Elektronische Bauelemente

MMBT3904ZW

200 mA, 60 V

NPN Plastic Encapsulated Transistor

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

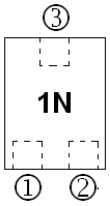
FEATURES

- Collector current capability I_C=200mA
- Collector-emitter voltage V_{CEO}=40V.

APPLICATION

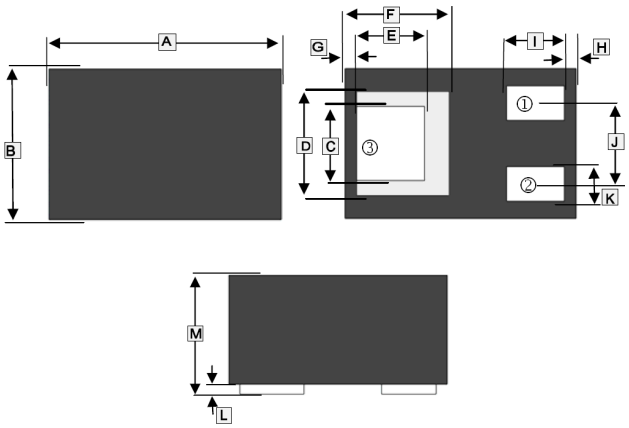
- General switching and amplification.

MARKING

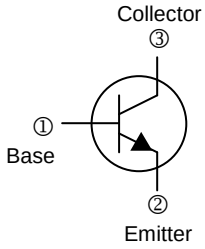


(Top View)

WBFBP-03E



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	0.95	1.05	H	0.50RE	
B	0.55	0.65	I	0.20	0.30
C	0.27	0.37	J	0.30	0.40
D	0.45REF.		K	0.10	0.20
E	0.27	0.37	L	0.01	0.10
F	0.45REF.		M	0.45	0.55
G	0.50REF.				



PACKAGING DIMENSION

Package	MPQ	Leader Size
WBFBP03E	10K	7 inch

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ unless otherwise noted)

Parameters	Symbol	Rating	Unit
Collector - Emitter Voltage	V_{CEO}	40	V
Collector - Base Voltage	V_{CBO}	60	V
Emitter - Base Voltage	V_{EBO}	6	V
Collector Current - Continuous	I_C	200	mA
Total Device Dissipation	P_D[1]	100	mW
	P_D[2]	590	mW
Thermal Resistance, Junction to Ambient[1]	$R_{\theta JA}$[1]	1250	℃ / W
	$R_{\theta JA}$[2]	212	℃ / W
Junction, Storage Temperature	T_J, T_{STG}	150, -55 ~ +150	℃

NOTE:

1. Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint
2. Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector1cm^2

ELECTRICAL CHARACTERISTICS (T_A = 25℃ unless otherwise noted)(Continued)

Parameters	Symbol	MIN.	MAX.	Unit	TEST CONDITIONS
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60	-	V	I_C=10μA, I_E=0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	-	V	I_C =1mA, I_B =0
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6	-	V	I_E =10μA, I_C=0
Collector cut-off current	I_{CBO}	-	0.1	μA	V_{CB}=60V, I_E =0
Collector Cut-Off Current	I_{CEX}	-	50	nA	V_{CE}=30V, $V_{BE(OFF)}$=3V
Emitter cut-off current	I_{EBO}	-	0.1	μA	V_{EB}=5V, I_C=0
DC current gain	$h_{FE(2)}$	100	300		I_C=10mA, V_{CE}=1V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	0.3	V	I_C =50mA, I_B =5mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	0.95	V	I_C =50mA, I_B =5mA
Current-Gain-Bandwidth Product	f_T	300	-	MHz	I_C= 10mA, V_{CE}= 20V, f=100MHz
Delay Time	td	-	35	nS	V_{CC}=3V,V_{BE}=-0.5V,
Rise Time	tr	-	35	nS	I_C=10mA, I_{B1} =1mA
Storage Time	ts	-	200	nS	V_{CC}=3V,I_C=10mA
Fall Time	tf	-	50	nS	I_{B1}=I_{B2}=1mA