

**PREMIUM PERFORMANCE  
ULTRA LOW<sub>rec (sat)</sub>  
SILICON EPITAXIAL JUNCTION  
PNP SWITCHING TRANSISTORS**

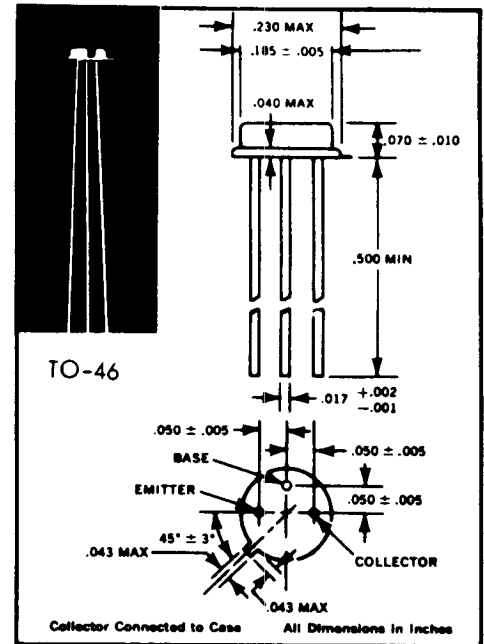
**2N4006  
THRU  
2N4011**

GEOMETRY 292, PG. 57

- $r_{EC (sat)}$  3 Ohms Typical
- LOW  $C_{eb}$
- LOW LEAKAGE
- HIGH  $BV_{EBO}$

**ELECTRICAL DATA ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	2N4006 2N4009	2N4007 2N4010	2N4008 2N4011	UNITS
Collector to Emitter Voltage	$BV_{CE0}$	-6	-15	-30	Volts
Emitter to Collector Voltage	$BV_{ECO}$	-6	-15	-30	Volts
Collector to Base Voltage	$BV_{CB0}$	-10	-20	-35	Volts
Emitter to Base Voltage	$BV_{EB0}$	-10	-20	-35	Volts
Collector Current	$I_C$	100			mA
Power Dissipation	$P_T$	400			mW
Derating Factor	$DF$	2.3			mW/°C
Junction Temp. (Oper. & Stor.)	$T_J$	-65°C to +200°C			
Lead Temp. (1/16" ± 1/32" from case)	$T_L$	240°C for 10 sec.			



**ELECTRICAL CHARACTERISTICS:  $T_A = 25^\circ C$  (UNLESS OTHERWISE STATED)**

PARAMETER	SYMBOL	CONDITION	2N4006 2N4009*		2N4007 2N4010*		2N4008 2N4011*		* MATCH	UNITS
			Min.	Max.	Min.	Max.	Min.	Max.		
Collector to Base Leakage	$I_{CBO}$	$V_{CB} = V_{CB MAX.}$	-	0.1	-	0.3	-	0.3	-	nA
Emitter to Base Leakage	$I_{EBO}$	$V_{EB} = V_{EB MAX.}$	-	0.1	-	0.3	-	0.3	-	nA
Collector to Base Leakage	$I_{CBO}$	$V_{CB} = V_{CB MAX.} (T_A = 85^\circ C)$	-	5.0	-	15.0	-	15.0	-	nA
Emitter to Base Leakage	$I_{EBO}$	$V_{EB} = V_{EB MAX.} (T_A = 85^\circ C)$	-	5.0	-	15.0	-	15.0	-	nA
Offset Voltage	$V_O$	$I_B = 0.1 mA; I_E = 0$	-	0.2	-	0.5	-	0.5	± .02	mV
Offset Voltage	$V_O$	$I_B = 1 mA; I_E = 0$	-	0.5	-	0.7	-	0.8	-	mV
Inverted Saturation Resistance	$r_{EC(sat)}$	$I_B = 0.1 mA; I_C = 0.1 mA f = 1 kHz$	-	15	-	20	-	20	± 5	Ohms
Inverted Saturation Resistance	$r_{EC(sat)}$	$I_B = 1.0 mA; I_C = 0.1 mA f = 1 kHz$	-	4.0	-	6.0	-	6.0	-	Ohms
DC Common Collector Forward Current Transfer Ratio	$h_{FC}$	$V_{EC} = -6V; I_E = 1 mA$	40	-	30	-	20	-	-	-
High Frequency Current Gain	$h_{fe}$	$V_{CE} = -6V; I_C = 1 mA; f = 1 MHz$	20	-	15	-	15	-	-	-
Collector to Base Capacitance	$C_{ob}$	$V_{CB} = -6V; I_C = 1 mA; f = 140 kHz$	-	10	-	10	-	10	-	pf
Emitter to Base Capacitance	$C_{eb}$	$V_{EB} = -6V; I_E = 0; f = 140 kHz$	-	6	-	6	-	6	-	pf
Delay Time	$t_D$	$R_L = 220 \Omega V_{CC} = -5V$	-	60	-	60	-	60	-	ns
Rise Time	$t_R$	$R_B = 1K, V_{BB} = +5V$	-	120	-	120	-	120	-	ns
Storage Time	$t_S$	$V_{pulse} = -10V$	-	320	-	320	-	320	± 100	ns
Fall Time	$t_F$	Tektronix Type R plug-in	-	120	-	120	-	120	-	ns

**2N4009 - 2N4011**

\* The 2N4009 is a matched pair of 2N4006  
The 2N4010 is a matched pair of 2N4007  
The 2N4011 is a matched pair of 2N4008

$\Delta V_O$  at  $I_B = 0.1 mA; -25^\circ C / +100^\circ C \pm 50 \mu V$   
 $\Delta V_{CB}$  at  $I_B = 0.1 mA; I_E = 0 T_A = 25^\circ C \pm 100 mV$



147 Sherman Street, Cambridge, Mass. 02140  
Tel: (617) 491-1670 • TWX: 710-320-1196