



# WBFBP-03A Plastic-Encapsulate Transistors

## MMBTA42E TRANSISTOR

### DESCRIPTION

NPN Epitaxial Silicon Transistor

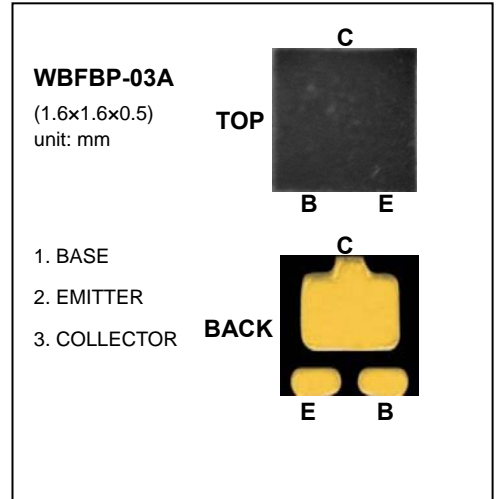
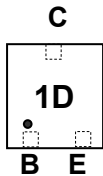
### FEATURES

Power dissipation  $P_{CM}$  : 0.15 W ( $T_{amb}=25^{\circ}C$ )

### APPLICATION

High Voltage Amplifier  
 For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)

### MARKING:1D



### MAXIMUM RATINGS $T_A=25^{\circ}C$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	310	V
$V_{CEO}$	Collector-Emitter Voltage	305	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current -Continuous	300	mA
$T_J$	Junction Temperature	150	$^{\circ}C$
$T_{stg}$	Storage Temperature	-55-150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance, junction to Ambient	200	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance, unction to Case	83.3	$^{\circ}C/W$

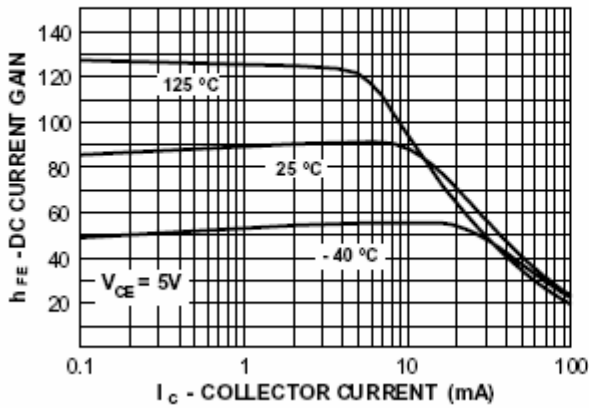
### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	310		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA, I_B=0$	305		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu A, I_C=0$	5		V
Collector cut-off current	$I_{CBO}$	$V_{CB}=200V, I_E=0$		0.25	$\mu A$
Collector cut-off current	$I_{CEO}$	$V_{CE}=200V, I_B=0$		0.25	$\mu A$
		$V_{CE}=300V, I_B=0$		5	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5V, I_C=0$		0.1	$\mu A$
DC current gain	$h_{FE(1)}$	$V_{CE}=10V, I_C=1mA$	60		
	$h_{FE(2)}$	$V_{CE}=10V, I_C=10mA$	100	200	
	$h_{FE(3)}$	$V_{CE}=10V, I_C=30mA$	75		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$		0.2	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=20mA, I_B=2mA$		0.9	V
Transition frequency	$f_T$	$V_{CE}=20V, I_C=10mA$ $f=30MHz$	50		MHz

