

General Purpose Transistors

9013xLT1

NPN Silicon

FEATURE

We declare that the material of product compliance with RoHS requirements.

Pb-Free package is available

RoHS product for packing code suffix "G"

Halogen free product for packing code suffix "H"

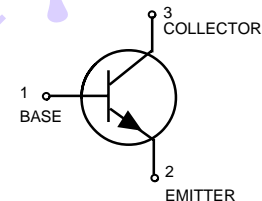


DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
9013PLT1	13P	3000/Tape&Reel
9013QLT1	13Q	3000/Tape&Reel
9013RLT1	13R	3000/Tape&Reel
9013SLT1	13S	3000/Tape&Reel

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	20	V
Collector-Base Voltage	V_{CBO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector current-continuous	I_C	500	mA



THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) $T_A=25^{\circ}\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (2) $T_A=25^{\circ}\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^{\circ}\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}\text{C}/\text{W}$
Junction and Storage Temperature	T_j, T_{stg}	-55 to +150	$^{\circ}\text{C}$

DEVICE MARKING

9013QLT1=13Q	9013RLT1=13R	9013SLT1=13S
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ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C=1.0\text{mA}$)	$V_{(BR)CEO}$	20	-	-	V
Emitter-Base Breakdown Voltage ($I_E=100\mu\text{A}$)	$V_{(BR)EBO}$	5	-	-	V
Collector-Base Breakdown Voltage ($I_C=100\mu\text{A}$)	$V_{(BR)CBO}$	40	-	-	V
Collector Cutoff Current ($V_{CB}=35\text{V}$)	I_{CBO}	-	-	150	nA
Emitter Cutoff Current ($V_{EB}=4\text{V}$)	I_{EBO}	-	-	150	nA

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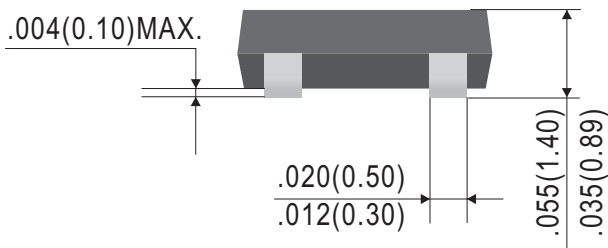
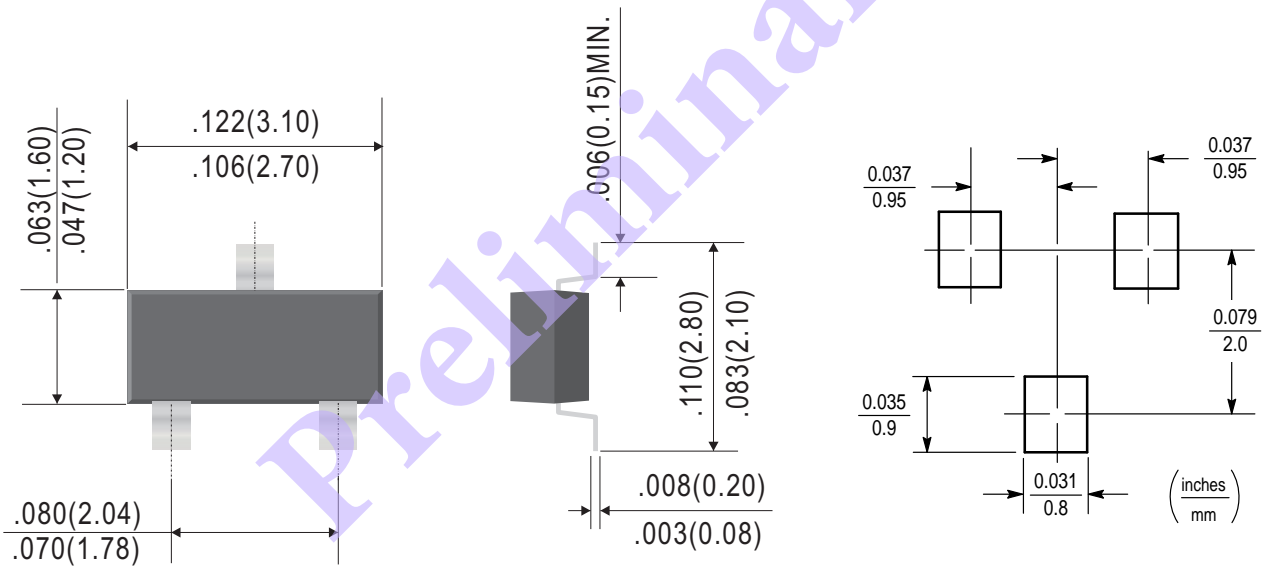
ON CHARACTERISTICS

DC Current Gain ($I_c=50mA, V_{CE}=1V$)	H_{fe}	100	-	600	
Collector-Emitter Saturation Voltage ($I_c=50mA, I_b=50mA$)	$V_{CE(S)}$	-	-	0.6	V

NOTE:

*	P	Q	R	S
H_{FE}	100~200	150~300	200~400	300~600

SOT-23



Dimensions in inches and (millimeters)