



### Features

- High current gain
- Excellent  $h_{FE}$  linearity
- Low noise

### Mechanical data

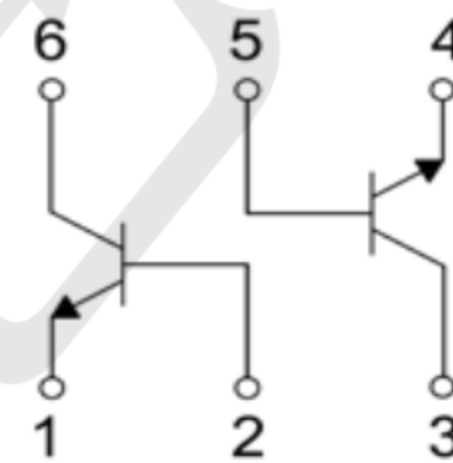
- Case: SOT-363
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

### Ordering Information

- Shipping Qty:3000/7inch Tape& Reel



### Circuit Diagram



### Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

Parameter	Symbol	TPBC847S	Unit
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	45	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current (Continuous)	$I_C$	100	mA
Collector Current (Peak)	$I_{CM}$	200	mA

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (Collector)	$P_D$	300	mW
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	417	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	260	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	320	°C/W
Operating Junction Temperature	$T_J$	-55 ~ +150	°C
Storage Temperature Range	$T_{STG}$	-55 ~ +150	°C



**Electrical Characteristics NPN 4401 (TA=25°C unless otherwise specified)**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 10\mu A, I_E = 0$	50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10mA, I_B = 0$	45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu A, I_C = 0$	6	-	-	V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30V, I_E = 0$	-	-	15	nA
		$V_{CB} = 30V, I_E = 0$ $T_J = 150^\circ C$	-	-	5	$\mu A$
Emitter-base Cut-off Current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	-	-	100	nA
Collector-emitter Cut-off Current	$I_{CEO}$	$V_{CE} = 30V, I_B = 0$	-	-	1	mA
DC Current Gain	$h_{FE}$	$V_{CE} = 5V, I_C = 10\mu A$	-	250	-	-
DC Current Gain		$V_{CE} = 5V, I_C = 2mA$	200	-	450	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 0.5mA$	-	0.09	0.25	V
		$I_C = 100mA, I_B = 5mA$	-	0.20	0.60	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 0.5mA$	-	0.70	0.90	V
		$I_C = 100mA, I_B = 5mA$	-	0.90	1.10	V
Base-Emitter Voltage	$V_{BE(ON)}$	$V_{CE} = 5V, I_C = 2mA$	0.58	0.66	0.70	V
		$V_{CE} = 5V, I_C = 10mA$	-	-	0.77	V
Transition Frequency	$f_T$	$V_{CE} = 5V, I_C = 10mA$ $f = 100MHz$	100	-	-	MHz



Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)

