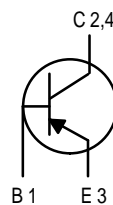


Preliminary Data Sheet
Bipolar Power Transistors
PNP Silicon

- 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

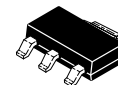


Schematic

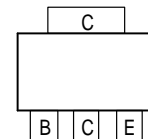
MMJT9435

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}	± 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°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
OFF CHARACTERISTICS					
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	μAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$)	I_{EBO}	—	—	10	μAdc

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) $f_T = |h_{FE}| \cdot f_{test}$

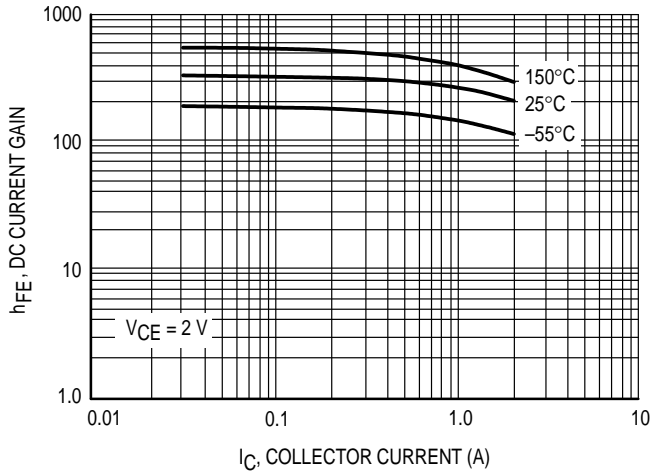


Figure 1. DC Current Gain

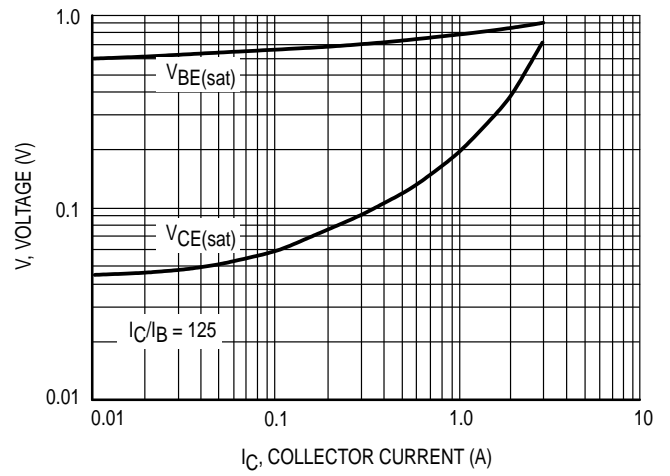


Figure 2. "ON" Voltages

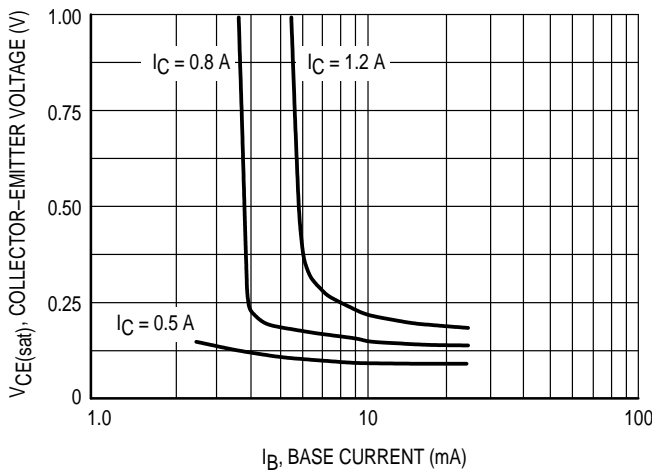


Figure 3. Collector Saturation Region

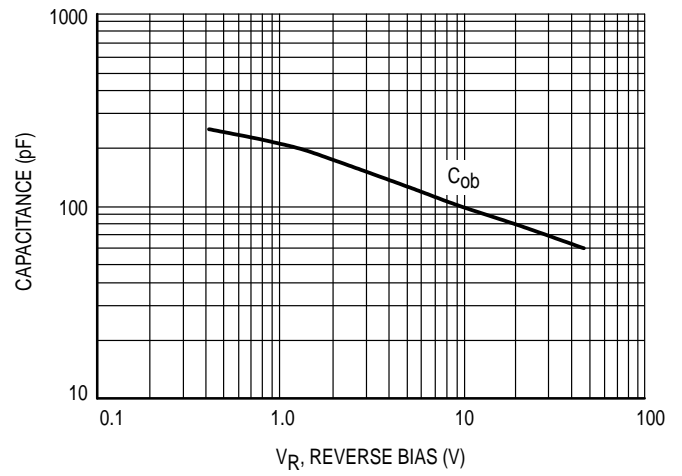
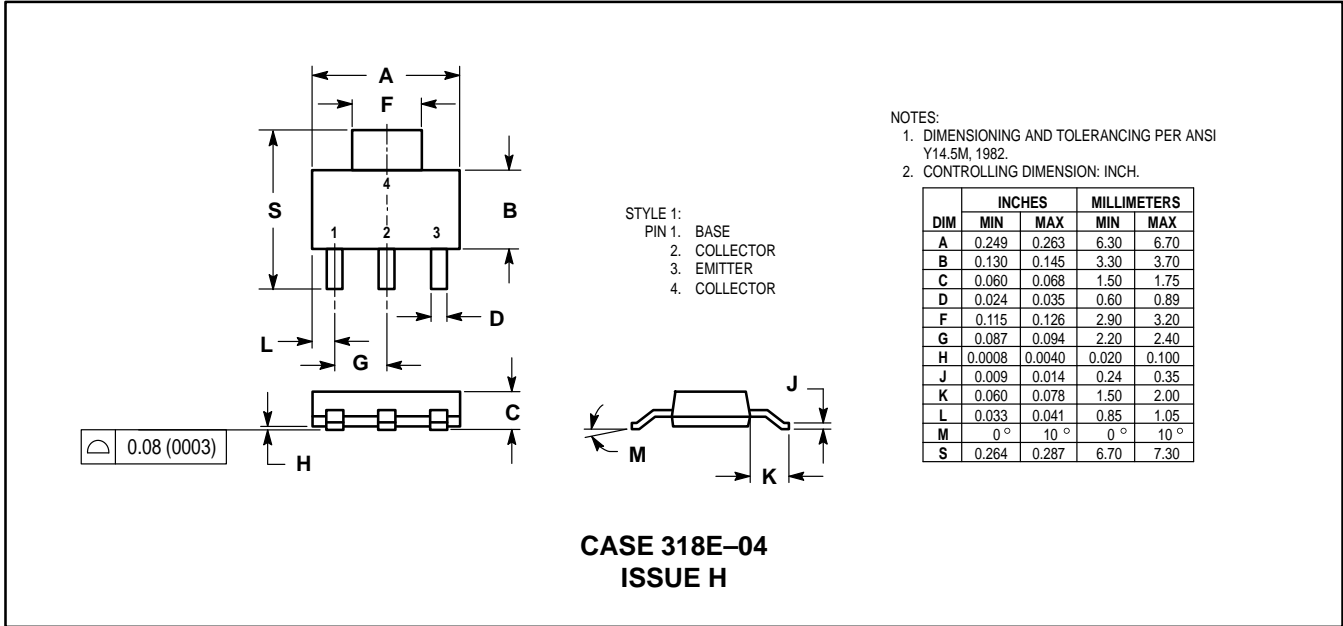


Figure 4. Capacitance

PACKAGE DIMENSIONS



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