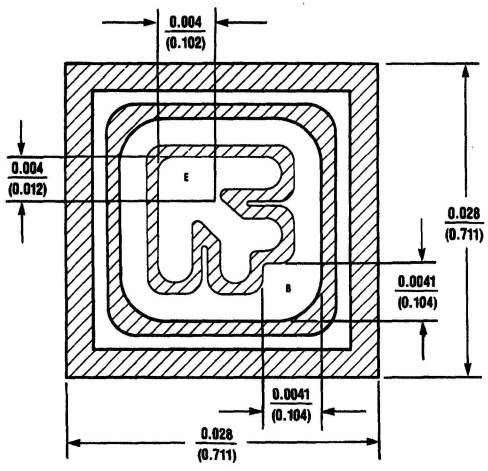
National Semiconductor

Process 48
NPN High Voltage Amplifier



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DESCRIPTION

Process 48 is a non-overlay, triple-diffused, silicon device with a field plate. Complement to Process 76.

APPLICATION

This device was designed for application as a video output to drive color CRT and other high voltage applications.

PRINCIPAL DEVICE TYPES

TO-202 EBC: D40N1-4

TO-237 EBC: 2N6719, 92PU10

TO-226 EBC: MPSW42

TO-92 EBC: MPSA42

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Symbol	Conditions	Min	Typ	Max	Units
BV_{CEO}	I_C = 1 mA	300	370		V
BV_{CBO}	I_C = 100 μA		500		V
BV_{EBO}	I_E = 10 μA	7.0			V
I_{CES}	V_{CB} = 150V			100	nA
I_{EBO}	V_{EB} = 6V			100	nA
h_{FE}	I_C = 1 mA, V_{CE} = 10V I_C = 10 mA, V_{CE} = 10V I_C = 100 mA, V_{CE} = 10V	30 40	 90 20	 200	
$V_{CE(SAT)}$	I_C = 20 mA, I_B = 2 mA		0.25	1.0	V
$V_{BE(SAT)}$	I_C = 20 mA, I_B = 2 mA		0.74	1.0	V
C_{CB}	V_{CB} = 20V (TO-92)		1.9	3.5	pF
C_{ib}	V_{EB} = 0.5V			70	pF
h_{fe}	I_C = 15 mA, V_{CE} = 100V, I_C = 15 mA, f = 20 MHz	2.5	4.0		
$P_{D(max)}$					
TO-202	T_C = 25°C	10			W
	T_A = 25°C	2			W
TO-226	T_C = 25°C	2			W
	T_A = 25°C	1			W
TO-237	T_C = 25°C	2			W
	T_A = 25°C	850			mW
TO-92	T_A = 25°C	600			mW
θ_{JC}					
TO-202	T_C = 25°C			12.5	°C/W
TO-237	T_C = 25°C			62.5	°C/W

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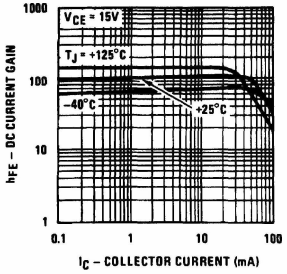
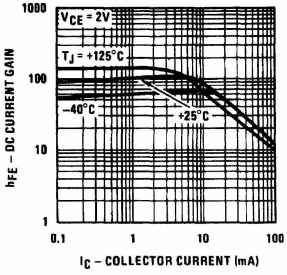
ELECTRICAL CHARACTERISTICS (T_A = 25°C) (Continued)

Symbol	Conditions	Min	Typ	Max	Units
θ_{JA}					
TO-202	T_A = 25°C			62.5	°C/W
TO-226	T_A = 25°C			125	°C/W
TO-237	T_A = 25°C			147	°C/W
TO-92	T_A = 25°C			208	°C/W
$T_{J(max)}$	All Plastic Parts	150			°C

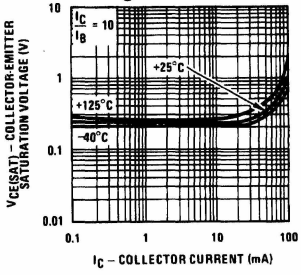
DC Current Gain vs Collector Current



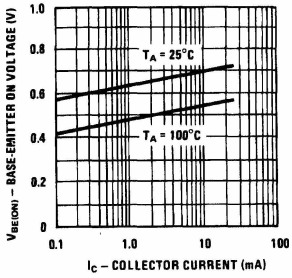
Typical Pulsed Current Gain vs Collector Current



