

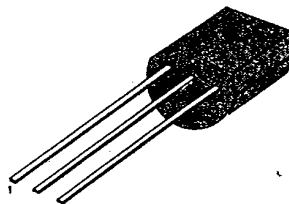
KSR2013**PNP EPITAXIAL SILICON TRANSISTOR****SWITCHING APPLICATION (Bias Resistor Built In)**

- Switching circuit, Inverter, Interface circuit Driver circuit
- Built in bias Resistor ($R_1=2.2K\Omega$, $R_2=47K\Omega$)
- Complement to KSR1013

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-10	V
Collector Current	I_C	-100	mA
Collector Dissipation	P_C	300	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 ~ 150	$^\circ\text{C}$

TO-92



1. Emitter 2. Collector 3. Base

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ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=-10\mu\text{A}$, $I_E=0$	-50			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=-100\mu\text{A}$, $I_B=0$	-50			V
Collector Cutoff Current	I_{CBO}	$V_{CB}=-40\text{V}$, $I_E=0$			-0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=-5\text{V}$, $I_C=-5\text{mA}$	68			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-10\text{mA}$, $I_B=-0.5\text{mA}$			-0.3	V
Current Gain-Bandwidth Product	f_T	$V_{CE}=-5\text{mA}$, $I_C=-10\text{V}$		200		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}$, $I_E=0$ $f=1.0\text{MHz}$		5.5		pF
Input Off Voltage	$V_{I(off)}$	$V_{CE}=-5\text{V}$, $I_C=-100\mu\text{A}$	-0.5			V
Input On Voltage	$V_{I(on)}$	$V_{CE}=-0.2\text{V}$, $I_C=-10\text{mA}$			-1.1	V
Input Resistor	R_1		1.5	2.2	2.9	$K\Omega$
Resistor Ratio	R_1/R_2		0.042	0.047	0.052	

Equivalent Circuit