

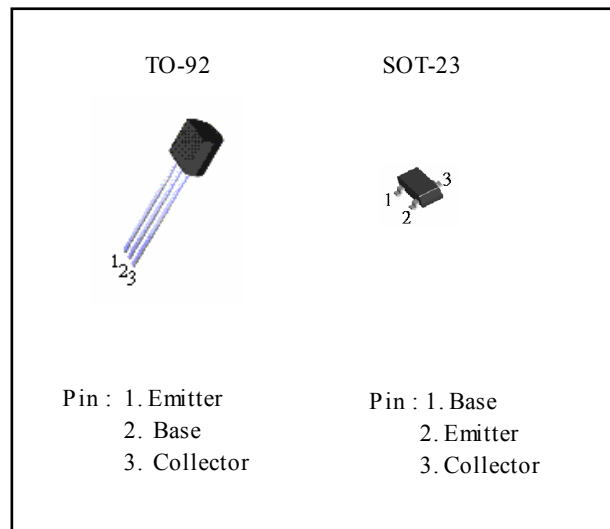
NPN Epitaxial Silicon Transistor

GENERAL PURPOSE TRANSISTOR

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

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

**ORDERING INFORMATION**

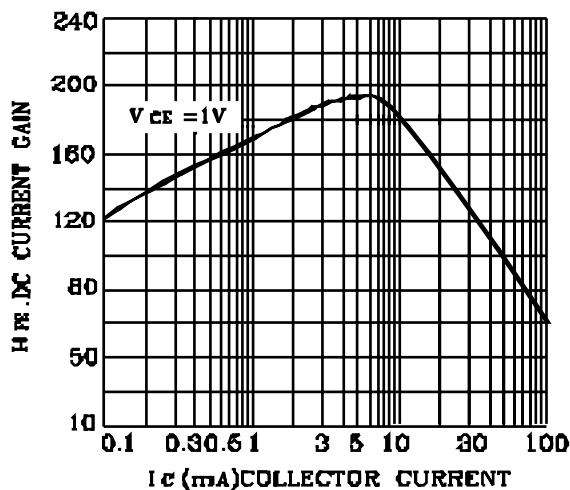
Device	Operating Temperature	Package
PJ2N3904CT	-20 $^\circ\text{C}$ ~ +85 $^\circ\text{C}$	TO-92
PJ2N3904CX		SOT-23

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

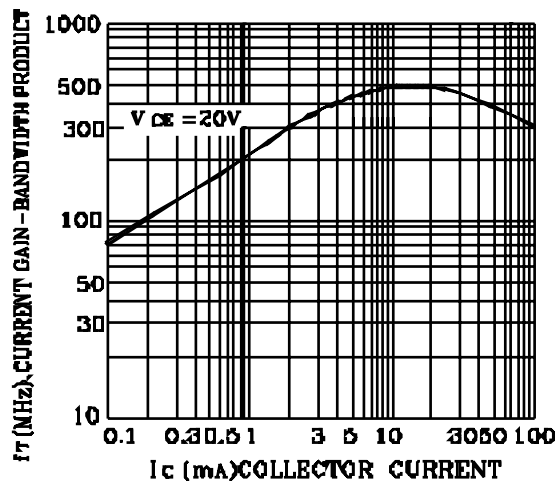
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = 10\text{ }\mu\text{A}$, $I_E = 0$	60			V
*Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 1\text{ mA}$, $I_B = 0$	40			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = 10\text{ }\mu\text{A}$, $I_C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

*Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$

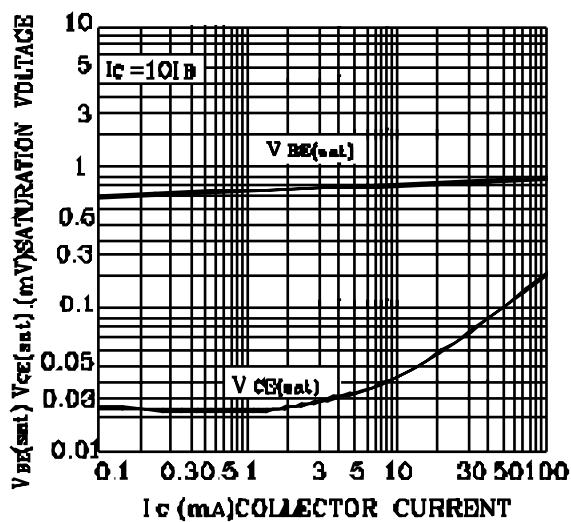
DC CURRENT GAIN



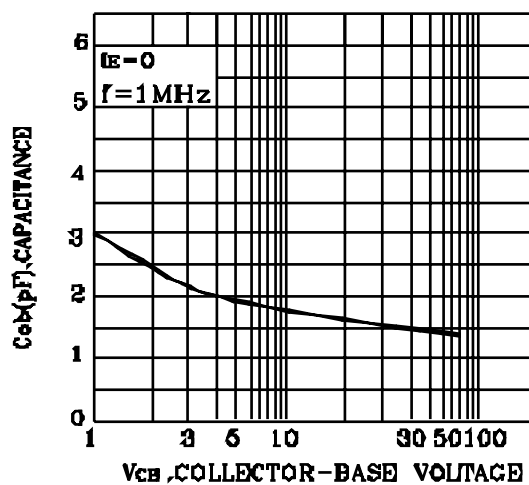
CURRENT GAIN-BANDWIDTH PRODUCT



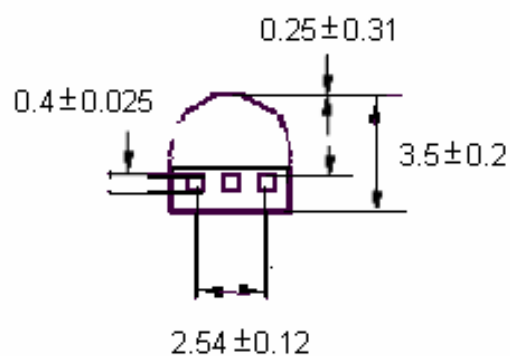
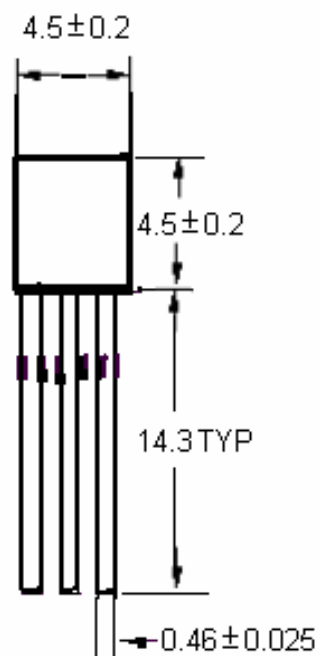
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



OUTPUT CAPACITANCE



TO-92 Unit:mm



SOT-23 Unit:mm

