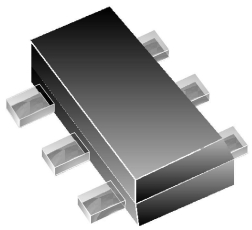
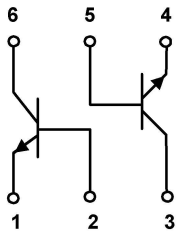
WT3904CW

Dual NPN Transistor

Features

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching





SOT-563

Mechanical Characteristics

- SOT-563 Package
- Marking : Making Code
- RoHS Compliant & HF

Absolute Maximum Rating (Tamb=25°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	I_C	200	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	0.2	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	°C /W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ 150	°C

Electrical Characteristics - NPN (T_{amb}=25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	6	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 60V, I_E = 0	-	-	50	nA
Collector Cut-off Current	I_{CEX}	V_{CE} = 30V, $V_{EB(off)}$ = 3V	-	-	50	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	-	-	50	nA
DC Current Gain	$h_{FE(1)}$	V_{CE} = 1V, I_C = 0.1mA	40	-	-	
	$h_{FE(2)}$	V_{CE} = 1V, I_C = 1.0mA	70	-	-	
	$h_{FE(3)}$	V_{CE} = 1V, I_C = 10mA	100	-	300	
	$h_{FE(4)}$	V_{CE} = 1V, I_C = 50mA	60	-	-	
	$h_{FE(5)}$	V_{CE} = 1V, I_C = 100mA	30	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1.0mA	-	-	0.2	V
		I_C = 50mA, I_B = 5.0mA	-	-	0.3	
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1.0mA	-	-	0.85	V
		I_C = 50mA, I_B = 5.0mA	-	-	0.95	
Transition Frequency	f_T	V_{CE}= 20V, I_C= 10mA, f= 100MHz	300	-	-	MHz
Output Capacitance	C_{obo}	V_{CB}= 5V, I_E= 0, f= 1MHz	-	-	4	pF
Input Capacitance	C_{ibo}	V_{EB}= 0.5V, I_C= 0, f= 1MHz	-	-	8	pF
Delay Time	t_d	V_{CC} = 3V, $V_{BE(off)}$ = -0.5V, I_C = 10mA, I_{B1} = 1mA	-	-	35	ns
Rise Time	t_r		-	-	35	ns
Storage Time	t_s	V_{CC} = 3V, I_C = 10mA, I_{B1} = I_{B2} = 1mA	-	-	200	ns
Fall Time	t_f		-	-	50	ns

