

/ Descriptions

Silicon NPN transistor in a DFN1006-3L Plastic Package.

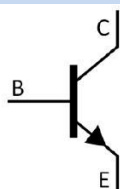
/ Features

Low current, Low voltage, HF Product.

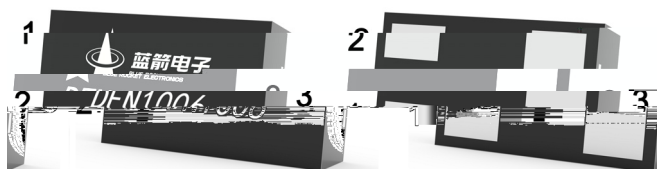
/ Applications

General purpose amplifier and switching.

/ Equivalent Circuit



/ Pinning



PIN 1 Base PIN 2 Emitter PIN 3 Collector

/ h_{FE} Classifications & Marking

h_{FE} Range	100 300
Marking	· H1AK

/ Absolute Maximum Ratings(Ta=25)

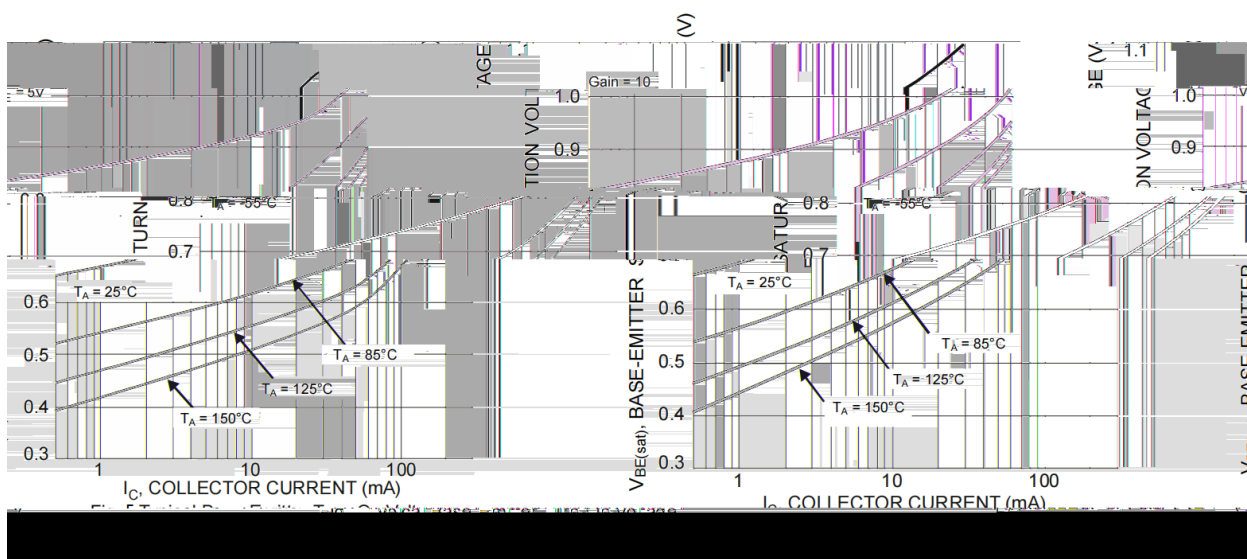
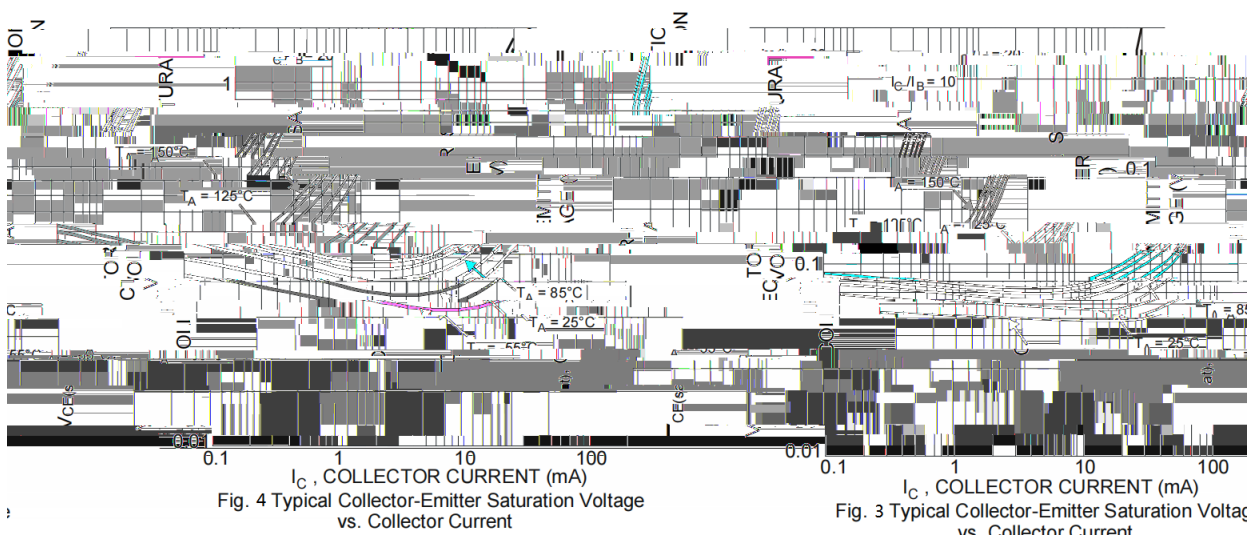
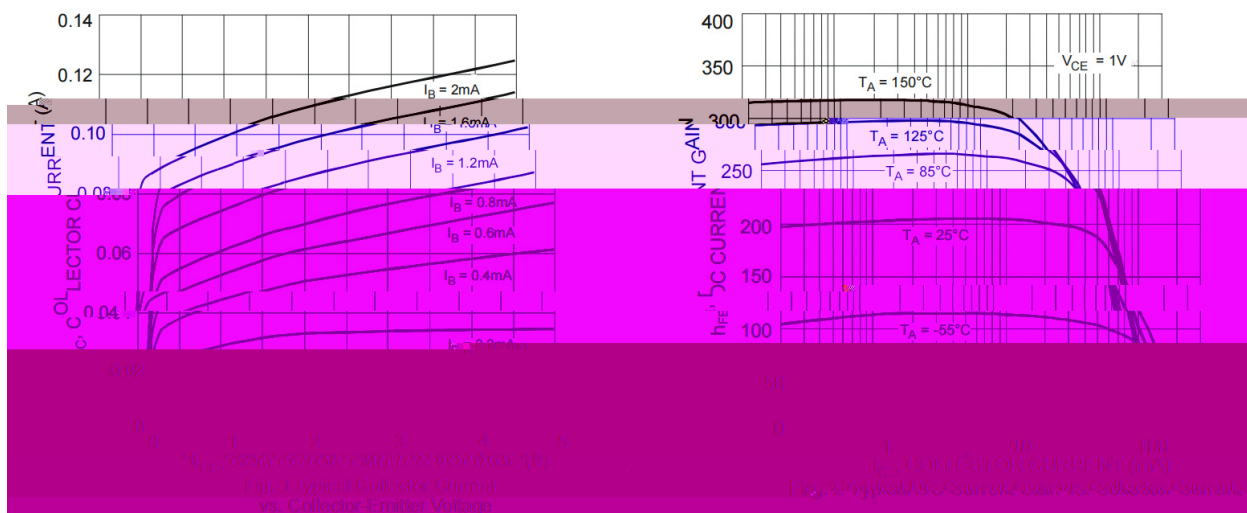
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	200	mA
*Collector Power Dissipation	P_C	100	mW
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 150	
Thermal Resistance, Junction to Ambient	R_{thJA}	310	/W
Thermal Resistance, Junction to Lead	R_{thJL}	120	/W

