

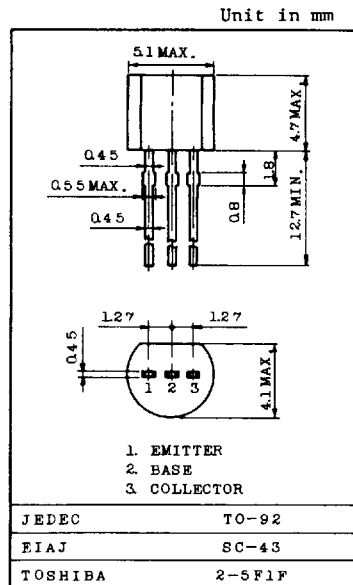
TOSHIBA (DISCRETE/OPTO)

T-31-23

FOR GENERAL PURPOSE USE SWITCHING AND AMPLIFIER APPLICATIONS.

FEATURES:

- . Low Leakage Current
 - : $I_{CEV} = -50\text{nA}(\text{Max.})$, $I_{BEV} = 50\text{nA}(\text{Max.})$
 - @ $V_{CE} = -30\text{V}$, $V_{BE} = 3\text{V}$
- . Excellent DC Current Gain Linearity
- . Low Saturation Voltage
 - : $V_{CE}(\text{sat}) = -0.4\text{V}(\text{Max.})$ @ $I_C = -50\text{mA}$, $I_B = -5\text{mA}$
- . Low Collector Output Capacitance
 - : $C_{ob} = 4.5\text{pF}(\text{Max.})$ @ $V_{CB} = -5\text{V}$
- . Complementary to 2N3904

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

Weight : 0.21g

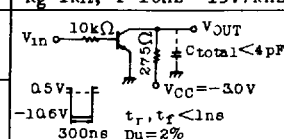
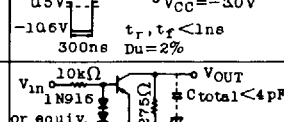
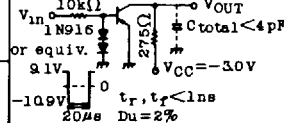
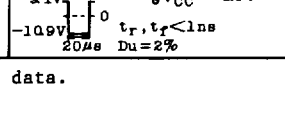
	CHARACTERISTIC	SYMBOL	RATING	UNIT
※	Collector-Base Voltage	V_{CBO}	-40	V
※	Collector-Emitter Voltage	V_{CEO}	-40	V
※	Emitter-Base Voltage	V_{EBO}	-5	V
※	Collector Current	I_C	-200	mA
	Base Current	I_B	-50	mA
※	Collector Power Dissipation ($T_a = 25^\circ\text{C}$) Derate Linearly 25°C	P_C	625	mW
			5.0	mW/ $^\circ\text{C}$
※	Collector Power Dissipation ($T_c = 25^\circ\text{C}$) Derate Linearly 25°C	P_C	1.5	W
			12	mW/ $^\circ\text{C}$
※	Thermal Resistance (Junction to Ambient)	$R_{th(j-a)}$	200	$^\circ\text{C/W}$
※	Thermal Resistance (Junction to Case)	$R_{th(j-c)}$	83.3	$^\circ\text{C/W}$
※	Junction Temperature	T_j	150	$^\circ\text{C}$
※	Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ\text{C}$

*In accordance with JEDEC registration data.

TOSHIBA (DISCRETE/OPTO)

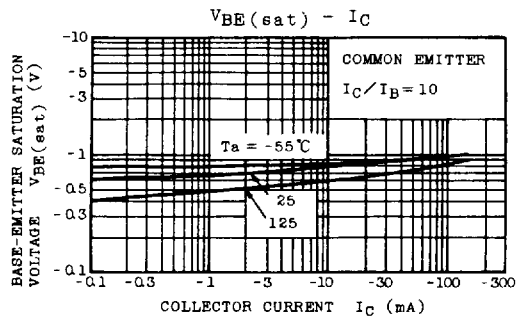
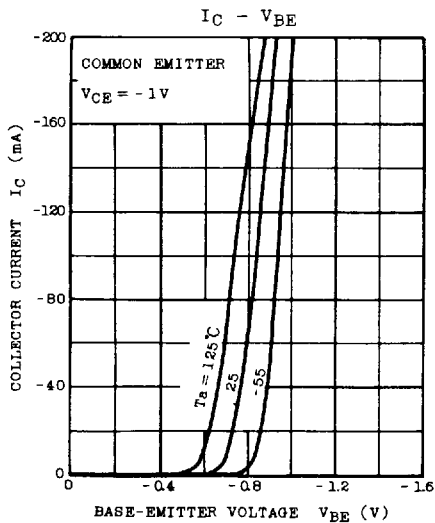
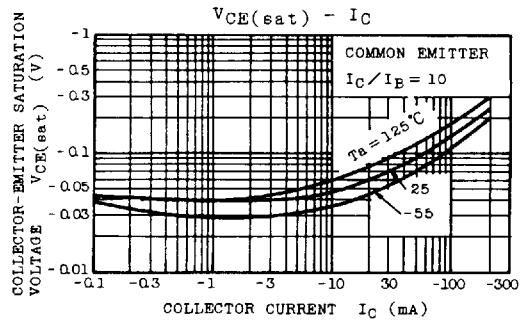
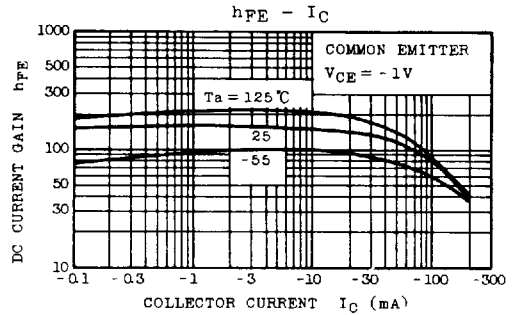
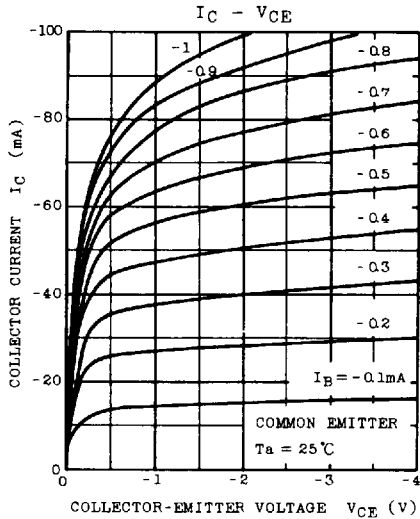
2N3906

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
*	Collector Cut-off Current	ICEV	VCE=-30V, VBE=3V	-	-	-50	nA
*	Base Cut-off Current	IBEV	VCE=-30V, VBE=3V	-	-	50	nA
*	Collector-Base Breakdown Voltage	V(BR)CBO	IC=-10μA, IE=0	-40	-	-	V
*	Collector-Emitter Breakdown Voltage	V(BR)CEO	IC=-1mA, IB=0	-40	-	-	V
*	Emitter-Base Breakdown Voltage	V(BR)EBO	IE=-10μA, IC=0	-5	-	-	V
DC Current Gain		hFE(1)	VCE=-1V, IC=-0.1mA	60	-	-	
		hFE(2)	VCE=-1V, IC=-1mA	80	-	-	
		hFE(3)	VCE=-1V, IC=-10mA	100	-	300	
		hFE(4)	VCE=-1V, IC=-50mA	60	-	-	
		hFE(5)	VCE=-1V, IC=-100mA	30	-	-	
* Collector-Emitter Saturation Voltage		VCE(sat)1	IC=-10mA, IB=-1mA	-	-	-0.25	V
		VCE(sat)2	IC=-50mA, IB=-5mA	-	-	-0.4	
* Base-Emitter Saturation Voltage		VBE(sat)1	IC=-10mA, IB=-1mA	-0.65	-	-0.85	V
		VBE(sat)2	IC=-50mA, IB=-5mA	-	-	-0.95	
* Transition Frequency	fT		VCE=-20V, IC=-10mA f=100MHz	250	-	-	MHz
* Collector Output Capacitance	Cob		VCB=-5V, IE=0, f=1MHz	-	-	4.5	pF
* Input Capacitance	Cib		VEB=-0.5V, IC=0, f=1MHz	-	-	10	pF
* Input Impedance	hie		VCE=-10V, IC=-1mA f=1kHz	2.0	-	12	kΩ
* Voltage Feedback Ratio	hre						
* Small-Signal Current Gain	hfe						
* Collector Output Admittance	hoe						
* Noise Figure	NF		VCE=-5V, IC=-0.1mA Rg=1kΩ, f=10Hz ~ 15.7kHz	-	-	4	dB
* Switching Time	Delay Time	td		-	-	35	ns
	Rise Time	tr		-	-	35	
	Storage Time	tstg		-	-	225	
	Fall Time	tf		-	-	75	

* In accordance with JEDEC registration data.

TOSHIBA (DISCRETE/OPTO)



TOSHIBA (DISCRETE/OPTO)