Typical Characteristics

Figure 1. Static Characteristics

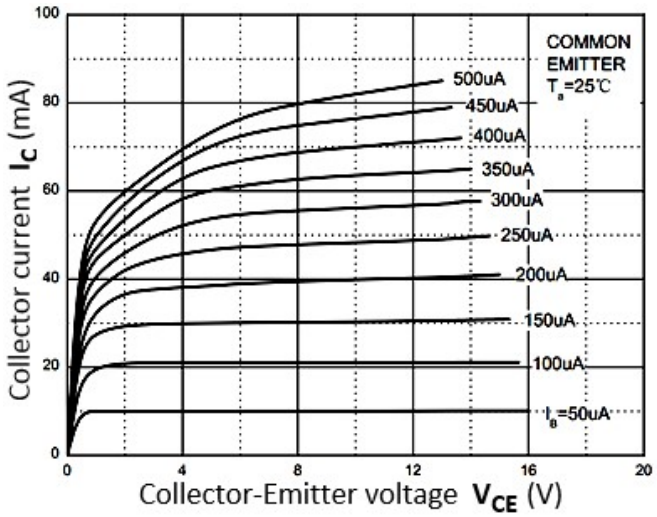


Figure 2. h_{FE} vs. I_C

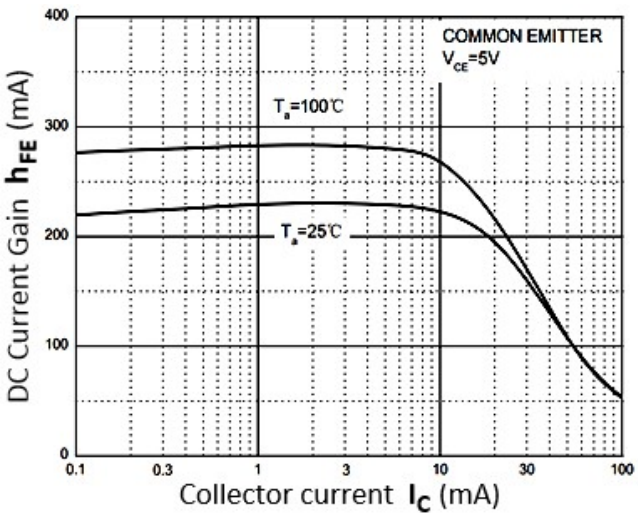


Figure 3. $V_{BE(sat)}$ vs. I_C

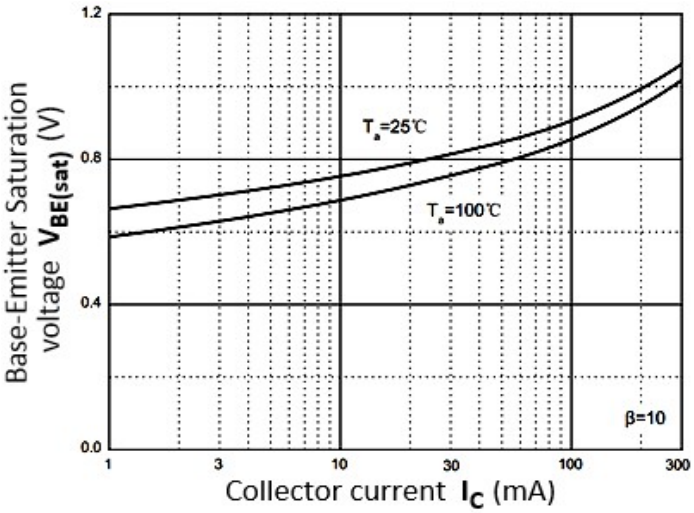


Figure 4. $V_{CE(sat)}$ vs. I_C

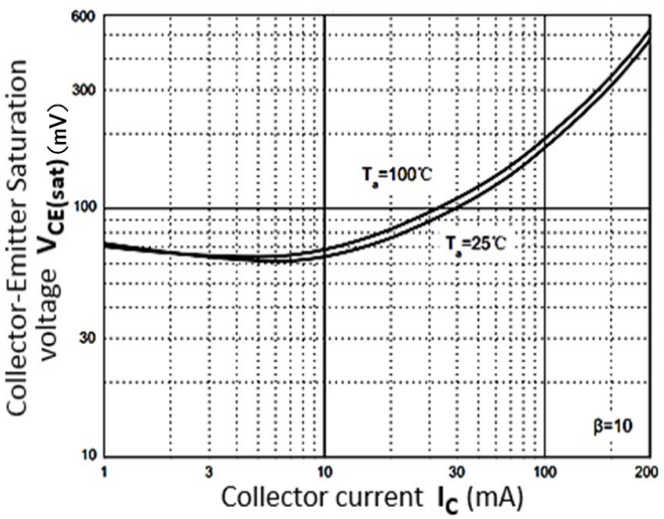


Figure 5. I_C vs. V_{BE}

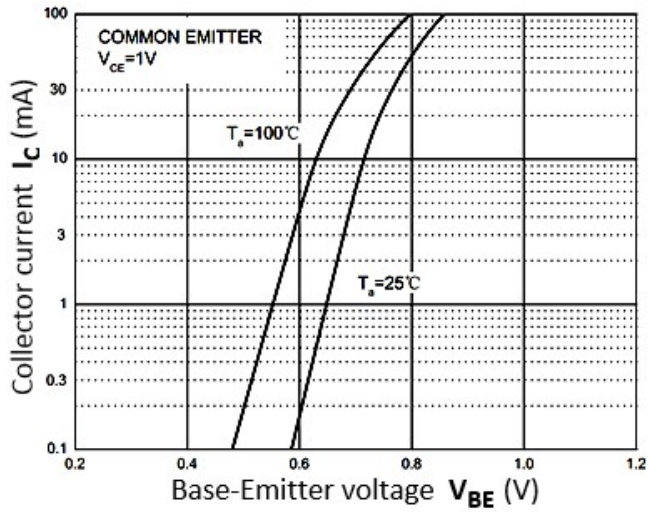


Figure 6. C_{ob} / C_{ib} vs. V_{CB} / V_{EB}

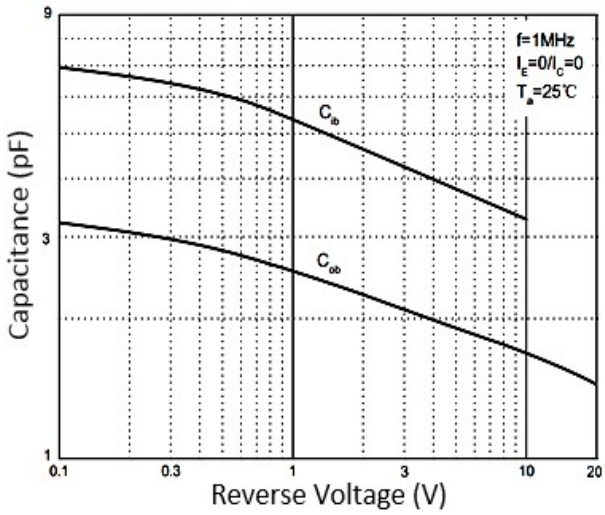
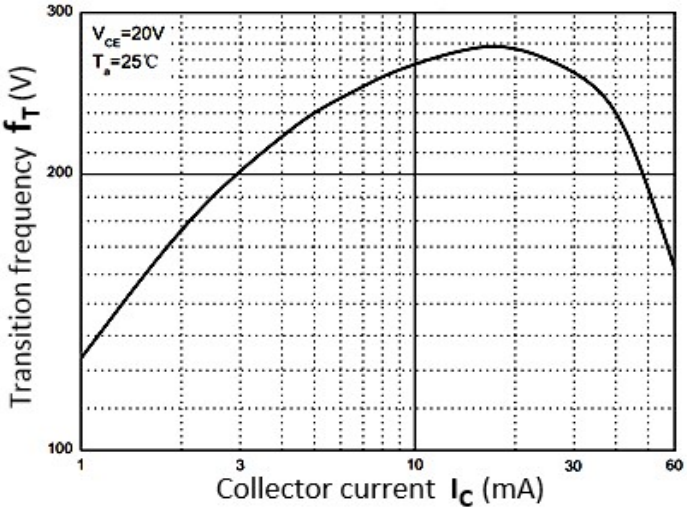
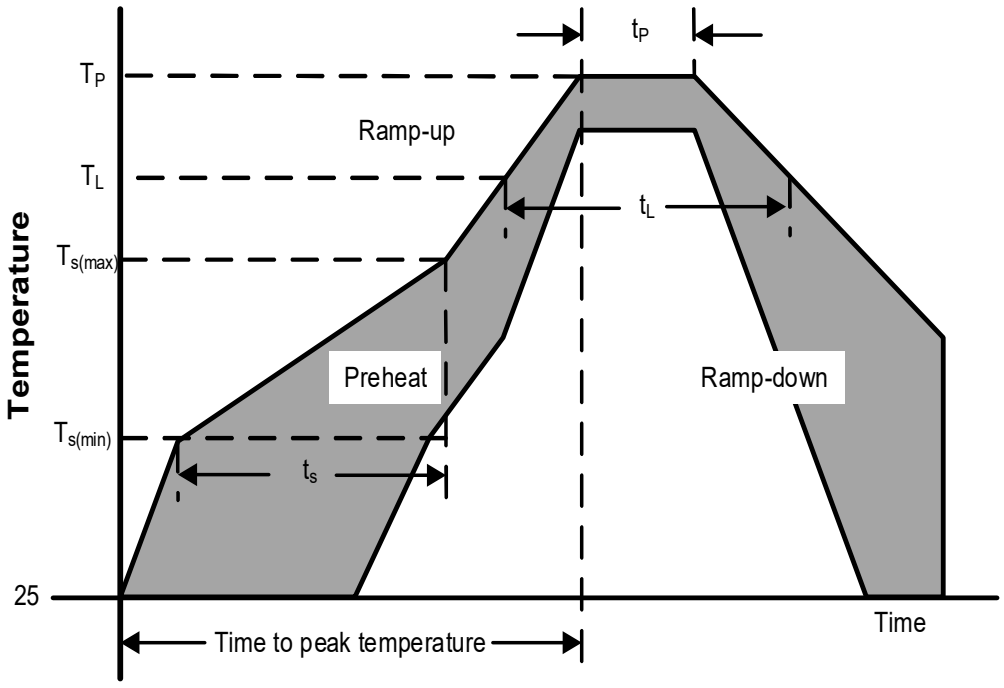


Figure 7. f_T vs. I_C



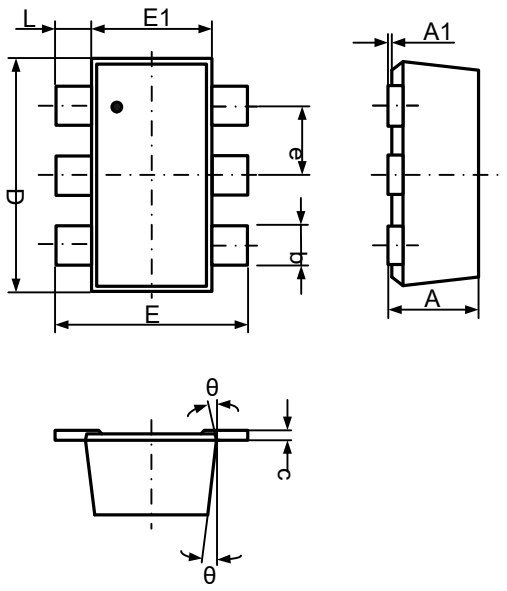
Soldering Parameters

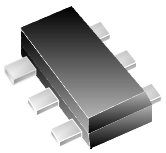
Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (ts)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L——Ramp-up Rate		5°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260+0/-5 °C
Time within actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



Outline Drawing – SOT-563

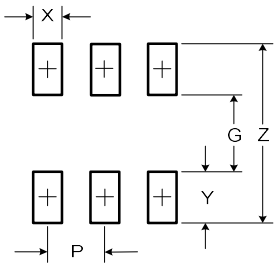
PACKAGE OUTLINE





SOT-563

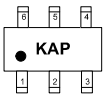
DIMENSIONS				
SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7° REF		7° REF	



DIM	MILLIMETERS
Z	1.91
G	0.89
P	0.51 TYP
X	0.3
Y	0.51

Notes:
Controlling Dimension: Millimeter.

Marking Codes

Part Number	Marking Code
WT3904CW	

Package Information

Qty：3k/Reel

CONTACT INFORMATION

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Specifications are subject to change without notice.
The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
Users should verify actual device performance in their specific applications.