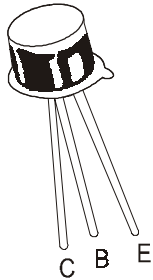


NPN SILICON PLANAR SWITCHING TRANSISTORS

2N2221
2N2222



TO-18
Metal Can Package

Switching and Linear Application DC and VHF Amplifier Applications

ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	2N2221, 22	UNIT
Collector Emitter Voltage	V_{CEO}	30	V
Collector Base Voltage	V_{CBO}	60	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current Continuous	I_C	800	mA
Power Dissipation @Ta=25°C	P_D	500	mW
Derate Above 25°C		2.28	mW/°C
Power Dissipation @ Tc=25°C	P_D	1.2	W
Derate Above 25°C		6.85	mW/°C
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-65 to +200	°C

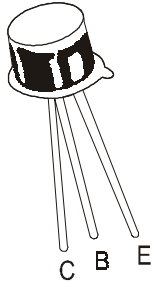
ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	VALUE		UNIT
			MIN	MAX	
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C=10mA, I_B=0$	30		V
Collector Base Breakdown Voltage	BV_{CBO}	$I_C=10\mu A, I_E=0$	60		V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu A, I_C=0$	5		V
Collector Leakage Current	I_{CBO}	$V_{CB}=50V, I_E=0$		10	nA
		$V_{CB}=50V, I_E=0$ $T_a=150^\circ C$		10	μA
Collector Emitter Saturation Voltage	$V_{CE(Sat)}$ *	$I_C=150mA, I_B=15mA$		0.4	V
		$I_C=500mA, I_B=50mA$		1.6	V
Base Emitter Saturation Voltage	$V_{BE(Sat)}$ *	$I_C=150mA, I_B=15mA$	0.6	1.3	V
		$I_C=500mA, I_B=50mA$		2.6	V

NPN SILICON PLANAR SWITCHING TRANSISTORS

2N2221

2N2222



TO-18
Metal Can Package

ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	2221		2222		UNIT
			MIN	MAX	MIN	MAX	
DC Current Gain	h_{FE}	$I_C=0.1mA, V_{CE}=10V^*$	20		35		
		$I_C=1mA, V_{CE}=10V$	25		50		
		$I_C=10mA, V_{CE}=10V^*$	35		75		
		$I_C=150mA, V_{CE}=1V^*$	20		50		
		$I_C=150mA, V_{CE}=1V^*$	40	120	100	300	
		$I_C=500mA, V_{CE}=10V^*$	20		30		

DYNAMIC CHARACTERISTICS

Transition Frequency	f_T	$I_C=20mA, V_{CE}=20V$ $f=100MHz$	250		250		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, I_E=0$ $f=100KHz$		8		8	pF
Input Capacitance	C_{ib}	$V_{EB}=0.5V, I_C=0$ $f=100kHz$		30		30	pF

SWITCHING CHARACTERISTICS

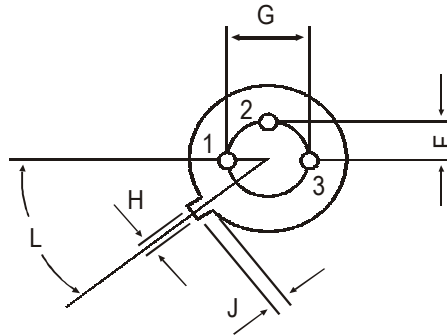
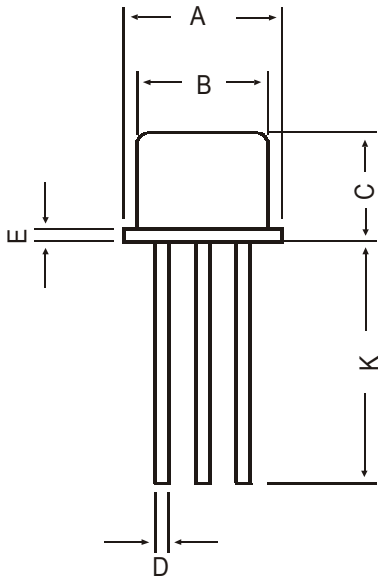
Delay time	t_d				10		ns
		$I_C=150mA, I_{B1}=15mA$					
Rise time	t_r	$V_{CC}=30V, V_{BE(off)}=0.5V$			25		ns
Storage time	t_s				225		ns
		$I_C=150mA, I_{B1}=15mA$					
Fall time	t_f	$I_{B2}=15mA, V_{CC}=30V$			60		ns

*Pulse Condition: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

2N2221
2N2222

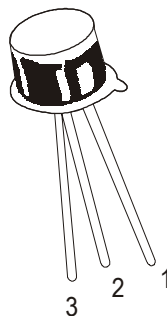
TO-18
Metal Can Package

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"	5K	17" x 15" x 13.5"	80K	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 in the Data Sheet and 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).

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