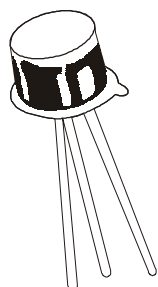


NPN SILICON PLANAR SWITCHING TRANSISTORS

2N2221A
2N2222A
TO-18



Switching And Linear Application DC And VHF Amplifier Applications

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	2N2221A,22A	UNIT
Collector -Emitter Voltage	VCEO	40	V
Collector -Base Voltage	VCBO	75	V
Emitter -Base Voltage	VEBO	6.0	V
Collector Current Continuous	IC	800	mA
Power Dissipation @Ta=25 degC	PD	500	mW
Derate Above 25deg C		2.28	mW/deg C
@ Tc=25 degC	PD	1.2	W
Derate Above 25deg C		6.85	mW/deg C
Operating And Storage Junction Temperature Range	Tj, Tstg	-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	VCEO	IC=10mA, IB=0	40	-	V
Collector -Base Voltage	VCBO	IC=10uA, IE=0	75	-	V
Emitter-Base Voltage	VEBO	IE=10uA, IC=0	6.0	-	V
Collector-Cut off Current	ICBO	VCB=60V, IE=0	-	10	nA
Emitter-Cut off Current	ICEX	Ta=150 deg C			
		VCB=60V, IE=0	-	10	uA
		VCE=60V, VEB=3V	-	10	nA
		VEB=3V, IC=0	-	10	nA
Base-Cut off Current	IBL	VCE=60V, VEB=3V	-	20	nA
Collector Emitter Saturation Voltage	VCE(Sat)*	IC=150mA, IB=15mA	-	0.3	V
		IC=500mA, IB=50mA		1.0	V
Base Emitter Saturation Voltage	VBE(Sat) *	IC=150mA, IB=15mA	-	0.6-1.2	V
		IC=500mA, IB=50mA	-	2.0	V

ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified) 2N2221A to 2N2222A

DESCRIPTION	SYMBOL	TEST CONDITION	2221A	2222A	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	

DYNAMIC CHARACTERISTICS

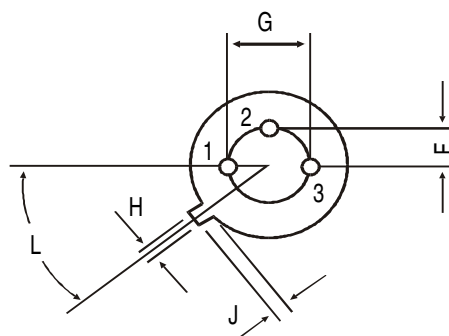
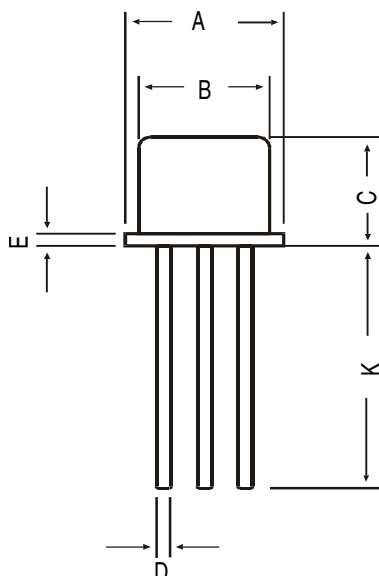
ALL f=1kHz					
Small Signal Current Gain	hfe	IC=1mA, VCE=10V	30-150	50-300	
		IC=10mA, VCE=10V	50-300	75-375	
Input Impedance	hie	IC=1mA, VCE=10V	1.0-3.5	2.0-8.0	kohms
		IC=10mA, VCE=10V	0.2-1.0	0.25-1.25	
Voltage Feedback Ratio	hre	IC=1mA, VCE=10V	<5.0	<8.0	x10-4
		IC=10mA, VCE=10V	<2.5	<4.0	
Out put 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	<150	<150	ps
		f=31.8MHz			
Real Part Common-Emitter High Frequency	Re(hie)	IC=20mA, VCE=20V	<60	<60	ohms
Input Impedance		f=300MHz			
Noise Figure	NF	IC=100uA, VCE=10V	-	<4.0	dB
		Rs=1kohms, f=1kHz			

DYNAMIC CHARACTERISTICS

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
SWITCHING Time					
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

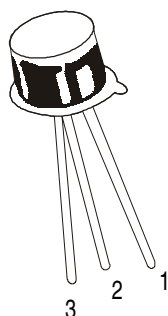
***Pulse Condition: Pulse Width=300us, Duty Cycle=2%**

TO-18 Metal Can Package



All dimensions in mm.

DIM	MIN	MAX
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	—	0.76
F	—	1.27
G	—	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	—
L	45 DEG	



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-18	1K/polybag	350 gm/1K pcs	3" x 7.5" x 7.5"	5.0K	17" x 15" x 13.5"	80.0K	34 kgs

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Discrete Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished on the CDIL Web Site/CD is believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Discrete Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



CDIL is a registered Trademark of

Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.

Telephone + 91-11-579 6150 Fax + 91-11-579 9569, 579 5290

e-mail sales@cdil.com www.cdil.com