

2N3734 2N3735

CASE 79, STYLE 1
TO-39 (TO-205AD)

2N3736 2N3737

CASE 26, STYLE 1
TO-46 (TO-206AD)

GENERAL PURPOSE
TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	2N3734	2N3735	Unit
		2N3736	2N3737	
Collector-Emitter Voltage	V_{CEO}	30	50	Vdc
Collector-Base Voltage	V_{CBO}	50	75	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current — Continuous	I_C	1.5		Adc
		TO-39 2N3734 2N3735	TO-46 2N3736 2N3737	
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 5.71	0.5 2.86	Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	4.0 22.8	2.0 11.4	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	2N3734	2N3735	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.044	0.088	$^\circ\text{C}/\text{mW}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	0.175	0.35	$^\circ\text{C}/\text{mW}$

Refer to 2N3725 for graphs.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage(1) ($I_C = 10 \text{ mAdc}, I_B = 0$)	$V_{(BR)CEO}$	30 50	— —	Vdc
Collector-Base Breakdown Voltage ($I_C = 10 \mu\text{Adc}, I_E = 0$)	$V_{(BR)CBO}$	50 75	— —	Vdc
Emitter-Base Breakdown Voltage ($I_E = 10 \mu\text{Adc}, I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 25 \text{ Vdc}, V_{EB} = 2 \text{ Vdc}$) ($V_{CE} = 25 \text{ Vdc}, V_{EB} = 2 \text{ Vdc}, T_A = 100^\circ\text{C}$) ($V_{CE} = 40 \text{ Vdc}, V_{EB} = 2 \text{ Vdc}$) ($V_{CE} = 40 \text{ Vdc}, V_{EB} = 2 \text{ Vdc}, T_A = 100^\circ\text{C}$)	I_{CEX}	— — — —	0.20 20 0.20 20	μAdc
Base Cutoff Current ($V_{CE} = 25 \text{ Vdc}, V_{EB} = 2 \text{ Vdc}$) ($V_{CE} = 40 \text{ Vdc}, V_{EB} = 2 \text{ Vdc}$)	I_{BL}	— —	0.3 0.3	μAdc

ON CHARACTERISTICS

DC Current Gain(1) ($I_C = 10 \text{ mAdc}, V_{CE} = 1 \text{ Vdc}$) ($I_C = 150 \text{ mAdc}, V_{CE} = 1 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}, V_{CE} = 1 \text{ Vdc}$) ($I_C = 1 \text{ Adc}, V_{CE} = 1.5 \text{ Vdc}$) ($I_C = 1.5 \text{ Adc}, V_{CE} = 5 \text{ Vdc}$)	h_{FE}	35 40 35 30 20 30 20	— — — 120 80 — —	—
Collector-Emitter Saturation Voltage(1) ($I_C = 10 \text{ mAdc}, I_B = 1 \text{ mAdc}$) ($I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$) ($I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$) ($I_C = 1 \text{ Adc}, I_B = 100 \text{ mAdc}$)	$V_{CE(sat)}$	— — — —	0.2 0.3 0.5 0.9	Vdc
Base-Emitter Saturation Voltage(1) ($I_C = 10 \text{ mAdc}, I_B = 1 \text{ mAdc}$) ($I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$) ($I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$) ($I_C = 1 \text{ Adc}, I_B = 100 \text{ mAdc}$)	$V_{BE(sat)}$	— — — 0.9	0.8 1.0 1.2 1.4	Vdc

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ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS				
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 100\text{ kHz}$)	C_{obo}	—	9.0	pF
Input Capacitance ($V_{BE} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 100\text{ kHz}$)	C_{ibo}	—	80	pF
Small-Signal Current Gain ($I_C = 50\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 100\text{ MHz}$)	h_{fe}	2.5	—	—
SWITCHING CHARACTERISTICS				
Turn-On Time ($V_{CC} = 30\text{ V}$, $V_{BE(off)} = 2.0\text{ V}$, $I_C = 1.0\text{ Amp}$, $I_{B1} = 100\text{ mA}$)	t_{on}	—	40	ns
Turn-Off Time ($V_{CC} = 30\text{ V}$, $V_{BE(off)} = 2.0\text{ V}$, $I_C = 1.0\text{ Amp}$, $I_{B1} = 100\text{ mA}$)	t_{off}	—	60	ns
Total Control Charge ($I_C = 1\text{ Amp}$, $I_B = 100\text{ mA}$, $V_{CC} = 30\text{ V}$)	Q_T	—	10	pC

(1) Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

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SWITCHING TIME EQUIVALENT TEST CIRCUITS

