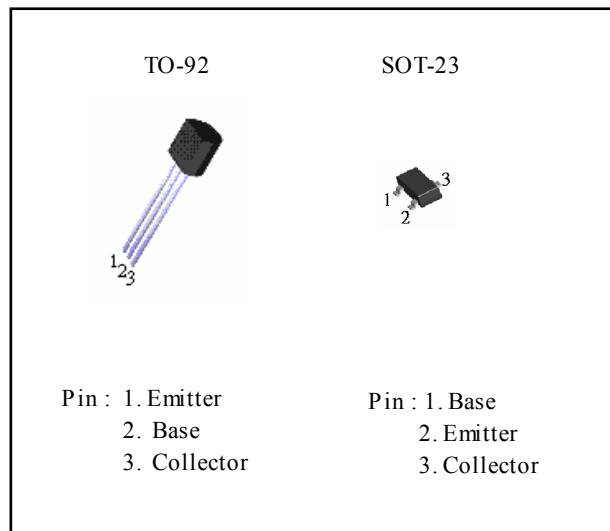


**NPN Epitaxial Silicon Transistor**

**GENERAL PURPOSE TRANSISTOR**

- Collector-Emitter Voltage:  $V_{CE0} = 40V$
- Collector Dissipation:  $P_{C (max)} = 625 mW$



**ABSOLUTE MAXIMUM RATINGS** ( $T_a = 25^\circ C$ )

Rating	Symbol	Rating	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
Collector Dissipation	$P_C$	625	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55~150	$^\circ C$

**ORDERING INFORMATION**

Device	Operating Temperature	Package
PJ2N3904CT	-20 $^\circ C$ ~ +85 $^\circ C$	TO-92
PJ2N3904CX		SOT-23

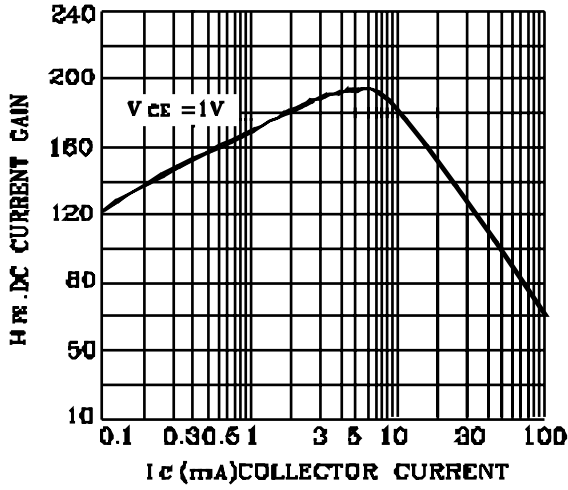
**ELECTRICAL CHARACTERISTICS** ( $T_a = 25^\circ C$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 10 \mu A, I_E = 0$	60			V
*Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 1mA, I_B = 0$	40			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E = 10 \mu A, I_C = 0$	6			V
Collector Cut-off Current	$I_{CEX}$	$V_{CE} = 30V, V_{BE} = 3V$			50	nA
Base Cut-off Current	$I_{BL}$	$V_{CE} = 30V, V_{BE} = 3V$			50	nA
*DC Current Gain	$h_{FE}$	$I_C = 0.1mA, V_{CE} = 1V$	40			
		$I_C = 1mA, V_{CE} = 1V$	70			
		$I_C = 10mA; V_{CE} = 1V$	100		300	
		$I_C = 50mA, V_{CE} = 1V$	60			
		$I_C = 100mA, V_{CE} = 1V$	30			
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10mA, I_B = 1mA$			0.2	V
		$I_C = 50mA, I_B = 5mA$			0.3	V
*Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10mA, I_B = 1mA$	0.65		0.85	V
		$I_C = 50mA, I_B = 5mA$			0.95	V
Output Capacitance	$C_{ob}$	$V_{CB} = 5V, I_E = 0$			4	pF
Current Gain Bandwidth Produce	$f_T$	$f = 1MHz$ $I_C = 10mA, V_{CE} = 20V$	300			MHz
Turn On Time	$t_{on}$	$f = 100MHz$ $V_{CC} = 3V, V_{BE} = 0.5V$			70	ns
Turn Off Time	$t_{off}$	$I_C = 10mA, I_{B1} = 1mA$ $V_{CC} = 3V, I_C = 1mA$			250	ns
		$I_{B1} = I_{B2} = 1mA$				

