

**SO642**

SMALL SIGNAL NPN TRANSISTOR

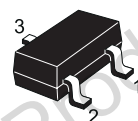
PRELIMINARY DATA

Type	Marking
SO642	N91

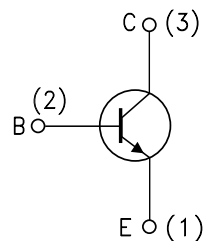
- SILICON EPITAXIAL PLANAR NPN HIGH VOLTAGE TRANSISTOR
- MINIATURE SOT-23 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- THE PNP COMPLEMENTARY TYPE IS SO692

APPLICATIONS

- VIDEO AMPLIFIER CIRCUITS (RGB CATHODE CURRENT CONTROL)
- TELEPHONE WIRELINE INTERFACE (HOOK SWITCHES, DIALER CIRCUITS)

**SOT-23**

INTERNAL SCHEMATIC DIAGRAM



DS10130

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	300	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	300	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	6	V
I_C	Collector Current	0.1	A
I_{CM}	Collector Peak Current	0.3	A
P_{tot}	Total Dissipation at $T_C = 25\text{ }^{\circ}\text{C}$	310	mW
T_{stg}	Storage Temperature	-65 to 150	$^{\circ}\text{C}$
T_j	Max. Operating Junction Temperature	150	$^{\circ}\text{C}$

THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	403.2	°C/W
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• Device mounted on a PCB area of 1 cm²

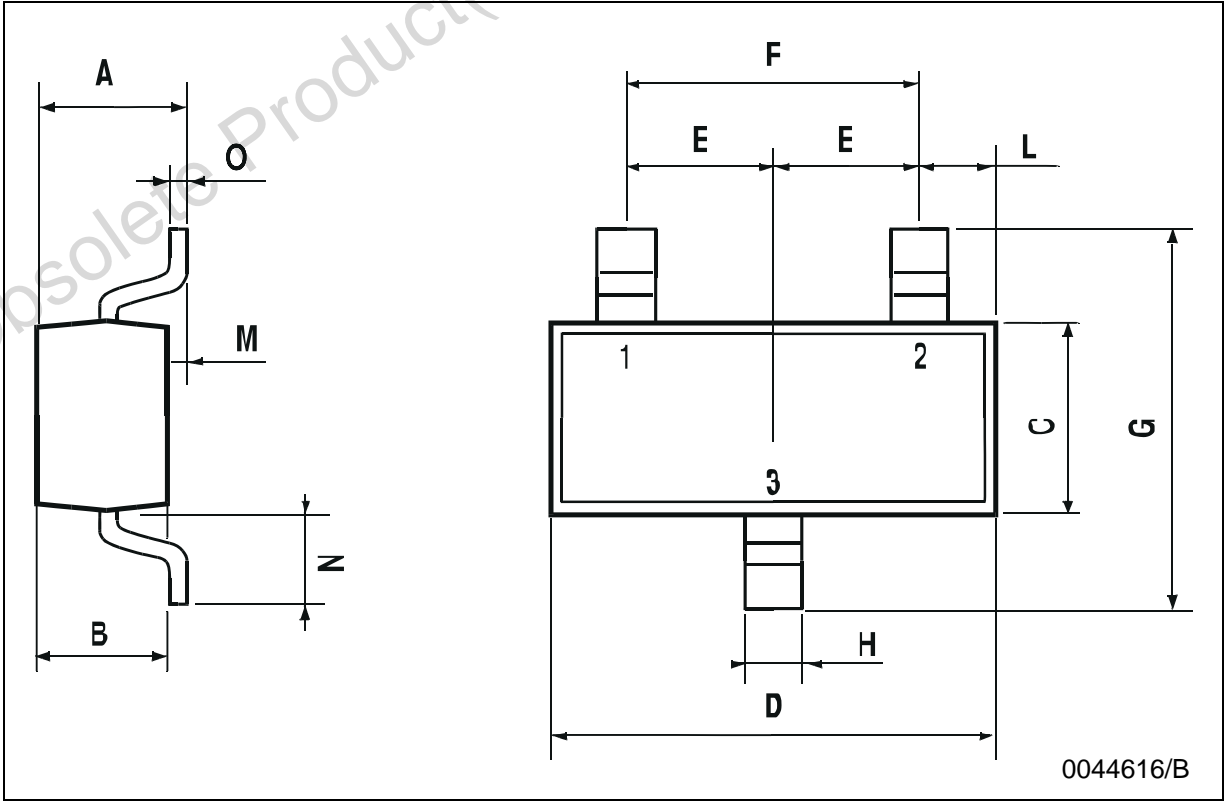
ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 200\text{ V}$			100	nA
$V_{(BR)CBO}$	Collector-Emitter Breakdown Voltage ($I_E = 0$)	$I_C = 100\text{ }\mu\text{A}$	300			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 1\text{ mA}$	300			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = 100\text{ }\mu\text{A}$	6			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 20\text{ mA}$ $I_B = 2\text{ mA}$			0.5	V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 20\text{ mA}$ $I_B = 2\text{ mA}$			0.9	V
h_{FE}^*	DC Current Gain	$I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}$ $V_{CE} = 10\text{ V}$	25 40 40			
f_T	Transition Frequency	$I_C = 10\text{ mA}$ $V_{CE} = 20\text{ V}$ $f = 20\text{ MHz}$	50			MHz
C_{CBO}	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$		6		pF
C_{EBO}	Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = 2\text{ V}$ $f = 1\text{ MHz}$		22		pF

* 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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