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2N4854, 2N4855

N-P-N, P-N-P DUAL SILICON TRANSISTORS

*absolute maximum ratings at 25°C free-air temperature (unless otherwise noted) †

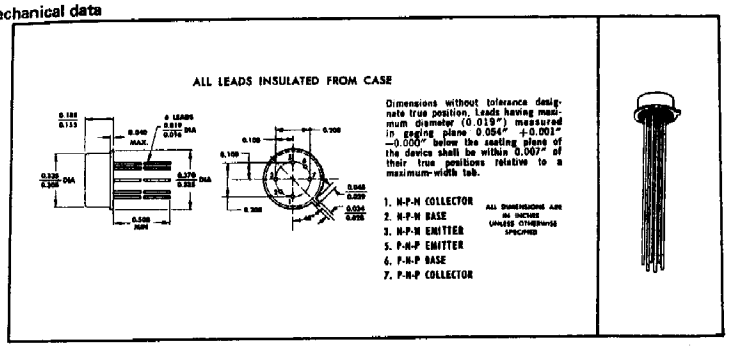
	EACH TRIODE	TOTAL DEVICE
Collector-Base Voltage	60 V	
Collector-Emitter Voltage (See Note 1)	40 V	
Emitter-Base Voltage	5 V	
Collector-1—Collector-2 Voltage		±120 V
Lead-to-Case Voltage		±120 V
Continuous Collector Current	600 mA	
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 2)	300 mW	600 mW
Continuous Device Dissipation at (or below) 25°C Case Temperature (See Note 3)	1 W	2 W
Storage Temperature Range	−65°C to 200°C	
Lead Temperature 1/16 Inch from Case for 10 Seconds	← 300°C →	

NOTES: 1. This value applies between 0 and 600 mA collector current when the base-emitter diode is open-circuited. 40 V and 600 mA collector current may be simultaneously applied provided the time of application is 10 μs or less and the duty cycle is 2% or less.
2. Derate linearly to 175°C free-air temperature at the rates of 2 mW/°C for each triode and 4 mW/°C for total device.
3. Derate linearly to 175°C case temperature at the rates of 6.67 mW/°C for each triode and 13.33 mW/°C for total device.

*JEDEC registered data. This data sheet contains all applicable registered data in effect at the time of publication.

†Voltages and currents apply to the N-P-N triode. For the P-N-P triode the values are the same, but the signs are reversed.

*mechanical data



*electrical characteristics at 25°C free-air temperature (unless otherwise noted) †

individual triode characteristics (see note 4)

PARAMETER		TEST CONDITIONS		2N4854 MIN	2N4854 MAX	2N4855 MIN	2N4855 MAX	UNIT
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 μA, I_E = 0		60		60		V
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 10 mA, I_B = 0,	See Note 5	40		40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 μA, I_C = 0		5		5		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 50 V, I_E = 0			10		10	nA
		V_{CB} = 50 V, I_E = 0,	T_A = 150°C		10		10	μA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 3 V, I_C = 0			10		10	nA
h_{FE}	Static Forward Current Transfer Ratio	V_{CE} = 1 V, I_C = 150 mA,	See Note 5	50		20		
		V_{CE} = 10 V, I_C = 100 μA		35		20		
		V_{CE} = 10 V, I_C = 1 mA		50		25		
		V_{CE} = 10 V, I_C = 10 mA,	See Note 5	75		35		
		V_{CE} = 10 V, I_C = 150 mA,	See Note 5	100	300	40	120	
		V_{CE} = 10 V, I_C = 300 mA,	See Note 5	35		20		
V_{BE}	Base-Emitter Voltage	I_B = 15 mA, I_C = 150 mA,	See Note 5	0.75	1.2	0.75	1.2	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_B = 15 mA, I_C = 150 mA,	See Note 5		0.4		0.4	V
h_{ie}	Small-Signal Common-Emitter Input Impedance	V_{CE} = 10 V, I_C = 1 mA,	f = 1 kHz	1.5	9	0.75	4.5	kΩ
h_{fe}	Small-Signal Common-Emitter Forward Current Transfer Ratio			60	300	30	150	
h_{oe}	Small-Signal Common-Emitter Output Admittance				50		25	μmho
$\lvert h_{fe} \rvert$	Small-Signal Common-Emitter Forward Current Transfer Ratio	V_{CE} = 10 V, I_C = 20 mA,	f = 100 MHz	2		2		
C_{cb}	Collector-Base Capacitance	V_{CB} = 10 V, I_E = 0,	f = 1 MHz, See Note 6		8		8	pF

*operating characteristics at 25°C free-air temperature †

individual triode characteristics (see note 4)

PARAMETER		TEST CONDITIONS		MAX	UNIT
t_d	Delay Time	I_C = 150 mA, $I_{B(1)}$ = 15 mA, $V_{BE(off)}$ = −0.5 V,		20	ns
t_r	Rise Time	R_L = 200 Ω,	See Note 7 and Figure 1	40	ns
t_s	Storage Time	I_C = 150 mA, $I_{B(1)}$ = 15 mA, $I_{B(2)}$ = −15 mA,		280	ns
t_f	Fall Time	R_L = 200 Ω,	See Note 7 and Figure 2	70	ns
F	Spot Noise Figure	V_{CE} = 10 V, I_C = 100 μA, R_G = 1 kΩ,	f = 1 kHz	8	dB

NOTES: 4. The terminals of the triode not under test are open-circuited for the measurement of these characteristics.
5. These parameters must be measured using pulse techniques. t_w = 300 μs, duty cycle ≤ 2%.
6. C_{cb} measurement employs a three-terminal capacitance bridge incorporating a guard circuit. The emitter and case are connected to the guard terminal of the bridge.
7. Voltages and current values shown are nominal; exact values vary with device parameters.

*JEDEC registered data

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