

2N3720

APPLICATIONS:

- High-Speed Switching
- Medium-Current Switching
- High-Frequency Amplifiers

FEATURES:

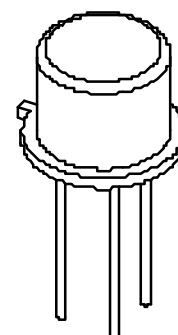
- Collector-Emitter Sustaining Voltage:
 $V_{CE(SUS)} = 60 \text{ Vdc (Min) - 2N3720}$
- DC Current Gain:
 $h_{FE} = 25-180 @ I_C = 1.0 \text{ Adc}$
- Low Collector-Emitter Saturation Voltage:
 $V_{CE(sat)} = 0.75 \text{ Vdc @ } I_C = 1.0 \text{ Adc}$
- High Current-Gain - Bandwidth Product:
 $f_T = 90 \text{ MHz (Typ)}$

**Silicon PNP
Power Transistors**

DESCRIPTION:

These power transistors are produced by PPC's DOUBLE DIFFUSED PLANAR process. This technology produces high voltage devices with excellent switching speeds, frequency response, gain linearity, saturation voltages, high current gain, and safe operating areas. They are intended for use in Commercial, Industrial, and Military power switching, amplifier, and regulator applications.

Ultrasonically bonded leads and controlled die mount techniques are utilized to further increase the SOA capability and inherent reliability of these devices. The temperature range to 200°C permits reliable operation in high ambients, and the hermetically sealed package insures maximum reliability and long life.



TO-5

ABSOLUTE MAXIMUM RATINGS:

SYMBOL	CHARACTERISTIC	VALUE	UNITS
V_{CE}^*	Collector-Emitter Voltage	60	Vdc
V_{CB}^*	Collector-Base Voltage	60	Vdc
V_{EB}^*	Emitter-Base Voltage	4.0	Vdc
I_C^*	Peak Collector Current	10	Adc
I_C^*	Continuous Collector Current	3.0	Adc
I_B^*	Base Current	0.5	Adc
T_{STG}^*	Storage Temperature	-65 to 200	°C
T_J^*	Operating Junction Temperature	-65 to 200	°C
P_D^*	Total Device Dissipation $T_C = 25^\circ\text{C}$	6.0	Watts
	Derate above 25°C	34.3	mW/°C
P_D^*	Total Device Dissipation $T_A = 25^\circ\text{C}$	1.0	Watts
	Derate above 25°C	5.71	mW/°C
θ_{JC}	Thermal Resistance Junction to Case	29	°C/W
	Junction to Ambient	175	°C/W

* Indicates JEDEC registered Data.

ELECTRICAL CHARACTERISTICS:

(25° Case Temperature Unless Otherwise Noted)

SYMBOL	CHARACTERISTIC	TEST CONDITIONS	VALUE		Units
			Min.	Max.	
$V_{CE(sus)}^*$	Collector-Emitter Sustaining Voltage	$I_C = 20 \text{ mAdc}$, $I_B = 0$ (Note 1)	60	----	Vdc
I_{CEX}^*	Collector Cutoff Current	$V_{CE} = 60 \text{ Vdc}$, $V_{BE(off)} = 2.0 \text{ Vdc}$ $V_{CE} = 60 \text{ Vdc}$, $V_{BE(off)} = 2.0 \text{ Vdc}$, $T_C = 150^\circ\text{C}$	----	10 1.0	μAdc mAdc
I_{CBO}^*	Collector Cutoff Current	$V_{CB} = 60 \text{ Vdc}$, $I_E = 0$	----	10	μAdc
I_{EBO}^*	Emitter Cutoff Current	$V_{BE} = 4.0 \text{ Vdc}$, $I_C = 0$	----	1.0	mAdc
h_{FE}^*	DC Current Gain (Note 1)	$I_C = 500 \text{ mAdc}$, $V_{CE} = 1.5 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}$, $V_{CE} = 1.5 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}$, $V_{CE} = 1.5 \text{ Vdc}$, $T_C = -40^\circ\text{C}$	20 25 15	---- 180 ----	---- ---- ----
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage (Note 1)	$I_C = 1.0 \text{ Adc}$, $I_B = 100 \text{ mAdc}$, $T_C = -40^\circ\text{C}$ to $+100^\circ\text{C}$ $I_C = 3.0 \text{ Adc}$, $I_B = 300 \text{ mAdc}$, $T_C = -40^\circ\text{C}$ to $+100^\circ\text{C}$	---- ----	0.75 1.5	Vdc Vdc
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage (Note 1)	$I_C = 1.0 \text{ Adc}$, $I_B = 100 \text{ mAdc}$, $T_C = -40^\circ\text{C}$ to $+100^\circ\text{C}$ $I_C = 3.0 \text{ Adc}$, $I_B = 300 \text{ mAdc}$, $T_C = -40^\circ\text{C}$ to $+100^\circ\text{C}$	---- ----	1.5 2.3	Vdc Vdc
f_T^*	Current-Gain Bandwidth Product (Note 2)	$I_C = 500 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f_{test} = 30 \text{ MHz}$	60	----	MHz
C_{ob}^*	Output Capacitance	$V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 0.1 \text{ MHz}$	----	120	pF
C_{ib}^*	Input Capacitance	$V_{EB} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 0.1 \text{ MHz}$	----	1000	pF
t_{on}^*	Turn-on Time	$V_{CC} = 12 \text{ Vdc}$, $V_{BE(off)} = 0$, $I_C = 1.0 \text{ Adc}$, $I_{B1} = 0.1 \text{ Adc}$	----	100	ns
t_{off}^*	Turn-off Time	$V_{CC} = 12 \text{ Vdc}$, $I_C = 1.0 \text{ Adc}$, $I_{B1} = I_{B2} = 100 \text{ mAdc}$	----	400	ns

Note 1: Pulse Test: Pulse width $\leq 300\mu\text{S}$, Duty Cycle = 2.0%.

Note 2: $f_T = |h_{fe}| * f_{test}$

* Indicates JEDEC registered data

PACKAGE MECHANICAL DATA:

