

TL/G/10036-19

DESCRIPTION

Process 66 is an overlay, double-diffused, silicon epitaxial device. Complement to Process 23.

APPLICATION

This device was designed for general purpose amplifier and switching applications at collector currents of 10 μ A to 100 mA.

PRINCIPAL DEVICE TYPES

TO-92 EBC: 2N3906, 4126

TO-236: MMBT3906

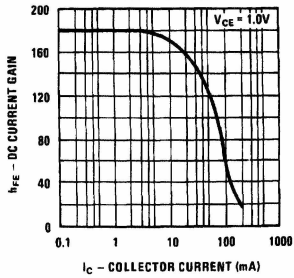
TO-116: MPQ3906

16-SOIC: MMPQ3906

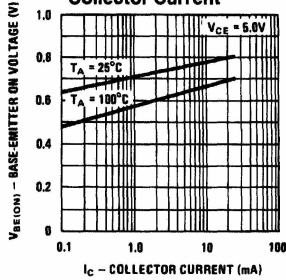
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Symbol	Conditions	Min	Typ	Max	Units
t_{OFF}	$I_C = 10 \text{ mA}, I_{B2} = 1 \text{ mA}$		150	300	ns
t_{ON}	$I_C = 10 \text{ mA}, I_{B1} = 1 \text{ mA}$		30	70	ns
C_{ob}	$V_{\text{CB}} = 5\text{V}$		3.0	4.5	pF
C_{ib}	$V_{\text{EB}} = 0.5\text{V}$			15	pF
h_{fe}	$f = 100 \text{ MHz}, V_{\text{CE}} = 20\text{V}, I_C = 10 \text{ mA}$	2.5	4.5		
NF (wideband)	$I_C = 100 \mu\text{A}, V_{\text{CE}} = 5\text{V}, R_S = 1 \text{ k}\Omega$		2.0		dB
h_{FE}	$I_C = 0.1 \text{ mA}, V_{\text{CE}} = 1\text{V}$ $I_C = 1 \text{ mA}, V_{\text{CE}} = 1\text{V}$ $I_C = 10 \text{ mA}, V_{\text{CE}} = 1\text{V}$ $I_C = 50 \text{ mA}, V_{\text{CE}} = 1\text{V}$ $I_C = 100 \text{ mA}, V_{\text{CE}} = 1\text{V}$	40 50 50 40 20	150	350	
$V_{\text{CE(SAT)}}$	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5 \text{ mA}$			0.25 0.40	V V
$V_{\text{BE(SAT)}}$	$I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5 \text{ mA}$			0.85 0.95	V V
BV_{CEO}	$I_C = 1 \text{ mA}$	35			V
BV_{CBO}	$I_C = 10 \mu\text{A}$	45			V
BV_{EBO}	$I_C = 10 \mu\text{A}$	5.0			V
I_{CBO}	$V_{\text{CB}} = 25\text{V}$			100	nA
I_{EBO}	$V_{\text{EB}} = 4\text{V}$			100	nA

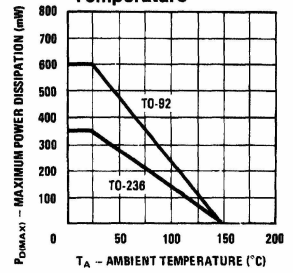
DC Current Gain vs Collector Current



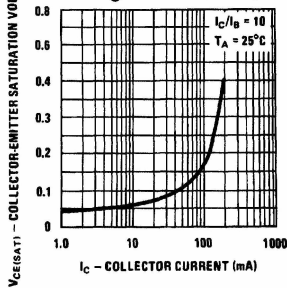
Base-Emitter ON Voltage vs Collector Current



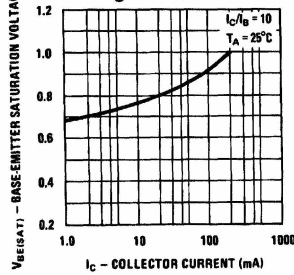
Maximum Power Dissipation vs Ambient Temperature



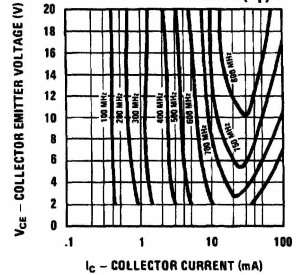
Collector-Emitter Saturation Voltage vs Collector Current



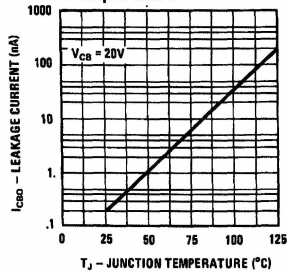
Base-Emitter Saturation Voltage vs Collector Current



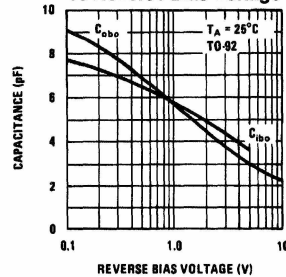
Contours of Constant Gain Bandwidth Product (fT)



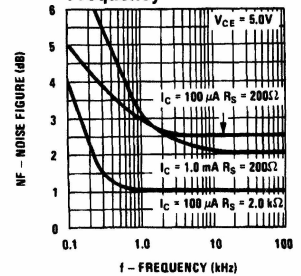
Collector-Base Diode Reverse Current vs Temperature



Common Base Open Circuit Input and Output Capacitance vs Reverse Bias Voltage



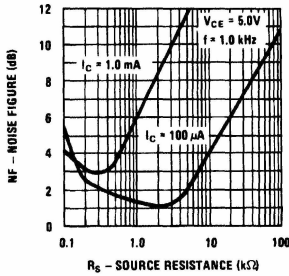
Noise Figure vs Frequency



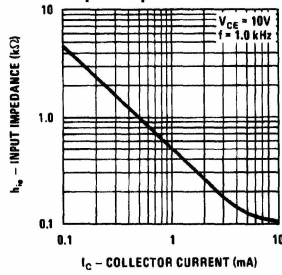
TL/G/10038-21

Process 66

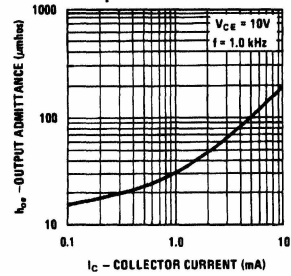
Noise Figure vs Source Resistance



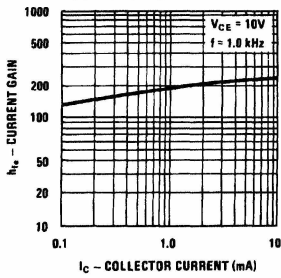
Input Impedance



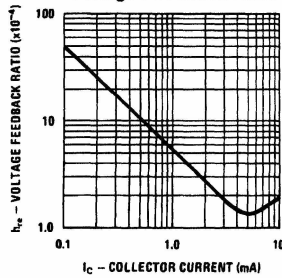
Output Admittance



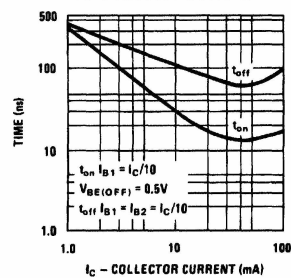
Current Gain



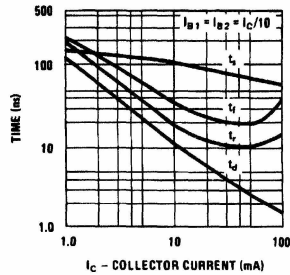
Voltage Feedback Ratio



Turn On and Turn Off Times vs Collector Current



Switching Times vs Collector Current



TL/G/10038-20