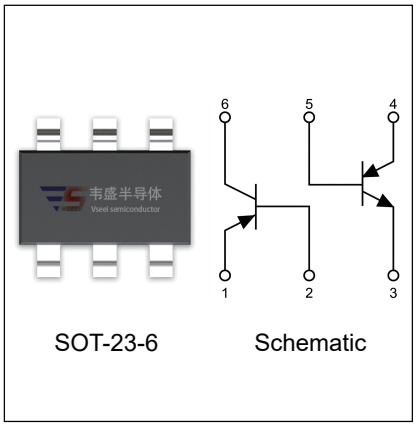
2045 Dual 40V complementary transistors



FEATURES

- 40V complementary device
- High h_{FE}
- Mounting cost and area can be cut in half

Tr1 NPN and Tr2 PNP Absolute Maximum Ratings (T_a=25℃)

Symbol	Parameter	Value		Unit
		NPN	PNP	
V_{CBO}	Collector-Base Voltage	40	-40	V
V_{CEX}	Collector-Emitter Voltage	40	-40	V
V_{CEO}	Collector-Emitter Voltage	30	-30	V
V_{EBO}	Emitter-Base Voltage	7	-7	V
I_C	Collector Current- Continuous	1.5	-1.5	A
I_{CM}	Collector Current- Peak	5	-5	A
P_C	Collector Power Dissipation	350	350	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	357	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150		℃

ELECTRICAL CHARACTERISTICS

Tr1 NPN (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=100μA, I_E=0	40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$*	I_C=10mA, I_B=0	30			V
Collector-emitter breakdown voltage	$V_{(BR)CEX}$	I_C=1μA, $V_{BE(off)}$=-0.5V	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=100μA, I_C=0	7			V
Collector cut-off current	I_{CBO}	V_{CB}=32V, I_E=0			20	nA
Collector cut-off current	I_{CER}	V_{CE}=16V, R≤1kΩ			20	nA
Emitter cut-off current	I_{EBO}	V_{EB}=6V, I_C=0			20	nA
DC current gain	h_{FE}*	V_{CE}=2V, I_C=100mA	180		500	
Collector-emitter saturation voltage	$V_{CE(sat)}$*	I_C=750mA, I_B=15mA			0.375	V
Base-emitter saturation voltage	$V_{BE(sat)}$*				1.2	V

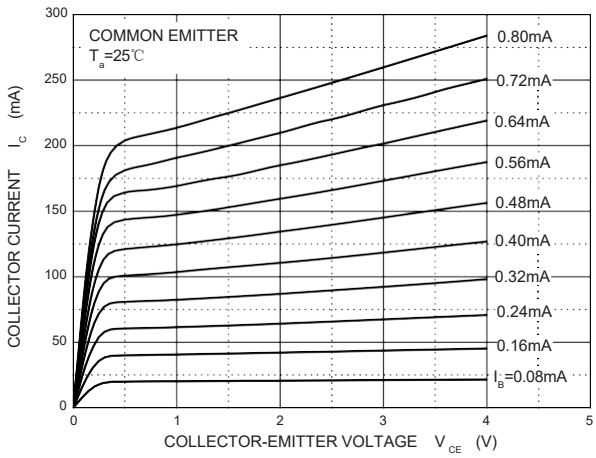
Tr2 PNP (T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-100μA, I_E=0	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$*	I_C=-10mA, I_B=0	-30			V
Collector-emitter breakdown voltage	$V_{(BR)CEX}$	I_C=-1μA, $V_{BE(off)}$=0.5V	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-100μA, I_C=0	-7			V
Collector cut-off current	I_{CBO}	V_{CB}=-32V, I_E=0			-20	nA
Collector cut-off current	I_{CER}	V_{CE}=-16V, R≤1kΩ			-20	nA
Emitter cut-off current	I_{EBO}	V_{EB}=-6V, I_C=0			-20	nA
DC current gain	h_{FE}*	V_{CE}=-2V, I_C=-100mA	180		500	
Collector-emitter saturation voltage	$V_{CE(sat)}$*	I_C=-750mA, I_B=-15mA			-0.375	V
Base-emitter saturation voltage	$V_{BE(sat)}$*				-1.2	V

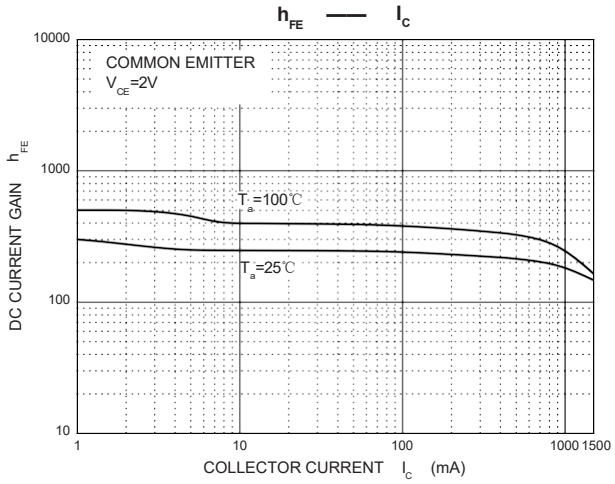
*Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.