* PCB Mount on the PCBA

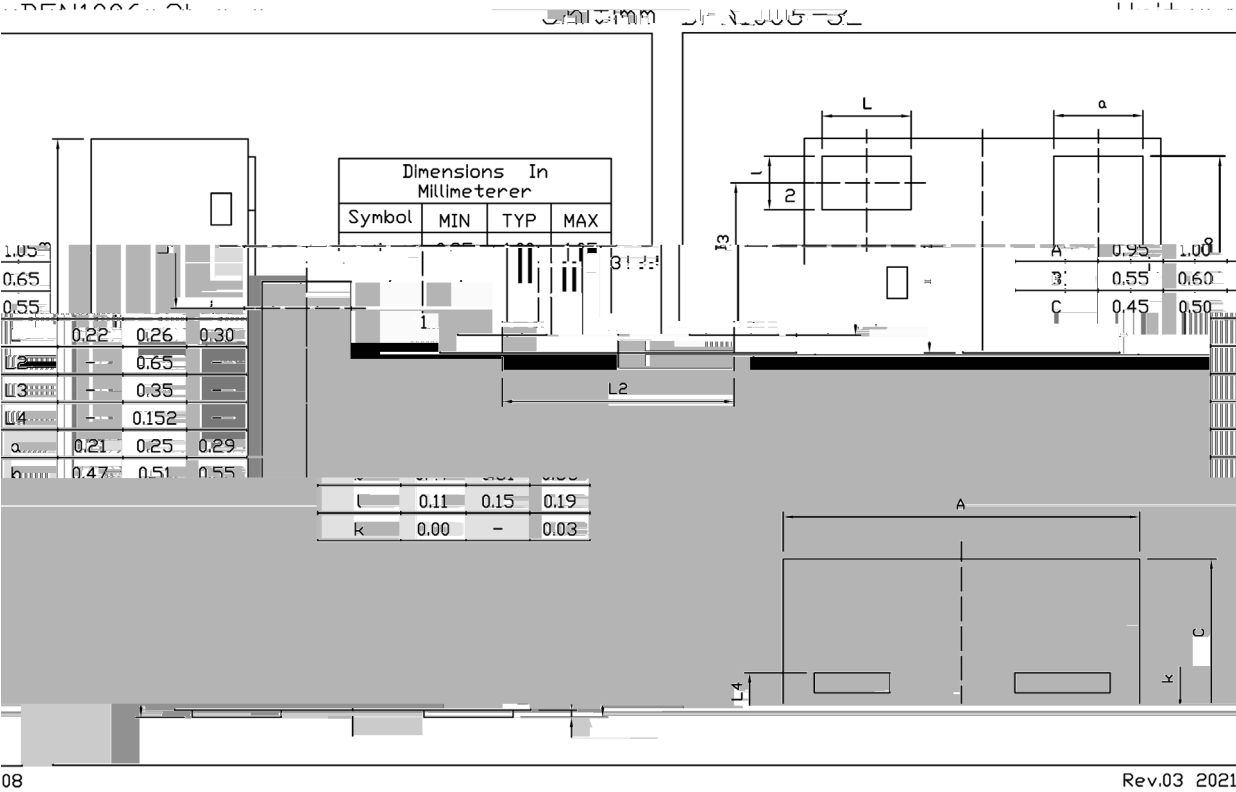
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=10\text{ A}$ $I_E=0$	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=1.0\text{mA}$ $I_B=0$	40			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=10\text{ A}$ $I_C=0$	6.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=30\text{V}$ $I_E=0$			0.05	A
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=3.0\text{V}$ $I_C=0$			0.05	A
DC Current Gain	$h_{FE(1)}$	$V_{CE}=1.0\text{V}$ $I_C=10\text{mA}$	100		300	
	$h_{FE(2)}$	$V_{CE}=1.0\text{V}$ $I_C=100\text{mA}$	30			
	$h_{FE(3)}$	$V_{CE}=1.0\text{V}$ $I_C=50\text{mA}$	60			
	$h_{FE(4)}$	$V_{CE}=1.0\text{V}$ $I_C=1.0\text{mA}$	70			
	$h_{FE(5)}$	$V_{CE}=1.0\text{V}$ $I_C=0.1\text{mA}$	40			
Collector-Emitter Saturation Voltage	$V_{CE(sat)(1)}$	$I_C=10\text{mA}$ $I_B=1.0\text{mA}$			0.2	V
	$V_{CE(sat)(2)}$	$I_C=50\text{mA}$ $I_B=5.0\text{mA}$			0.3	V
Base-Emitter Saturation Voltage	$V_{BE(sat)(1)}$	$I_C=10\text{mA}$ $I_B=1.0\text{mA}$	0.65		0.85	V
	$V_{BE(sat)(2)}$	$I_C=50\text{mA}$ $I_B=5.0\text{mA}$			0.95	V
Transition Frequency	f_T	$V_{CE}=20\text{V}$ $I_C=10\text{mA}$ $f=100\text{MHz}$	300			MHz
Output Capacitance	C_{ob}	$V_{CB}=5.0\text{V}$ $f=1.0\text{MHz}$			4.0	pF
Storage Time	t_{stg}	$V_{CC}=3.0\text{V}$ $I_C=10\text{mA}$ $I_{B1}=-I_{B2}=1.0\text{mA}$			200	ns
Fall Time	t_f	$V_{CC}=3.0\text{V}$ $I_C=10\text{mA}$ $I_{B1}=-I_{B2}=1.0\text{mA}$			50	ns
Delay Time	t_d	$V_{CC}=3.0\text{V}$ $V_{BE}=0.5\text{V}$ $I_C=10\text{mA}$ $I_{B1}=1.0\text{mA}$			35	ns
Rise Time	t_r	$V_{CC}=3.0\text{V}$ $V_{BE}=0.5\text{V}$ $I_C=10\text{mA}$ $I_{B1}=1.0\text{mA}$			35	ns
Input Capacitance	C_{ib}	$V_{EB}=0.5\text{V}$ $f=1.0\text{MHz}$			8.0	pF