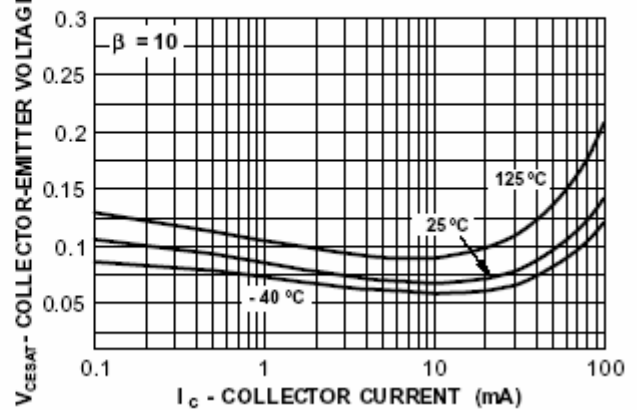
# Typical Characteristics

# MMBTA42E

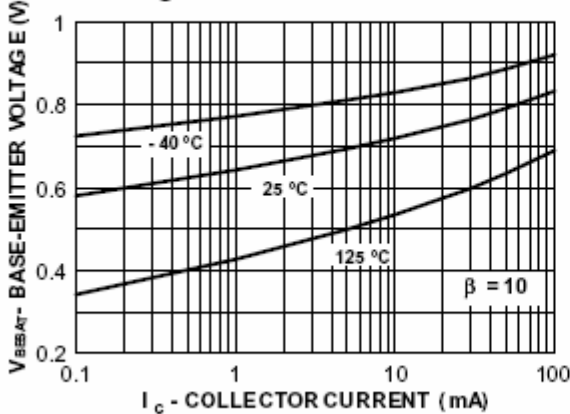
**DC Current Gain vs Collector Current**



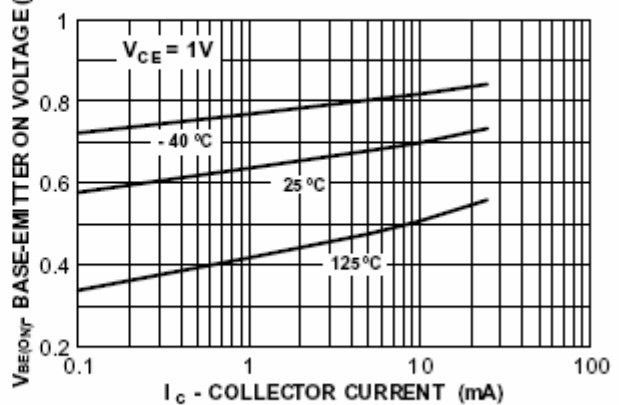
**Collector-Emitter Saturation Voltage vs Collector Current**



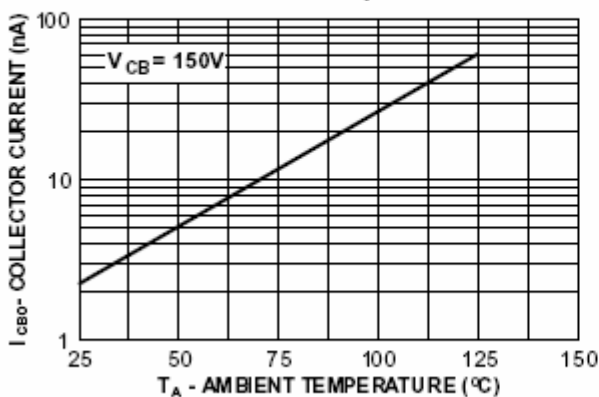
**Base-Emitter Saturation Voltage vs Collector Current**



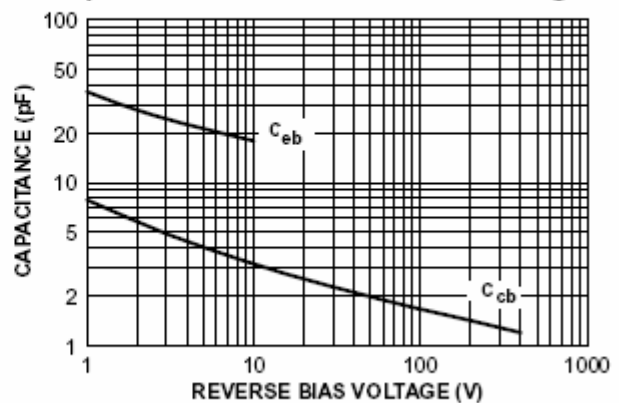
**Base-Emitter ON Voltage vs Collector Current**

