

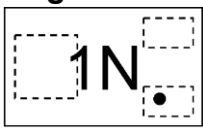


GP3904BC Transistor(NPN)

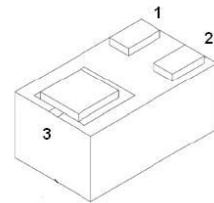
Feature

- Switching Transistor
- Collector-emitter voltage $V_{CE}=40V$
- Collector current $I_c=0.2A$

Marking: 1N

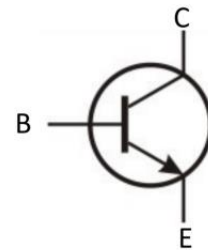


WBFBP-03E



1. BASE 2. EMITTER 3.COLLECTOR

Schematic diagram



MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Collector-Base Voltage	V_{CBO}	60	V	
Collector-Emitter Voltage	V_{CEO}	40	V	
Emitter-Base Voltage	V_{EBO}	6	V	
Collector Current -Continuous	I_c	0.2	A	
Power Dissipation	P_d	Note1	0.1	W
		Note2	0.59	
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	Note1	1250	$^{\circ}C/W$
		Note2	212	
Junction Temperature	T_J	-55~ +150	$^{\circ}C$	
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$	

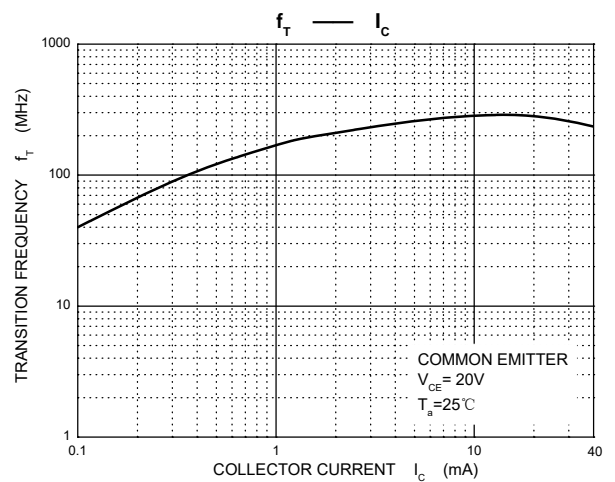
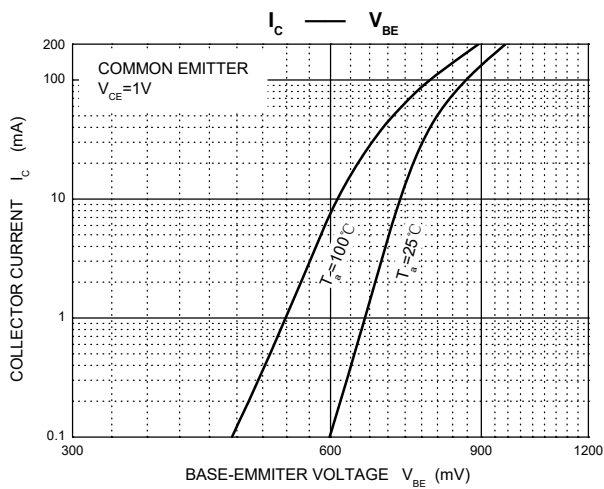
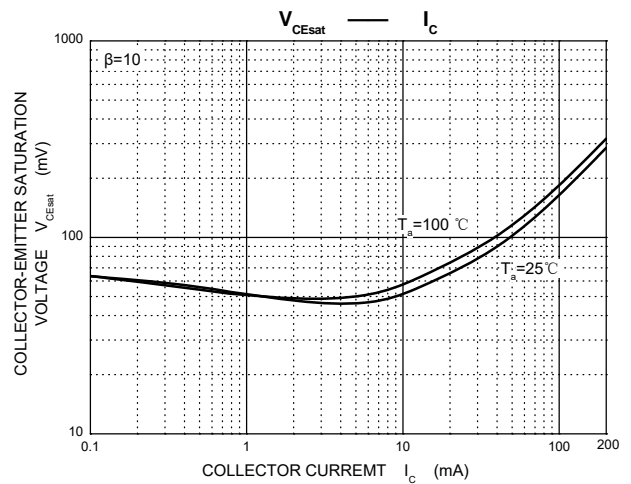
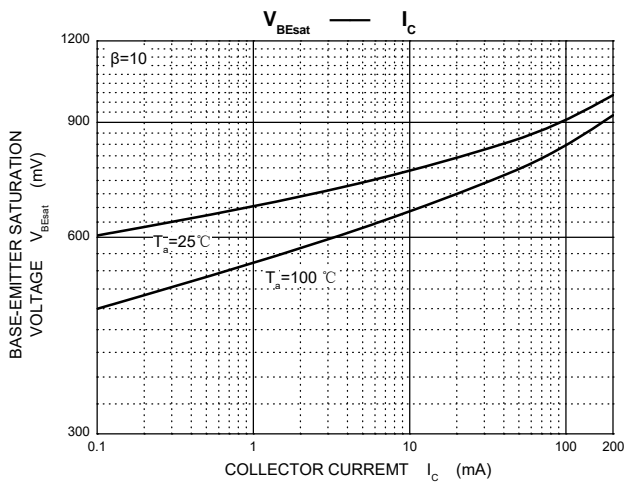
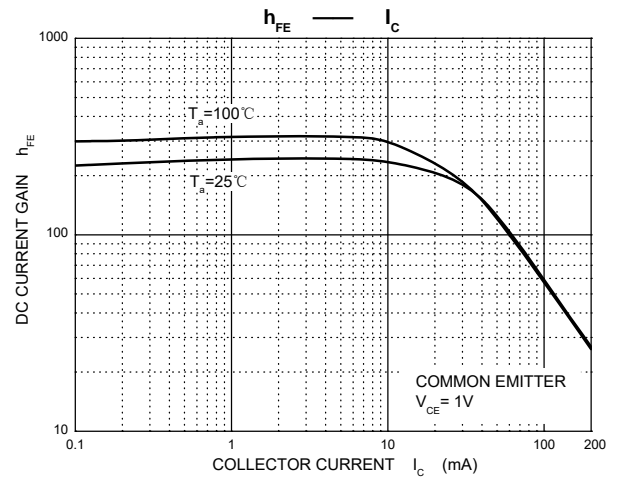
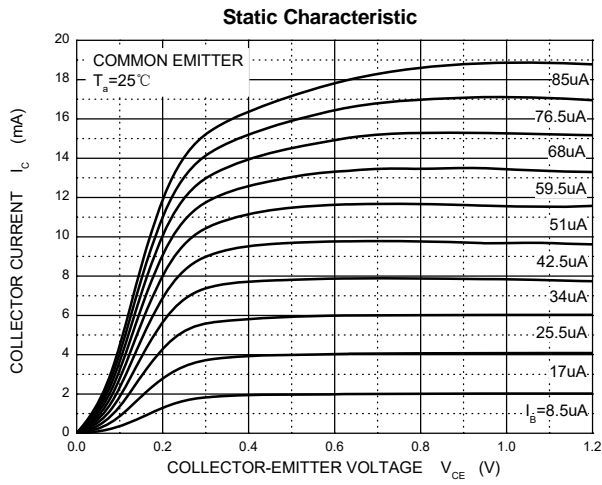
Note:

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 collector 1cm².

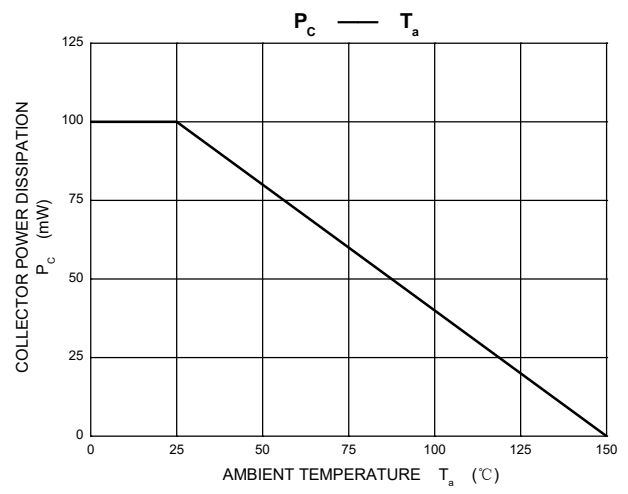
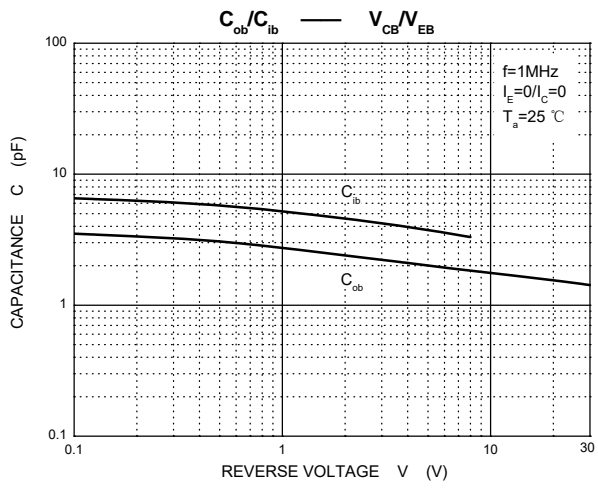
ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6		V
Collector cut-off current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0$		100	nA
Collector cut-off current	I_{CEX}	$V_{CE}=30\text{V}, V_{EB(off)}=3\text{V}$		50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}, I_C=0$		100	nA
DC current gain	h_{FE}	$V_{CE}=1\text{V}, I_C=10\text{mA}$	100	300	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50\text{mA}, I_B=5\text{mA}$		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=50\text{mA}, I_B=5\text{mA}$		0.95	V
Transition frequency	f_T	$V_{CE}=20\text{V}, I_C=10\text{mA}, f=100\text{MHz}$	300		MHZ
Delay Time	t_d	$V_{CC}=3\text{V}, I_C=10\text{mA},$		35	ns
Rise Time	t_r	$V_{BE(off)}=-0.5\text{V}, I_{B1}=1\text{mA}$		35	ns
Storage Time	t_s	$V_{CC}=3\text{V}, I_C=10\text{mA},$		200	ns
Fall Time	t_f	$I_{B1}=I_{B2}=1\text{mA}$		50	ns

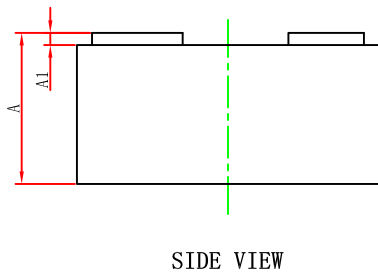
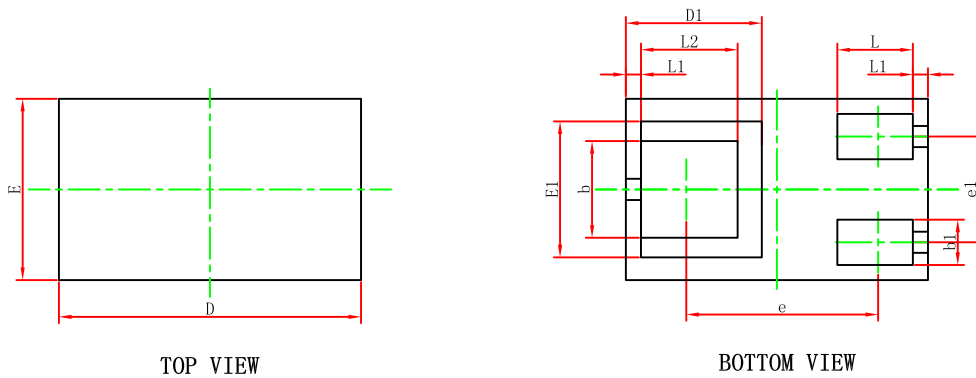
Typical Characteristics



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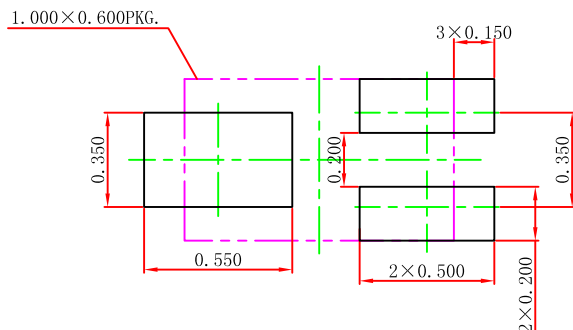


WFBFP-03E Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.010	0.100	0.000	0.004
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
D1	0.450REF.		0.018REF.	
E1	0.450REF.		0.018REF.	
b	0.270	0.370	0.011	0.015
b1	0.100	0.200	0.004	0.008
e	0.635REF.		0.025REF.	
e1	0.300	0.400	0.012	0.016
L	0.200	0.300	0.008	0.012
L1	0.050REF.		0.002REF.	
L2	0.270	0.370	0.011	0.015

WFBFP-03E Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.050 mm.
3. The pad layout is for reference purposes only.