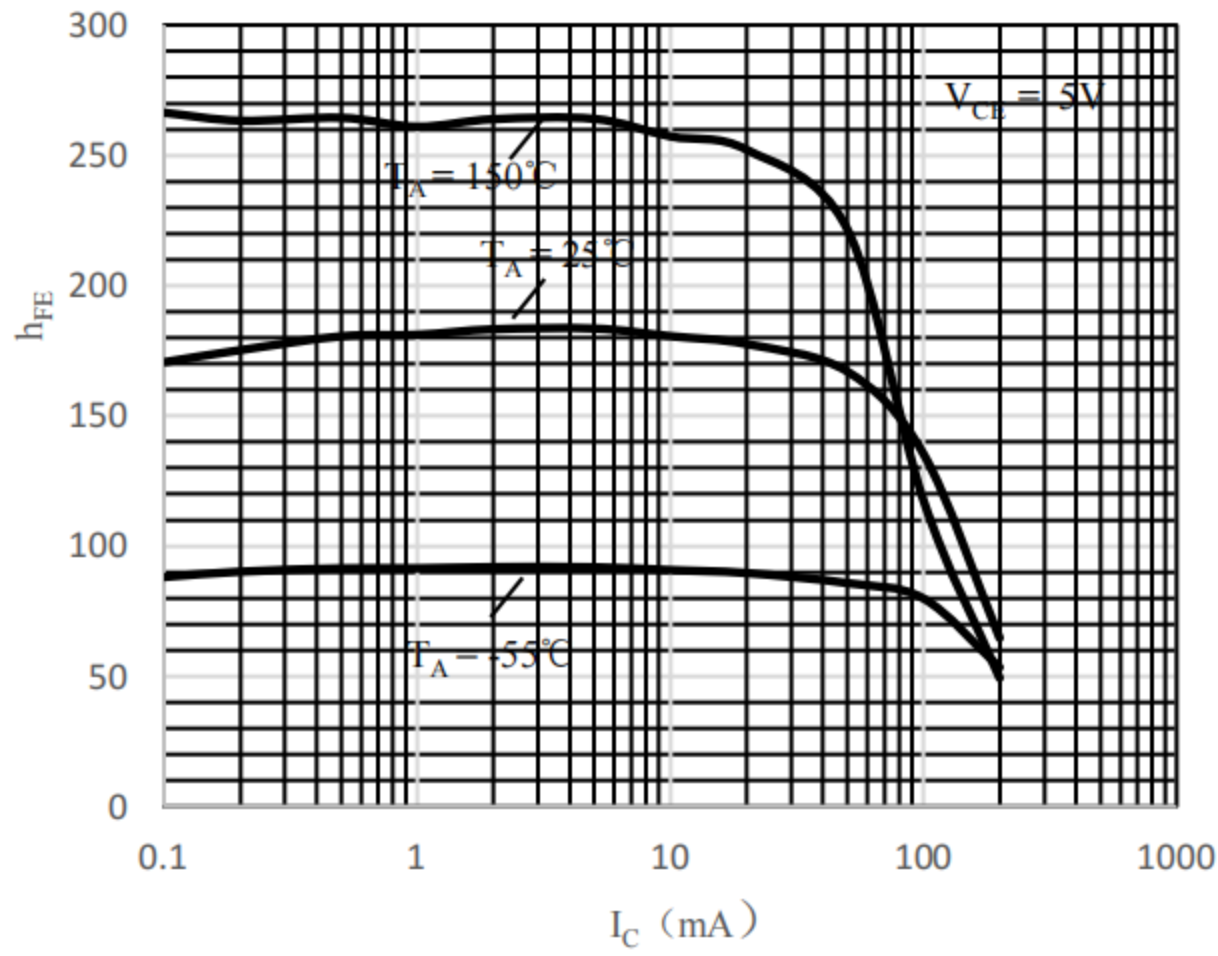


Fig 1  $h_{FE}$  vs.  $I_C$

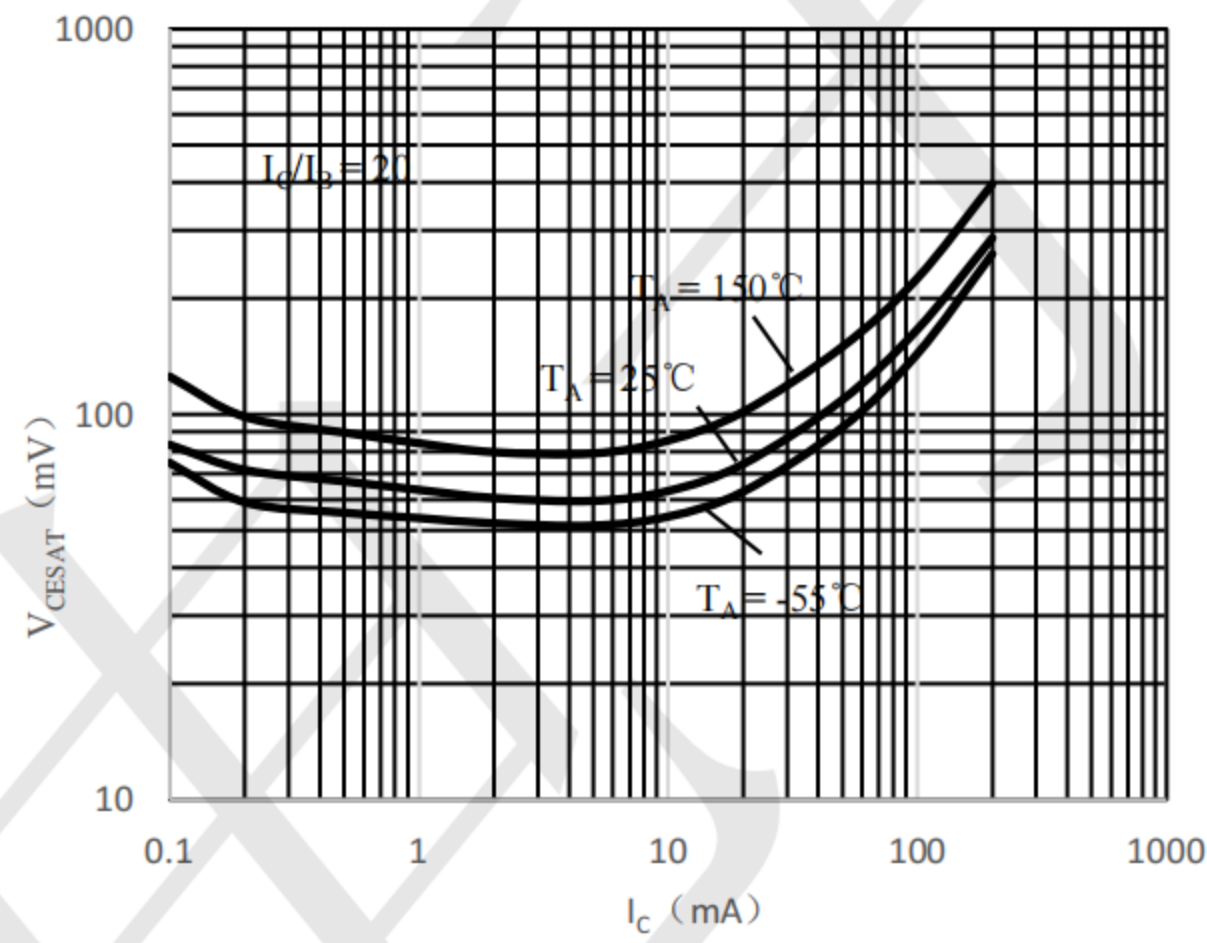


Fig 2  $V_{CE(sat)}$  vs.  $I_C$

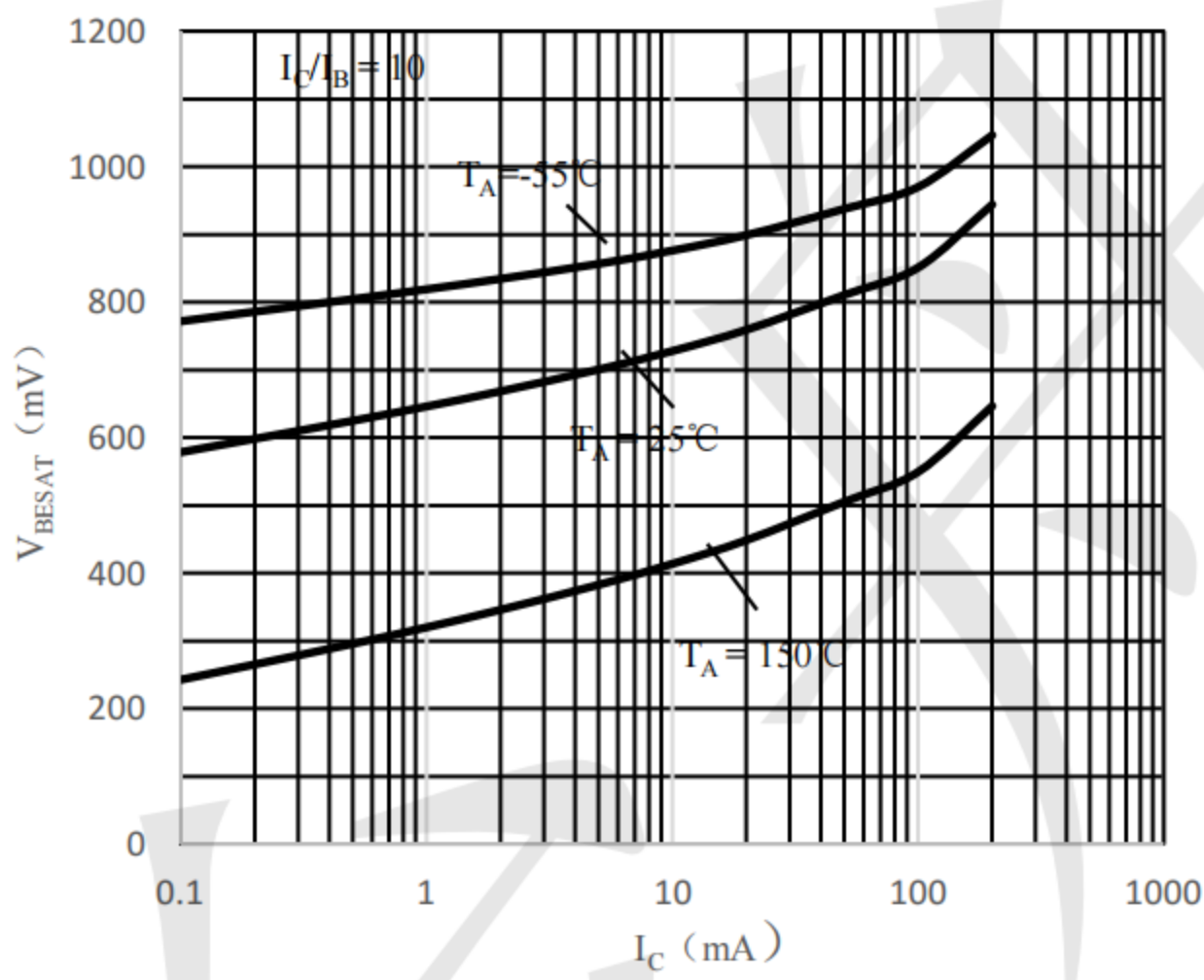


