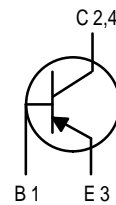


*Preliminary Data Sheet*  
**Bipolar Power Transistors**  
**PNP Silicon**

- Collector–Emitter Sustaining Voltage —  $V_{CE(sus)}$   
= 30 Vdc (Min) @  $I_C = 10$  mAdc
- High DC Current Gain —  $h_{FE}$   
= 140 (Min) @  $I_C = 1.2$  Adc  
= 125 (Min) @  $I_C = 3.0$  Adc
- Low Collector–Emitter Saturation Voltage —  $V_{CE(sat)}$   
= 0.275 Vdc (Max) @  $I_C = 1.2$  Adc  
= 0.68 Vdc (Max) @  $I_C = 5.0$  Adc
- SOT–223 Surface Mount Packaging

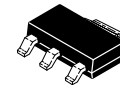


Schematic

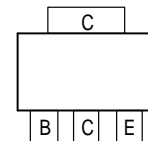
**MMJT9435**

Motorola Preferred Device

**POWER BJT**  
 **$I_C = 3.0$  AMPERES**  
 **$V_{CE0} = 30$  VOLTS**  
 **$V_{CE(sat)} = 0.275$  VOLTS**



CASE 318E–04, Style 1



Top View  
Pinout

**MAXIMUM RATINGS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	30	Vdc
Collector–Base Voltage	$V_{CB}$	45	Vdc
Emitter–Base Voltage	$V_{EB}$	$\pm 8.0$	Vdc
Base Current — Continuous	$I_B$	1.0	Adc
Collector Current — Continuous — Peak	$I_C$	3.0 5.0	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	3.0 0.025	Watts mW/ $^\circ\text{C}$
Total $P_D$ @ $T_A = 25^\circ\text{C}$ mounted on 1" sq. (645 sq. mm) Drain pad on FR–4 bd material		2.0	Watts
Total $P_D$ @ $T_A = 25^\circ\text{C}$ mounted on 0.92" sq. (590 sq. mm) Drain pad on FR–4 bd material		1.5	
Total $P_D$ @ $T_A = 25^\circ\text{C}$ mounted on 0.012" sq. (7.6 sq. mm) Drain pad on FR–4 bd material		0.8	
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	–55 to +150	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance – Junction to Case	$R_{\theta JC}$	40	$^\circ\text{C/W}$
– Junction to Ambient on 1" sq. (645 sq. mm) Drain pad on FR–4 bd material	$R_{\theta JA}$	60	
– Junction to Ambient on 0.92" sq. (590 sq. mm) Drain pad on FR–4 bd material	$R_{\theta JA}$	85	
– Junction to Ambient on 0.012" sq. (7.6 sq. mm) Drain pad on FR–4 bd material	$R_{\theta JA}$	156	
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 5 seconds	$T_L$	260	$^\circ\text{C}$

This document contains information on a new product. Specifications and information are subject to change without notice.

**Preferred devices** are Motorola recommended choices for future use and best overall value.



**MMJT9435****ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Collector–Emitter Sustaining Voltage ( $I_C = 10\text{ mAdc}$ , $I_B = 0\text{ Adc}$ )	$V_{CE(sus)}$	30	—	—	Vdc
Collector Cutoff Current ( $V_{CE} = 25\text{ Vdc}$ , $R_{BE} = 200\ \Omega$ )	$I_{CER}$	—	—	20	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{BE} = 5.0\text{ Vdc}$ )	$I_{EBO}$	—	—	10	$\mu\text{Adc}$

**ON CHARACTERISTICS(1)**

Collector–Emitter Saturation Voltage ( $I_C = 0.8\text{ Adc}$ , $I_B = 20\text{ mAdc}$ ) ( $I_C = 1.2\text{ Adc}$ , $I_B = 20\text{ mAdc}$ ) ( $I_C = 5.0\text{ Adc}$ , $I_B = 1.0\text{ Adc}$ )	$V_{CE(sat)}$	— — —	0.140 — —	0.210 0.275 0.680	Vdc
Base–Emitter Saturation Voltage ( $I_C = 5.0\text{ Adc}$ , $I_B = 1.0\text{ Adc}$ )	$V_{BE(sat)}$	—	—	1.40	Vdc
Base–Emitter On Voltage ( $I_C = 3.0\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ )	$V_{BE(on)}$	—	—	1.10	Vdc
DC Current Gain ( $I_C = 1.2\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ ) ( $I_C = 3.0\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ )	$h_{FE}$	140 125	— 170	— —	—

**DYNAMIC CHARACTERISTICS**

Output Capacitance ( $V_{CB} = 10\text{ Vdc}$ , $I_E = 0\text{ Adc}$ , $f = 1.0\text{ MHz}$ )	$C_{ob}$	—	100	—	pF
Input Capacitance ( $V_{EB} = 8.0\text{ Vdc}$ )	$C_{ib}$	—	135	—	pF
Current–Gain — Bandwidth Product(2) ( $I_C = 500\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f_{test} = 1.0\text{ MHz}$ )	$f_T$	—	105	—	MHz

(1) Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .(2)  $f_T = |h_{FE}| \cdot f_{test}$

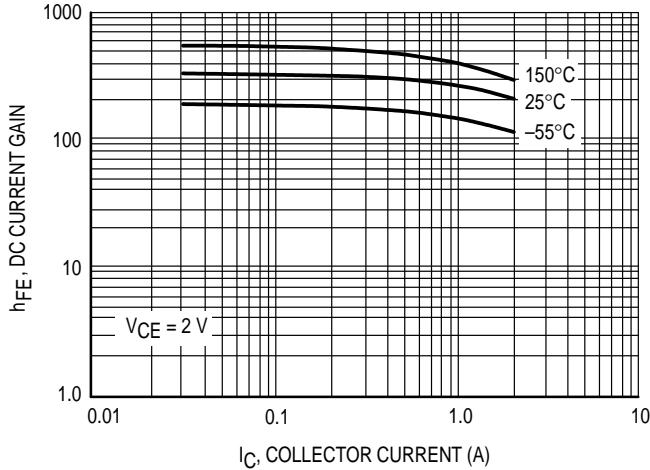


Figure 1. DC Current Gain

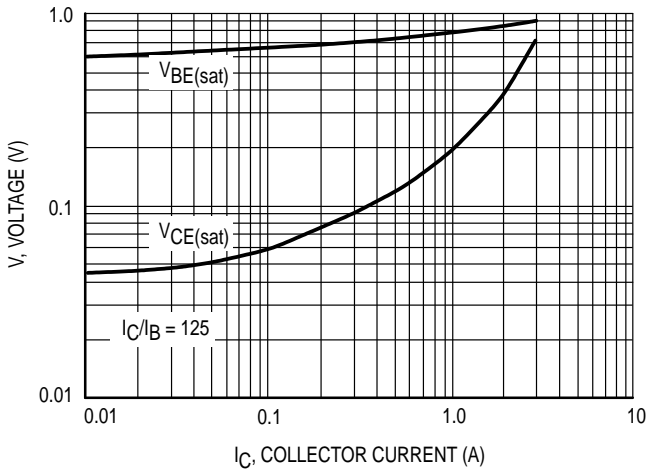


Figure 2. "ON" Voltages

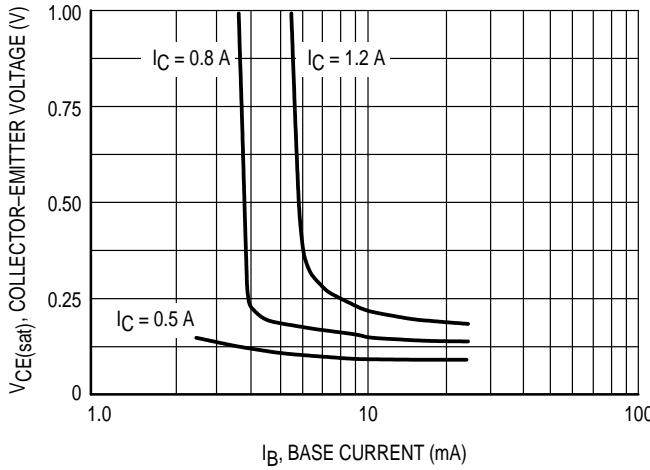


Figure 3. Collector Saturation Region

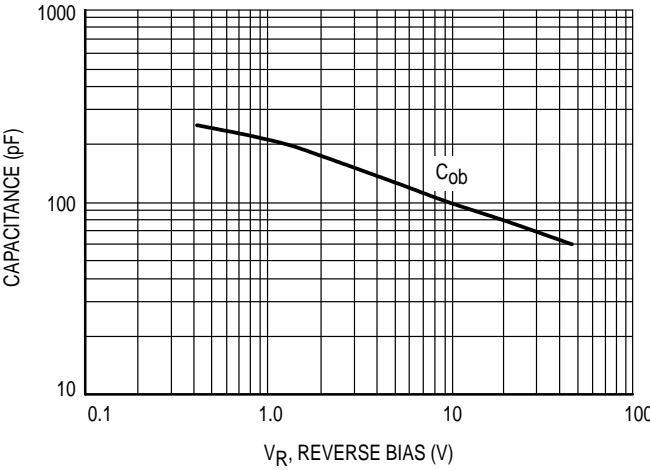
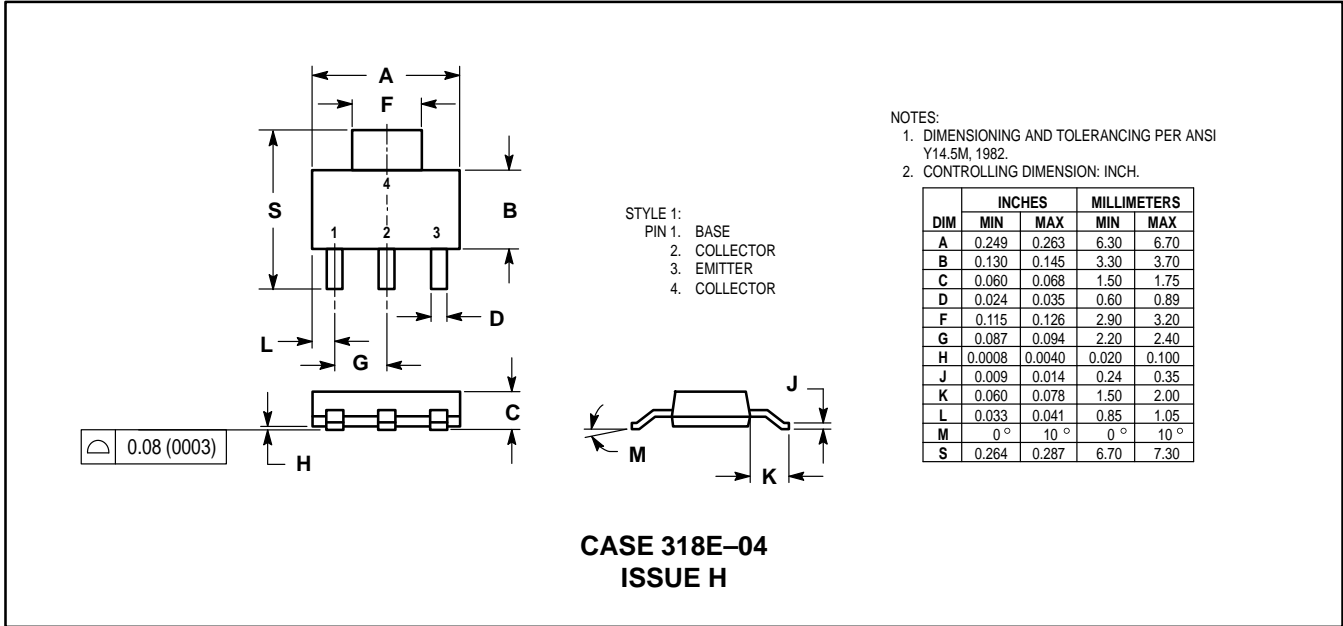


Figure 4. Capacitance

PACKAGE DIMENSIONS



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