

Transistors

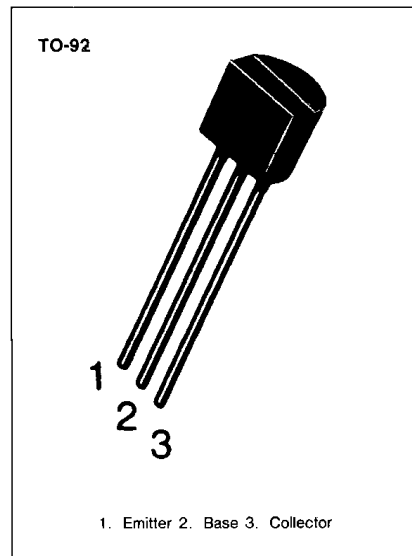
2N4403

GENERAL PURPOSE TRANSISTOR

- Collector-Emitter Voltage: $V_{CE0} = 40V$
- Collector Dissipation: $P_c (\text{max}) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_c	-600	mA
Collector Dissipation	P_c	625	mW
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ C$



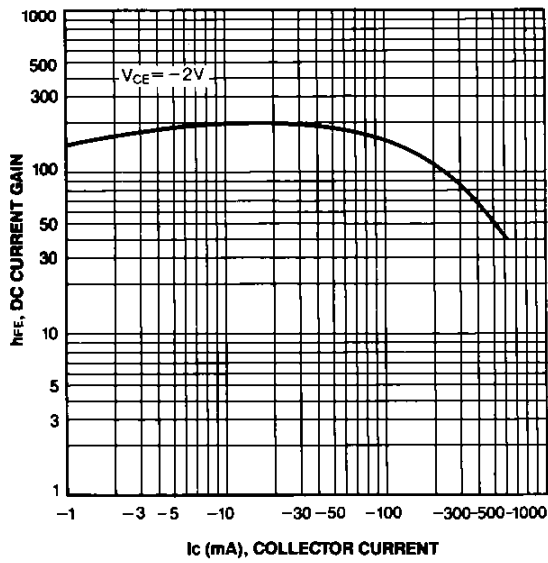
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = -100\mu A, I_E = 0$	-40			V
* Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = -1mA, I_B = 0$	-40			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = -100\mu A, I_C = 0$	-5			V
Collector Cut-off Current	I_{CEX}	$V_{CE} = -35V, V_{EB} = -0.4V$			-100	nA
Base Cut-off Current	I_{BEV}	$V_{CE} = -35V, V_{EB} = -0.4V$			-100	nA
* DC Current Gain	h_{FE}	$V_{CE} = -1V, I_C = -0.1mA$	30			
		$V_{CE} = -1V, I_C = -1mA$	60			
		$V_{CE} = -1V, I_C = -10mA$	100			
		* $V_{CE} = -2V, I_C = -150mA$	100		300	
		* $V_{CE} = -2V, I_C = -500mA$	20			
* Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_C = -150mA, I_B = -15mA$			-0.4	V
		$I_C = -500mA, I_B = -50mA$			-0.75	V
* Base-Emitter Saturation Voltage	$V_{BE} (\text{sat})$	$I_C = -150mA, I_B = -15mA$	-0.75		-0.95	V
		$I_C = -500mA, I_B = -50mA$			-1.3	V
Collector-Base Capacitance	C_{CB}	$V_{CB} = -10V, I_E = 0, f = 140KHz$			8.5	pF
Current Gain Bandwidth Product	f_T	$V_{CE} = -10V, I_C = -20mA$ $f = 100MHz$	200			MHz
Turn On Time	t_{ON}	$V_{CC} = -30V, V_{BE} = -2V$ $I_C = -150mA, I_{B1} = -15mA$			35	ns
Turn Off Time	t_{OFF}	$V_{CC} = -30V, I_C = -150mA$ $I_{B1} = I_{B2} = -15mA$			255	ns

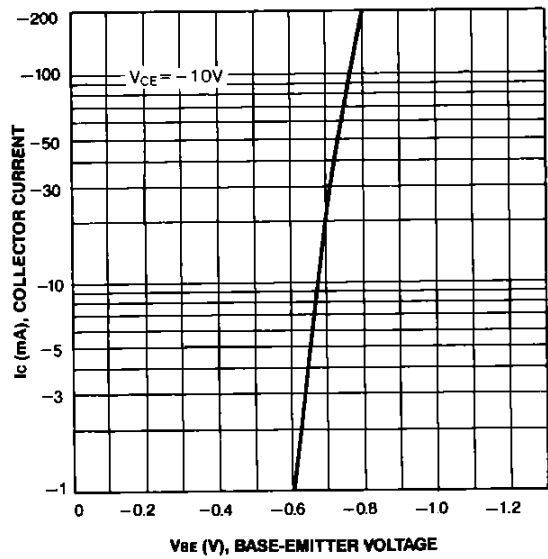
*Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



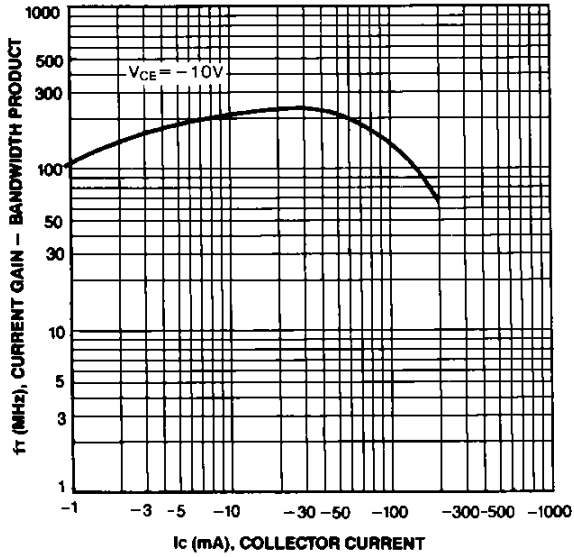
DC CURRENT GAIN



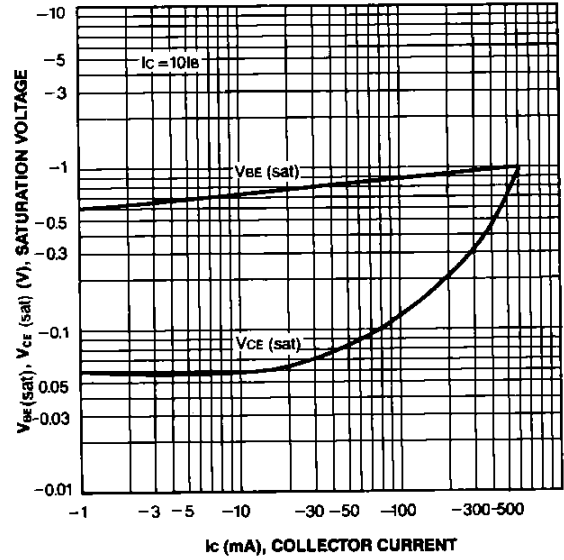
BASE-EMITTER ON VOLTAGE



CURRENT GAIN-BANDWIDTH PRODUCT



BASE-EMITTER SATURATION VOLTAGE COLLECTOR-EMITTER SATURATION VOLTAGE



COLLECTOR-BASE CAPACITANCE

