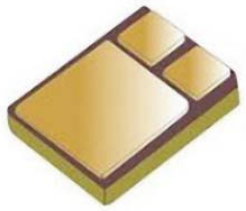
2N5151U3 &2N5153U3

PNP Power Silicon Transistor

Rev. V3

Features

- JANS and JANSR Qualified to MIL-PRF-19500/545
- JEDEC Registered 2N5153
- Lightweight & Low Power
- Ideal for Space, Military, and Other High Reliability Applications
- Surface Mount U3 Package



Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
Collector - Emitter Breakdown Voltage	I_C = -100 mAdc, I_B = 0	$V_{(BR)CEO}$	Vdc	-80	—
Emitter - Base Cutoff Current	V_{EB} = -4.0 Vdc, I_C = 0 V_{EB} = -5.5 Vdc, I_C = 0	I_{EBO}	µAdc mAdc	— —	-1 -1
Collector - Emitter Cutoff Current	V_{CE} = -60 Vdc, V_{BE} = 0 V_{CE} = -100 Vdc, V_{BE} = 0	I_{CES}	µAdc mAdc	— —	-1 -1
Collector - Emitter Cutoff Current	V_{CE} = -40 Vdc, I_B = 0	I_{CEO}	µAdc	—	-50
On Characteristics[1]					
Forward Current Transfer Ratio	I_C = -50 mAdc, V_{CE} = -5.0 Vdc 2N5151U3 2N5153U3 I_C = -2.5 Adc, V_{CE} = -5.0 Vdc 2N5151U3 2N5153U3 I_C = -5.0 Adc, V_{CE} = -5.0 Vdc 2N5151U3 2N5153U3	H_{FE}	-	 20 50 30 70 20 40	 — — 90 200 — —
Collector - Emitter Saturation Voltage	I_C = -2.5 Adc, I_B = -250 mAdc I_C = -5.0 Adc, I_B = -500 mAdc	$V_{CE(SAT)}$	Vdc	— —	-0.75 -1.50
Emitter - Base Voltage Non-Saturation	I_C = -2.5 Adc, V_{CE}= -5.0 Vdc	$V_{BE(ON)}$	Vdc	—	-1.45
Emitter - Base Saturation Voltage	I_C = -2.5 Adc, I_B = -250 mAdc I_C = -5.0 Adc, I_B = -500 mAdc	$V_{BE(SAT)}$	Vdc	— —	-1.45 -2.20
Dynamic Characteristics					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	I_C = -500 mAdc, V_{CE} = -5.0 Vdc, f = 10 mHz 2N5151U3 2N5153U3	$\lvert H_{FE} \rvert$	-	 6 7	—
Small-Signal Short-Circuit Forward Current Transfer Ratio	I_C = -100 mAdc, V_{CE} = -5.0 Vdc, f = 1 kHz 2N5151U3 2N5153U3	H_{FE}	-	 20 50	—
Output Capacitance	V_{CB} = -10 Vdc, I_E = 0, f = 1 MHz	C_{OBO}	pF	—	250

(Continued next page)

1. Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤2.0%.

PNP Power Silicon Transistor

Rev. V3

Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Switching Characteristics					
Turn-On Time	I_C = -5 Adc; I_{B1} = -500 mAdc, R_L = 6 Ω, I_{B2} = -500 mAdc, $V_{BE(OFF)}$ = -3.7 Vdc	T_{ON}	µs	—	0.5
Turn-Off Time		T_{OFF}	µs	—	1.5
Storage Time		T_S	µs	—	1.4
Fall Time		T_f	µs	—	0.5
Safe Operating Area					
DC Tests: Test 1: Test 2: Test 3:	T_C = +25°C, I Cycle, t = 1 s V_{CE} = -5 Vdc, I_C = -2 Adc V_{CE} = -32 Vdc, I_C = -310 mAdc V_{CE} = -80 Vdc, I_C = -12.5 mAdc				

Absolute Maximum Ratings[2,3]

Ratings	Symbol	Value
Collector - Emitter Voltage	V_{CEO}	-80 Vdc
Collector - Base Voltage	V_{CBO}	-100 Vdc
Emitter - Base Voltage	V_{EBO}	-5.5 Vdc
Collector Current	I_C	-2 Adc -10 Adc[4]
Total Power Dissipation @ T_A = 25°C @ T_C = 25°C	P_T	 1.16 W 100 W
Operating & Storage Temperature Range	T_J, T_{STG}	-65°C to +200°C

2. Derate linearly 5.7 mW/°C for T_A > +25°C.
3. Derate linearly 571 mW/°C for T_A > +25°C.
4. This value applies for PW ≤ 8.3 ms, duty cycle ≤ 1%.