NPN Transistor

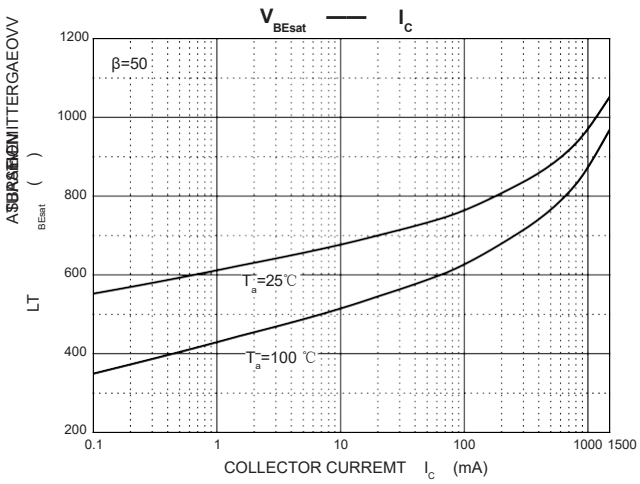
Static Characteristic



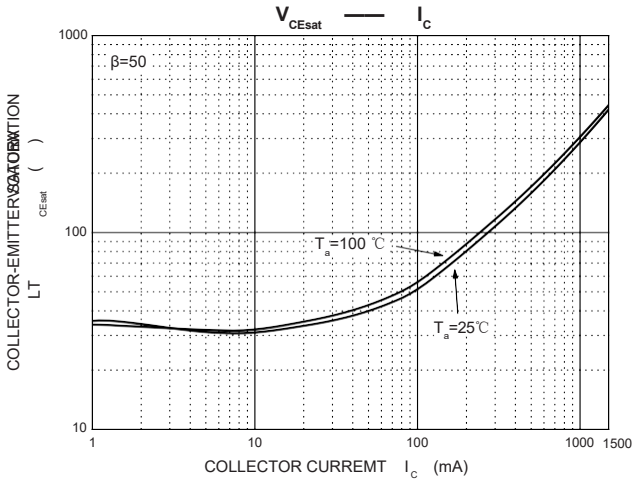
h_{FE} —— I_C



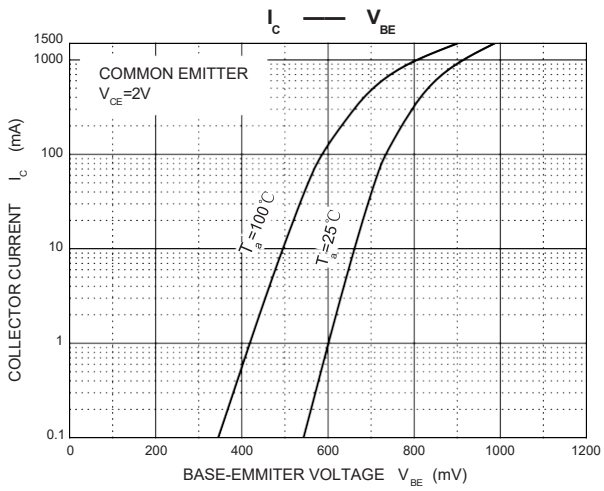
V_{BEsat} —— I_C



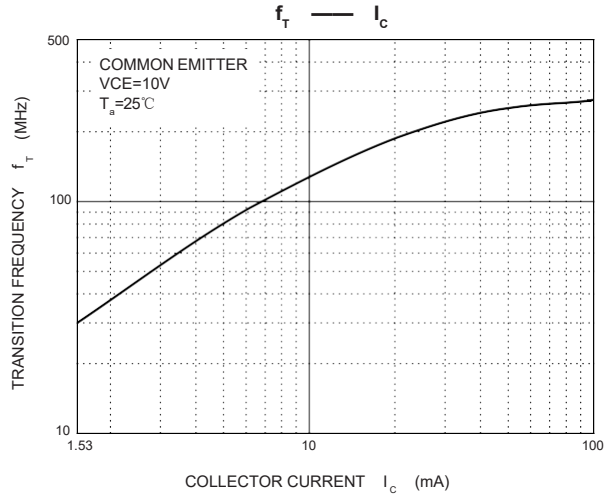
V_{CEsat} —— I_C



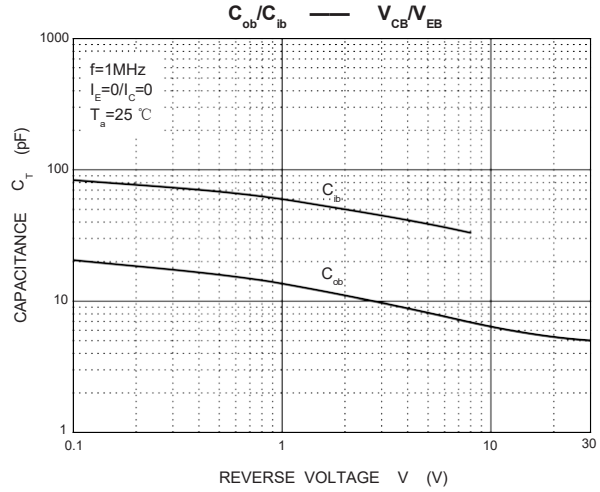
