

PREMIUM PERFORMANCE ULTRA LOW_{rec} (sat) SILICON EPITAXIAL JUNCTION PNP SWITCHING TRANSISTORS

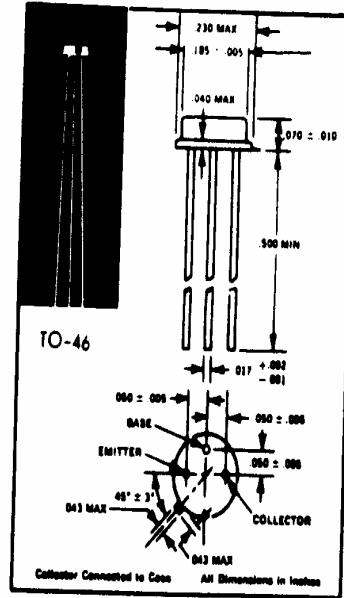
2N4006
THRU
2N4011

GEOMETRY 292

- 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_{CEO}	-6	-15	-30	Volts
Emitter to Collector Voltage	BV_{EC}	-6	-15	-30	Volts
Collector to Base Voltage	BV_{CB}	-10	-20	-35	Volts
Emitter to Base Voltage	BV_{EB}	-10	-20	-35	Volts
Collector Current	I_C	100			mA
Power Dissipation	P_D	400			mW
Derating Factor	D_r	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: $T_A = 25^\circ\text{C}$ (UNLESS OTHERWISE STATED)

PARAMETER	SYMBOL	CONDITION	2N4006	2N4007	2N4008	MATCH	UNITS
			2N4009*	2N4010*	2N4011*		
Collector to Base Leakage	I_{CB}	$V_{CB} = V_{CB\text{ MAX}}$	Min. Max.	Min. Max.	Min. Max.	-	nA
Emitter to Base Leakage	I_{EB}	$V_{EB} = V_{EB\text{ MAX}}$	- 0.1	- 0.3	- 0.3	-	nA
Collector to Base Leakage	I_{CB}	$V_{CB} = V_{CB\text{ MAX}}$ ($T_A = 85^\circ\text{C}$)	- 5.0	- 15.0	- 15.0	-	nA
Emitter to Base Leakage	I_{EB}	$V_{EB} = V_{EB\text{ MAX}}$ ($T_A = 85^\circ\text{C}$)	- 5.0	- 15.0	- 15.0	-	nA
Offset Voltage	V_{CE}	$I_E = 0.1\text{mA}$; $I_C = 0$	- 0.2	- 0.5	- 0.5	$\pm .02$	mV
Offset Voltage	V_{CE}	$I_E = 1\text{mA}$; $I_C = 0$	- 0.5	- 0.7	- 0.8	-	mV
Inverted Saturation Resistance	$r_{ec(\text{sat})}$	$I_E = 0.1\text{mA}$; $I_C = 0.1\text{mA}$ $f = 1\text{kHz}$	- 15	- 20	- 20	± 5	Ohms
Inverted Saturation Resistance	$r_{ec(\text{sat})}$	$I_E = 1.0\text{mA}$; $I_C = 0.1\text{mA}$ $f = 1\text{kHz}$	- 4.0	- 6.0	- 6.0	-	Ohms
DC Common Collector Forward Current Transfer Ratio	h_{FC}	$V_{CE} = 6\text{V}$; $I_E = 1\text{mA}$	40 -	30 -	20 -	-	-
High Frequency Current Gain	h_{FE}	$V_{CE} = 6\text{V}$; $I_E = 1\text{mA}$; $f = 1\text{MHz}$	20 -	15 -	15 -	-	-
Collector to Base Capacitance	C_{cb}	$V_{CB} = 6\text{V}$; $I_C = 1\text{mA}$; $f = 140\text{kHz}$	- 10	- 10	- 10	-	pfd
Emitter to Base Capacitance	C_{eb}	$V_{EB} = 5\text{V}$; $I_E = 0$; $f = 140\text{kHz}$	- 6	- 6	- 6	-	pfd
Delay Time	t_D	$R_L = 220\Omega$ $V_{CE} = -5\text{V}$	- 60	- 60	- 60	-	ns
Rise Time	t_R	$R_L = 1K$ $V_{CB} = -5\text{V}$	- 120	- 120	- 120	-	ns
Storage Time	t_S	$V_{CE} = -10\text{V}$	- 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

ΔV_{CE} at $I_E = 0.1\text{mA}$; 25°C to 100°C $\pm 50\mu\text{V}$
 ΔV_{EB} at $I_E = 0.1\text{mA}$; $I_C = 0$; $T_A = 25^\circ\text{C}$ $\pm 100\text{mV}$