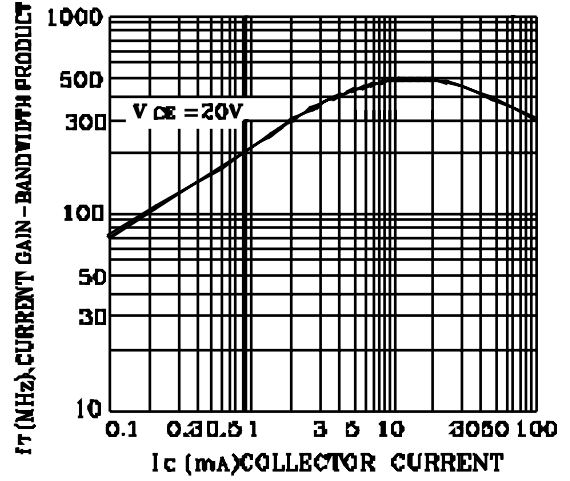
\*Pulse Test: Pulse Width  $\leq 300 \mu s$ . Duty Cycle  $\leq 2\%$

NPN Epitaxial Silicon Transistor

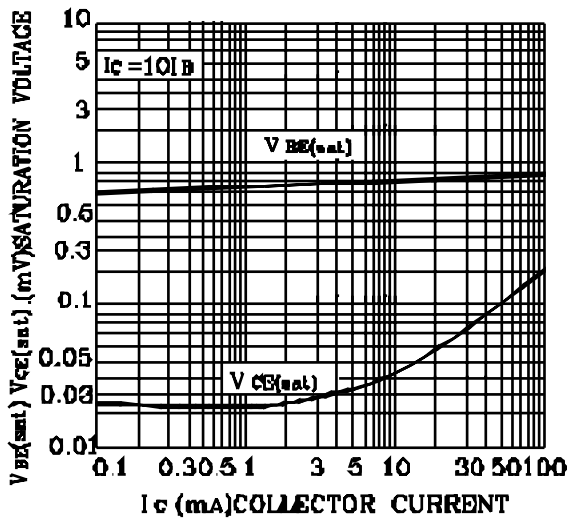
DC CURRENT GAIN



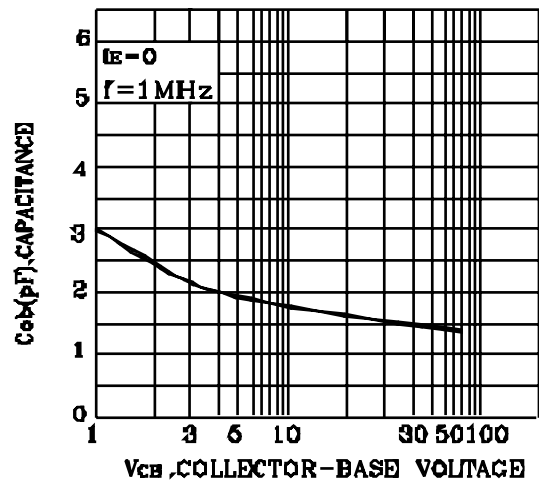
CURRENT GAIN-BANDWIDTH PRODUCT



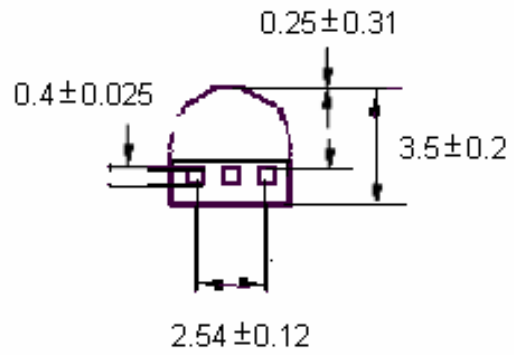
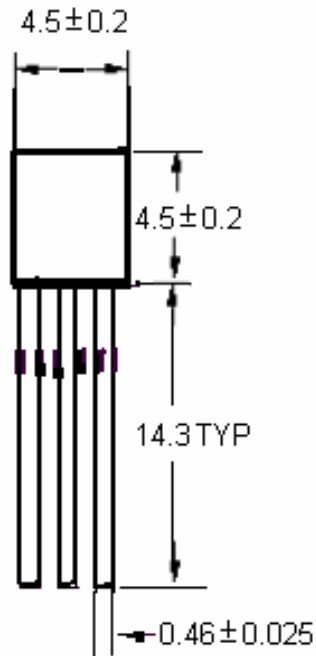
BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



OUTPUT CAPACITANCE



**TO-92 Unit:mm**



**SOT-23 Unit:mm**

