

NPN SILICON TRANSISTOR

Qualified per MIL-PRF-19500/727

DEVICES

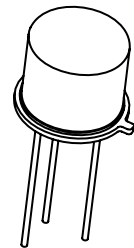
2N5010	2N5013	2N5010S	2N5013S
2N5011	2N5014	2N5011S	2N5014S
2N5012	2N5015	2N5012S	2N5015S

LEVELS

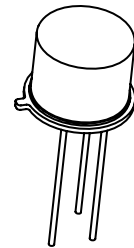
JAN
JANTX
JANTXV

ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CER}	2N5010	500 Vdc
		2N5011	600 Vdc
		2N5012	700 Vdc
		2N5013	800 Vdc
		2N5014	900 Vdc
		2N5015	1000 Vdc
Collector-Base Voltage	V_{CBO}	2N5010	500 Vdc
		2N5011	600 Vdc
		2N5012	700 Vdc
		2N5013	800 Vdc
		2N5014	900 Vdc
		2N5015	1000 Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current	I_{C}	200	mAdc
Base Current	I_{B}	20	mAdc
Total Power Dissipation	P_{t}	@ $T_{\text{A}} = +25^\circ\text{C}$	1.0 W
		@ $T_{\text{C}} = +25^\circ\text{C}$	7.0
Thermal Resistance, Junction to Case 1/	$R_{\theta\text{JC}}$	20	$^\circ\text{C}/\text{W}$
Operating & Storage Junction Temperature Range	$T_{\text{j}}, T_{\text{stg}}$	-65 to +200	$^\circ\text{C}$



TO-5
2N5010 thru 2N5015



TO-39
2N5010S thru 2N5015S

Note:

1/ See 19500/727 for Thermal Derating Curves.

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ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Collector to Base Cutoff Current $V_{CB} = 400\text{V}$ 2N5010 $V_{CB} = 500\text{V}$ 2N5011 $V_{CB} = 580\text{V}$ 2N5012 $V_{CB} = 650\text{V}$ 2N5013 $V_{CB} = 700\text{V}$ 2N5014 $V_{CB} = 760\text{V}$ 2N5015	I_{CBO1}		10	nAdc
@ $T_A = +150^\circ\text{C}$ $V_{CB} = 400\text{V}$ 2N5010 $V_{CB} = 500\text{V}$ 2N5011 $V_{CB} = 588\text{V}$ 2N5012 $V_{CB} = 650\text{V}$ 2N5013 $V_{CB} = 700\text{V}$ 2N5014 $V_{CB} = 760\text{V}$ 2N5015	I_{CBO2}		10	uAdc
Emitter to Base Cutoff Current $V_{EB} = 4\text{V}$	I_{EBO}		20	uAdc
Collector to Base Breakdown Voltage $I_C = 0.1\text{mA}$ 2N5010 $I_C = 0.1\text{mA}$ 2N5011 $I_C = 0.1\text{mA}$ 2N5012 $I_C = 0.2\text{mA}$ 2N5013 $I_C = 0.2\text{mA}$ 2N5014 $I_C = 0.2\text{mA}$ 2N5015	$V_{(BR)CBO}$	500		Vdc
Emitter to Base Breakdown Voltage $I_C = 0\text{mA}$ $I_E = 0.05\text{mA}$	$V_{(BR)EBO}$	5		Vdc
Collector to Emitter Breakdown Voltage $R_{BE} = 1\text{K}\Omega$ 2N5010 $I_C = 0.2\text{mA}$, Pulsed 2N5011 2N5012 2N5013 2N5014 2N5015	$V_{(BR)CER}$	500		Vdc
Forward-Current Transfer Ratio $I_C = 25\text{mA}$ 2N5010, 2N5011, 2N5012 $I_C = 20\text{mA}$ 2N5013, 2N5014, 2N5015 $V_{CE} = 10\text{V}$	h_{FE1}	30	180	
$V_{CE} = 10\text{V}$ $I_C = 5\text{mA}$	h_{FE2}	10		
$V_{CE} = 10\text{V}$ $I_C = 20\text{mA}$ @ $T_A = -55^\circ\text{C}$	h_{FE3}	10		



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TECHNICAL DATA SHEET

NPN SILICON TRANSISTOR

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ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted) (Cont.)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Base-Emitter Saturation Voltage $I_C = 25\text{mA}$ $I_C = 20\text{mA}$ $I_B = 5\text{mA}$, Pulsed	$V_{BE(SAT)}$		1.0 1.0	Vdc Vdc
Collector-Emitter Saturation Voltage $I_C = 25\text{mA}$ $I_C = 25\text{mA}$ $I_C = 25\text{mA}$ $I_C = 20\text{mA}$ $I_C = 20\text{mA}$ $I_C = 20\text{mA}$ $I_B = 5\text{mA}$, Pulsed	$V_{CE(SAT)}$		1.4 1.5 1.6 1.6 1.6 1.8	Vdc Vdc Vdc Vdc Vdc Vdc

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Magnitude of small signal short-circuit forward current transfer ratio $V_{CE} = 10\text{Vdc}$, $I_C = 25\text{mA}$, $f = 10\text{MHz}$ $V_{CE} = 10\text{Vdc}$, $I_C = 20\text{mA}$, $f = 10\text{MHz}$	$ h_{fe} $	1.0 1.0		
Open circuit output capacitance $V_{CB} = 10\text{V}$, $I_E = 0$, $f = 2\text{MHz}$	C_{obo}		30	pF