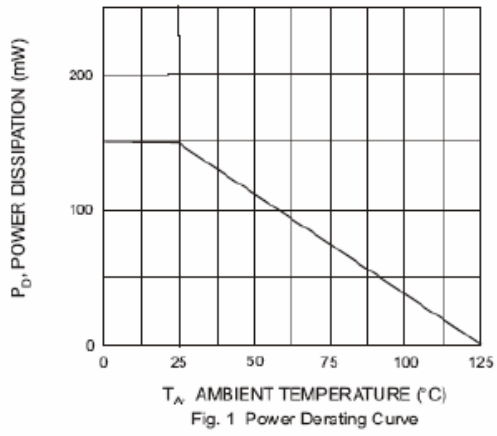


**Collector-Cutoff Current vs Ambient Temperature**

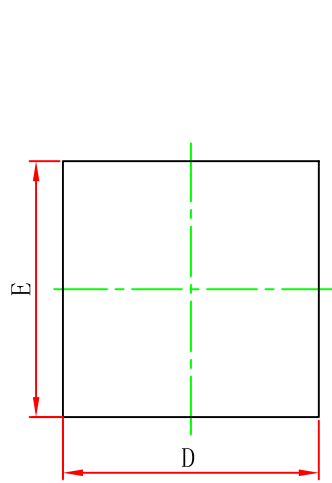


**Collector-Base and Emitter-Base Capacitance vs Reverse Bias Voltage**

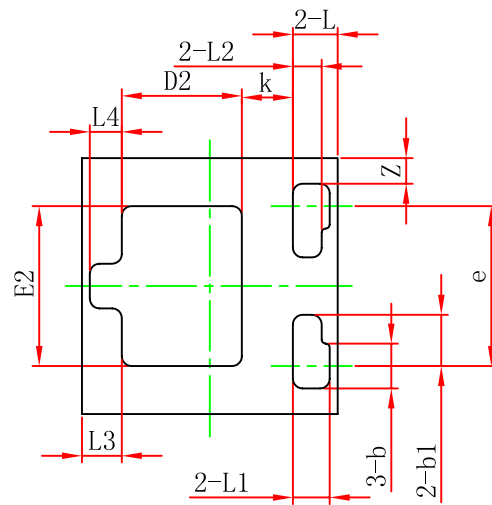




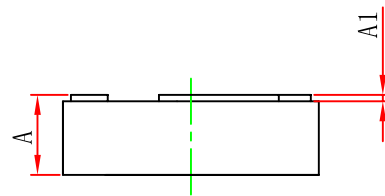
# WBFBP-03A(1.6×1.6×0.5) PACKAGE OUTLINE DIMENSIONS



TOP VIEW

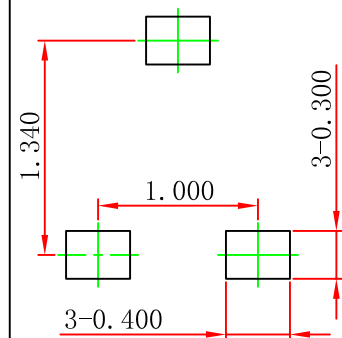


BOTTOM VIEW



SIDE VIEW

## (LAND PATTERN RECOMMENDATION)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.010	0.090	0.000	0.004
b	0.230	0.330	0.009	0.013
b1	0.320 REF.		0.013 REF.	
D	1.550	1.650	0.061	0.065
E	1.550	1.650	0.061	0.065
D2	0.750 REF.		0.030 REF.	
E2	1.000 REF.		0.040 REF.	
e	1.000 TYP.		0.040 TYP.	
L	0.280 REF.		0.011 REF.	
L1	0.230 REF.		0.009 REF.	
L2	0.180 REF.		0.007 REF.	
L3	0.250 REF.		0.010 REF.	
L4	0.200 REF.		0.008 REF.	
k	0.320 REF.		0.013 REF.	
z	0.160 REF.		0.006 REF.	