



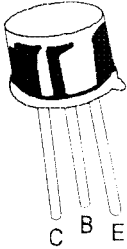
SOLID STATE INC.

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NPN SILICON PLANAR RF TRANSISTORS

2N3498, 2N3499,
2N3500, 2N3501



TO-39
Metal Can Package

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

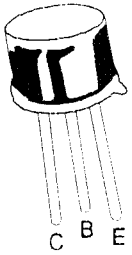
DESCRIPTION	SYMBOL TEST CONDITION	2N3498	2N3500	UNITS
		2N3499	2N3501	
Collector Emitter Voltage	V_{CEO}	100	150	V
Collector Base Voltage	V_{CBO}	100	150	V
Emitter Base Voltage	V_{EBO}		6	V
Collector Current Continuous	I_C	500	300	mA
Power Dissipation @ Ta=25°C	P_D		1.0	W
Derate Above 25°C			5.71	mW/°C
Power Dissipation@ Tc=25°C	P_D		5.0	W
Derate Above 25°C			28.6	mW/°C
Operating And Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C
THERMAL RESISTANCE				
Junction to Ambient	$R_{th(j-a)}$		175	°C/W
Junction to Case	$R_{th(j-c)}$		35	°C/W

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

DESCRIPTION	SYMBOL TEST CONDITION	VALUE			UNITS
		MIN	TYP	MAX	
Collector Emitter Breakdown Voltage	BV_{CEO}^*				
	2N3498/3499	$I_C=10mA, I_B=0$	100		V
	2N3500/3501		150		V
Collector Base Breakdown Voltage	BV_{CBO}	$I_C=10\mu A, I_E=0$			
	2N3498/3499		100		V
	2N3500/3501		150		V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu A, I_C=0$			
	ALL		6		V
Collector Leakage Current	I_{CBO}	$V_{CB}=50V, I_E=0$		50	nA
	2N3498/3499	$V_{CB}=50V, I_E=0, T_A=150^\circ C$		50	μA
	2N3500/3501	$V_{CB}=75V, I_E=0$		50	nA
	2N3500/3501	$V_{CB}=75V, I_E=0, T_A=150^\circ C$		50	μA
Emitter Leakage Current	I_{EBO}	$V_{EB}=4V, I_C=0$		25	nA
	ALL				

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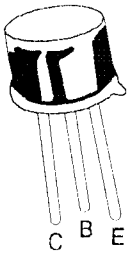
DESCRIPTION	SYMBOL	TEST CONDITION	VALUE			UNITS	
			MIN	TYP	MAX		
Collector Emitter Saturation Voltage	$V_{CE(Sat)}$	$I_C=10mA, I_B=1mA$		0.2		V	
		$I_C=50mA, I_B=5mA$		0.25		V	
	2N3500/3501	$I_C=150mA, I_B=15mA^*$		0.4		V	
	2N3498/3499	$I_C=300mA, I_B=30mA^*$		0.6		V	
Base Emitter Saturation Voltage	$V_{BE(Sat)}$	$I_C=10mA, I_B=1mA$		0.8		V	
		$I_C=50mA, I_B=5mA$		0.9		V	
	2N3500/3501	$I_C=150mA, I_B=15mA^*$		1.2		V	
	2N3498/3499	$I_C=300mA, I_B=30mA^*$		1.4		V	
DC Current Gain	h_{FE}^*	$I_C=0.1mA, V_{CE}=10V$	2N3498/3500	20			
			2N3499/3501	35			
		$I_C=1mA, V_{CE}=10V$	2N3498/3500	25			
			2N3499/3501	50			
		$I_C=10mA, V_{CE}=10V$	2N3498/3500	35			
			2N3499/3501	75			
		$I_C=150mA, V_{CE}=10V^*$	2N3498/3500	40		120	
			2N3499/3501	100		300	
		2N3500	$I_C=300mA, V_{CE}=10V^*$	2N3500	15		
				2N3501	20		
2N3498	$I_C=300mA, V_{CE}=10V^*$	2N3498	15				
		2N3499	20				

SMALL SIGNAL CHARACTERISTICS

Input Impedance	h_{ie}	$I_C=10mA, V_{CE}=10V,$ $f=1KHz$	2N3498/3500	0.2	1.0	$K\Omega$
			2N3499/3501	0.25	1.25	
Voltage Feedback Ratio	h_{re}	$I_C=10mA, V_{CE}=10V,$ $f=1KHz$	2N3498/3500		2.5	$\times 10^{-4}$
			2N3499/3501		4.0	
Small Signal Current Gain	$ h_{fe} $	$I_C=10mA, V_{CE}=10V,$ $f=1KHz$	2N3498/3500	50	300	
			2N3499/3501	75	375	

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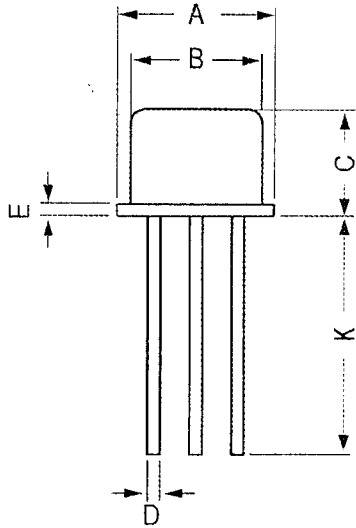
DESCRIPTION	SYMBOL	TEST CONDITION	VALUE			UNITS
			MIN	TYP	MAX	
Output Admittance		h_{oe}				μmhos
	2N3499/3501	$f=1\text{KHz}$		200		
Transition Frequency		f_T				
	ALL	$I_C=20\text{mA}, V_{CE}=20\text{V},$	150			MHz
		$f=100\text{MHz}$				
Output Capacitance		C_{ob}				
	2N3498/3499	$V_{CB}=10\text{V}, I_E=0, f=100\text{KHz}$			10	pF
	2N3500/3501				8	pF
Input Capacitance		C_{ib}				
	ALL	$V_{BE}=0.5\text{V}, I_C=0, f=100\text{KHz}$			80	pF
SWITCHING CHARACTERISTICS						
Delay Time		t_d		20		ns
			$I_C=150\text{mA}, I_{B1}=15\text{mA}$			
			$V_{CC}=100\text{V}, V_{EB}=2\text{V}$			
Rise Time		t_r		35		ns
Storage Time		t_s		800		ns
			$I_C=150\text{mA}, I_{B1}=I_{B2}=15\text{mA}$			
			$V_{CC}=100\text{V}$			
Fall Time		t_s		80		ns
*Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$						

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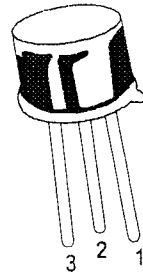
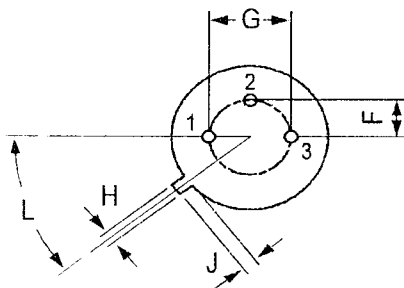
Metal Can Package

TO-39 Metal Can Package



All dimensions are in mm

DIM	MIN	MAX
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	0.53
E	—	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.70	—
L	42 DEG	48 DEG



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR