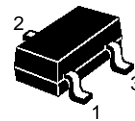


SMALL SIGNAL NPN TRANSISTORS

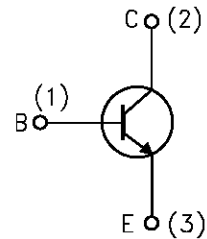
Type	Marking
SO930	N08
SO2484	N05

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- MINIATURE PLASTIC PACKAGE FOR APPLICATION IN SURFACE MOUNTING CIRCUITS
- LOW NOISE SMALL SIGNAL AMPLIFIER



SOT-23

INTERNAL SCHEMATIC DIAGRAM



SC08960

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		SO930	SO2484	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	45	60	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	45	60	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	5	6	V
I_C	Collector Current	30	50	mA
P_{tot}	Total Dissipation at $T_c = 25^\circ C$	200		mW
T_{stg}	Storage Temperature	-65 to 150		$^\circ C$
T_j	Max. Operating Junction Temperature	150		$^\circ C$

SO930/SO2484

THERMAL DATA

$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	620	$^{\circ}\text{C/W}$
R_{thj-SR}	Thermal Resistance Junction-Substrate	Max	400	$^{\circ}\text{C/W}$

• Mounted on a ceramic substrate area = 7 x 5 x 0.5 mm

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CE} = 30\text{ V}$			25	nA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			25	nA
$V_{(BR)CBO}^*$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 10\ \mu\text{A}$ for SO2484	60			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 10\text{ mA}$ for SO930 for SO2484	45 60			V V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_C = 10\ \mu\text{A}$ for SO2482	6			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 10\text{ mA}$ $I_B = 0.5\text{ mA}$ for SO930 $I_C = 1\text{ mA}$ $I_B = 0.1\text{ mA}$ for SO2484		0.25	1 0.35	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 10\text{ mA}$ $I_B = 0.5\text{ mA}$ for SO930			1	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 100\ \mu\text{A}$ $V_{CE} = 5\text{ V}$ for SO2484	0.5		0.7	V
h_{FE}^*	DC Current Gain	$I_C = 10\ \mu\text{A}$ $V_{CE} = 5\text{ V}$ for SO930 for SO2484 $I_C = 100\ \mu\text{A}$ $V_{CE} = 5\text{ V}$ for SO2484 $I_C = 500\ \mu\text{A}$ $V_{CE} = 5\text{ V}$ for SO930 $I_C = 1\text{ mA}$ $V_{CE} = 5\text{ V}$ for SO2484 $I_C = 10\text{ mA}$ $V_{CE} = 5\text{ V}$ for SO930 for SO2484	100 100 175 150 250		300 500 600 800	
f_T	Transition Frequency	$I_C = 10\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 100\text{MHz}$		200		MHz
C_{CB}	Collector Base Capacitance	$I_E = 0$ $V_{CB} = 5\text{ V}$ $f = 1\text{ MHz}$		3	6	pF
C_{EB}	Emitter Base Capacitance	$I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$		3.5		pF
NF	Noise Figure	$V_{CE} = 5\text{ V}$ $I_C = 0.01\text{ mA}$ $f = 1\text{KHz}$ $\Delta f = 200\text{ Hz}$ $R_G = 10\text{ K}\Omega$		2		dB

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 2\%$

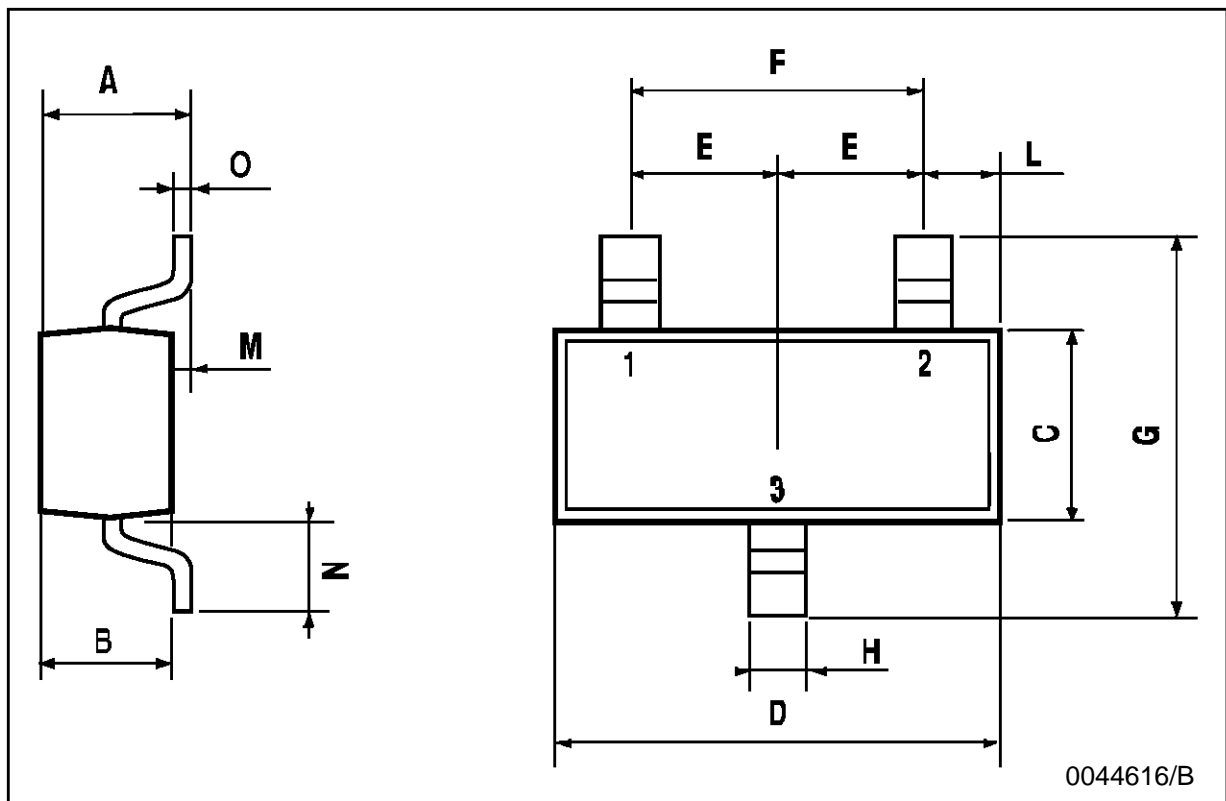
ELECTRICAL CHARACTERISTICS (Continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
h_{ie}	Input Impedance	$V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$ $f = 1\text{ KHz}$ for SO2484	3.5	10	24	$K\Omega$
h_{re}	Reverse Voltage Ratio	$V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$ $f = 1\text{ KHz}$ for SO2484		5	8	10^{-4}
h_{fe}	Small Signal Current Gain	$V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$ $f = 1\text{ KHz}$ for SO930 for SO2484	150 150		600 900	
h_{oe}	Output Admittance	$V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$ $f = 1\text{ KHz}$ for SO2484		25	40	μs

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 2\%$

SOT-23 MECHANICAL DATA

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.85		1.1	33.4		43.3
B	0.65		0.95	25.6		37.4
C	1.20		1.4	47.2		55.1
D	2.80		3	110.2		118
E	0.95		1.05	37.4		41.3
F	1.9		2.05	74.8		80.7
G	2.1		2.5	82.6		98.4
H	0.38		0.48	14.9		18.8
L	0.3		0.6	11.8		23.6
M	0		0.1	0		3.9
N	0.3		0.65	11.8		25.6
O	0.09		0.17	3.5		6.7



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