

TL/G/10038-4

DESCRIPTION

Process 62 is a non-overlay, double-diffused, silicon epitaxial device. Complement to Process 07.

APPLICATION

These devices are designed for low level, high gain, low noise general purpose amplifier applications to 20 mA collector current.

PRINCIPAL DEVICE TYPES

TO-18: 2N3550

TO-92 EBC: 2N5086, PN4250

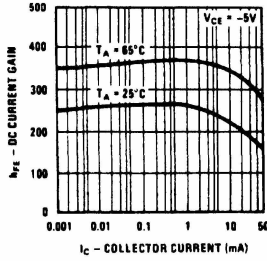
TO-236: MMBT5086

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

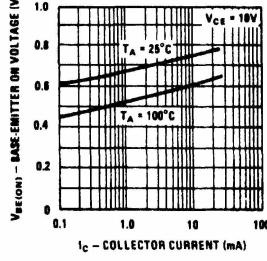
Symbol	Conditions	Min	Typ	Max	Units
NF	$V_{CE} = 5\text{V}$, $I_C = 10\ \mu\text{A}$, $R_S = 10\ \text{k}\Omega$, PBW = 15.70 kHz		1	3	dB
h_{fe}	$V_{CE} = 5\text{V}$, $I_C = 500\ \mu\text{A}$, $f = 20\ \text{MHz}$	3	6		
C_{ib}	$V_{EB} = 0.5\text{V}$			8	pF
C_{ob}	$V_{CB} = 5\text{V}$		3.5	5	pF
h_{FE}	$I_C = 1\ \mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 10\ \mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 100\ \mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 500\ \mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 1\ \text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 10\ \text{mA}$, $V_{CE} = 5\text{V}$	45 60 75 90 90 75	270	630	
$V_{CE(SAT)}$	$I_C = 1\ \text{mA}$, $I_B = 0.1\ \text{mA}$ $I_C = 10\ \text{mA}$, $I_B = 1\ \text{mA}$			0.10 0.15	V V
$V_{BE(SAT)}$	$I_C = 1\ \text{mA}$, $I_B = 0.1\ \text{mA}$ $I_C = 10\ \text{mA}$, $I_B = 1\ \text{mA}$			0.75 0.90	V V
BV_{CEO}	$I_C = 1\ \text{mA}$	50			V
BV_{CBO}	$I_C = 10\ \mu\text{A}$	60			V
BV_{EBO}	$I_E = 10\ \mu\text{A}$	8			V
I_{CBO}	$V_{CB} = 40\text{V}$			100	nA
I_{EBO}	$V_{EB} = 6\text{V}$			100	nA
$P_{D(max)}$					
TO-18	$T_A = 25^\circ\text{C}$	600			mW
TO-92	$T_A = 25^\circ\text{C}$	600			mW
TO-236	$T_C = 25^\circ\text{C}$	350			mW
$T_{J(max)}$	All Metal Can Parts	200			$^\circ\text{C}$
	All Plastic Parts	150			$^\circ\text{C}$

Process 62

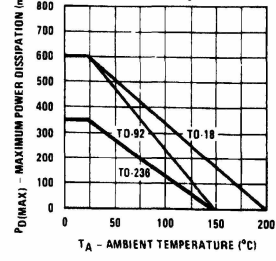
DC Current Gain vs Collector Current



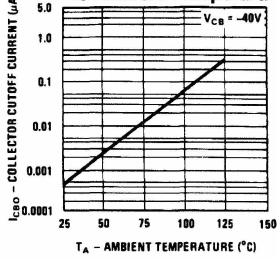
Base-Emitter ON Voltage vs Collector Current



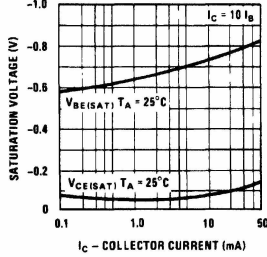
Maximum Power Dissipation vs Ambient Temperature



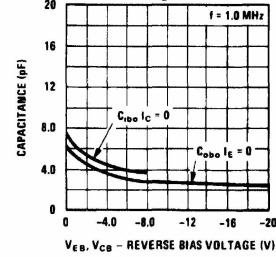
Collector Cutoff Current vs Ambient Temperature



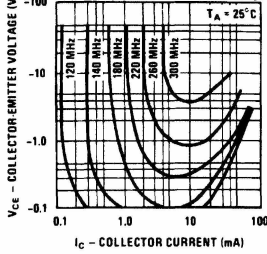
Collector and Base Saturation Voltage vs Collector Current



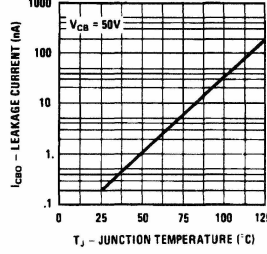
Input and Output Capacitance vs Reverse Bias Voltage



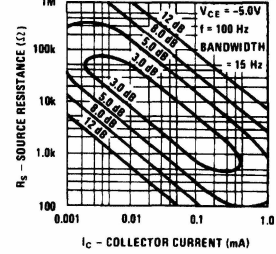
Contours of Constant Gain Bandwidth Product (fT)



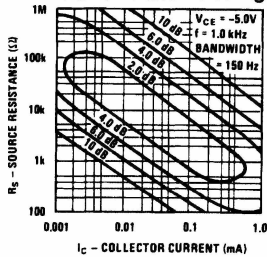
Collector-Base Diode Current vs Temperature



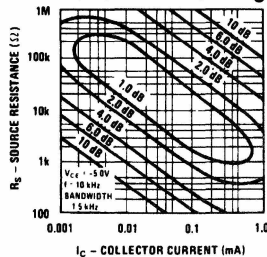
Contours of Constant Narrow Band Noise Figure



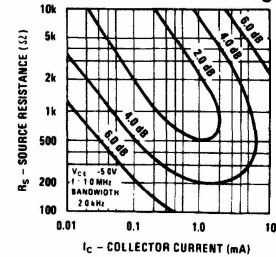
Contours of Constant Narrow Band Noise Figure

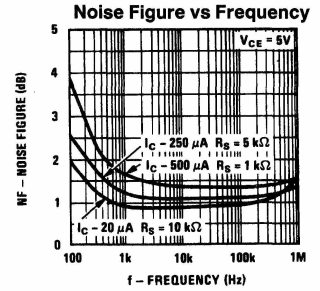
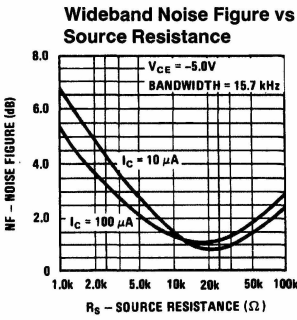
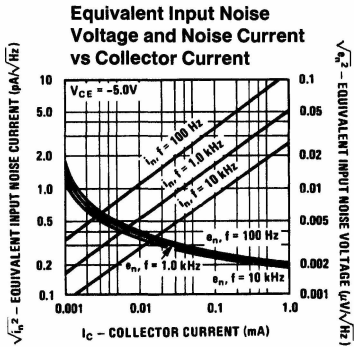


Contours of Constant Narrow Band Noise Figure



Contours of Constant Narrow Band Noise Figure



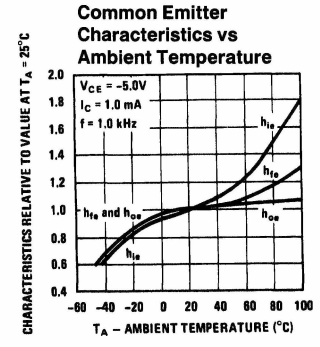
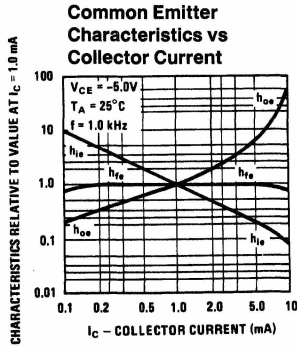
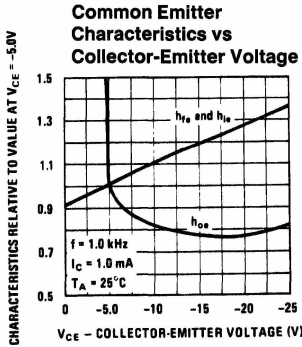


TL/G/10038-6

SMALL SIGNAL CHARACTERISTICS (f = 1.0 kHz)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
h_{ie}	Input Resistance	$I_C = 1.0 \text{ mA}, V_{CE} = -5.0\text{V}$	2.5	8.0	20	$k\Omega$
h_{oe}	Output Conductance	$I_C = 1.0 \text{ mA}, V_{CE} = -5.0\text{V}$	5.0	19	50	μmho
h_{re}	Voltage Feedback Ratio	$I_C = 1.0 \text{ mA}, V_{CE} = -5.0\text{V}$			10	$\times 10^{-4}$
h_{fe}	Small Signal Current Gain	$I_C = 1.0 \text{ mA}, V_{CE} = -5.0\text{V}$	100	250	800	

TYPICAL COMMON EMITTER CHARACTERISTICS (f = 1.0 kHz)



TL/G/10038-7