

New Jersey Semi-Conductor Products, Inc.

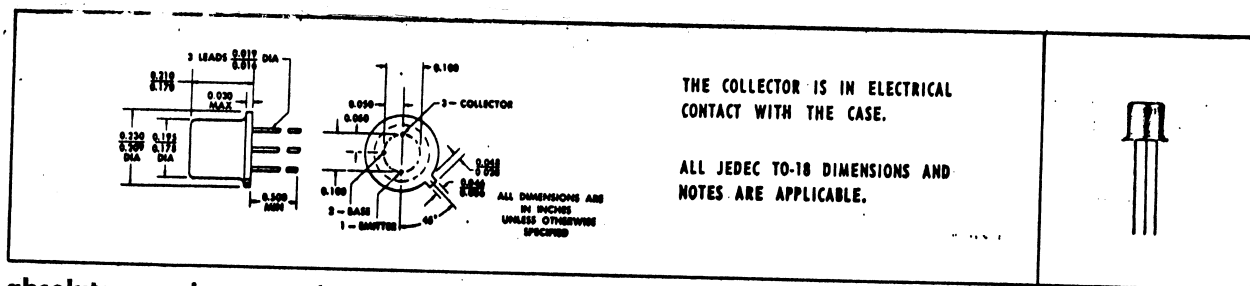
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TYPES 2N3033, 2N3034, 2N3035 N-P-N EPITAXIAL MESA SILICON TRANSISTORS

DESIGNED FOR EXTREMELY-HIGH-SPEED, HIGH-CURRENT
AVALANCHE-MODE SWITCHING APPLICATIONS

- Strobe-Pulse Generators
- Square-Wave Pulse Generators
- Memory-Core Drivers



absolute maximum ratings at 25°C free-air temperature (unless otherwise noted)

Emitter-Base Voltage	4 v
Collector Current, Continuous	200 ma
Collector Current, Peak (See Note 1)	10 a
Total Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 2)	300 mw
Total Device Dissipation at (or below) 25°C Case Temperature (See Note 3)	1.0 w
Storage Temperature Range	-65°C to +200°C

electrical characteristics at 25°C free-air temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS	2N3033		2N3034		2N3035		UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	
BV_{CBO} Collector-Base Breakdown Voltage	$I_C = 1 \text{ ma}$, $I_E = 0$	100	160	70	120	50	90	v
BV_{CES} Collector-Emitter Breakdown Voltage	$I_C = 1 \text{ ma}$, $R_{BE} = 100 \Omega$	100	150	70	110	50	80	v
BV_{EBO} Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{a}$, $I_C = 0$	4		4		4		v
I_{CBO} Collector Cutoff Current	$V_{CB} - \text{See Note 4}$, $I_E = 0$	5		5		5		μa
	$V_{CE} - \text{See Note 5}$, $R_{BE} = 100 \Omega$	5		5		5		μa
	$V_{CE} = 90 \text{ v}$, $R_{BE} = 100 \Omega$, $T_A = 125^\circ\text{C}$	50						μa
	$V_{CE} = 60 \text{ v}$, $R_{BE} = 100 \Omega$, $T_A = 125^\circ\text{C}$			50				μa
I_{CER} Collector Cutoff Current	$V_{CE} = 40 \text{ v}$, $R_{BE} = 100 \Omega$, $T_A = 125^\circ\text{C}$					50		μa
I_{EBO} Emitter Cutoff Current	$V_{EB} = 3 \text{ v}$, $I_C = 0$	1		1		1		μa
$I_{CES(H)}$ Collector Hold-Off Current	$V_{BE} = 0$, (See Note 6)	2.0		2.0		2.0		ma
$I_{CER(H)}$ Collector Hold-Off Current	$R_{BE} = 100 \Omega$, (See Note 6)	1.5		1.5		1.5		ma
V_{BE} Base-Emitter Voltage	$I_B = 20 \text{ ma}$, $I_C = 100 \text{ ma}$	1.5		1.5		1.5		v
$V_{CE(sat)}$ Collector-Emitter Saturation Voltage	$I_B = 20 \text{ ma}$, $I_C = 100 \text{ ma}$	1.0		1.0		1.0		v
C_{ob} Common-Base Open-Circuit Output Capacitance	$V_{CB} = 10 \text{ v}$, $I_E = 0$, $f = 140 \text{ kc}$	6		6		6		pf
C_{ib} Common-Base Open-Circuit Input Capacitance	$V_{EB} = 1 \text{ v}$, $I_C = 0$, $f = 140 \text{ kc}$	10		10		10		pf

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that data-sheets are current before placing orders.

- NOTES: 1. This value applies for $PW \leq 25 \text{ nsec}$, Duty Cycle $\leq 0.05\%$
2. Derate linearly to 175°C free-air temperature at the rate of $2.0 \text{ mw}/^\circ\text{C}$.
3. Derate linearly to 175°C case temperature at the rate of $6.67 \text{ mw}/^\circ\text{C}$.
4. This parameter is measured at a collector-base voltage 15 v below the actual BV_{CBO} at $I_C = 1 \text{ ma}$, $I_E = 0$.
5. This parameter is measured at a collector-emitter voltage 15 v below the actual BV_{CER} at $I_C = 1 \text{ ma}$, $R_{\theta} = 100 \Omega$.
6. Collector Hold-Off Current is defined as that value of collector cutoff current above which the reverse voltage-current characteristic exhibits negative resistance. These parameters are measured by a sweep method using a transistor curve tracer.

switching characteristics at 25°C free-air temperature

PARAMETER	TEST CONDITIONS	2N3033		2N3034		2N3035		UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	
t_d Delay Time	See Figure 1	3		3		3		nsec
t_r Rise Time		2		2		2		nsec
V_o Output Pulse Amplitude		45		30		20		v