



MMBT3904FA

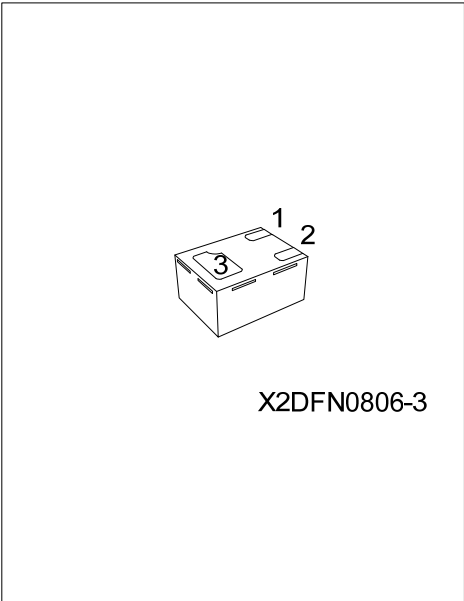
Preliminary

NPN SILICON TRANSISTOR

GENERAL PURPOSE APPLICATION

FEATURES

- * Collector-Emitter Voltage: $V_{CE0} = 40V$
- * Complementary to UTC MMBT3906FA



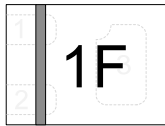
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MMBT3904FAL-KBB-R	MMBT3904FAG-KBB-R	X2DFN0806-3	B	E	C	Tape Reel

Note: Pin Assignment: B: Base E: Emitter C: Collector

<p>MMBT3904FAG-KBB-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) KBB: X2DFN0806-3 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V_{CB0}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Peak Pulse Collector Current	I_{CM}	500	mA
Collector Dissipation	P_C	435	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	287	$^\circ\text{C/W}$

Note: The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	V_{CB0}	$I_C=10\mu\text{A}$, $I_E=0$	60			V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=1\text{mA}$, $I_B=0$ (Note)	40			V
Emitter-Base Breakdown Voltage	V_{EBO}	$I_E=10\mu\text{A}$, $I_C=0$	6			V
Collector Cut-Off Current	I_{CEX}	$V_{CE}=30\text{V}$, $V_{EB}=3\text{V}$			50	nA
Base Cut-Off Current	I_{BL}	$V_{CE}=30\text{V}$, $V_{EB}=3\text{V}$			50	nA
DC Current Gain (Note)	h_{FE}	$V_{CE}=1\text{V}$, $I_C=0.1\text{mA}$	40			
		$V_{CE}=1\text{V}$, $I_C=1\text{mA}$	70			
		$V_{CE}=1\text{V}$, $I_C=10\text{mA}$	100		300	
		$V_{CE}=1\text{V}$, $I_C=50\text{mA}$	60			
		$V_{CE}=1\text{V}$, $I_C=100\text{mA}$	30			
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=10\text{mA}$, $I_B=1\text{mA}$			0.2	V
		$I_C=50\text{mA}$, $I_B=5\text{mA}$			0.3	V
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=10\text{mA}$, $I_B=1\text{mA}$	0.65		0.85	V
		$I_C=50\text{mA}$, $I_B=5\text{mA}$			0.95	V
Current Gain Bandwidth Product	f_T	$V_{CE}=20\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$	300			MHz

Note: Pulse test: $P_W \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

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