Fig 3  $V_{BE(sat)}$  vs.  $I_C$

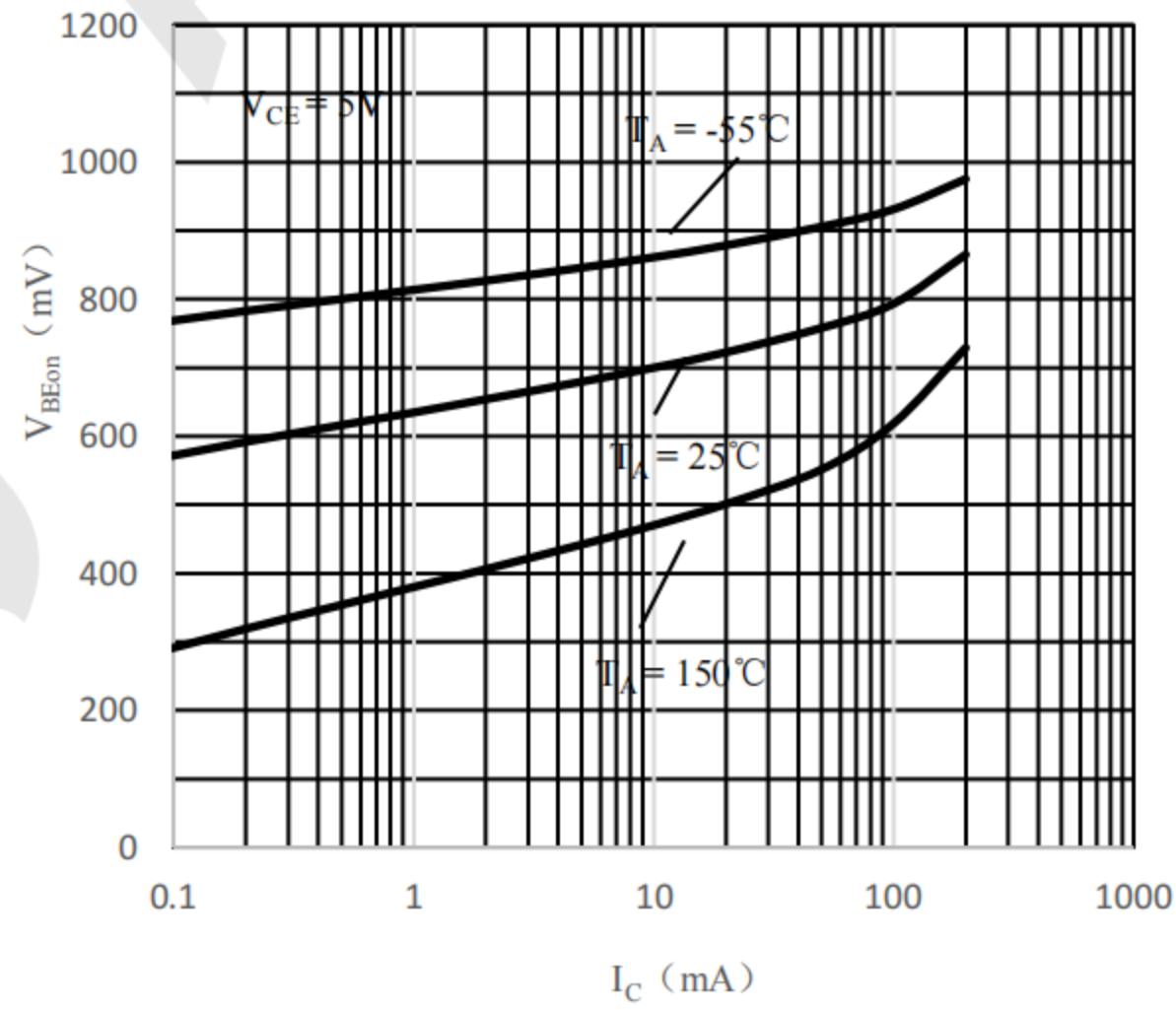


Fig 4  $V_{BE(on)}$  vs.  $I_C$



Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)

