

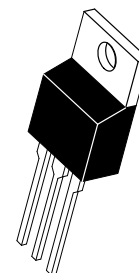
# NPN Silicon High-Voltage Transistor

... useful for general-purpose, high voltage applications requiring high  $f_T$ .

- Collector-Emitter Sustaining Voltage —  
 $V_{CEO(sus)} = 350 \text{ Vdc (Min) @ } I_C = 2.5 \text{ mAdc}$
- DC Current Gain —  
 $h_{FE} = 40 \text{ (Min) @ } I_C = 100 \text{ mAdc — MJE2361T}$
- Current-Gain-Bandwidth Product —  
 $f_T = 10 \text{ MHz (Typ) @ } I_C = 50 \text{ mAdc}$

**MJE2360T**  
**MJE2361T**

**0.5 AMPERE**  
**POWER TRANSISTORS**  
**NPN SILICON**  
**350 VOLTS**  
**30 WATTS**



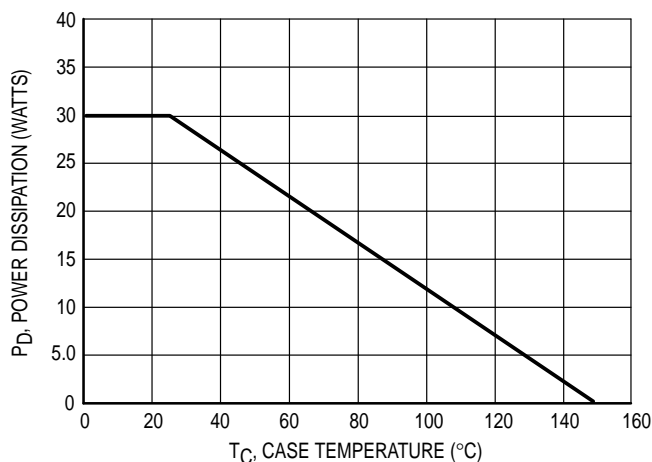
**CASE 221A-06**  
**TO-220AB**

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	350	Vdc
Collector-Base Voltage	$V_{CB}$	375	Vdc
Emitter-Base Voltage	$V_{EB}$	6.0	Vdc
Collector Current — Continuous	$I_C$	0.5	Adc
Base Current	$I_B$	0.25	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	30 0.24	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	4.167	$^\circ\text{C/W}$



**Figure 1. Power-Temperature Derating Curve**

# MJE2360T MJE2361T

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Sustaining Voltage <sup>(1)</sup> (I <sub>C</sub> = 2.5 mA <sub>d</sub> c, I <sub>B</sub> = 0)	V <sub>CEO(sus)</sub>	350	—	—	V <sub>d</sub> c
Collector Cutoff Current (V <sub>CE</sub> = 250 V <sub>d</sub> c, I <sub>B</sub> = 0)	I <sub>CEO</sub>	—	—	0.25	mA <sub>d</sub> c
Collector Cutoff Current (V <sub>CE</sub> = 375 V <sub>d</sub> c, V <sub>EB(off)</sub> = 1.5 V <sub>d</sub> c)	I <sub>CEX</sub>	—	—	0.5	mA <sub>d</sub> c
Collector Cutoff Current (V <sub>CB</sub> = 375 V <sub>d</sub> c, I <sub>E</sub> = 0)	I <sub>CBO</sub>	—	—	0.1	mA <sub>d</sub> c
Emitter Cutoff Current (V <sub>BE</sub> = 5.0 V <sub>d</sub> c, I <sub>C</sub> = 0)	I <sub>EBO</sub>	—	—	0.1	mA <sub>d</sub> c

## ON CHARACTERISTICS (1)

DC Current Gain (I <sub>C</sub> = 50 mA <sub>d</sub> c, V <sub>CE</sub> = 10 V <sub>d</sub> c)	MJE2360T MJE2361T MJE2360T MJE2361T	h <sub>FE</sub>	25	—	200	—
(I <sub>C</sub> = 100 mA <sub>d</sub> c, V <sub>CE</sub> = 10 V <sub>d</sub> c)			50	—	250	
			15	—	—	
			40	—	—	
Collector–Emitter Saturation Voltage (I <sub>C</sub> = 100 mA <sub>d</sub> c, I <sub>B</sub> = 10 mA <sub>d</sub> c)		V <sub>CE(sat)</sub>	—	—	1.5	V <sub>d</sub> c
Base–Emitter On Voltage (I <sub>C</sub> = 100 mA <sub>d</sub> c, V <sub>CE</sub> = 10 V <sub>d</sub> c)		V <sub>BE(on)</sub>	—	—	1.0	V <sub>d</sub> c

## DYNAMIC CHARACTERISTICS

Current–Gain — Bandwidth Product (I <sub>C</sub> = 50 mA <sub>d</sub> c, V <sub>CE</sub> = 10 V <sub>d</sub> c, f = 1.0 MHz)	f <sub>T</sub>	—	10	—	MHz
Output Capacitance (V <sub>CB</sub> = 100 V <sub>d</sub> c, I <sub>E</sub> = 0, f = 100 kHz)	C <sub>ob</sub>	—	20	—	pF

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

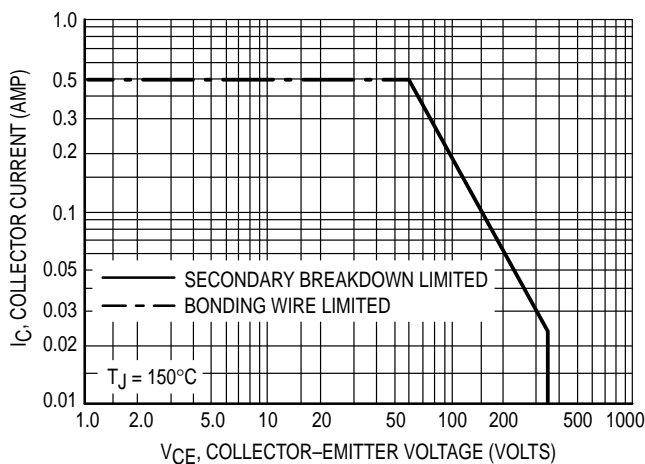
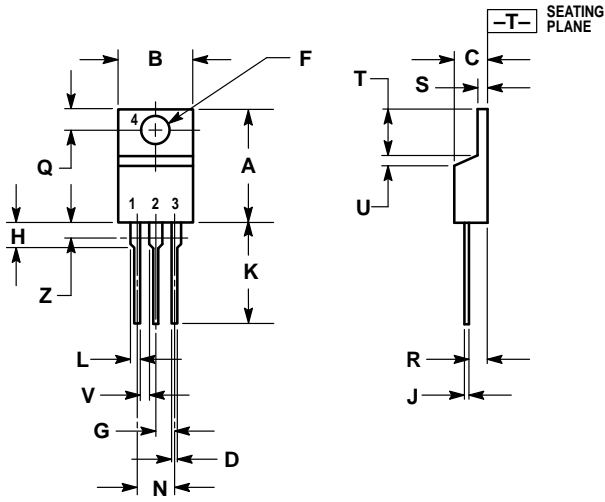


Figure 2. DC Safe Operating Area

The Safe Operating Area Curves indicate I<sub>C</sub> – V<sub>CE</sub> limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T<sub>J</sub>, power–temperature derating must be observed for both steady state and pulse power conditions.

PACKAGE DIMENSIONS




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

- STYLE 1:  
 PIN 1. BASE  
 2. COLLECTOR  
 3. EMITTER  
 4. COLLECTOR

CASE 221A-06  
 TO-220AB  
 ISSUE Y

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