

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

2N3638 2N3638A

TELEPHONE: (973) 376-2922
(212) 227-8005
FAX: (973) 376-8860

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)

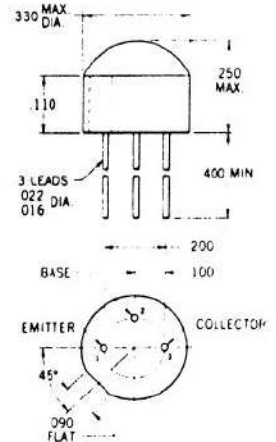
0.7 Watt
0.3 Watt

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

PHYSICAL DIMENSIONS



NOTES: All dimensions in inches.
Leads are gold plated wire.
Package weight is 0.01 gram.

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

SYMBOL	CHARACTERISTIC	MIN.	2N3638 TYP.	MAX.	MIN.	2N3638A TYP.	MAX.	UNITS	TEST CONDITIONS
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	$I_C = 100$ 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	$I_C = 300$ mA $I_{B1} = 30$ mA
t_{off}	Turn Off Time (Note 6)		110	170		110	170	ns	$I_C = 300$ mA $I_{B1} = 30$ mA $I_{B2} = -30$ 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 $V_{EB} = 0$
$I_{CES(65^\circ C)}$	Collector Reverse Current		0.002	2.0	μ A	$V_{CE} = -15$ V $V_{EB} = 0$

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice.
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