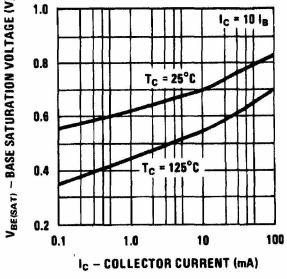
Collector-Emitter Saturation Voltage vs Collector Current



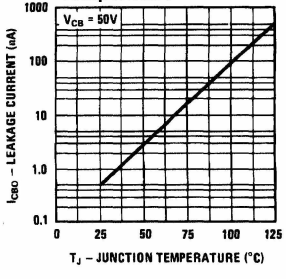
Base-Emitter ON Voltage vs Collector Current



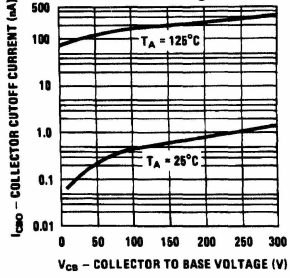
Base Saturation Voltage vs Collector Current



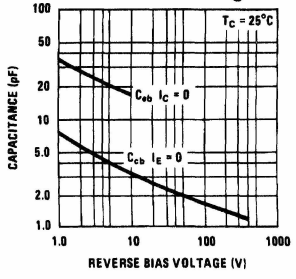
Collector-Base Diode Reverse Current vs Temperature



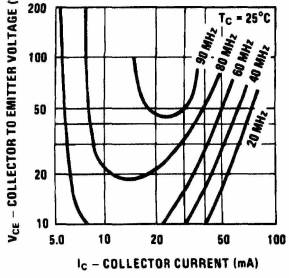
Collector Cutoff Current vs Collector Voltage



Collector-Base and Emitter-Base Capacitance vs Reverse Bias Voltage



Contours of Constant Gain Bandwidth Product



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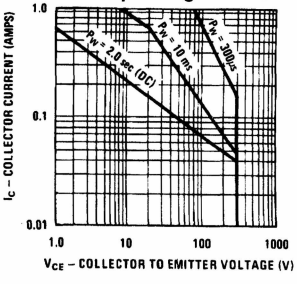
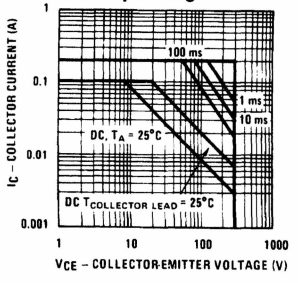
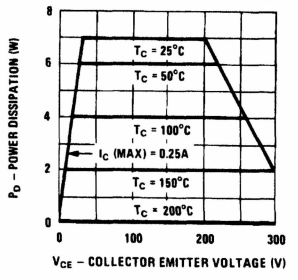
Safe Operating Area TO-202



Safe Operating Area TO-237



Guaranteed Maximum DC Power Dissipation vs Collector-Emitter Voltage TO-39



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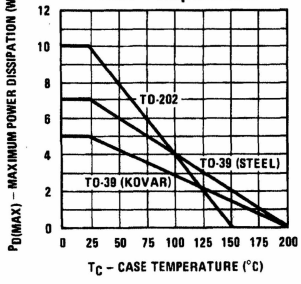
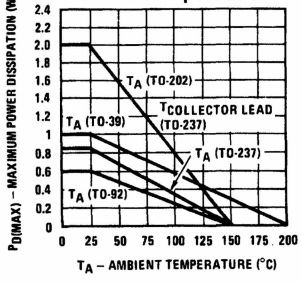
Maximum Power Dissipation vs Case Temperature



Maximum Power Dissipation vs Ambient Temperature



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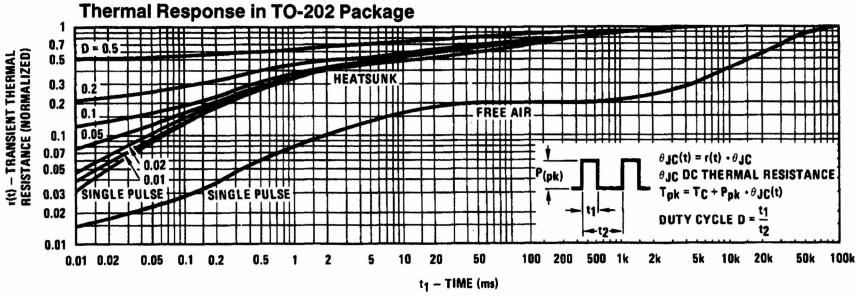
Thermal Response in TO-202 Package



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