

MMBT3904ZK

Rev.D Mar.-2025



蓝箭电子
BLUE ROCKET ELECTRONICS

DATA SHEET

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

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Low current, Low voltage, HF Product.

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1. Absolute Maximum Ratings(Ta=25℃ ;)

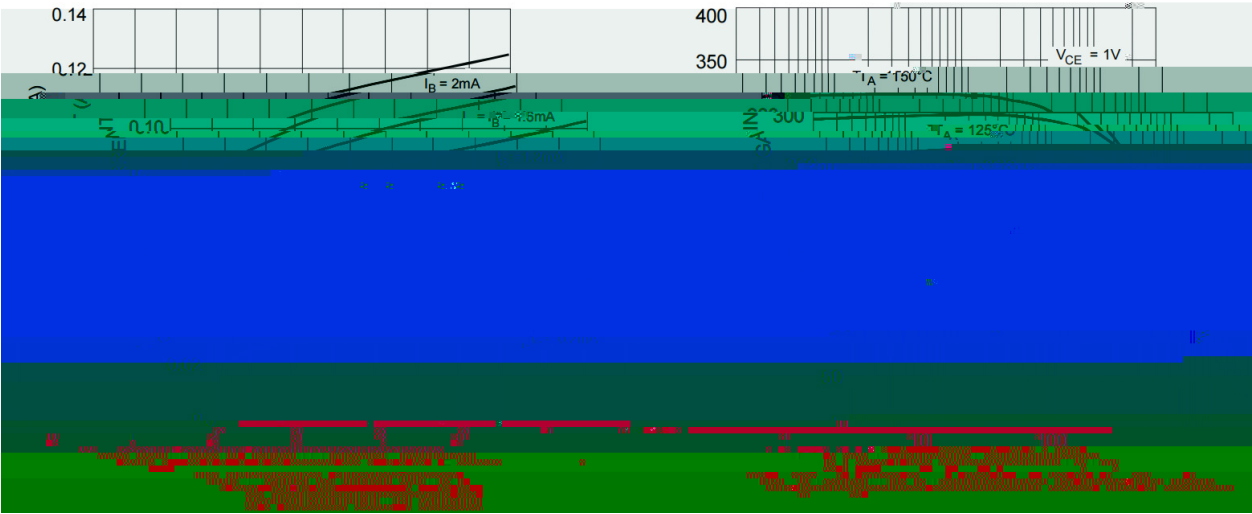
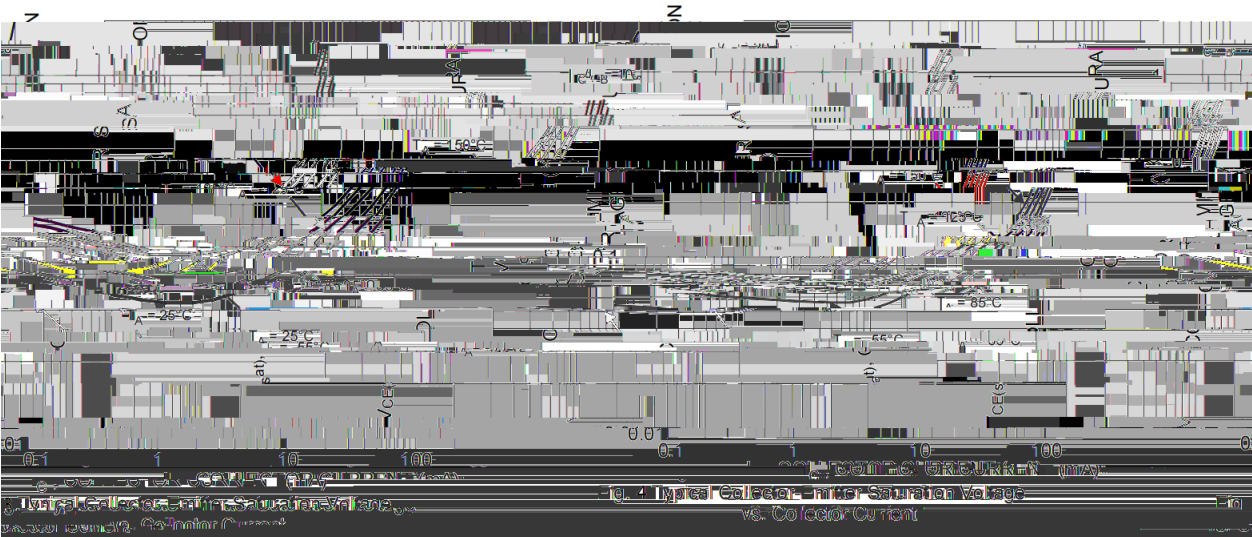
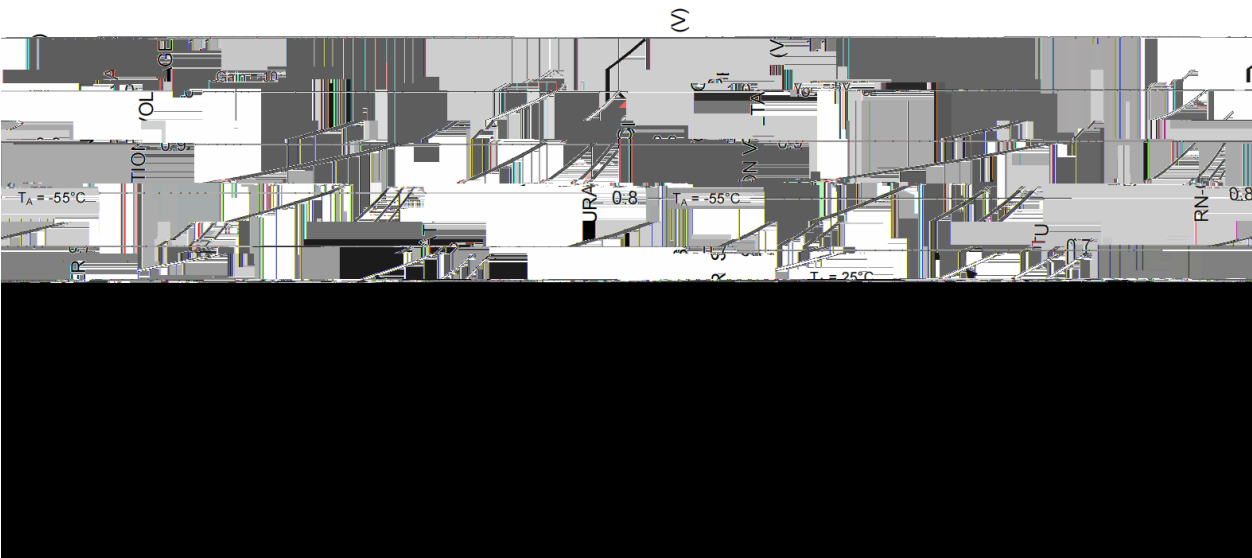
Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	40	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current	I_C	200	mA
*Collector Power Dissipation	P_C	100	mW
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55 ~ 150	
Thermal Resistance,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

