

/ Descriptions

Silicon PNP transistor in a SOT-23 Plastic Package.

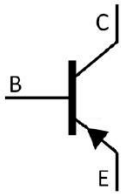
/ Features

Large current capacity, low collector to emitter saturation voltage very small-sized package permitting sets to be made smaller and slimer.

/ Applications

AF power amplifie,medium-speed switching, small-sized motor drivers.

/ Equivalent Circuit



/ Pinning



PIN 1 Base PIN 2 Emitter PIN 3 Collector

/ h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	Q	P	K
h_{FE} Range	135~270	200~400	300~600
Marking	HULQ	HULP	HULK

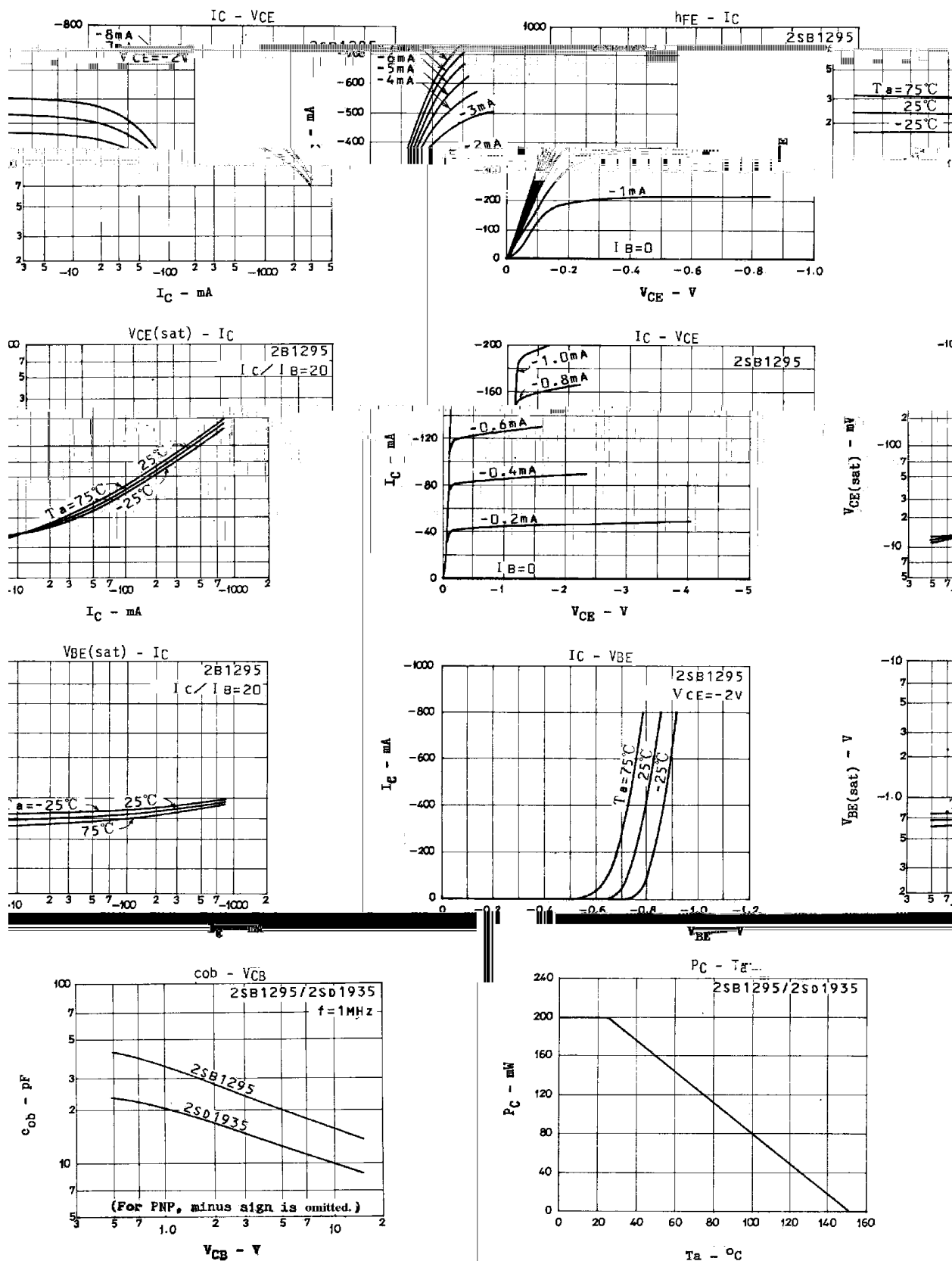
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	-15	V
Collector to Emitter Voltage	V_{CEO}	-15	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current	I_C	-800	mA
Collector Current(Pulse)	I_{CP}	-3.0	A
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55~150	

/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=-10\text{ A}$ $I_B=0$	-15			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=-1.0\text{mA}$ $R_{BE}=\infty$	-15			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=-10\text{ A}$ $I_C=0$	-5.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=-12\text{V}$ $I_E=0$			-0.1	A
Emitter Cut-Off Current	I_{EBO}	$V_{CE}=-4.0\text{V}$ $I_B=0$			-0.1	A
DC Current Gain	$h_{FE(1)}$	$V_{CE}=-2.0\text{V}$ $I_C=-50\text{mA}$	135		600	
	$h_{FE(2)}$	$V_{CE}=-2.0\text{V}$ $I_C=-800\text{mA}$	80			
Collector to Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=-5.0\text{mA}$ $I_B=-0.5\text{mA}$		-0.01	-0.025	V
	$V_{CE(sat)(2)}$	$I_C=-400\text{mA}$ $I_B=-20\text{mA}$		-0.1	-0.2	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-400\text{mA}$ $I_B=-20\text{mA}$		-0.9	-1.2	V
Transition Frequency	f_T	$V_{CB}=-2.0\text{V}$ $I_C=-50\text{mA}$		300		MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}$ $f=1.0\text{MHz}$		15		pF

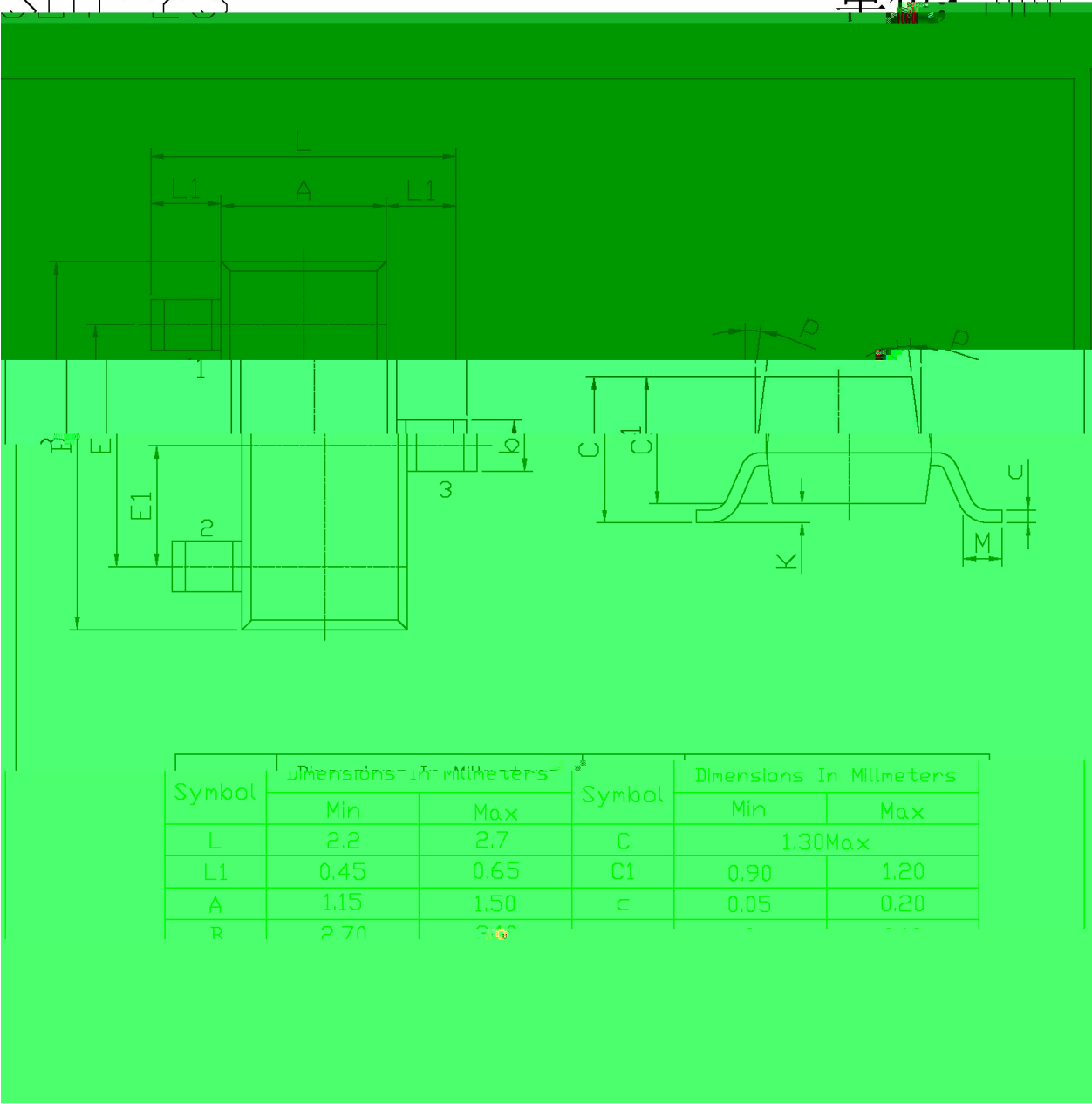
/ Electrical Characteristic Curve



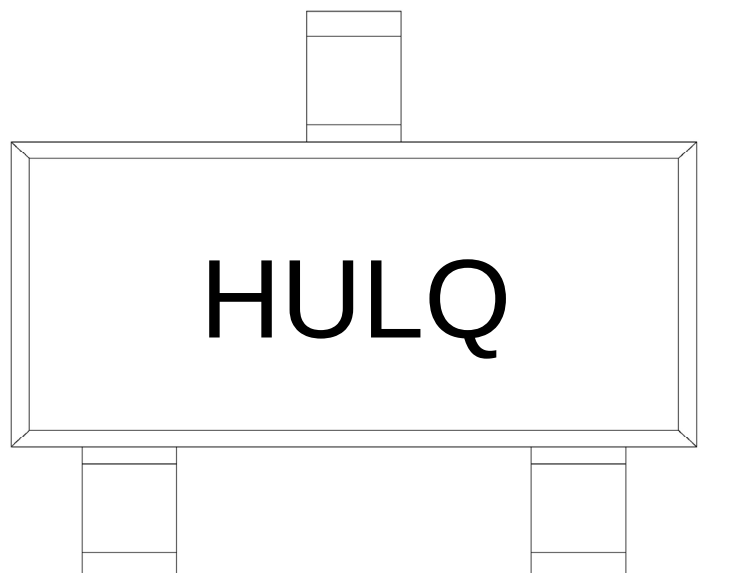
/ Package Dimensions

SOT-23

单位: mm



/ Marking Instructions



UL

Q h_{FE}

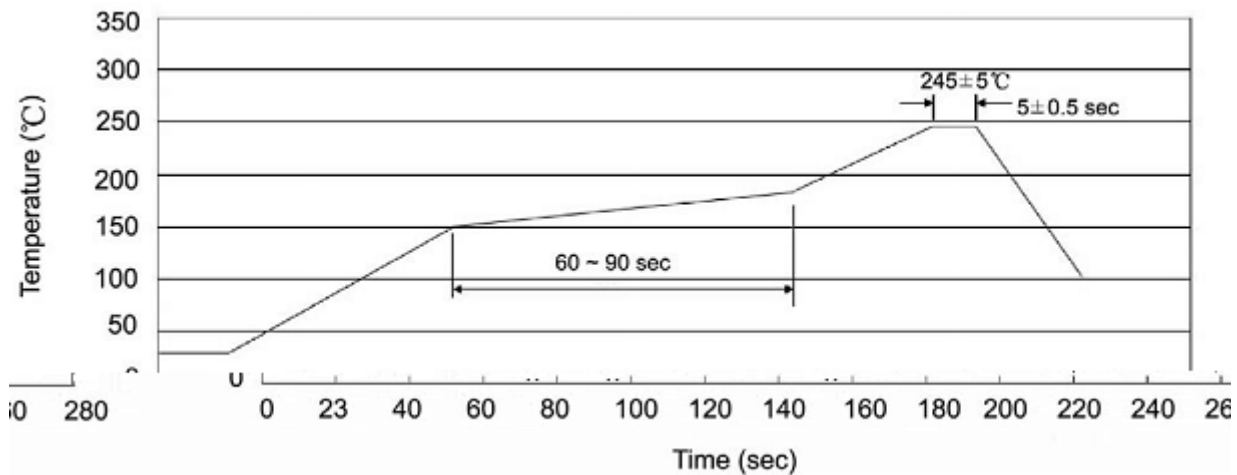
Note:

Company Code

UL Product Type Code

Q h_{FE} Classifications Symbol Code

() / **Temperature Profile for IR Reflow Soldering(Pb-Free)**



Note:

- | | | | | | |
|---|-----|-----|----|----------|---|
| 1 | 25 | 150 | 60 | 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 245 | 5 | 5 | 0.5sec; | 2.Peak Temp.:245 5 , Duration:5 0.5sec. |
| 3 | | | 2 | 10 /sec. | 3. Cooling Speed: 2~10 /sec. |

/ **Resistance to Soldering Heat Test Conditions**

260 5 10 1 sec. Temp.:260±5 Time:10±1 sec

/ **Packaging SPEC.**

/ REEL

Package Type	Units					Dimension (unit mm ³)		
	Units/Reel /	Reels/Inner Box /	Units/Inner Box /	Inner Boxes/Outer Box /	Units/Outer Box /	Reel	Inner Box	Outer Box
SOT-23	3,000	10	30,000	6	180,000	7" x8	180×120×180	390×385×205

/ **Notices**