/ Electrical Characteristic Curve



/ Package Dimensions



/ Marking Instructions



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Note:

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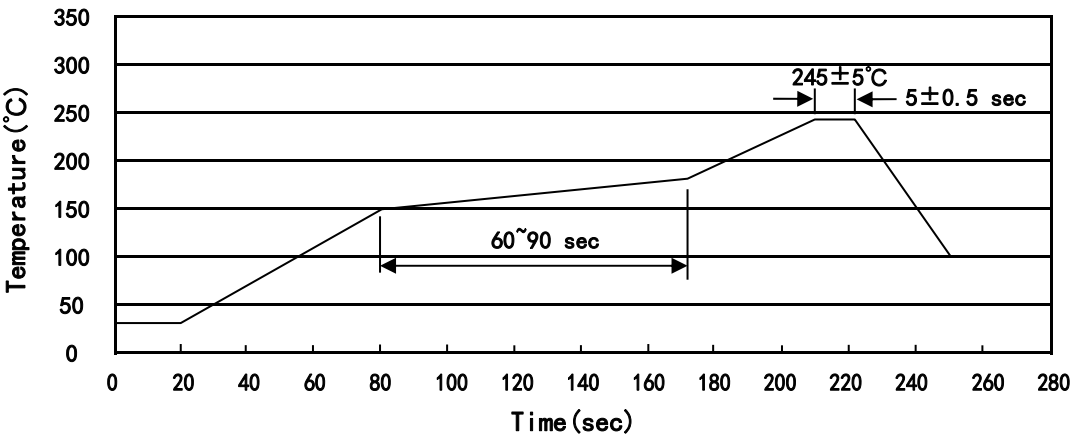
Identify

Company Code

1AK

Product Type Code

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



Note:

- | | | | | | |
|---|-----|-----|----|---------|---|
| 1 | 150 | 180 | 60 | 90sec; | 1.Preheating:150~180 , 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)		
DFN1006-3L	10,000	10	100,000	6	600,000	7 ×8	180×120×180	390×385×205

/ Notices