* P_C : Mount on the PCBA

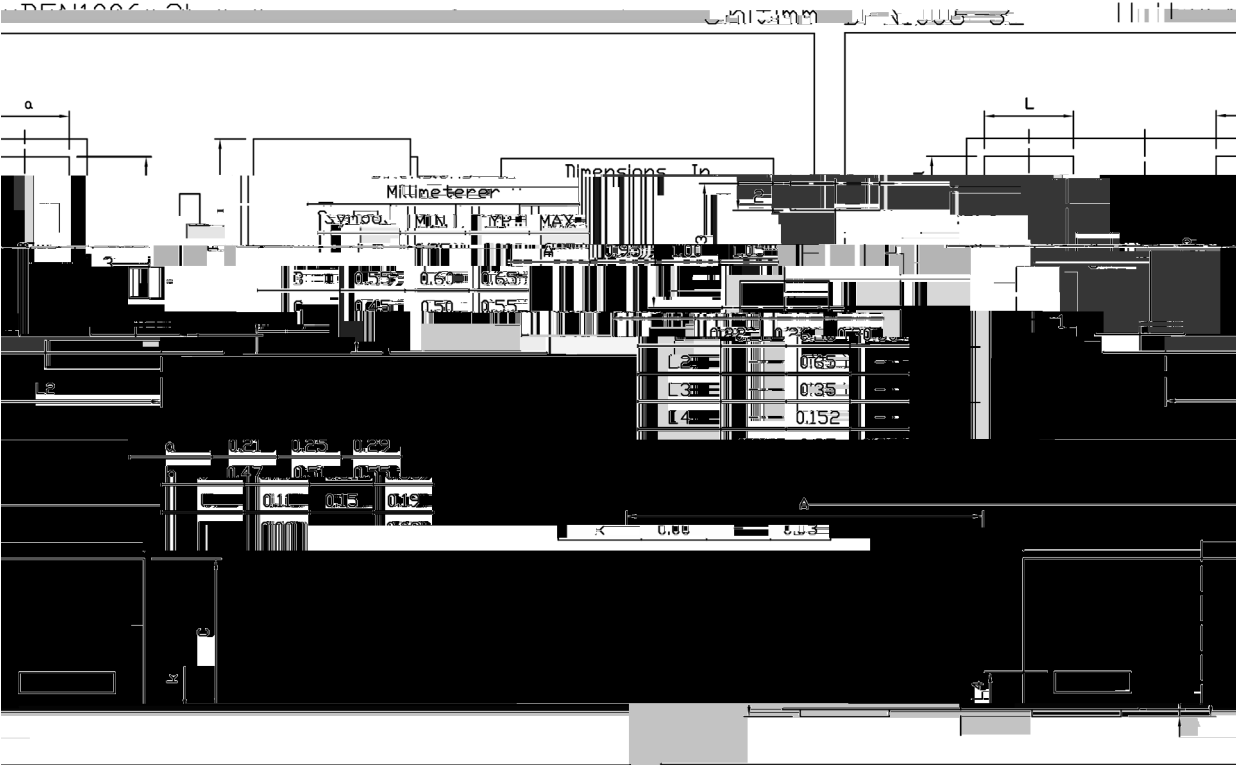
2. Electrical Characteristics(Ta=25℃ ;)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=10\text{mA}$ $I_E=0$	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}	$I_E=10\text{mA}$ $I_C=0$	6.0			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=30\text{V}$ $I_E=0$			0.05	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=3.0\text{V}$ $I_C=0$			0.05	μA
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

