

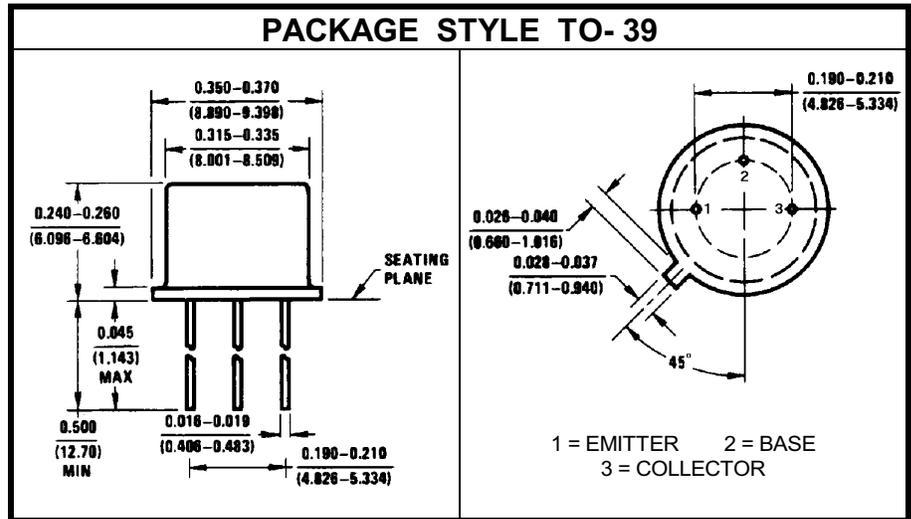
# SILICON NPN TRANSISTOR

**DESCRIPTION:**

The **2N2219A** is Designed for General Purpose Switching and Amplifier Applications.

**MAXIMUM RATINGS**

$I_C$	800 mA
$V_{CE}$	40 V
$P_{DISS}$	3.0 W @ $T_C = 25^\circ C$
$T_J$	$-65^\circ C$ to $+200^\circ C$
$T_{STG}$	$-65^\circ C$ to $+200^\circ C$
$\theta_{JC}$	58.3 $^\circ C/W$


**STATIC CHARACTERISTICS**  $T_C = 25^\circ C$ 

SYMBOL	TEST CONDITIONS	MINIMUM	TYPICAL	MAXIMUM	UNITS
$BV_{CEO}$	$I_C = 10$ mA	40			V
$BV_{CBO}$	$I_C = 10$ $\mu A$	75			V
$I_{CBO}$	$V_{CB} = 60$ V $T_C = 25^\circ C$ $T_C = 150^\circ C$			0.01 10	$\mu A$
$I_{CEX}$	$V_{CE} = 60$ V $V_{BE} = -3.0$ V			10	nA
$I_{BL}$	$V_{CE} = 60$ V $V_{BE} = -3.0$ V			20	nA
$BV_{EBO}$	$I_E = 10$ $\mu A$	6.0			V
$I_{EBO}$	$V_{EB} = 3.0$ V			10	nA
$h_{FE}$	$V_{CE} = 10$ V $I_C = 100$ $\mu A$ $I_C = 1.0$ mA $I_C = 10$ mA $T_A = 25^\circ C$ $T_A = -55^\circ C$ $I_C = 150$ mA	35 50 75 35 100		300	---
$V_{CE(SAT)}$	$I_C = 150$ mA $I_B = 15$ mA $I_C = 500$ mA $I_B = 50$ mA $V_{CE} = 1.0$ V $V_{CE} = 10$ V			0.3 1.0	V
$V_{BE(SAT)}$	$I_C = 150$ mA $I_B = 15$ mA $I_C = 500$ mA $I_B = 50$ mA	0.6		1.2 2.0	V



**DYNAMIC ELECTRICAL CHARACTERISTICS**  $T_A = 25^\circ\text{C}$

SYMBOL	TEST CONDITIONS			MINIMUM	TYPICAL	MAXIMUM	UNITS
$f_t$	$V_{CE} = 20\text{ V}$	$I_C = 20\text{ mA}$	$f = 100\text{ MHz}$	300			<b>MHz</b>
$C_{ob}$	$V_{CB} = 10\text{ V}$		$f = 100\text{ KHz}$			8.0	<b>pF</b>
$C_{ib}$	$V_{EB} = 0.5\text{ V}$		$f = 100\text{ KHz}$			25	<b>pF</b>
$h_{ie}$	$V_{CE} = 10\text{ V}$	$I_C = 1.0\text{ mA}$ $I_C = 10\text{ mA}$	$f = 1.0\text{ KHz}$	1,000 250		3,500	<b>Ohms</b>
$h_{oe}$	$V_{CE} = 10\text{ V}$	$I_C = 1.0\text{ mA}$ $I_C = 10\text{ mA}$	$f = 1.0\text{ KHz}$	5.0 25		35 200	<b><math>\mu\text{Mhos}</math></b>
$h_{fe}$	$V_{CE} = 10\text{ V}$	$I_C = 1.0\text{ mA}$ $I_C = 10\text{ mA}$	$f = 1.0\text{ KHz}$	50 75		300	<b>---</b>
$r_b'c_c$	$V_{CE} = 20\text{ V}$	$I_E = 20\text{ mA}$	$f = 31.8\text{ MHz}$			150	<b>pS</b>
$R_e(h_{ie})$	$V_{CE} = 20\text{ V}$	$I_C = 20\text{ mA}$	$f = 300\text{ MHz}$			60	<b>Ohms</b>
$t_d$	$V_{CC} = 30\text{ V}$ $V_{BE} = -0.5\text{ V}$	$I_C = 150\text{ mA}$ $I_{B1} = 15\text{ mA}$				10	<b>nS</b>
$t_r$	$V_{CC} = 30\text{ V}$ $V_{BE} = -0.5\text{ V}$	$I_C = 150\text{ mA}$ $I_{B1} = 15\text{ mA}$				25	<b>nS</b>
$t_s$	$V_{CC} = 30\text{ V}$	$I_C = 150\text{ mA}$	$I_{B1} = I_{B2} = 5\text{ mA}$			225	<b>nS</b>
$t_f$	$V_{CC} = 30\text{ V}$	$I_C = 150\text{ mA}$	$I_{B1} = I_{B2} = 15\text{ mA}$			60	<b>nS</b>