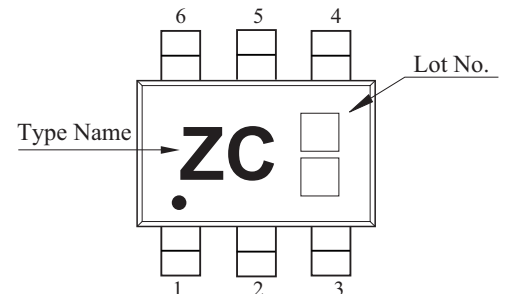
* Total Rating



EQUIVALENT CIRCUIT (TOP VIEW)



Marking



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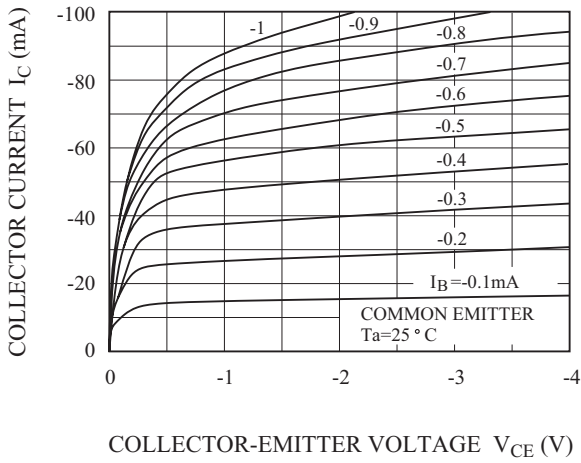
ELECTRICAL CHARACTERISTICS (Ta=25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CEX}	$V_{CE}=-30V, V_{EB}=-3V$	-	-	-50	nA
Base Cut-off Current		I_{BL}	$V_{CE}=-30V, V_{EB}=-3V$	-	-	-50	nA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	-40	-	-	V
Collector-Emitter Breakdown Voltage *		$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	-40	-	-	V
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-5.0	-	-	V
DC Current Gain	*	$h_{FE(1)}$	$V_{CE}=-1V, I_C=-0.1mA$	60	-	-	
		$h_{FE(2)}$	$V_{CE}=-1V, I_C=-1mA$	80	-	-	
		$h_{FE(3)}$	$V_{CE}=-1V, I_C=-10mA$	100	-	300	
		$h_{FE(4)}$	$V_{CE}=-1V, I_C=-50mA$	60	-	-	
		$h_{FE(5)}$	$V_{CE}=-1V, I_C=-100mA$	30	-	-	
Collector-Emitter Saturation Voltage *	*	$V_{CE(sat)1}$	$I_C=-10mA, I_B=-1mA$	-	-	-0.25	V
		$V_{CE(sat)2}$	$I_C=-50mA, I_B=-5mA$	-	-	-0.4	
Base-Emitter Saturation Voltage *	*	$V_{BE(sat)1}$	$I_C=-10mA, I_B=-1mA$	-0.65	-	-0.85	V
		$V_{BE(sat)2}$	$I_C=-50mA, I_B=-5mA$	-	-	-0.95	
Transition Frequency		f_T	$V_{CE}=-20V, I_C=-10mA, f=100MHz$	250	-	-	MHz
Collector Output Capacitance		C_{ob}	$V_{CB}=-5V, I_E=0, f=1MHz$	-	-	4.5	pF
Input Capacitance		C_{ib}	$V_{BE}=-0.5V, I_C=0, f=1MHz$	-	-	10	pF
Input Impedance		h_{ie}	$V_{CE}=-10V, I_C=-1mA, f=1kHz$	2.0	-	12	k Ω
Voltage Feedback Ratio		h_{re}		1.0	-	10	$\times 10^{-4}$
Small-Signal Current Gain		h_{fe}		100	-	400	
Collector Output Admittance		h_{oe}		3.0	-	60	$\mu \delta$
Noise Figure		NF		$V_{CE}=-5V, I_C=-0.1mA,$ $R_g=1k \Omega, f=10Hz \sim 15.7kHz$	-	-	4.0
Switching Time	Delay Time	t_d		-	-	35	nS
	Rise Time	t_r		-	-	35	
	Storage Time	t_{stg}		-	-	225	
	Fall Time	t_f		-	-	75	

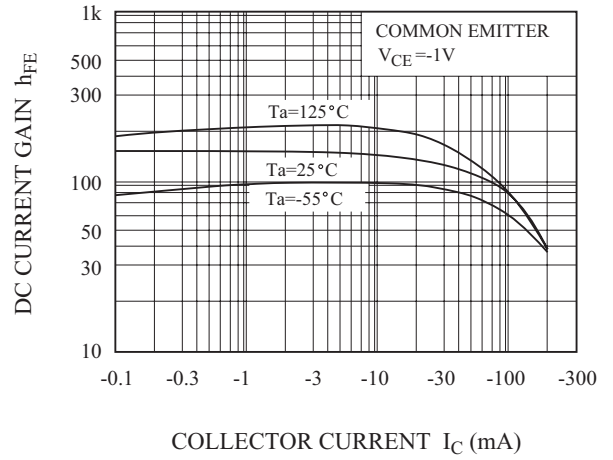
* Pulse Test : Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.

