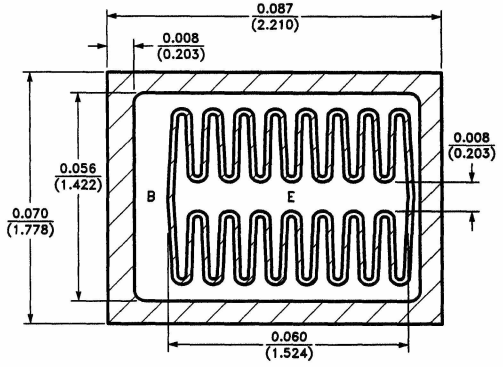
National Semiconductor

Process 34
NPN Planar Power



TL/G/10037–1

DESCRIPTION

This device is a nonoverlay, double-diffused, silicon epitaxial planar transistor.

APPLICATION

This device was designed for general purpose amplifier applications utilizing collector currents to 5A.

PRINCIPAL DEVICE TYPES

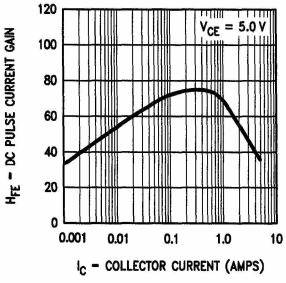
TO-39 EBC: 2N2891

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

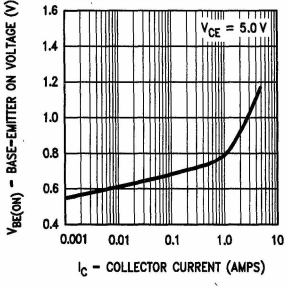
Symbol	Conditions	Min	Typ	Max	Units
BV_{CEO}	I_C = 10 mA	80			
BV_{CBO}	I_C = 100 μA	100			
BV_{EBO}	I_E = 10 μA	8			
I_{CBO}	V_{CB} = 60V			100	nA
I_{EBO}	V_{EB} = 6V			100	nA
h_{FE}	I_C = 1 mA, V_{CE} = 5V I_C = 10 mA, V_{CE} = 5V I_C = 100 mA, V_{CE} = 5V I_C = 500 mA, V_{CE} = 5V I_C = 1A, V_{CE} = 5V I_C = 5A, V_{CE} = 5V	40 40 40 40 20 15	80	150	
$V_{CE(SAT)}$	I_C = 100 mA, I_B = 10 mA I_C = 1A, I_B = 100 mA		0.05 0.20	0.10 0.30	V
$V_{BE(SAT)}$	I_C = 100 mA, I_B = 10 mA I_C = 1A, I_B = 100 mA		0.70 0.90	0.85 1.10	V
h_{FE}	I_{CE} = 200 mA, V_{CE} = 10V, f = 20 MHz	4.0	5.0		
C_{ob}	V_{CB} = 10V, f = 1 MHz		60	70	pF
C_{ib}	V_{EB} = 0.5V, f = 1 MHz			500	pF
t_{ON}	I_C = 1A, I_{B1} = 0.1A		90	120	ns
t_{OFF}	I_C = 1A, I_{B2} = 0.1A		200	260	ns
$P_{D(max)}$ TO-39	 T_C = 25°C T_A = 25°C	 7 1			 W W
θ_{JC}	T_C = 25°C			25	°C/W
θ_{JA}	T_A = 25°C			175	°C/W
$t_{J(max)}$	TO-39		200		°C

Process 34

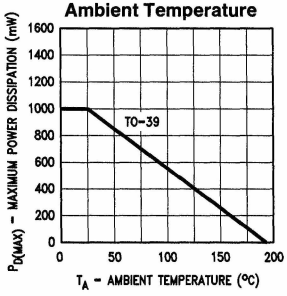
Pulsed DC Current Gain vs Collector Current



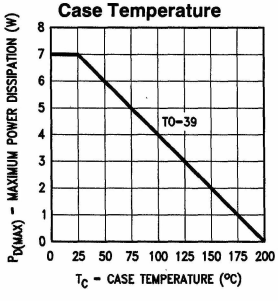
Base-Emitter ON Voltage vs Collector Current



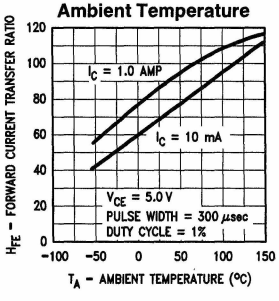
Maximum Power Dissipation vs Ambient Temperature



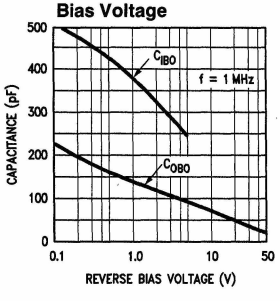
Maximum Power Dissipation vs Case Temperature



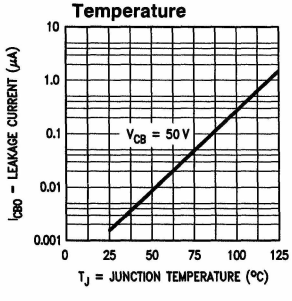
Pulsed DC Current Gain vs Ambient Temperature



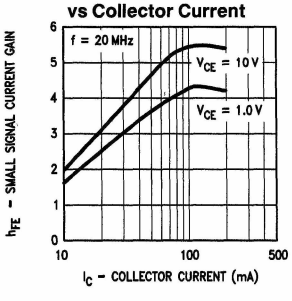
Capacitance vs Reverse Bias Voltage



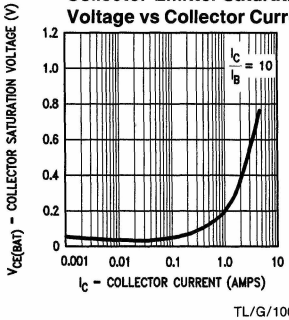
Collector-Base Diode Reverse Current vs Temperature



Small Signal Current Gain vs Collector Current



Collector-Emitter Saturation Voltage vs Collector Current



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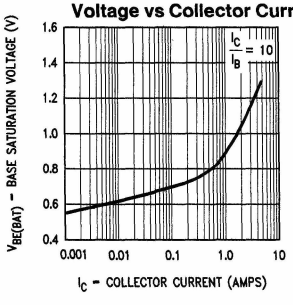
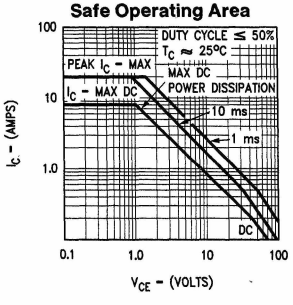
Base-Emitter Saturation Voltage vs Collector Current



Safe Operating Area



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