PPC, Inc.
Microsemi
Progress Powered by Technology

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2N3720

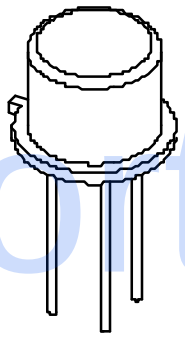
APPLICATIONS:

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

FEATURES:

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

Silicon PNP Power Transistors



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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.

ABSOLUTE MAXIMUM RATINGS:

SYMBOL	CHARACTERISTIC	VALUE	UNITS
V_{CEO}*	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°C Derate above 25°C	6.0 34.3	Watts mW/°C
P_D*	Total Device Dissipation T_A = 25°C Derate above 25°C	1.0 5.71	Watts mW/°C
θ JC	Thermal Resistance Junction to Case Junction to Ambient	 29 175	 °C/W °C/W

* Indicates JEDEC registered Data.

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ELECTRICAL CHARACTERISTICS:
(25°Case Temperature Unless Otherwise Noted)

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

Note 1: Pulse Test: Pulse width ≤ 300μS, Duty Cycle = 2.0%.

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

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PACKAGE MECHANICAL DATA:

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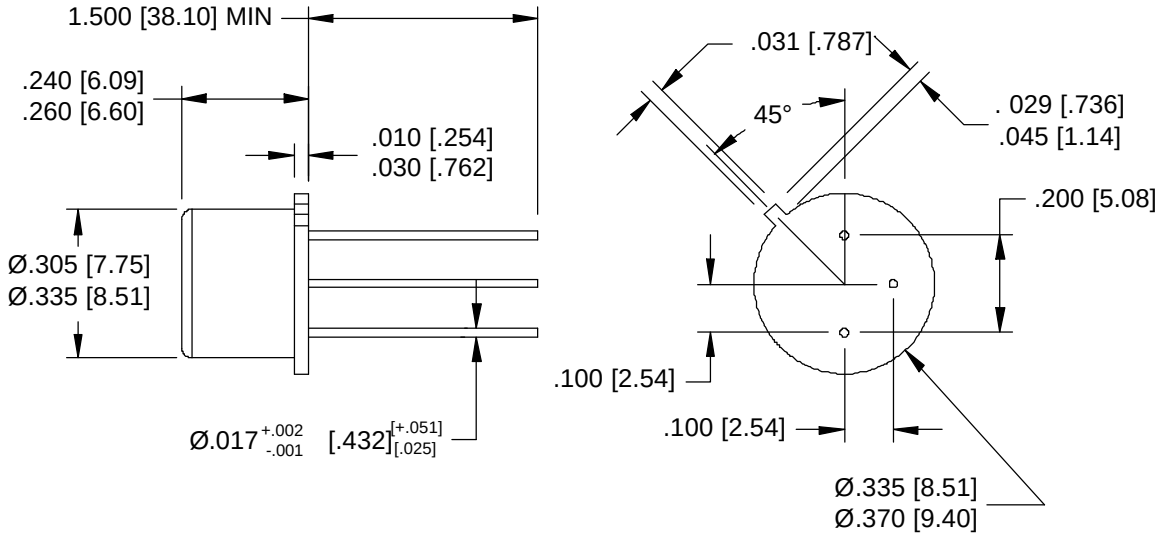

NOTE: DIMENSIONS IN [ ] = MILLIMETERS