New Jersey Semi-Conductor Products, Inc.

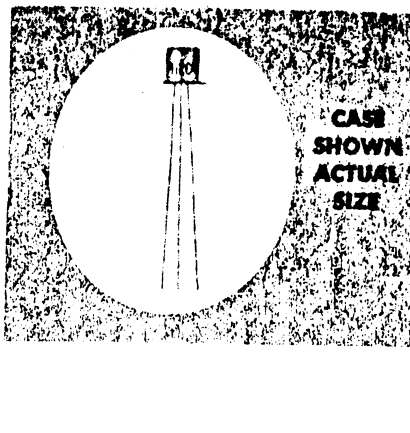
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (201) 376-2922
(212) 227-6005
TELEX: 13-8720

2N859,

DESCRIPTION

The 2N859, 2N861, 2N863 and 2N865 are Silicon Precision Alloy **Transistors (SPAT)*** intended for control circuits, medium speed switching applications and high gain amplifiers. The homogeneous base of these transistors provides a high reverse bias emitter-base diode rating. The units feature low saturation resistance, high beta and low cutoff currents. High and low temperature performance are guaranteed by a saturation current test at 125°C and a beta test at −55°C. These transistors have the polarity of PNP devices.



ABSOLUTE MAXIMUM RATINGS (NOTE 1)

Storage Temperature ..... −65°C to +140°C
Total Device Dissipation at 25°C (Note 2) ..... 150 mw
Lead Temperature, at 1/16" ± 1/32" from case ..... 230°C for 10 sec
Collector Current, I_C ..... −50 ma

	2N859	2N861	2N863	2N865	
Collector Voltage, V_{CB}	−40	−25	−15	−10	volts
Collector Voltage, V_{CEO}	−40	−25	−15	−6	volts
Emitter Voltage, V_{EB}	−25	−20	−10	−10	volts

ELECTRICAL CHARACTERISTICS (T = 25°C)

	2N859			2N861			2N863			2N865			
Static Characteristics	*Min.*	*Typ.*	*Max.*	*Min.*	*Typ.*	*Max.*	*Min.*	*Typ.*	*Max.*	*Min.*	*Typ.*	*Max.*	
Collector Cutoff Current, I_{CBO} (V_{CB} = −10v)			0.1			0.1			0.1			0.1	μ
Collector Cutoff Current, I_{CBO} (V_{CB} = −10v, T = 125°C)			15			15			15			15	μ
Collector Breakdown Voltage, BV_{CBO} (I_C = −1 μa) Note 3	40			25			15						volt
Collector Breakdown Voltage, BV_{CEO}, (I_{CEO} = −25 μa) Note 3	40			25			15			6			volt
Emitter Current, I_{EBO} (V_{EB} = −10v)									0.1			0.1	μ
Emitter Current, I_{EBO} (V_{EB} = −20v)						1							μ
Emitter Current, I_{EBO} (V_{EB} = −25v)			1										μ
DC Current Amplification Factor, h_{FE} (V_{CE} = −0.5v, I_C = −5 ma)	25	35	100	25	35	75	25	35	100	45	75	125	
DC Current Amplification Factor, h_{FE} (V_{CE} = −0.5v, I_C = −5 ma, T = −55°C)	16	23		16	23		16	23		35	55		
Collector Saturation Voltage, V_{CE} (SAT) (I_C = −5 ma, I_B = −0.5 ma)		.06	0.15		.06	0.15		.06	0.15		.05	0.1	volt
Base Voltage, V_{BE} (I_C = −5 ma, I_B = −0.5 ma)	0.75	0.81	1.0	0.75	0.81	1.0	0.75	0.81	0.95	0.75	0.8	1.0	volt
Small Signal Parameters (V_{CB} = −6v, I_E = 1 ma)													
Input Resistance, h_{ie}		2.5			2.5			2.5			5		kohms
Output Conductance, h_{oe}		50			50			50			110		μmhos
Current Amplifications Factor, h_{fe}	30	65	120	30	65	100	40	65	120	100	150	350	
Voltage Feedback Ratio, h_{re}		3.5			3.5			3.5			6.5		x10⁻⁴
High Frequency Characteristics													
Output Capacitance, C_{ob} (V_{CB} = −6v, I_E = 0, f = 4 mc)		5	9		5	9		5	9		5	9	pf
Input Capacitance, C_{ib} (V_{EB} = −6v, I_C = 0, f = 4 mc)		4	7		4	7		4	7		4	7	pf
Gain Bandwidth Product, f_T (V_{CE} = −6v, I_E = 1 ma)	6	14		7.5	22		10	22		24	52		mc
Real Part of Input Impedance, R_e (h_{ie}) (V_{CE} = −6v, I_E = 1 ma, f = 100 mc)		350	700		350	700		350	700		350	700	ohms
Switching Characteristics													
Rise Time, t_r (in circuit of figure 1)		125	250		105	210		90	175		50	100	nsec
Storage Time, t_s (in circuit of figure 2)		75	150		75	150		75	150		75	150	nsec
Fall Time, t_f (in circuit of figure 2)		125	250		105	210		90	175		50	100	nsec

REFER TO SUPPLEMENT 3 for curves, circuit diagrams and application information.

Typical values are not guaranteed and appear for guidance only.

*Trademark Philco Corp.