

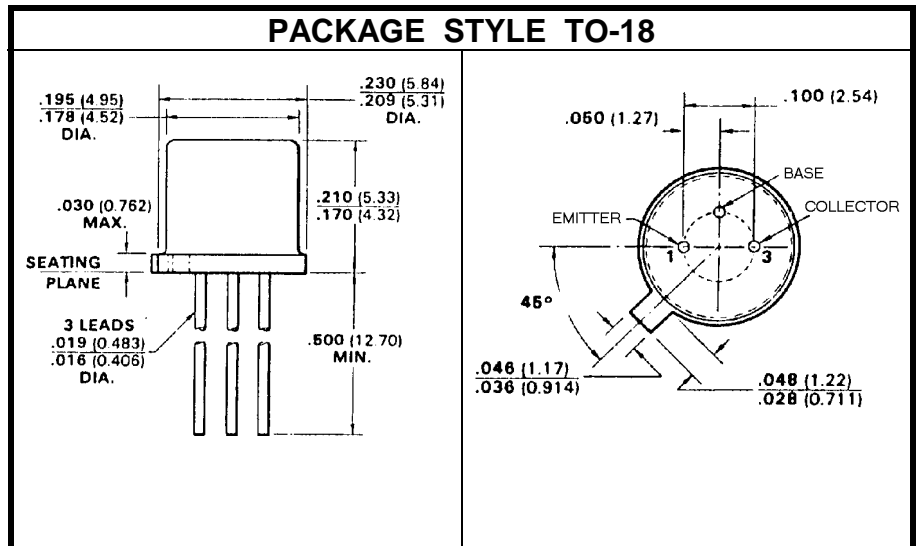
SILICON NPN TRANSISTOR

DESCRIPTION:

The **ASI 2N4013** is Designed for General Purpose Switching and Amplifier Applications.

MAXIMUM RATINGS

I_C	1.0 A
V_{CEO}	30 V
V_{CBO}	50 V
V_{EBO}	6.0 V
P_{DISS}	1.4 W @ T _C = 25 °C
T_J	-65 °C to +200 °C
T_{STG}	-65 °C to +200 °C
θ_{JC}	125 °C/W


CHARACTERISTICS T_C = 25 °C

SYMBOL	TEST CONDITIONS		MINIMUM	TYPICAL	MAXIMUM	UNITS
BV_{CEO}	I _C = 10 mA		30			V
BV_{CES}	I _C = 10 μA		50			V
BV_{CBO}	I _C = 10 μA		50			V
BV_{EBO}	I _E = 10 μA		6.0			V
I_{CBO}	V _{CB} = 40 V T _C = 100 °C				1.7 120	μA
I_{CES}	V _{CE} = 50 V				10	μA
h_{FE}	V _{CE} = 1.0 V	I _C = 10 mA	30		150	---
	V _{CE} = 1.0 V	I _C = 100 mA	60			
	V _{CE} = 1.0 V	I _C = 100 mA	30			
	V _{CE} = 1.0 V	I _C = 300 mA	40			
	V _{CE} = 1.0 V	I _C = 500 mA	35			
	V _{CE} = 1.0 V	I _C = 500 mA	20			
	V _{CE} = 2.0 V	I _C = 800 mA	25			
V _{CE} = 5.0 V	I _C = 1.0 A	30				

DYNAMIC CHARACTERISTICS $T_C = 25\text{ }^\circ\text{C}$

SYMBOL	TEST CONDITIONS			MINIMUM	TYPICAL	MAXIMUM	UNITS
$V_{CE(SAT)}$	$I_C = 10\text{ mA}$	$I_B = 1.0\text{ mA}$				0.25	V
	$I_C = 100\text{ mA}$	$I_B = 10\text{ mA}$				0.20	
	$I_C = 300\text{ mA}$	$I_B = 30\text{ mA}$				0.32	
	$I_C = 500\text{ mA}$	$I_B = 50\text{ mA}$				0.42	
	$I_C = 800\text{ mA}$	$I_B = 80\text{ mA}$				0.65	
	$I_C = 1.0\text{ A}$	$I_B = 100\text{ mA}$				0.75	
$V_{BE(SAT)}$	$I_C = 10\text{ mA}$	$I_B = 1.0\text{ mA}$				0.76	V
	$I_C = 100\text{ mA}$	$I_B = 10\text{ mA}$				0.86	
	$I_C = 300\text{ mA}$	$I_B = 30\text{ mA}$		0.8		1.1	
	$I_C = 500\text{ mA}$	$I_B = 50\text{ mA}$				1.1	
	$I_C = 800\text{ mA}$	$I_B = 80\text{ mA}$				1.5	
	$I_C = 1.0\text{ A}$	$I_B = 100\text{ mA}$				1.7	
f_t	$V_{CE} = 10\text{ V}$	$I_C = 50\text{ mA}$	$f = 100\text{ MHz}$	300			MHz
C_{ob}	$V_{CB} = 10\text{ V}$		$f = 1.0\text{ MHz}$			12	pF
C_{ib}	$V_{EB} = 0.5\text{ V}$		$f = 1.0\text{ MHz}$			55	pF
t_d	$V_{CC} = 30\text{ V}$ $I_{B1} = 50\text{ mA}$	$I_C = 500\text{ mA}$	$V_{BE} = 3.8\text{ V}$		5.0	10	nS
t_r	$V_{CC} = 30\text{ V}$ $I_{B1} = 50\text{ mA}$	$I_C = 500\text{ mA}$	$V_{BE} = 3.8\text{ V}$		15	30	nS
t_s	$V_{CC} = 30\text{ V}$	$I_C = 500\text{ mA}$	$I_{B1} = 50\text{ mA}$		30	50	nS
t_f	$V_{CC} = 30\text{ V}$	$I_C = 500\text{ mA}$	$I_{B1} = 50\text{ mA}$		25	30	nS
t_{on}	$V_{CC} = 30\text{ V}$ $I_{B1} = 50\text{ mA}$	$I_C = 500\text{ mA}$	$V_{BE} = 3.8\text{ V}$		20	35	nS
t_{off}	$V_{CC} = 30\text{ V}$ $I_{B1} = 50\text{ mA}$	$I_C = 500\text{ mA}$	$V_{BE} = 3.8\text{ V}$		50	60	nS