I_C —— V_{BE}



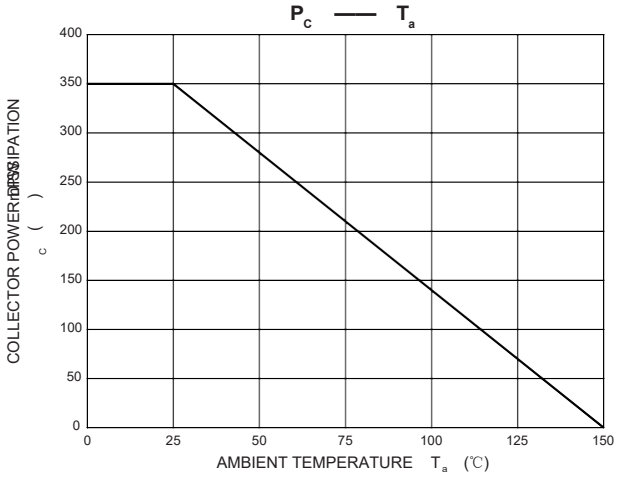
f_T —— I_C



C_{ob}/C_{ib} —— V_{CB}/V_{EB}

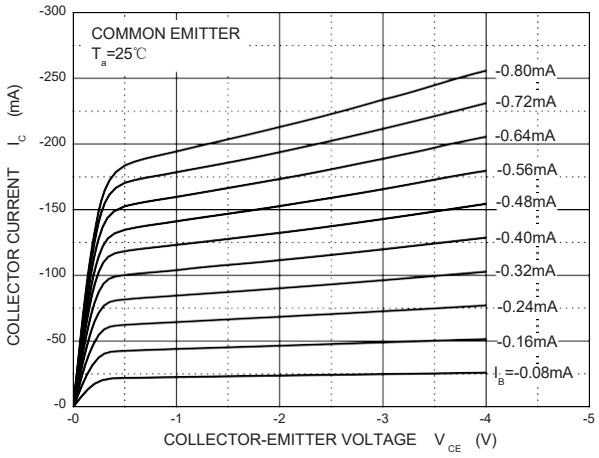


P_C —— T_a

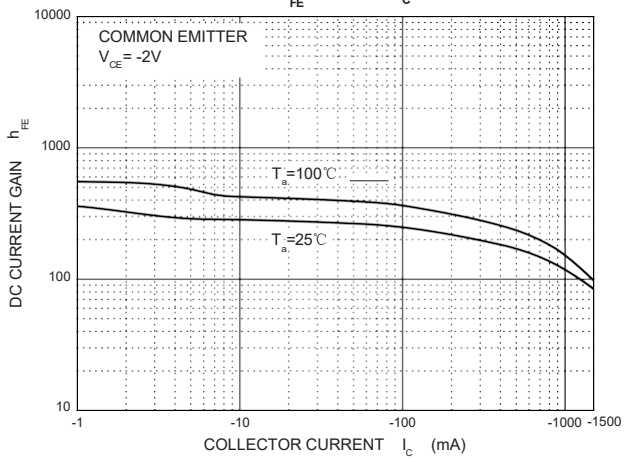


PNP Transistor

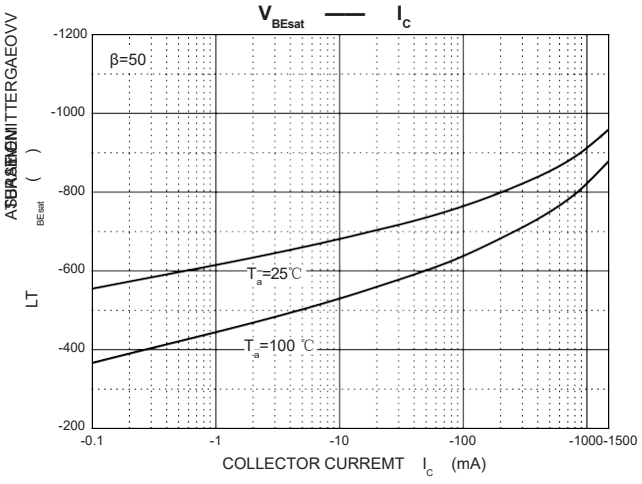
Static Characteristic