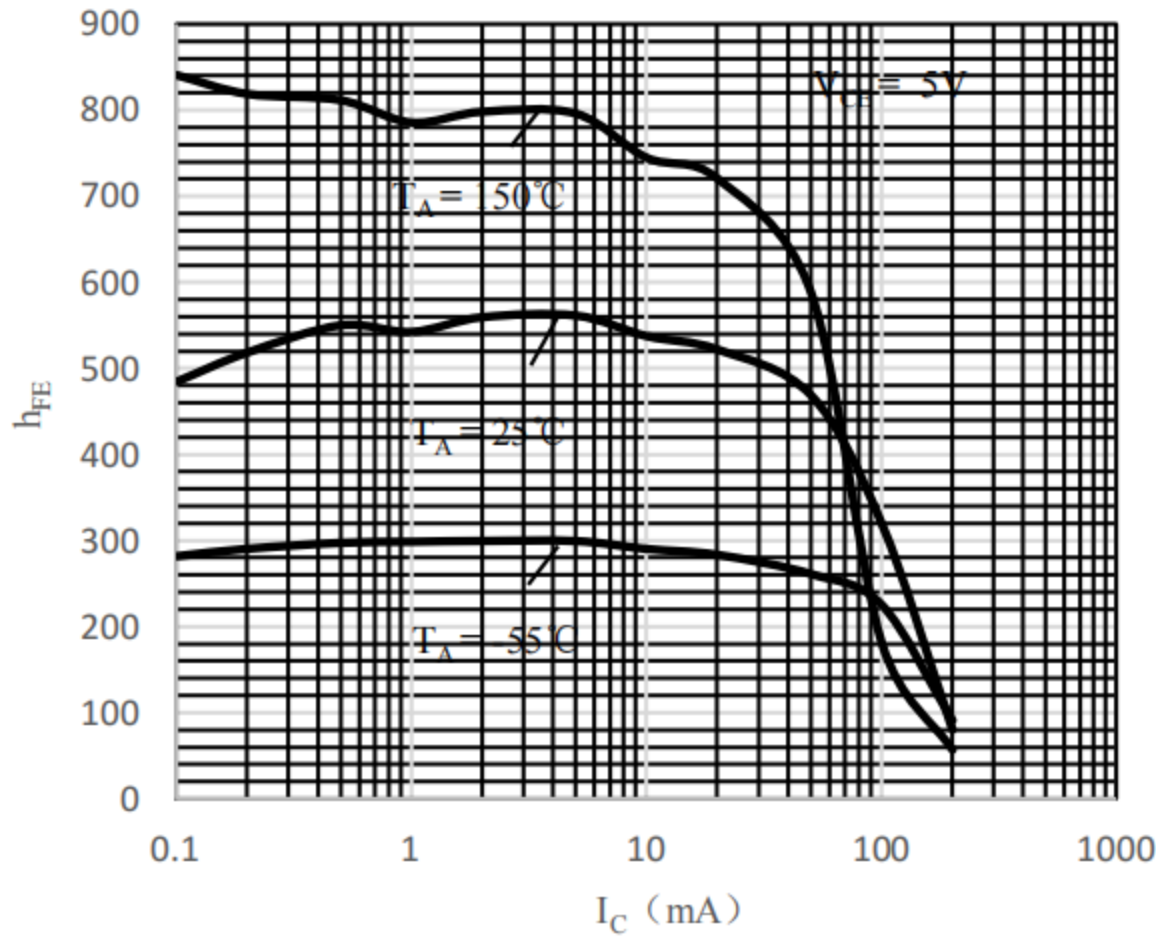


Fig 1  $h_{FE}$  vs.  $I_C$

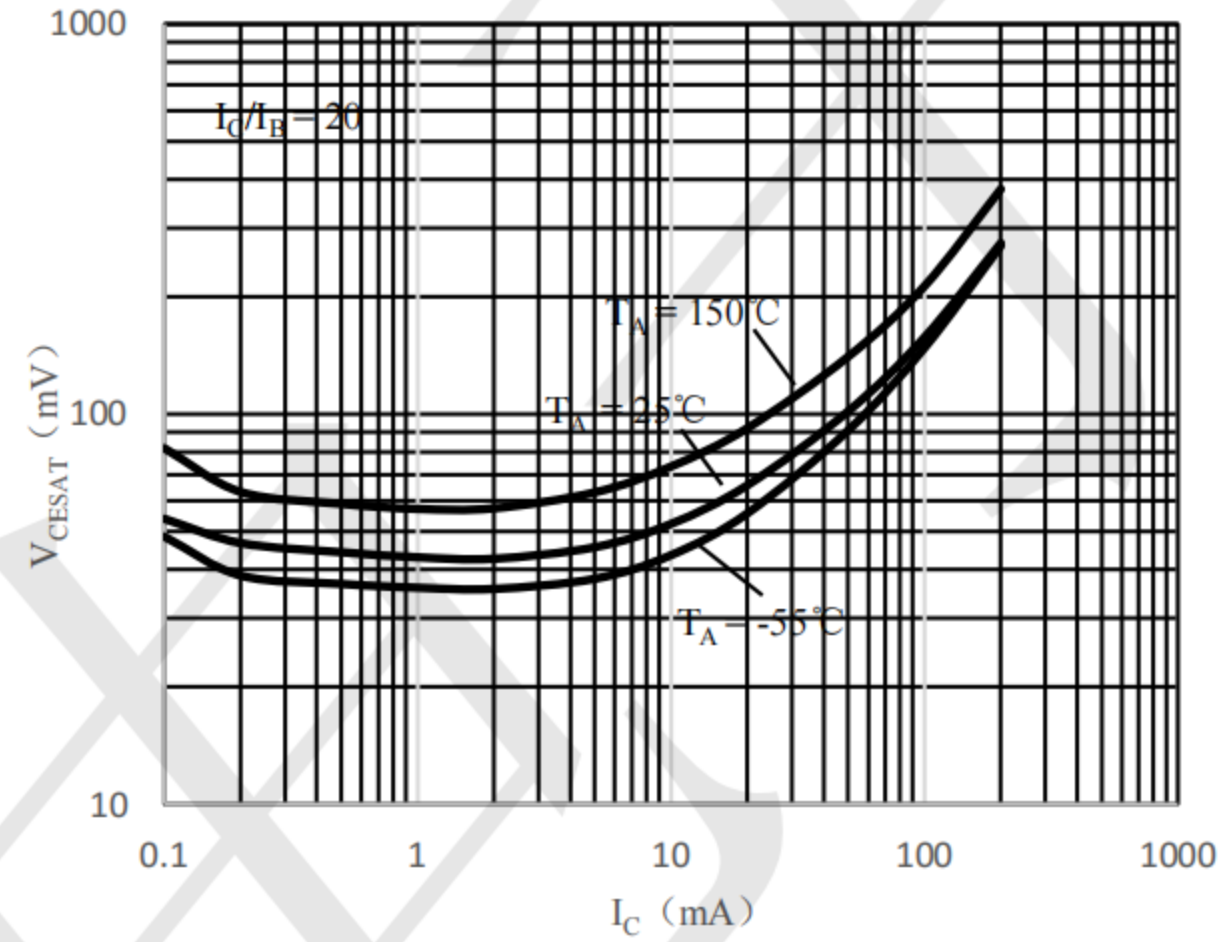


Fig 2  $V_{CE(sat)}$  vs.  $I_C$

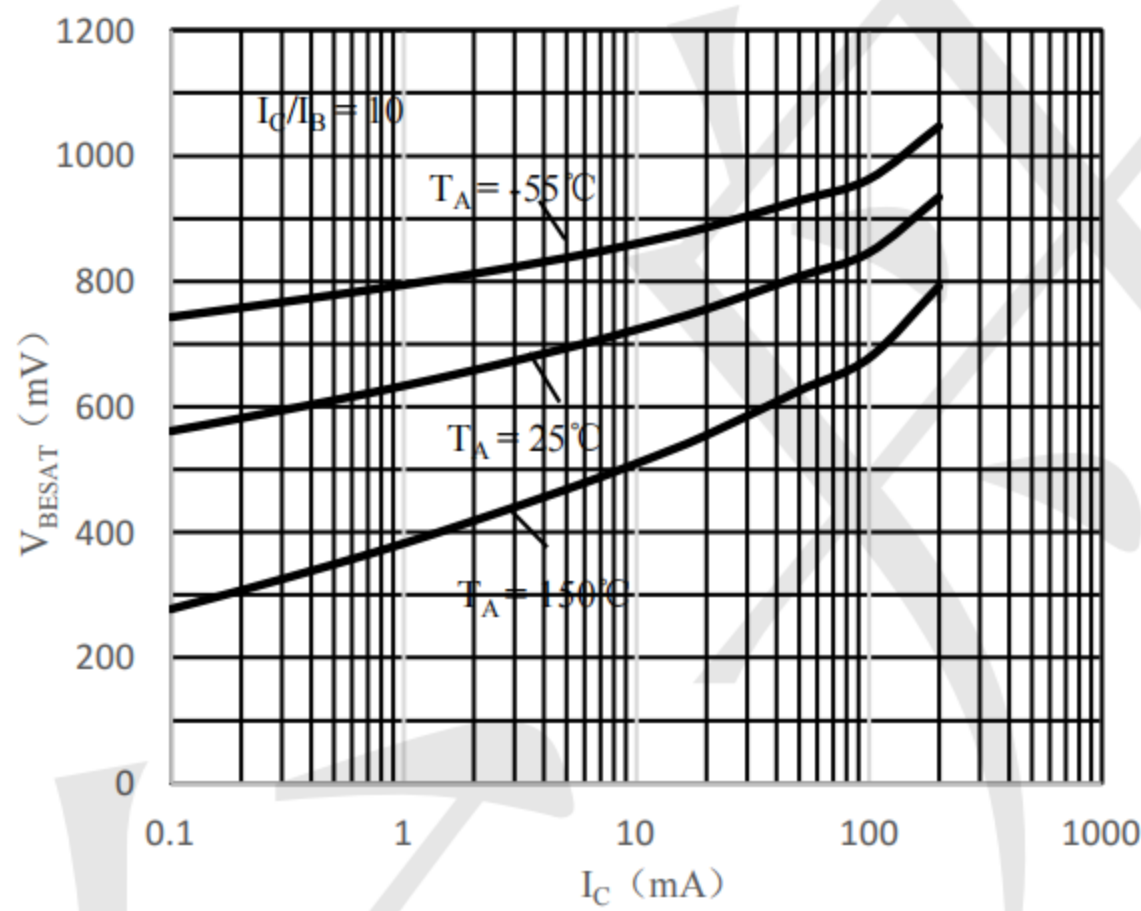


Fig 3  $V_{BE(sat)}$  vs.  $I_C$

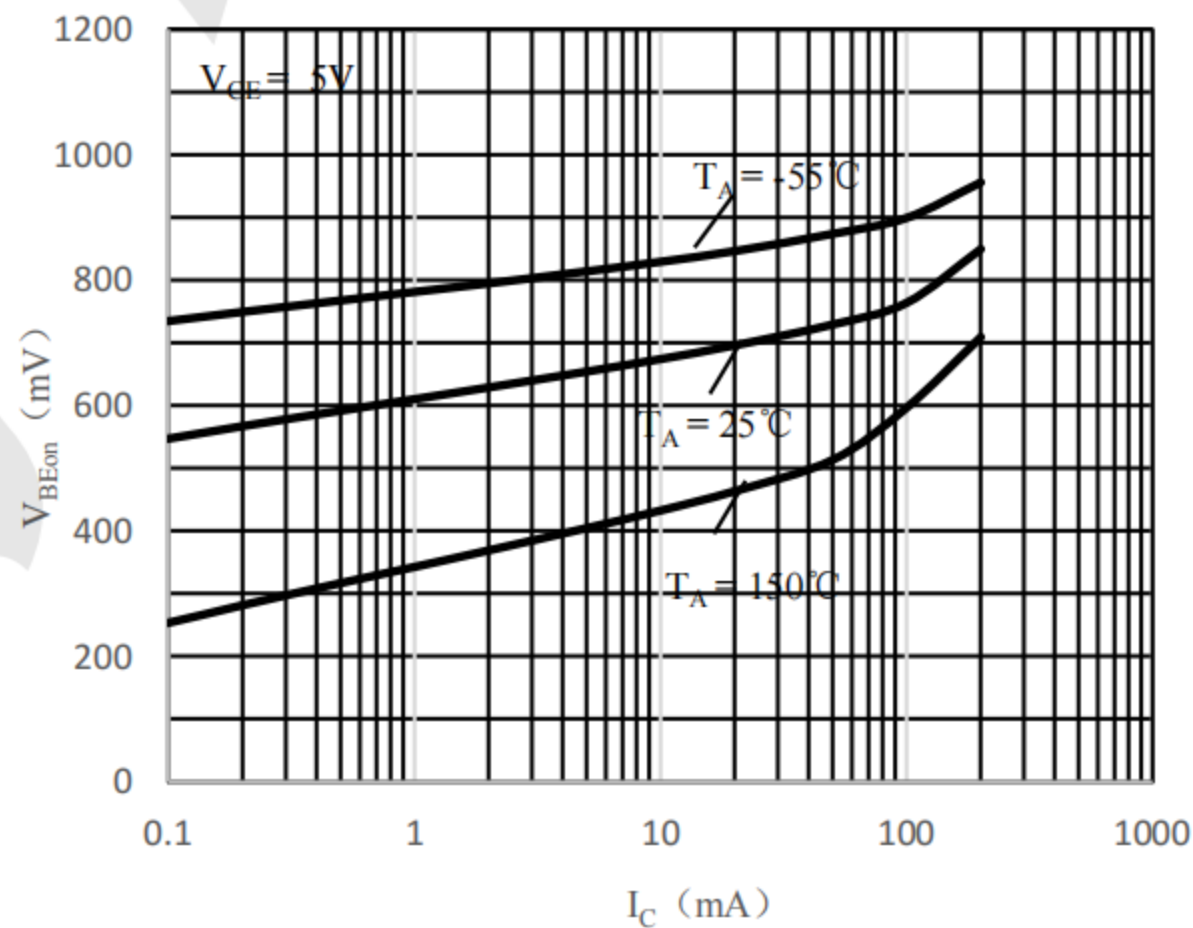


Fig 4  $V_{BE(on)}$  vs.  $I_C$



Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)

