NPN diffused silicon planar transistors

2N2483 - 2N2484

Low-level, low-noise types

The 2N2483 and 2N2484 are NPN silicon Planar transistors designed for use in high-performance, low-noise amplifier circuits from audio to high-frequency ranges.

ELECTRICAL CHARACTERISTICS
(T_A = 25°C unless otherwise noted)

Symbol	Characteristic and test conditions	Min.	Typ.	Max.	Unit
h_{FE}	DC Current Gain *				
h_{fe}	High Frequency Current Gain *				
h_{fe}	Small Signal Current Gain *				
NF	Wide Band Noise Figure *				
NF	Narrow Band Noise Figure *				
h_{ie}	Input Resistance *				
h_{oe}	Output Conductance *				
h_{re}	Voltage Feedback Ratio *				
h_{ib}	Input Resistance *				
V_{BEon}	Emitter-Base On Voltage I_C=100 µA V_{CE}=5V	0.5	0.57	0.7	V
V_{CEsat}	Collector Saturation Voltage I_C=1mA I_B=0.1mA		0.2	0.35	V
I_{CBO}	Collector Cutoff Current I_E=0 V_{CB}=45V I_E=0 V_{CB}=45V T_A 150°C		0.1 0.2	10 10	nA µA
I_{EBO}	Emitter Cutoff Current I_C 0 V_{EB} 5V		0.1	10	nA
I_{CEO}	Collector-Emitter Cutoff Current I_B=0 V_{CE}=5V		0.1		nA
BV_{CBO}	Collector to Base Breakdown Voltage I_C=10 µA I_E=0	60			V
BV_{EBO}	Emitter to Base Breakdown Voltage I_C=0 I_E=10 µA	6			V
$V_{CEOsust}$	Collector to Emitter Sustaining Voltage (4 and 5) I_C=10mA (pulsed) I_B=0	60			
C_{ob}	Output Capacitance I_E=0 V_{CB}=5V		3.5	6	pF
C_{TE}	Emitter Transition Capacitance I_C=0 V_{EB}=0.5V		3.5	6	pF

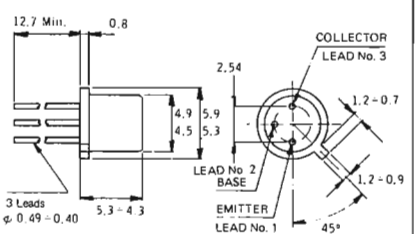
* For these parameters, see table on next page.

NOTES:
1) These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3) These ratings give a maximum junction temperature of 200°C and junction-to-case thermal resistance of 146°C/W (derating factor of 6.9 mW/°C); junction-to-ambient thermal resistance of 486°C/W (derating factor of 2.1 mW/°C).
4) These ratings refer to a high-current point where collector-to-emitter voltage is lowest. For more information send for SGS AR 5.
5) Pulse Conditions: length = 300 µsec; duty cycle 1%.
6) R_s 10 KΩ, Power Bandwidth of 15.7 Kc/s with dB points at 10 cps and 10-Kc/s.
7) f 1 Kc/s; R_s = 10 KΩ, Power Bandwidth of 200 cps.
8) f 10K R_s = 10 KΩ, Power Bandwidth of 2 Kc/s.
9) f 100 cps; R_s = 10 KΩ Power Bandwidth of 20 cps.

ABSOLUTE MAXIMUM RATINGS (1)
(T_A=25°C unless otherwise noted)

Voltages and Current		
Collector to Base	V_{CBO}	60 V
Collector to Emitter (4)	V_{CEO}	60 V
Emitter to Base	V_{EBO}	6 V
Collector Current	I_C	50 mA
Temperatures		
Storage Temperature	T_{STG}	-65°C to + 300°C
Operating Junction Temperature	T_J	200°C Max
Lead Temperature (Soldering, No Time Limit)	T_L	300°C Max
Power (2 and 3)		
Dissipation at 25°C Case Temperature	P_D	1.2 W
Dissipation at 25°C Ambient Temperature	P_D	0.36 W
Dissipation at 100°C Case Temperature	P_D	0.68 W

PHYSICAL DIMENSIONS
similar to JEDEC TO-18 outline



Note all dimensions in mm.

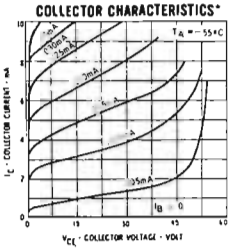
ELECTRICAL CHARACTERISTICS (Contd.) (T_A=25°C unless otherwise noted)

Symbol	Characteristic and Test Conditions	2N2483			2N2484			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
h_{FE}	DC Current Gain							
	I_C=1 µA V_{CE}=5V				30	200		
	I_C=10 µA V_{CE}=5V	40	80	120	100	290	500	
	I_C=100 µA V_{CE}=5V	75	140		175	375		
	I_C=500 µA V_{CE}=5V	100	200		200	430		
	I_C=1mA V_{CE}=5V	175	230		250	450		
	I_C=10 µA V_{CE}=5V T_A= -55°C	10			20			
h_{FE}	DC Pulse Current Gain (5)							
	I_C=10mA V_{CE}=5V		280	500		430	800	
h_{fe}	High Frequency Current Gain							
	I_C=50 µA V_{CE}=5V f= 5 Mc/s	2.4	4		3	4		
	I_C=500 µA V_{CE}=5V f= 30 Mc/s	2	2.3		2	2.6		
h_{fe}	Small Signal Current Gain							
	I_C=1mA V_{CE}=5V f= 1 Kc/s	80	280	450	150	400	900	
NF	Wide Band Noise Figure (6)							
	I_C=10 µA V_{CE}=5V		1.9	4		1.8	3	dB
NF	Narrow Band Noise Figure							
	I_C=10 µA V_{CE}=5V (7)		1.9	4		1.8	3	dB
	I_C=10 µA V_{CE}=5V (8)		0.7	3		0.6	2	dB
	I_C=10 µA V_{CE}=5V (9)		4	15		4	10	dB
h_{ie}	Input Resistance							
	I_C=1mA V_{CE}=5V f=1 Kc/s	1.5	7.5	13	3.5	15	24	KΩ
h_{oe}	Output Conductance							
	I_C=1mA V_{CE}=5V f=1 Kc/s		11	30		15	40	µmho
h_{re}	Voltage Feedback Ratio							
	I_C=1mA V_{CE}=5V f=1 Kc/s		300	800		425	800	$x10^{-6}$
h_{ib}	Input Resistance							
	I_C=1mA V_{CB}=5V f=1 Kc/s	25	27	32	25	27	32	Ω

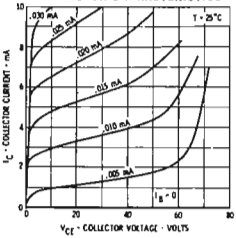
TYPICAL ELECTRICAL CHARACTERISTICS

2N2483

COLLECTOR CHARACTERISTICS*



COLLECTOR CHARACTERISTICS*



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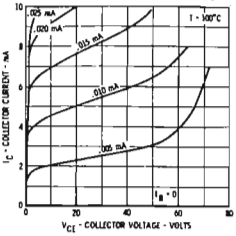
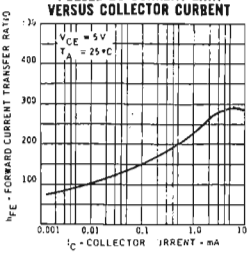
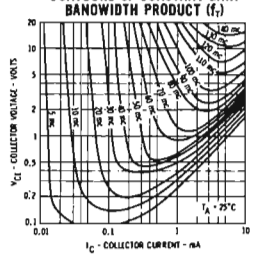


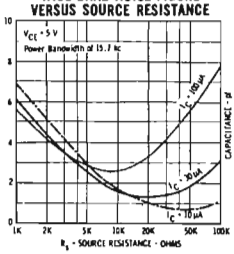
PULSED DC CURRENT GAIN VERSUS COLLECTOR CURRENT



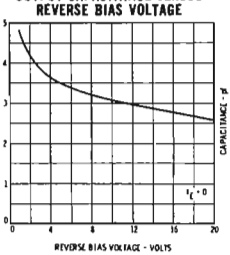
CONTOURS OF CONSTANT GAIN BANDWIDTH PRODUCT (f_T)



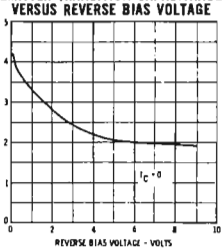
WIDE BAND NOISE FIGURE VERSUS SOURCE RESISTANCE



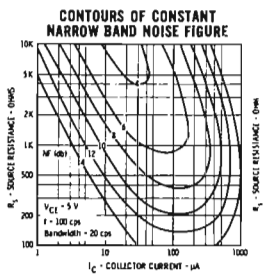
OUTPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



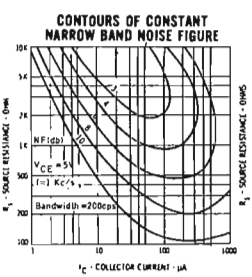
EMITTER TRANSITION CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



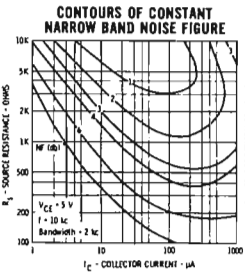
CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



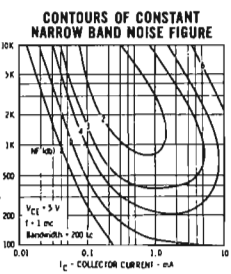
CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



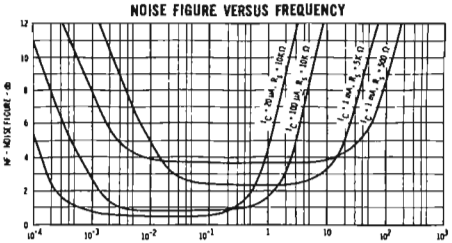
CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



NOISE FIGURE VERSUS FREQUENCY

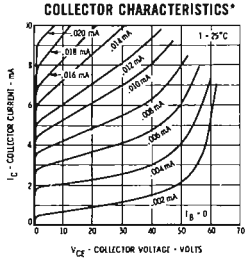


* Single family characteristics on Transistor Curve Tracer.

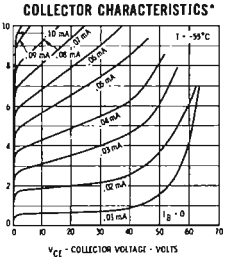
TYPICAL ELECTRICAL CHARACTERISTICS

2N2484

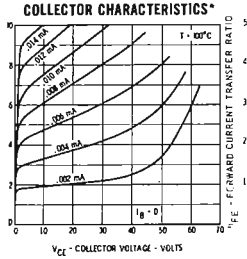
COLLECTOR CHARACTERISTICS*



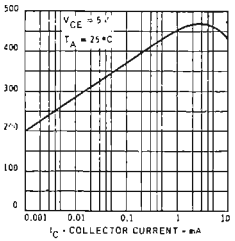
COLLECTOR CHARACTERISTICS*



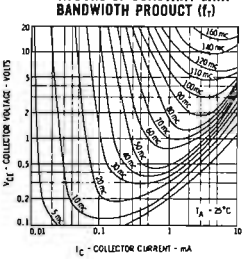
COLLECTOR CHARACTERISTICS*



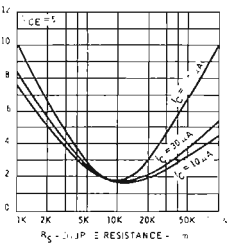
PULSED DC CURRENT GAIN VERSUS COLLECTOR CURRENT



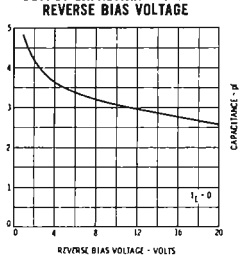
CONTOURS OF CONSTANT GAIN BANDWIDTH PRODUCT (f_T)



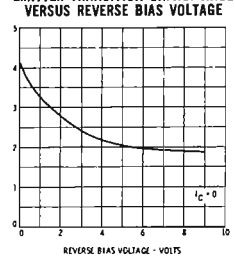
WIDE BAND NOISE FIGURE VERSUS SOURCE RESISTANCE



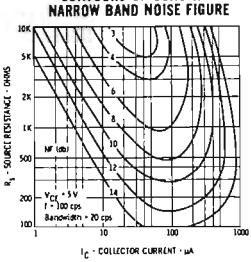
OUTPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



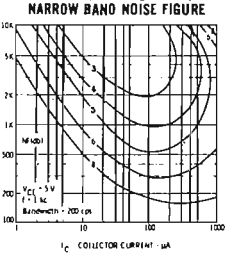
EMITTER TRANSITION CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



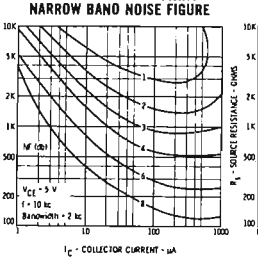
CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



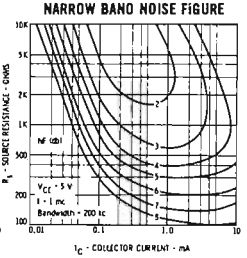
CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



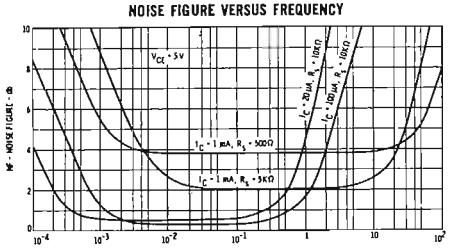
CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



CONTOURS OF CONSTANT NARROW BAND NOISE FIGURE



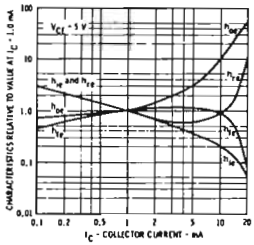
NOISE FIGURE VERSUS FREQUENCY

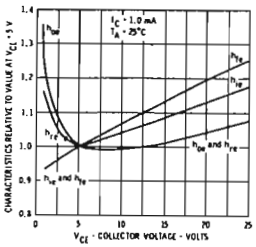


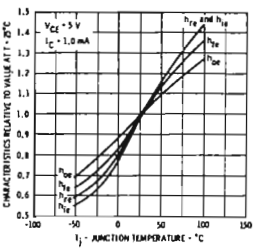
* Single family characteristics on Transistor Curve Tracer.

2N2483

COMMON EMITTER CHARACTERISTICS

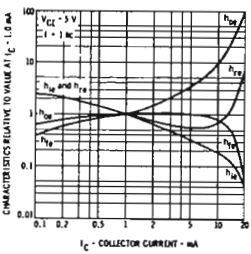


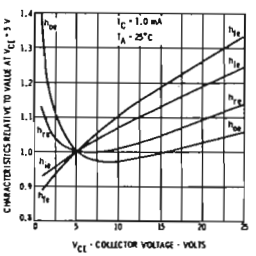


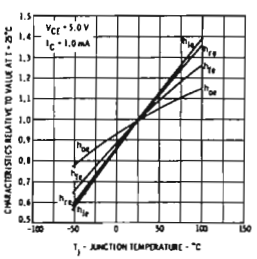


2N2484

COMMON EMITTER CHARACTERISTICS

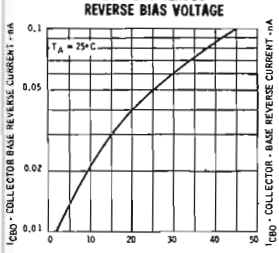




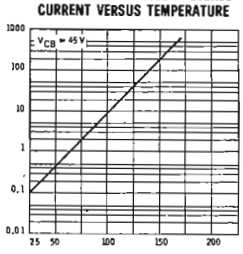


2N2483 - 2N2484

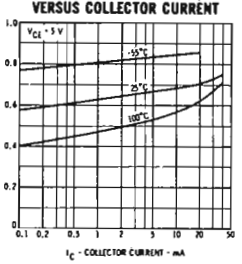
COLLECTOR-BASE DIODE REVERSE CURRENT VERSUS REVERSE BIAS VOLTAGE



COLLECTOR-BASE DIODE REVERSE CURRENT VERSUS TEMPERATURE



BASE-EMITTER ON VOLTAGE VERSUS COLLECTOR CURRENT



COLLECTOR SATURATION VOLTAGE VERSUS COLLECTOR CURRENT