

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

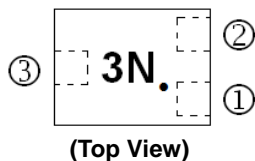
FEATURES

- Ultra Small SMD Plastic Package
- Epitaxial Planar Die Construction

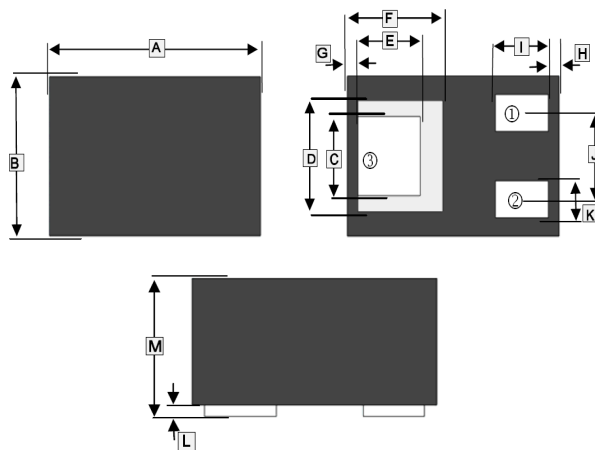
APPLICATION

- General switching and amplification.

MARKING



WBFBP-03E



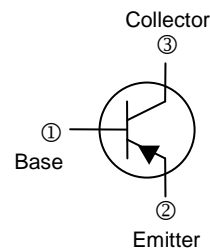
PACKAGE INFORMATION

Package	MPQ	Leader Size
WBFBP-03E	10K	7 inch

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	0.95	1.05	H	0.05 REF.	
B	0.55	0.65	I	0.20	0.30
C	0.27	0.37	J	0.30	0.40
D	0.45 REF.		K	0.10	0.20
E	0.27	0.37	L	0.01	0.10
F	0.45 REF.		M	0.45	0.55
G	0.05 REF.				

ORDER INFORMATION

Part Number	Type
MMBT3906ZW	Lead (Pb)-free
MMBT3906ZW-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Collector-Base Voltage	V _{CBO}	-40	V
Collector-Emitter Voltage	V _{CEO}	-40	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Current - Continuous	I _C	-200	mA
Collector Power Dissipation	P _D	100	mW
Thermal Resistance from Junction to Ambient	R _{θJA}	1250	°C / W
Junction and Storage Temperature	T _J , T _{STG}	150, -55~150	°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-40	-	-	V	$I_C = -1\text{mA}$, $I_B = 0$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-40	-	-	V	$I_C = -10\mu\text{A}$, $I_E = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-	-	V	$I_E = -10\mu\text{A}$, $I_C = 0$
Collector Cut-Off Current	I_{CEX}	-	-	-50	nA	$V_{CE} = -30\text{V}$, $V_{EB(off)} = -3\text{V}$
Emitter Cut-Off Current	I_{EBO}	-	-	-100	nA	$V_{EB} = -5\text{V}$, $I_C = 0$
DC Current Gain	h_{FE}	60	-	-		$I_C = -0.1\text{mA}$, $V_{CE} = -1\text{V}$
		80	-	-		$I_C = -1\text{mA}$, $V_{CE} = -1\text{V}$
		100	-	300		$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}$
		60	-	-		$I_C = -50\text{mA}$, $V_{CE} = -1\text{V}$
		30	-	-		$I_C = -100\text{mA}$, $V_{CE} = -1\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	-0.25	V	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$
		-	-	-0.4		$I_C = -50\text{mA}$, $I_B = -5\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-0.65	-	-0.85	V	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$
		-	-	-0.95		$I_C = -50\text{mA}$, $I_B = -5\text{mA}$
Current-Gain-Bandwidth Product	f_T	250	-	-	MHz	$V_{CE} = -20\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$
Collector output capacitance	C_{ob}	-	4.5	-	pF	$V_{CB} = -5\text{V}$, $I_E = 0$, $f = 1\text{MHz}$
Base Input capacitance	C_{ib}	-	10	-	pF	$V_{EB} = -0.5\text{V}$, $I_E = 0$, $f = 1\text{MHz}$
Noise Figure	NF	-	-	4	dB	$V_{CE} = -5\text{V}$, $I_E = -0.1\text{mA}$, $R_G = 1\text{k}\Omega$ $f = 1\text{kHz}$
Delay Time	T_d	-	35	-	nS	$V_{CC} = -3\text{V}$, $V_{BE(off)} = -0.5\text{V}$, $I_C = -10\text{mA}$, $I_{B1} = -1\text{mA}$
Rise Time	T_r	-	35	-	nS	
Storage Time	T_s	-	225	-	nS	$V_{CC} = -3\text{V}$, $I_C = -10\text{mA}$, $I_{B1} = I_{B2} = -1\text{mA}$
Fall Time	T_f	-	75	-	nS	

TYPICAL CHARACTERISTICS

Static Characteristic

