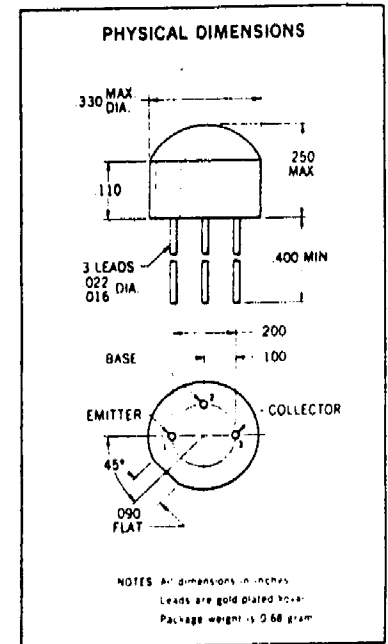


**2N3638 – 2N3638A**  
**PNP High Current Switches**  
**Diffused Silicon Planar\* Epitaxial Transistors**

- **FAST SWITCHING** --  $t_{on} = 75$  ns (max.) @ 300 mA  
--  $t_{off} = 170$  ns (max.) @ 300 mA
- **HIGH BETA** --  $h_{FE} 100$  (min.) @  $I_C = 50$  mA
- **HIGH CURRENT** -- Up to 500 mA
- **LOW  $V_{CE(sat)}$**  -- 1.0 Volt (max.) @ 300 mA
- **LOW COST IN ALL QUANTITIES**

**ABSOLUTE MAXIMUM RATINGS (Note 1)**

<b>Maximum Temperatures</b>		
Storage Temperature		-55°C to +125°C
Operating Junction Temperature		+125°C Maximum
Lead Temperature (Soldering, 10 sec time limit)		+260°C Maximum
<b>Maximum Power Dissipation</b>		
Total Dissipation at 25°C Case Temperature (Notes 2 and 3)		0.7 Watt
at 25°C Free Air Temperature (Notes 2 and 3)		0.3 Watt
<b>Maximum Voltages and Current</b>		
$V_{CBO}$ Collector to Base Voltage		-25 Volts
$V_{CES}$ Collector to Emitter Voltage		-25 Volts
$V_{CEO}$ Collector to Emitter Voltage (Note 4)		-25 Volts
$V_{EBO}$ Emitter to Base Voltage		-4.0 Volts
$I_C$ Collector Current (Note 2)		500 mA



**ELECTRICAL CHARACTERISTICS (25°C Free Air Temperature unless otherwise noted)**

SYMBOL	CHARACTERISTIC	2N3638			2N3638A			UNITS	TEST CONDITIONS
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.		
$h_{FE}$	DC Pulse Current Gain (Note 5)				80	140			$I_C = 1.0$ mA $V_{CE} = -10$ V
$h_{FE}$	DC Pulse Current Gain (Note 5)	20	70		100	160			$I_C = 10$ mA $V_{CE} = -10$ V
$h_{FE}$	DC Pulse Current Gain (Note 5)	30	67		100	130			$I_C = 50$ mA $V_{CE} = -1.0$ V
$h_{FE}$	DC Pulse Current Gain (Note 5)	20	40		20	50			$I_C = 300$ mA $V_{CE} = -2.0$ V
$V_{CE(sat)}$	Pulsed Collector Saturation Voltage (Note 5)		-0.08	-0.25		-0.08	-0.25	Volt	$I_C = 50$ mA $I_B = 2.5$ mA
$V_{CE(sat)}$	Pulsed Collector Saturation Voltage (Note 5)		-0.38	-1.0		-0.38	-1.0	Volt	$I_C = 300$ mA $I_B = 30$ mA
$V_{CEO(sust)}$	Collector to Emitter Sustaining Voltage (Notes 4 & 5)	-25			-25			Volts	$I_C = 10$ mA $I_B = 0$ (pulsed)
$BV_{CBO}$	Collector to Base Breakdown Voltage	-25			-25			Volts	$I_C = 100$ $\mu$ A $I_E = 0$
$BV_{CES}$	Collector to Emitter Breakdown Voltage	-25			-25			Volts	$I_C = 100$ $\mu$ A $V_{EB} = 0$
$t_{on}$	Turn On Time (Note 6)		28	75		28	75	ns	$I_C \approx 300$ mA $I_{B1} \approx 30$ mA
$t_{off}$	Turn Off Time (Note 6)		110	170		110	170	ns	$I_C \approx 300$ mA $I_{B1} \approx 30$ mA $I_{B2} \approx -30$ mA
$h_{fe}$	High Frequency Current Gain ( $f = 100$ MHz)	1.0	1.9		1.5	1.9			$I_C = 50$ mA $V_{CE} = -3.0$ V
$C_{obo}$	Common-Base, Open-Circuit Output Capacitance		6.0	20		6.0	10	pF	$I_E = 0$ $V_{CB} = -10$ V
$C_{ibo}$	Common-Base, Open-Circuit Input Capacitance		18	65		18	25	pF	$I_C = 0$ $V_{EB} = -0.5$ V

**ELECTRICAL CHARACTERISTICS (25°C Free Air Temperature unless otherwise noted)**

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
$V_{BE(sat)}$	Base-Emitter Saturation Voltage (pulsed, Note 5)		-0.9	-1.1	Volts	$I_C = 50$ mA $I_B = 2.5$ mA
$V_{BE(sat)}$	Base-Emitter Saturation Voltage (pulsed, Note 5)	-0.8	-1.25	-2.0	Volts	$I_C = 300$ mA $I_B = 30$ mA
$BV_{EBO}$	Emitter to Base Breakdown Voltage	-4.0			Volts	$I_E = 100$ $\mu$ A $I_C = 0$
$I_{CES}$	Collector Reverse Current		0.1	35	nA	$V_{CE} = -15$ V $V_{EB} = 0$
$I_{CES}(65^\circ\text{C})$	Collector Reverse Current		0.002	2.0	$\mu$ A	$V_{CE} = -15$ V $V_{EB} = 0$