Thermal Characteristics

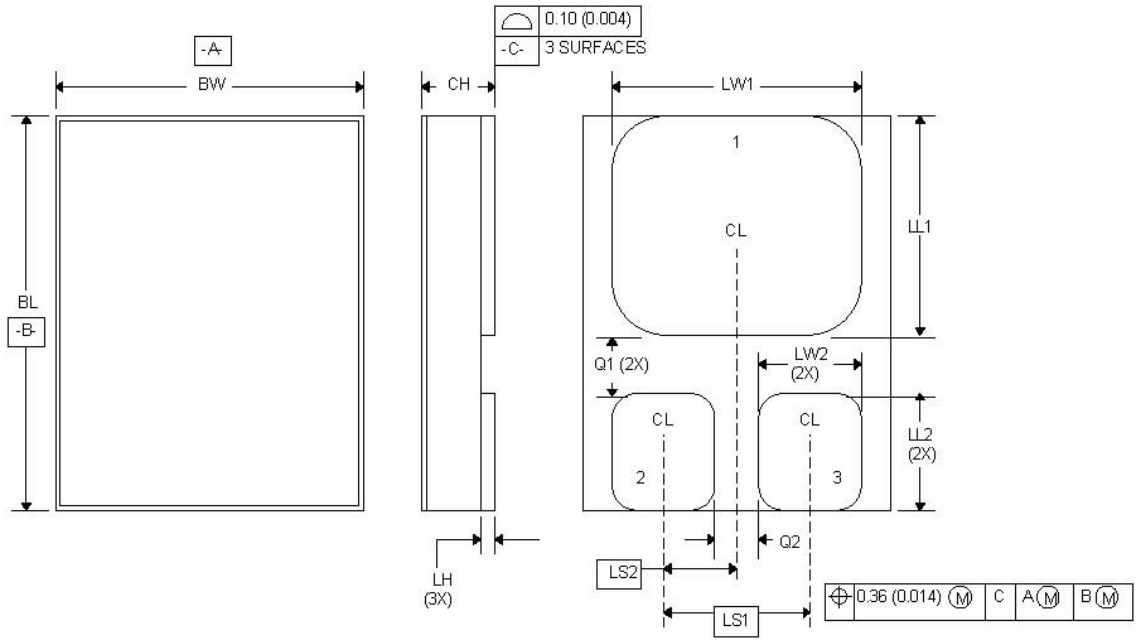
Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.75°C/W

2N5151U3 &2N5153U3

PNP Power Silicon Transistor

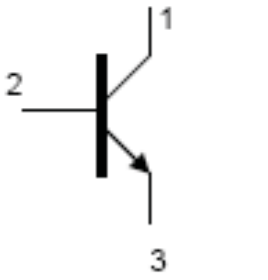
Rev. V3

Outline Drawing (U3)



1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. In accordance with ASME Y14.5M, diameters are equivalent to φx symbology.
4. Terminal 1 - collector, terminal 2 -base, terminal 3 - emitter.

SCHEMATIC



Ltr	Dimensions			
	Inches		Millimeters	
	Min.	Max.	Min.	Max.
BL	0.395	0.405	10.03	10.29
BW	0.291	0.301	7.40	7.65
CH	0.1085	0.1205	2.76	3.06
LH	0.010	0.020	0.25	0.51
LW_1	0.281	0.291	7.14	7.39
LW_2	0.090	0.100	2.29	2.54
LL_1	0.220	0.230	5.59	5.84
LL_2	0.115	0.125	2.92	3.18
LS_1	0.150 BSC		3.81 BSC	
LS_2	0.075 BSC		1.91 BSC	
Q_1	0.030		0.762	
Q_2	0.030		0.762	