



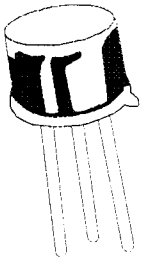
# SOLID STATE INC.

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## NPN SILICON PLANAR SWITCHING TRANSISTORS

2N2218A  
2N2219A  
TO-39



### Switching And Linear Application DC And VHF Amplifier Applications

#### ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	2N2218A,19A	UNIT
Collector -Emitter Voltage	V <sub>CEO</sub>	40	V
Collector -Base Voltage	V <sub>CB0</sub>	75	V
Emitter -Base Voltage	V <sub>EB0</sub>	6.0	V
Collector Current Continuous	I <sub>C</sub>	800	mA
Power Dissipation @Ta=25 degC	PD	800	mW
Derate Above 25deg C		4.57	mW/deg C
@ Tc=25 degC	PD	3.0	W
Derate Above 25deg C		17.1	mW/deg C
Operating And Storage Junction Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-65 to +200	deg C

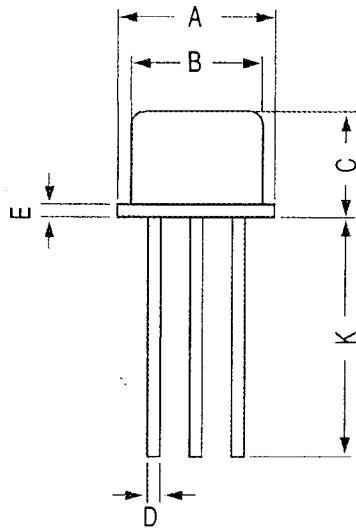
#### ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified)

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE		UNIT
			MIN	MAX	
Collector -Emitter Voltage	V <sub>CEO</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0	40	-	V
Collector -Base Voltage	V <sub>CB0</sub>	I <sub>C</sub> =10uA, I <sub>E</sub> =0	75	-	V
Emitter-Base Voltage	V <sub>EB0</sub>	I <sub>E</sub> =10uA, I <sub>C</sub> =0	6.0	-	V
Collector-Cut off Current	I <sub>CB0</sub>	V <sub>CB</sub> =60V, I <sub>E</sub> =0	-	10	nA
		Ta=150 deg C			
		V <sub>CB</sub> =60V, I <sub>E</sub> =0	-	10	uA
Emitter-Cut off Current	I <sub>CEx</sub>	V <sub>CE</sub> =60V, V <sub>EB</sub> =3V	-	10	nA
Base-Cut off Current	I <sub>EB0</sub>	V <sub>EB</sub> =3V, I <sub>C</sub> =0	-	10	nA
Collector Emitter Saturation Voltage	V <sub>CE(Sat)*</sub>	V <sub>CE</sub> =60V, V <sub>EB</sub> =3V	-	20	nA
		I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	-	0.3	V
		I <sub>C</sub> =500mA, I <sub>B</sub> =50mA	-	1.0	V
Base Emitter Saturation Voltage	V <sub>BE(Sat)*</sub>	I <sub>C</sub> =150mA, I <sub>B</sub> =15mA	-	0.6-1.2	V
		I <sub>C</sub> =500mA, I <sub>B</sub> =50mA	-	2.0	V

**ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified) 2N2218A to 2N2219A**

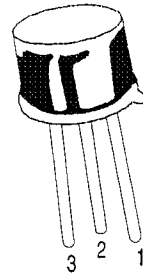
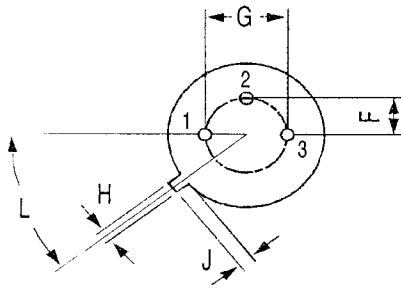
DESCRIPTION	SYMBOL	TEST CONDITION	2218A	2219A	UNIT
DC Current Gain	hFE	IC=0.1mA, VCE=10V	>20	>35	
		IC=1mA, VCE=10V	>25	>50	
		IC=10mA, VCE=10V	>35	>75	
		Ta=55 deg C			
		IC=10mA, VCE=10V	>15	>35	
		IC=150mA, VCE=10V	40-120	100-300	
		IC=150mA, VCE=1V	>20	>50	
		IC=500mA, VCE=10V	>25	>40	
<b><u>DYNAMIC CHARACTERISTICS</u></b>					
		ALL f=1kHz			
Small Signal Current Gain	hfe	IC=1mA, VCE=10V	30-150	50-300	
		IC=10mA, VCE=10V	50-300	75-375	
Input Impedance	hie	IC=1mA, VCE=10V	1.0-3.5	2.0-8.0	kohms
		IC=10mA, VCE=10V	0.2-1.0	0.25-1.25	
Voltage Feedback Ratio	hre	IC=1mA, VCE=10V	<5.0	<8.0	x10-4
		IC=10mA, VCE=10V	<2.5	<4.0	
Out put Admittance	hoe	IC=1mA, VCE=10V	3.0-15	5.0-35	umhos
		IC=10mA, VCE=10V	10-100	25-200	
Collector Base Time Constant	rb'Cc	IE=20mA, VCB=20V f=31.8MHz	<150	<150	ps
Real Part Common-Emitter High Frequency Input Impedance	Re(hie)	IC=20mA, VCE=20V f=300MHz	<60	<60	ohms
Noise Figure	NF	IC=100uA, VCE=10V Rs=1kohms, f=1kHz	-	<4.0	dB
<b><u>DYNAMIC CHARACTERISTICS</u></b>					
Transistors Frequency	ft	IC=20mA, VCE=20V f=100MHz	>250	>300	MHz
Out-Put Capacitance	Cob	VCB=10V, IE=0 f=100kHz	<8.0	<8.0	pF
Input Capacitance	Cib	VEB=0.5V, IC=0 f=100kHz	<25	<25	pF
<b><u>SWITCHING Time</u></b>					
Delay time	td	IC=150mA, IB1=15mA		<10	ns
Rise time	tr	VCC=30V, VBE=0.5V	-	<25	ns
Storage time	ts	IC=150mA, IB1=		<225	ns
Fall time	tf	IB2=15mA, VCC=30V	-	<60	ns
<b>*Pulse Condition: Pulse Width=300us, Duty Cycle=2%</b>					

## TO-39 Metal Can Package



DIM	MIN	MAX
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	—	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	—
L	42 DEG	48 DEG

All dimensions are in mm



### PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR