

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)

Maximum Temperatures

Storage Temperature

Operating Junction Temperature

Lead Temperature (Soldering, 10 sec time limit)

-55°C to +125°C

+125°C Maximum

+260°C Maximum

Maximum Power Dissipation

Total Dissipation at 25°C Case Temperature (Notes 2 and 3)

at 25°C Free Air Temperature (Notes 2 and 3)

0.7 Watt

0.3 Watt

Maximum Voltages and Current

V_{CBO} Collector to Base Voltage

V_{CES} Collector to Emitter Voltage

V_{CEO} Collector to Emitter Voltage (Note 4)

V_{EBO} Emitter to Base Voltage

I_C Collector Current (Note 2)

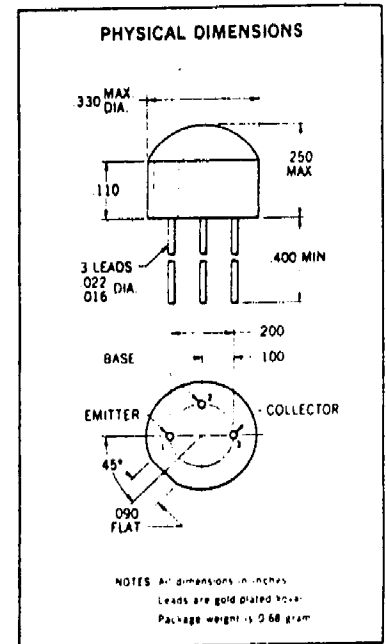
-25 Volts

-25 Volts

-25 Volts

-4.0 Volts

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 $I_B = 0$
BV_{CBO}	Collector to Base Breakdown Voltage	-25			-25			Volts	$I_C = 100$ μ A $I_E = 0$
BV_{CES}	Collector to Emitter Breakdown Voltage	-25			-25			Volts	$I_C = 100$ μ 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
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	$I_E = 100$ μ 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	μ A	$V_{CE} = -15$ V $V_{EB} = 0$

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