

### NPN EPITAXIAL PLANAR TRANSISTOR

 Lead(Pb)-Free

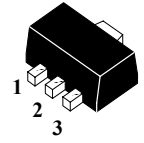
#### Features:

- \* Collector-Emitter Voltage:  $V_{CEO}=40V$
- \* Complementary to WTM3906

#### Mechanical Data:

- \* Case : Molded Plastic

1. BASE  
2. COLLECTOR  
3. EMITTER



SOT-89

#### ABSOLUTE MAXIMUM RATINGS( $T_A=25^{\circ}C$ Unless Otherwise Noted)

Rating	Symbol	Value	Unit
Collector to Base Voltage	$V_{CBO}$	60	V
Collector to Emitter Voltage	$V_{CEO}$	40	V
Collector to Base Voltage	$V_{EBO}$	6.0	V
Collector Current	$I_C$	200	mA
Total Device Dissipation $T_A=25^{\circ}C$	$P_D$	1.0	W
Junction Temperature	$T_j$	150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-55 to +150	$^{\circ}C$

## ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage $I_C=10\mu A, I_E=0$	$BV_{CBO}$	60	-	-	V
Collector-Emitter Breakdown Voltage $I_C=1.0mA, I_B=0$	$BV_{CEO}$	40	-	-	V
Emitter-Base Breakdown Voltage $I_E=10\mu A, I_C=0$	$BV_{EBO}$	6.0	-	-	V
Collector Cut-Off Current $V_{CE}=30V, V_{BE}=3V$	$I_{CEX}$	-	-	50	nA

## ON CHARACTERISTICS<sup>1</sup>

DC Current Gain $V_{CE}=1.0V, I_C=0.1mA$	$h_{FE(1)}$	40	-	-	
$V_{CE}=1.0V, I_C=1.0mA$	$h_{FE(2)}$	70	-	-	
$V_{CE}=1.0V, I_C=10mA$	$h_{FE(3)}$	100	-	300	-
$V_{CE}=1.0V, I_C=50mA$	$h_{FE(4)}$	60	-	-	
$V_{CE}=1.0V, I_C=100mA$	$h_{FE(5)}$	30	-	-	
Collector-Emitter Saturation Voltage $I_C=10mA, I_B=1.0mA$ $I_C=50mA, I_B=5.0mA$	$V_{CE(sat)}$	- -	- -	200 300	mV
Collector-Emitter Saturation Voltage $I_C=10mA, I_B=1.0mA$ $I_C=50mA, I_B=5.0mA$	$V_{BE(sat)}$	650 -	- -	850 950	mV

## DYNAMIC CHARACTERISTICS

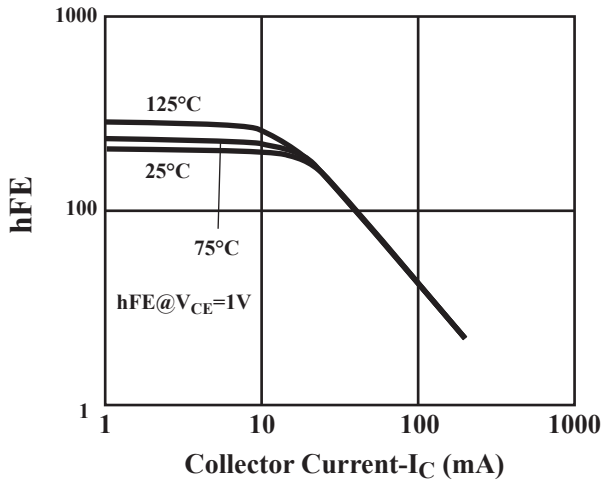
Transition Frequency $V_{CE}=20V, I_C=10mA, f=100MHz$	$f_T$	300	-	-	MHz
Output Capacitance $V_{CB}=5.0V, I_E=0, f=1.0MHz$	$C_{ob}$	-	-	4.0	pF