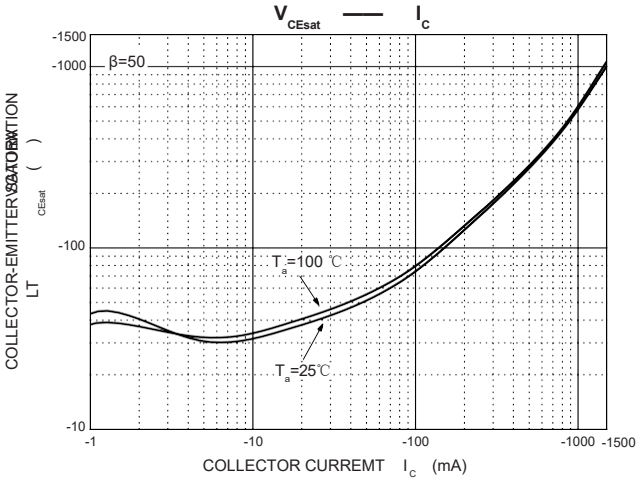
h_{FE} —— I_C



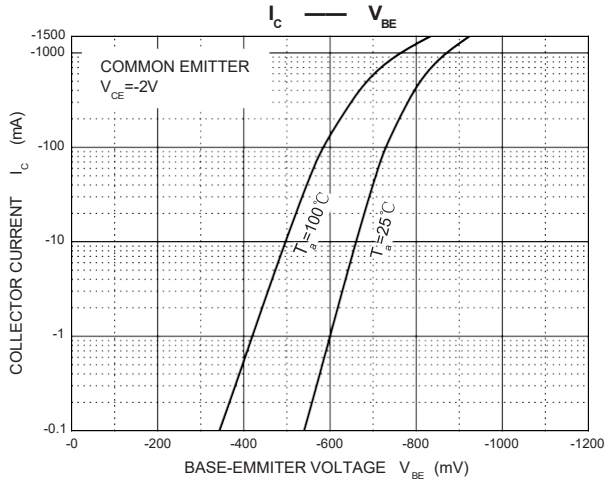
V_{BEsat} —— I_C



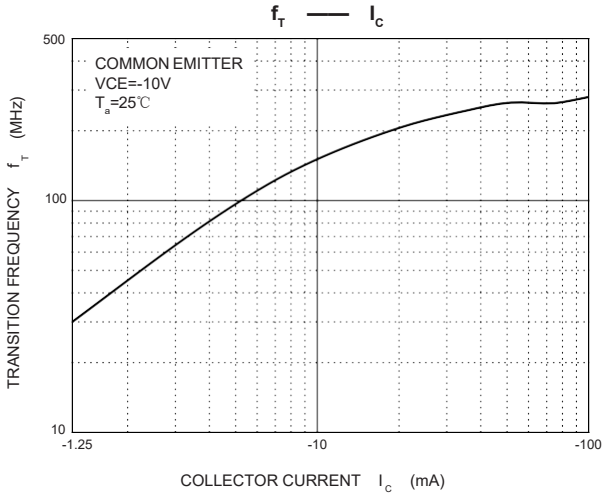
V_{CEsat} —— I_C



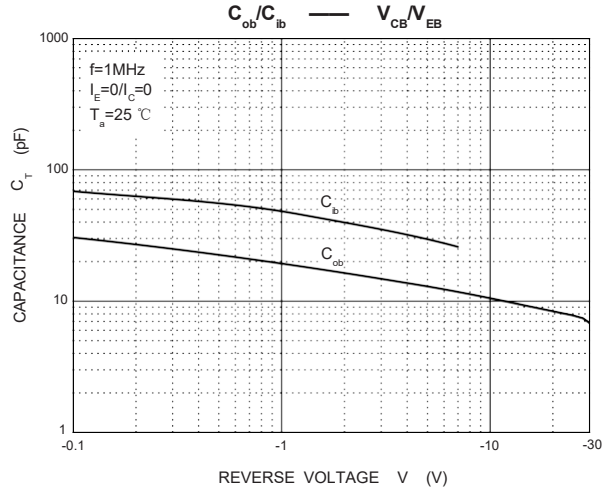
I_C —— V_{BE}



f_T —— I_C



C_{ob}/C_{ib} —— V_{CB}/V_{EB}



P_C —— T_a