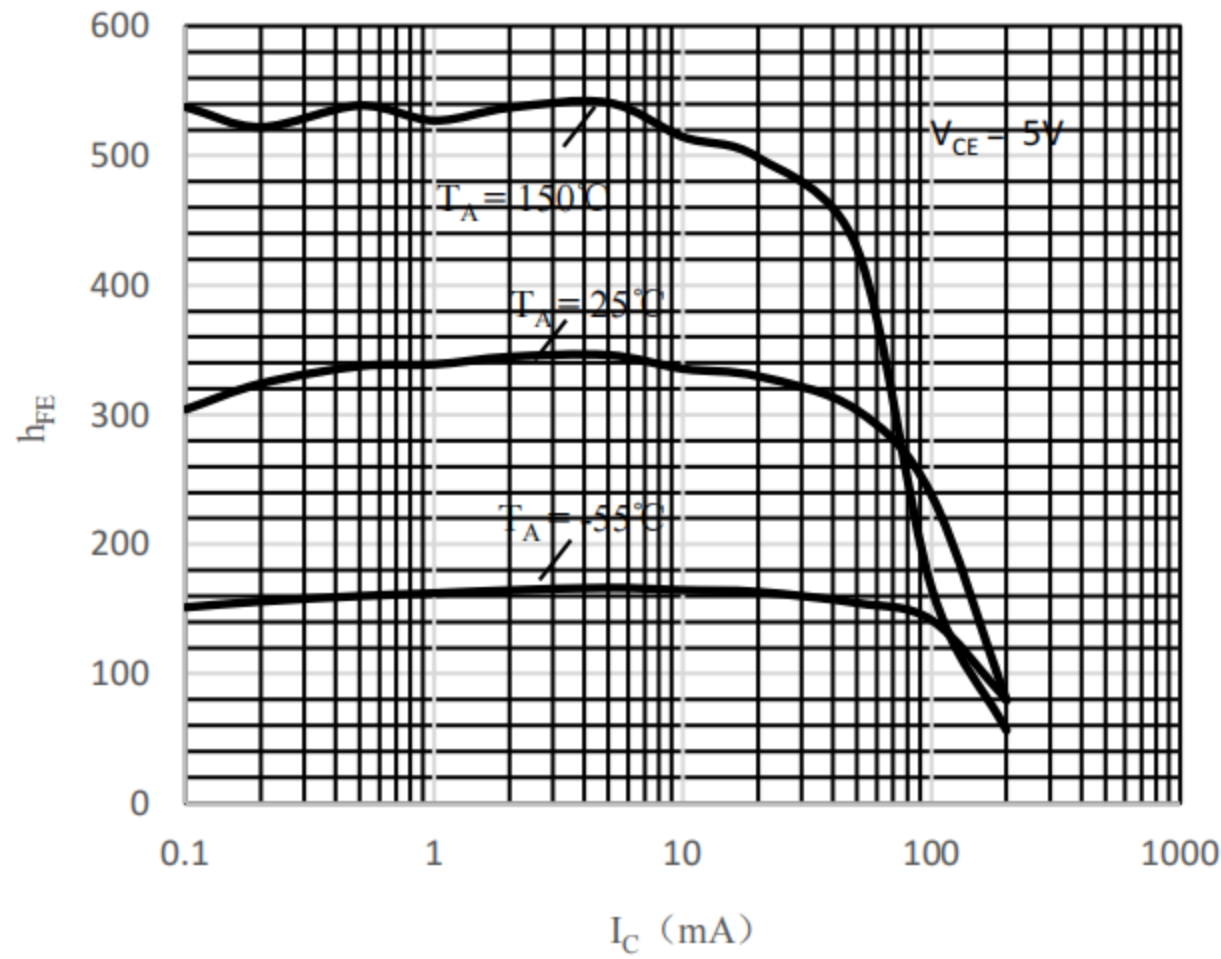


Fig 1 h<sub>FE</sub> vs. I<sub>C</sub>

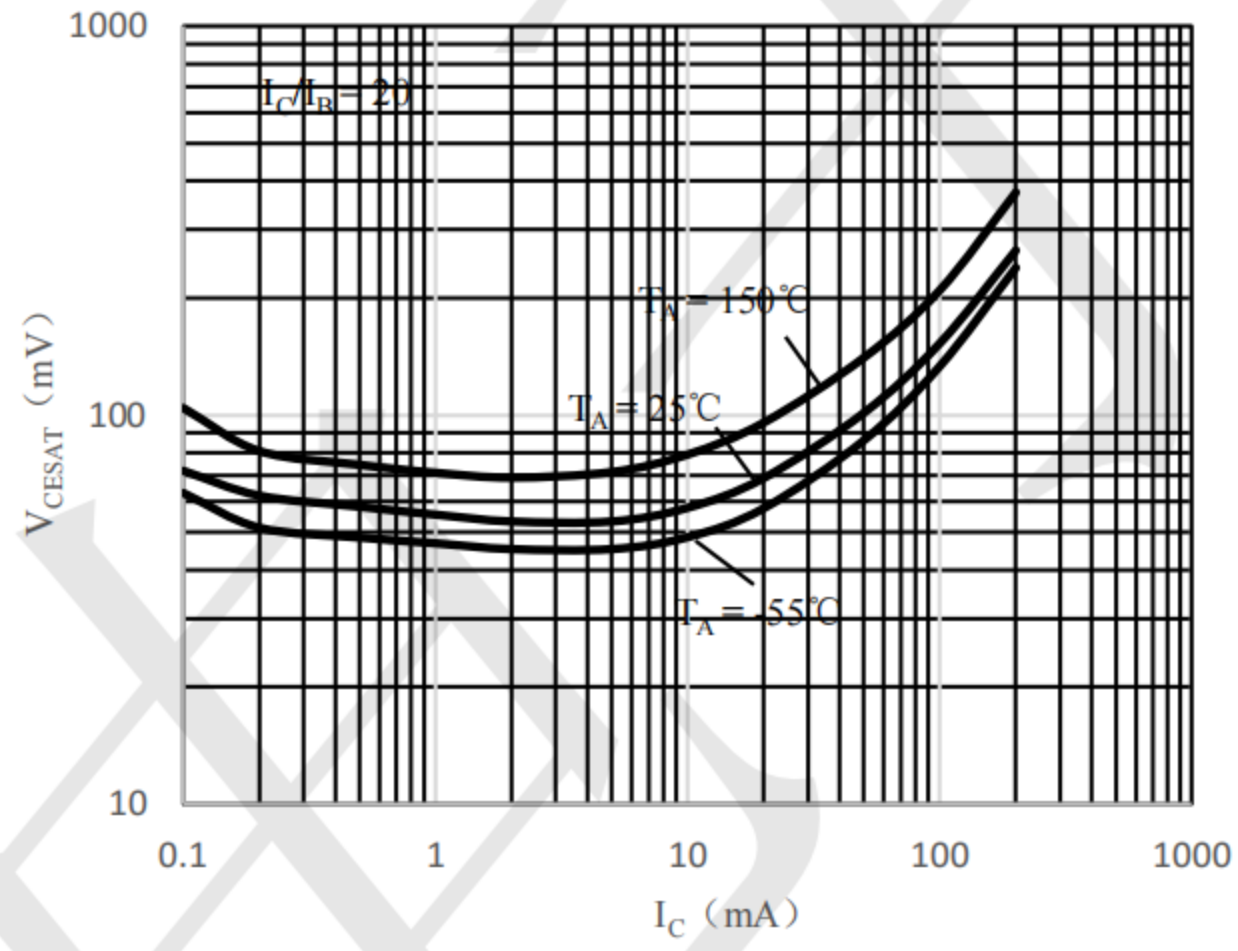


Fig 2 V<sub>CE(sat)</sub> vs. I<sub>C</sub>

