2N1132,A

JAN AVAILABLE
CASE 79-02, STYLE 1
TO-39 (TO-205AD)

SWITCHING TRANSISTOR

PNP SILICON

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Refer to 2N2904 for graphs.

MAXIMUM RATINGS

Rating	Symbol	2N1132	2N1132A	Unit
Collector-Emitter Voltage	V_{CEO}	35	40	Vdc
Collector-Emitter Voltage ($R_{BE} \leq 10$ Ohms)	V_{CER}	⟵ 50 ⟶		Vdc
Collector-Base Voltage	V_{CBO}	50	60	Vdc
Emitter-Base Voltage	V_{EBO}	⟵ 5.0 ⟶		Vdc
Collector Current — Continuous	I_C	⟵ 600 ⟶		mA
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	⟵ 600 ⟶ ⟵ 3.43 ⟶		mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	⟵ 2.0 ⟶ ⟵ 11.43 ⟶		Watts mW/°C
Total Device Dissipation @ T_C = 100°C 2N1132A	P_D	⟵ 1.0 ⟶		Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	87.49	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	291.55	°C/W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 10 mA)	2N1132A 2N1132	$V_{(BR)CEO}$	40 35	—	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	2N1132, 2N1132A	$V_{(BR)CBO}$	 50 60	 — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0) (I_E = 1.0 mA, I_C = 0)	 2N1132, 2N1132A	$V_{(BR)EBO}$	 5.0 5.0	— — —	Vdc
Collector Cutoff Current (V_{CB} = 30 Vdc, I_E = 0) (V_{CB} = 50 Vdc, I_E = 0) (V_{CB} = 30 Vdc, I_E = 0, T_A = 150°C) (V_{CB} = 45 Vdc, I_E = 0) (V_{CB} = 45 Vdc, I_E = 0, T_A = 150°C)	 2N1132 2N1132 2N1132 2N1132A 2N1132A	I_{CBO}	 — — — — —	 1.0 100 100 0.5 50	μAdc
Collector Cutoff Current (V_{CE} = 50 V, R_{BE} = ≤ 10 Ohms)	2N1132 2N1132A	I_{CER}	— —	10 10	mA mA
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0) (V_{BE} = 2.0 Vdc, I_C = 0)	 2N1132A 2N1132	I_{EBO}	 — —	 100 100	μAdc
ON CHARACTERISTICS(1)					
DC Current Gain (I_C = 5.0 mAdc, V_{CE} = 10 Vdc) (I_C = 150 mAdc, V_{CE} = 10 Vdc)		h_{FE}	 25 30	 — 90	—
Collector-Emitter Saturation Voltage (I_C = 150 mAdc, I_B = 15 mAdc)		$V_{CE(sat)}$	—	1.5	Vdc
Base-Emitter Saturation Voltage (I_C = 150 mAdc, I_B = 15 mAdc)		$V_{BE(sat)}$	—	1.3	Vdc

ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 20 MHz)		f_T	60	—	MHz
Output Capacitance		C_{obo}			pF
(V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)	2N1132,		—	45	
(V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)	2N1132A		—	30	
Input Capacitance		C_{ibo}			pF
(V_{BE} = 0.5 Vdc, I_C = 0, f = 1.0 kHz)	2N1132,		—	80	
(V_{BE} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)	2N1132A		—	80	
Input Impedance		h_{ib}			Ohms
(I_C = 1.0 mAdc, V_{CB} = 5.0 Vdc, f = 1.0 kHz			25	35	
(I_C = 5.0 mAdc, V_{CB} = 10 Vdc, f = 1.0 kHz			—	10	
Voltage Feedback Ratio		h_{rb}			X 10^{-4}
(I_C = 5.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)			—	8.0	
(I_C = 5.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)			—	8.0	
Small-Signal Current Gain		h_{fe}			—
(I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)	2N1132,		25	100	
	2N1132A		25	75	
(I_C = 5.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)	2N1132,		30	—	
	2N1132A		30		
Output Admittance		h_{ob}			μmhos
(I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz)			—	1.0	
(I_C = 5.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)			—	5.0	
SWITCHING CHARACTERISTICS					
Turn-On Time	2N1132A	t_{on}	—	45	ns
Turn-Off Time	2N1132A	t_{off}	—	35	ns

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

FIGURE 1 SWITCHING TIMES TEST CIRCUIT