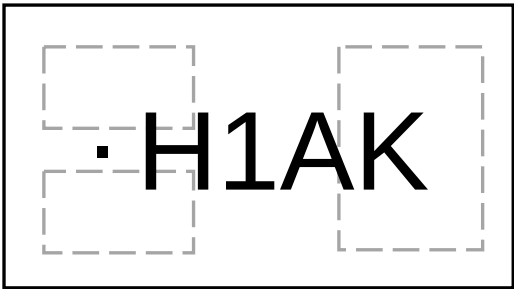


Ø □ =) ☎ / Package Dimensions



Rev.03 202108

, M y f / Marking Instructions

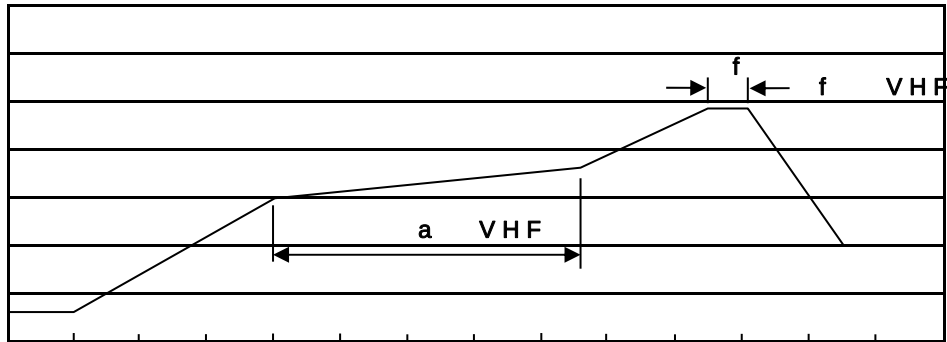


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1AK y ° Z W A

Note:
· y Identify
· y Company Code
1AK y Product Type Code

šWD t...•Žč (x/) / :KSVKXGZ[XK 6XULORK LUX /8 8KLRU] 9URJKXOTM 6

7HPSHUDWXUH



7LPH VHF

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10• Ä ½ “† 150 ½180 - k ž • 60 ½90sec;

20• Q > “† 245 r5 - k ž • 4 Ò 5 r0.5sec;

30•D N ò i Ò 0 ,† 2 ½10 - /sec.

Note:

1.Preheating:150~180 - , Time:60~90sec.

2.Peak Temp.:245 r5 - , Duration:5 r0.5sec.

3. Cooling Speed: 2~10 - /sec.

ÂD /Că p ¯ »] / Resistance to Soldering Heat Test Conditions

“† y 260 r5 -

ž • y 10 r1 sec.

Temp.:260±5

Time:10±1 sec

G P á / Packaging SPEC.

2 & x / REEL

Package Type 7>û ~ E	Units ;>û H					Dimension ;>û p . (unit /Æmm³)		
	Units/Reel / --	Reels/Inner Box -- /-	Units/Inner Box /-	Inner Boxes/Outer Box - /1ç	Units/Outer Box /1ç	Reel	Inner Box	Outer Boxç
DFN1006-3L	10,000	10	100,000	6	600,000	7 s ×8	180×120×180	390×385×205

„Đ y f / Notices