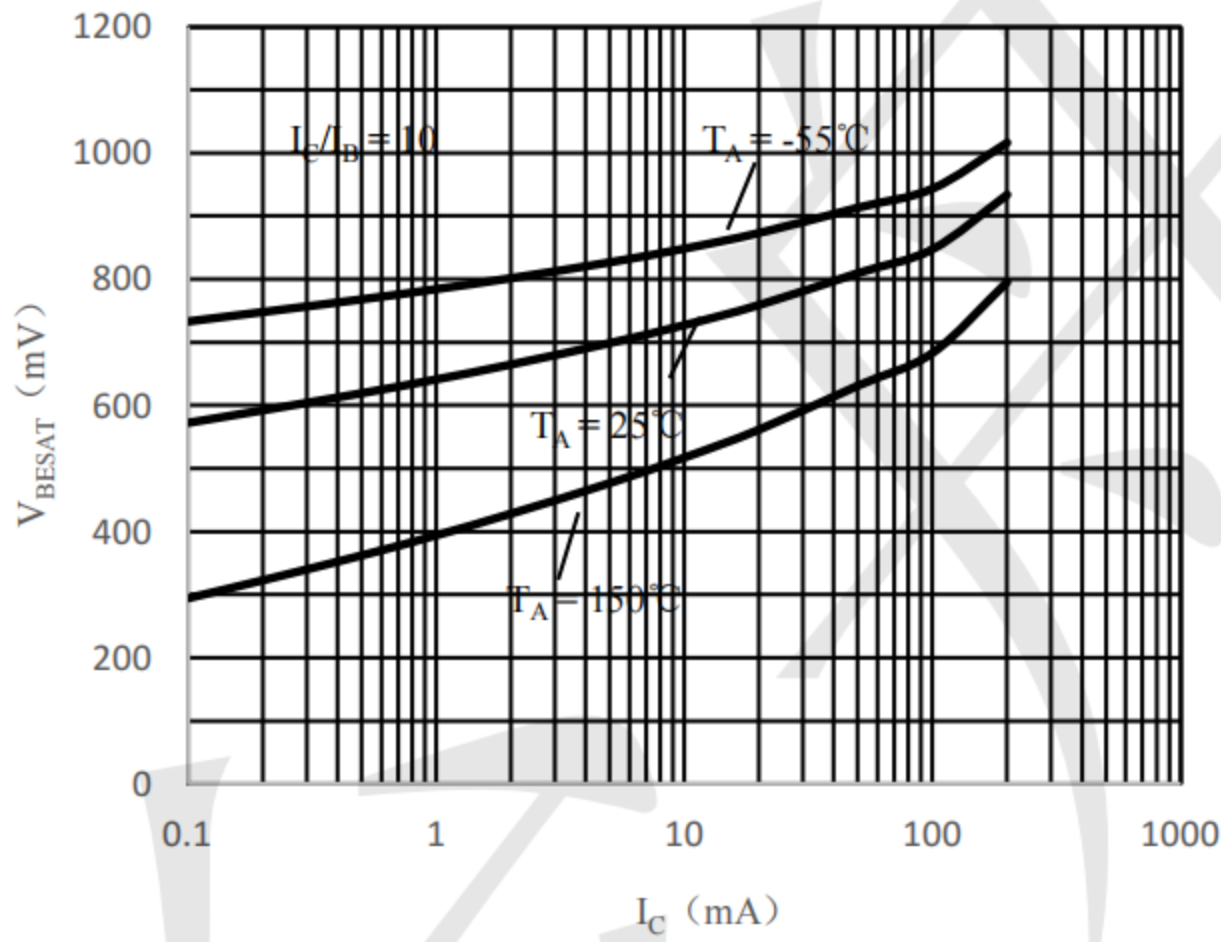


Fig 3 V<sub>BE(sat)</sub> vs. I<sub>C</sub>

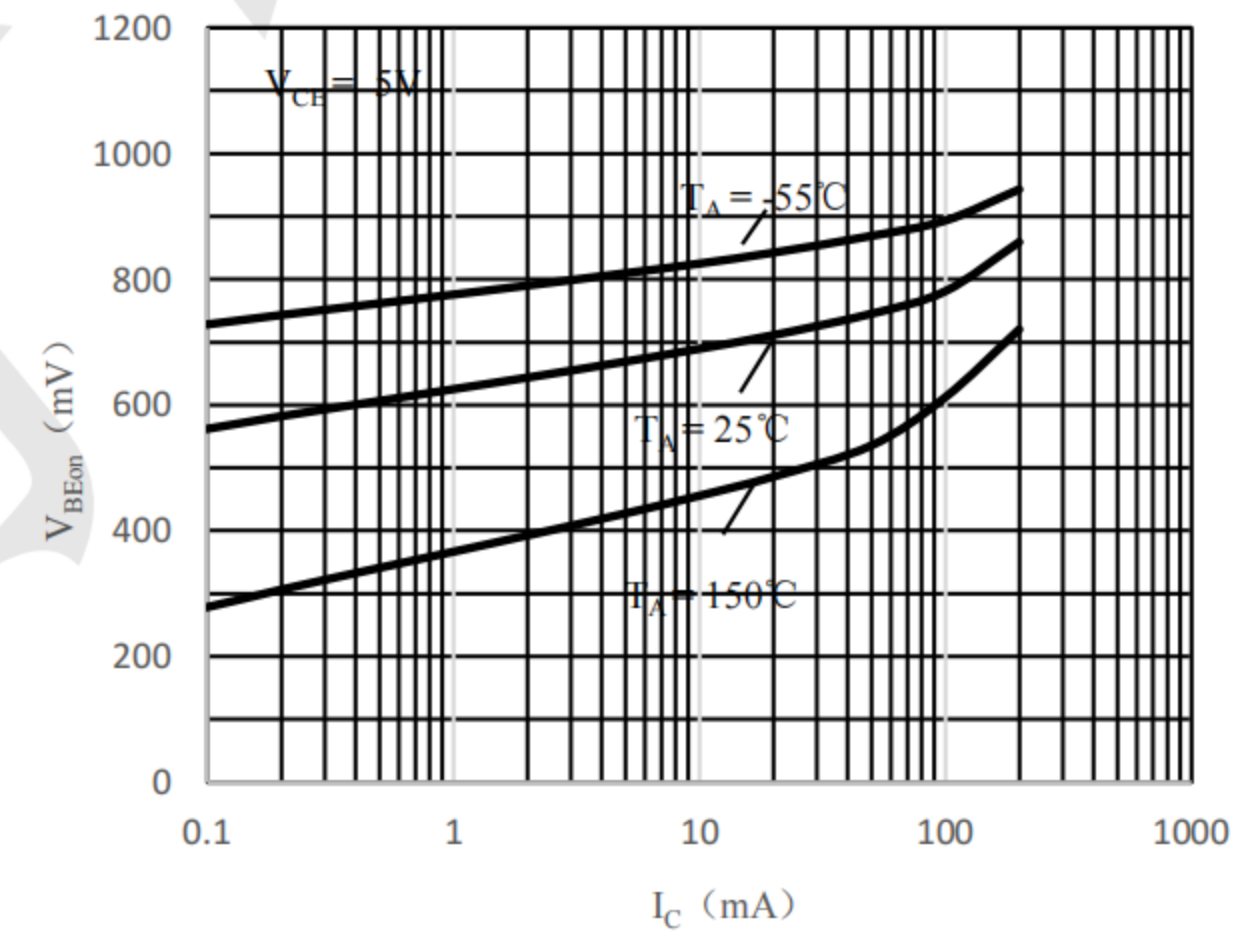
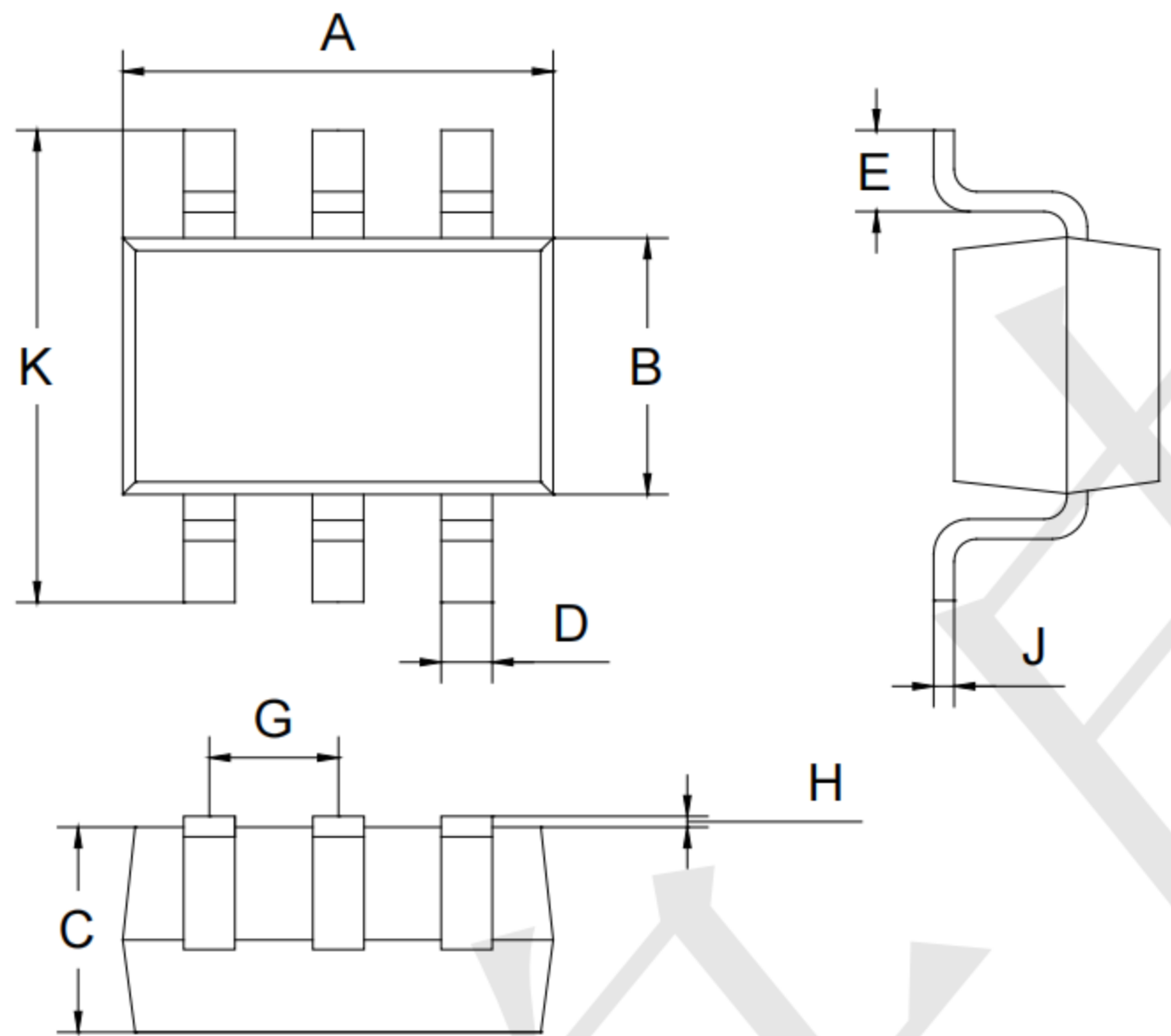