Note1. Pulse Test: Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$

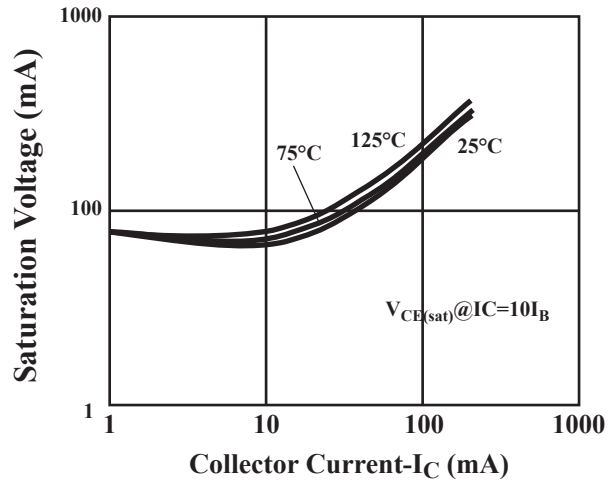
## DEVICE MARKING

WTM3904=3904

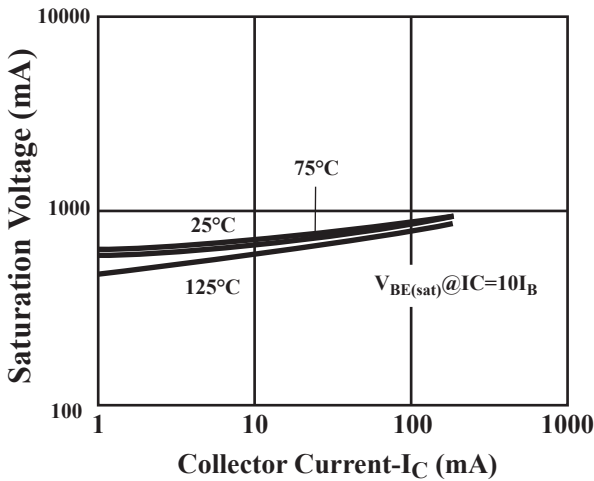
**Typical Characteristic**



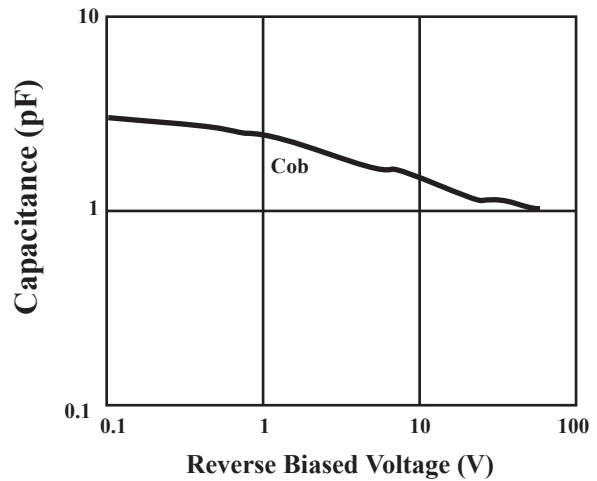
**Fig.1 Current Gain & Collector Current**



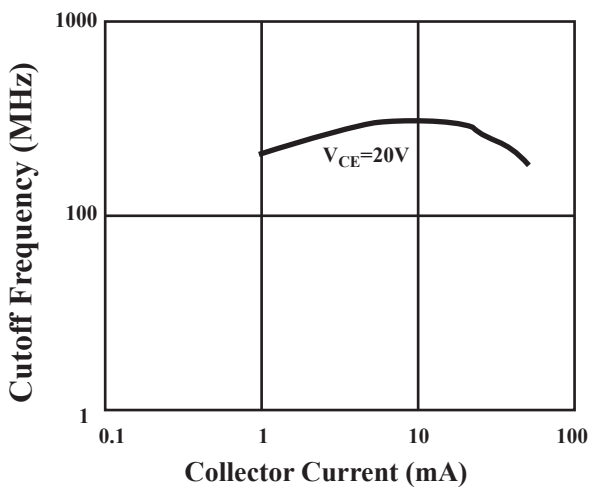
**Fig.2 Saturation Voltage & Collector Current**



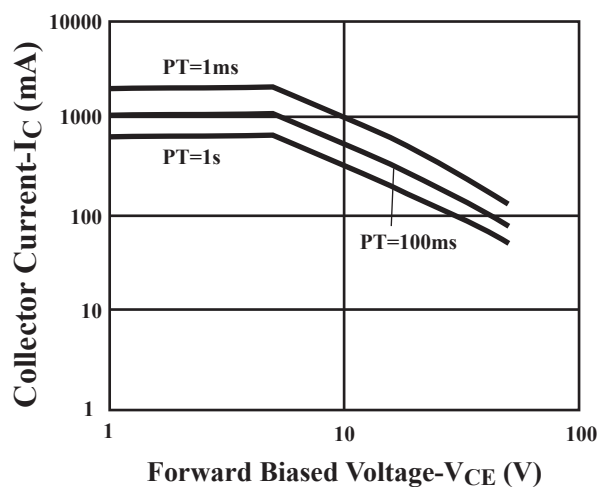
**Fig.3 Saturation Voltage & Collector Current**



**Fig.4 Capacitance & Reverse-Biased Voltage**



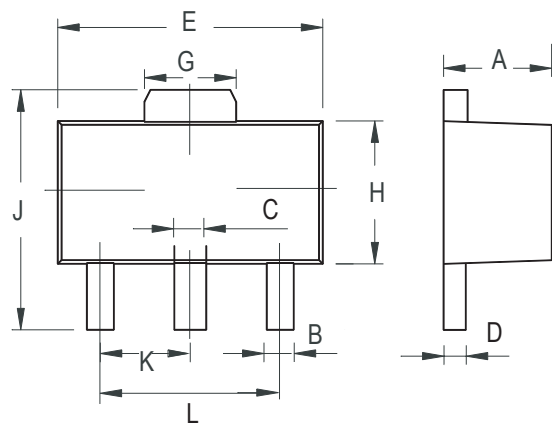
**Fig.5 Cutoff Frequency & Collector Current**



**Fig.6 Safe Operating Area**

**SOT-89 Outline Dimensions**

unit:mm



<b>SOT-89</b>		
<b>Dim</b>	<b>Min</b>	<b>Max</b>
<b>A</b>	1.400	1.600
<b>B</b>	0.320	0.520
<b>C</b>	0.360	0.560
<b>D</b>	0.350	0.440
<b>E</b>	4.400	4.600
<b>G</b>	1.400	1.800
<b>H</b>	2.300	2.600
<b>J</b>	3.940	4.250
<b>K</b>	1.500TYP	
<b>L</b>	2.900	3.100