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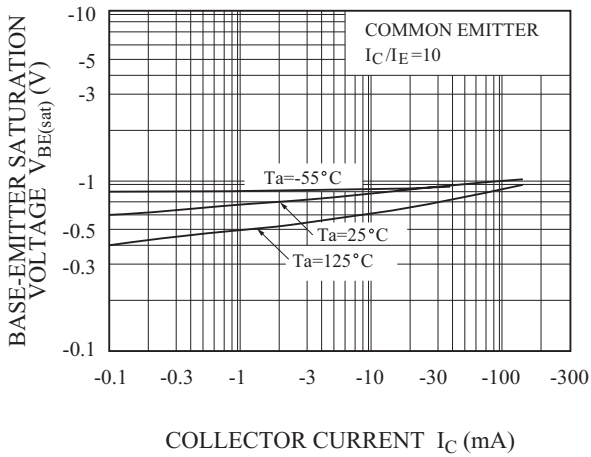
$I_C - V_{CE}$



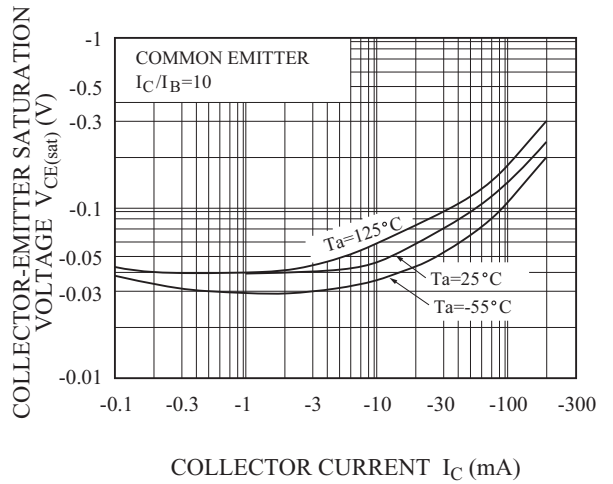
$h_{FE} - I_C$



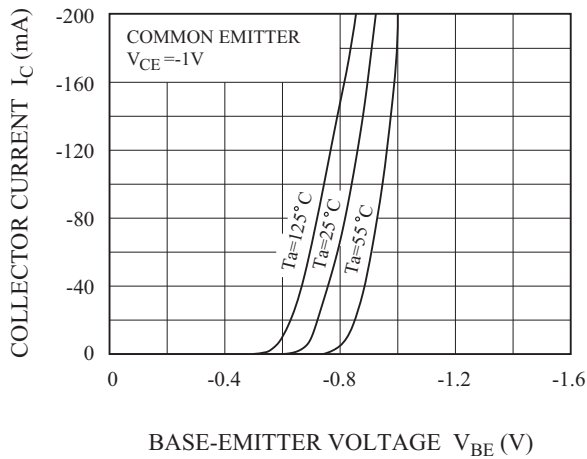
$V_{BE(sat)} - I_C$



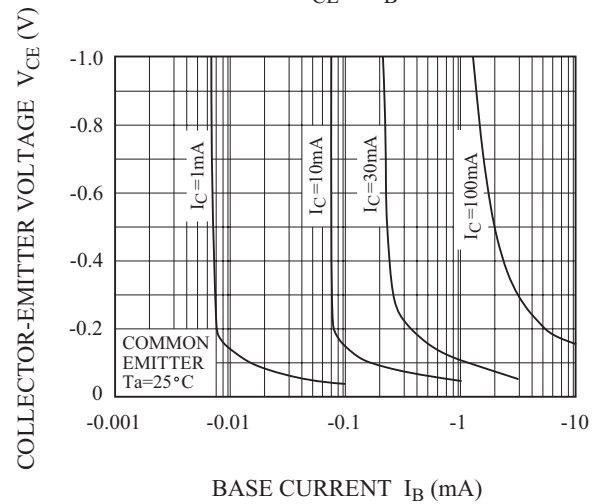
$V_{CE(sat)} - I_C$



$I_C - V_{BE}$

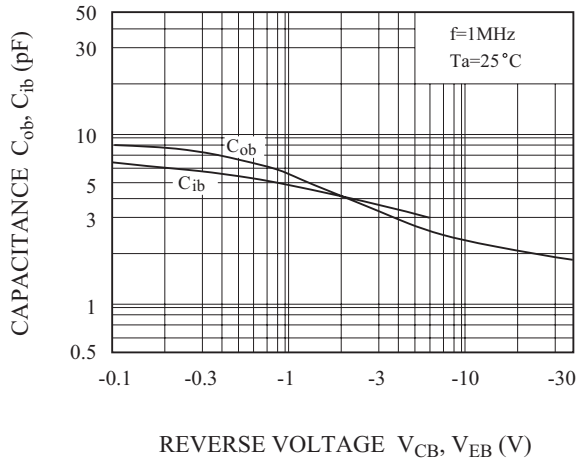


$V_{CE} - I_B$



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



$P_c - T_a$