Fig 4 V<sub>BE(ON)</sub> vs. I<sub>C</sub>

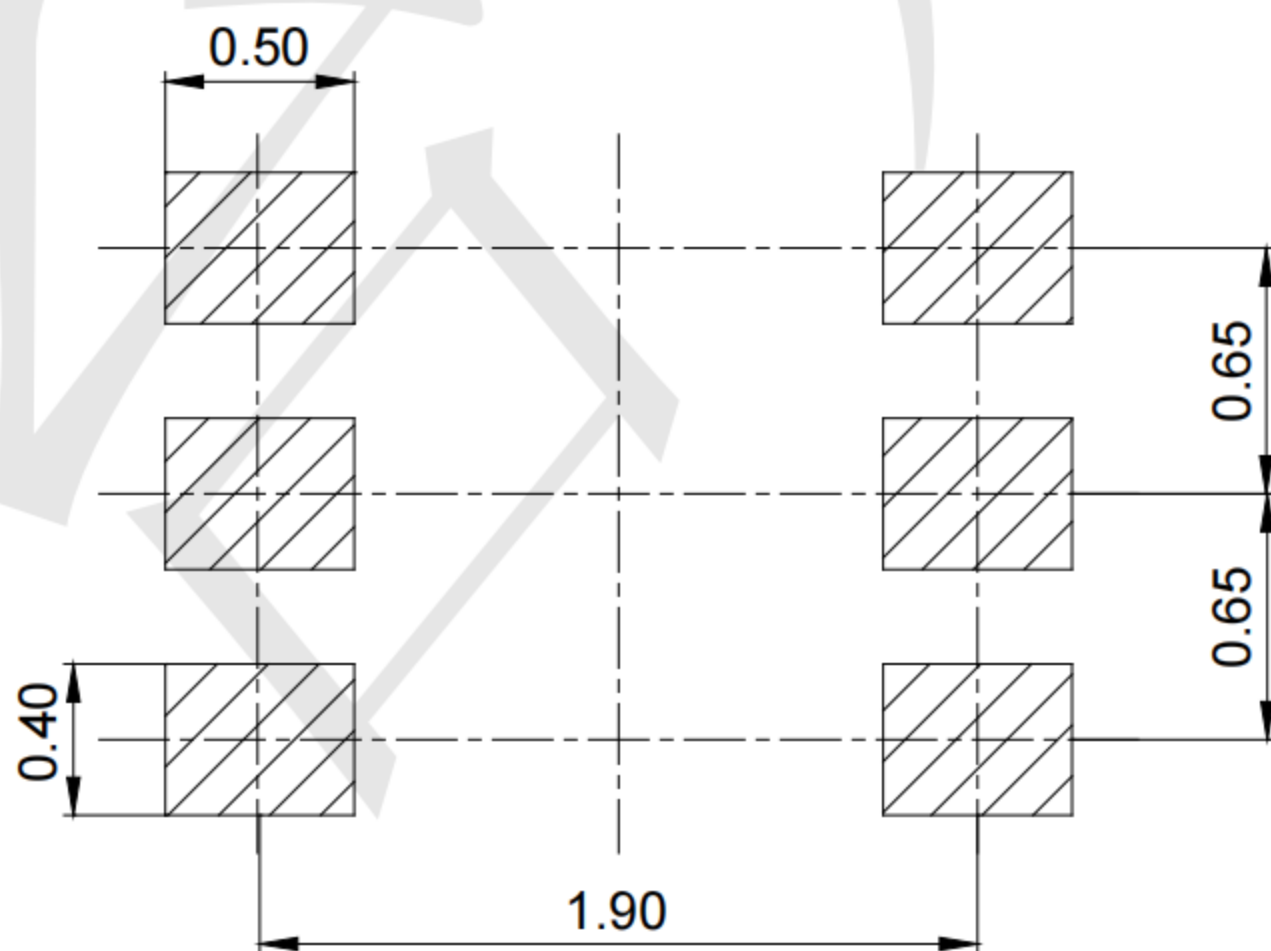


Outline Drawing - SOT363 (unit: mm)



SOT-363		
Dim	Min	Max
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40

Mounting Pad Layout-SOT363 (unit: mm)



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