

Type 2N5153L

Geometry 9702

Polarity PNP

Qual Level: JAN - JANS

**Generic Part Number:
2N5153L**

REF: MIL-PRF-19500/545

Features:

- Silicon power transistor for use in high speed switching applications.
- Housed in a [TO-5](#) case.
- Also available in chip form using the [9702](#) chip geometry.
- The Min and Max limits shown are per [MIL-PRF-19500/545](#) which Semicoa meets in all cases.

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TO-5

Maximum Ratings

$T_C = 25^{\circ}\text{C}$ unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	80	V
Collector-Base Voltage	V_{CBO}	100	V
Emitter-Base Voltage	V_{EBO}	5.5	V
Collector Current, Continuous	I_C	2	A
Collector Current, $P_W < 8.3 \text{ ms}$, $< 1\%$ duty cycle	I_C	10	A
Reverse Pulse Energy		15	mJ
Power Disipation $T_A = 25^{\circ}\text{C}$ ambient Derate above 25°C	P_T	1.0 5.7	Watt $\text{mW}/^{\circ}\text{C}$
Operating Junction Temperature	T_J	-65 to +200	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-65 to +200	$^{\circ}\text{C}$

Electrical Characteristics

 $T_C = 25^{\circ}\text{C}$ unless otherwise specified

OFF Characteristics	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage $I_C = 100\text{ mA}$, $I_B = 0$, pulsed	$V_{(BR)CBO}$	80	---	V
Base-Emitter Cutoff Current $V_{EB} = 4\text{ V}$, $I_C = 0$	I_{EBO1}	---	1.0	μA
$V_{EB} = 5.5\text{ V}$, $I_C = 0$	I_{EBO2}	---	1.0	mA
Collector-Emitter Cutoff Current $V_{CE} = 60\text{ V}$, $V_{BE} = 0$	I_{CES1}	---	1.0	μA
$V_{CE} = 100\text{ V}$, $V_{BE} = 0$	I_{CES2}	---	1.0	mA
$V_{CE} = 40\text{ V}$, $I_B = 0$	I_{CEO}	---	50	μA
$V_{CE} = 60\text{ V}$, $V_{BE} = +2\text{ V}$, $T_C = 150^{\circ}\text{C}$	I_{CEX}	---	500	μA

ON Characteristics	Symbol	Min	Max	Unit
Forward Current Transfer Ratio $I_C = 50\text{ mA}$, $V_{CE} = 5\text{ V}$	h_{FE1}	50	---	---
$I_C = 2.5\text{ A}$, $V_{CE} = 5\text{ V}$, pulsed	h_{FE2}	70	200	---
$I_C = 5.0\text{ A}$, $V_{CE} = 5\text{ V}$, pulsed	h_{FE3}	40	---	---
$I_C = 2.55\text{ A}$, $V_{CE} = 5\text{ V}$ pulsed, $T_C = -55^{\circ}\text{C}$	h_{FE4}	25	---	---
Base-Emitter Voltage, Nonsaturated $V_{CE} = 5\text{ V}$, $I_C = 2.5\text{ A}$, pulsed	V_{BE}	---	1.45	V dc
Base-Emitter Saturation Voltage $I_C = 2.5\text{ A}$, $I_B = 250\text{ mA}$, pulsed	$V_{BE(sat)1}$	---	1.45	V dc
$I_C = 5\text{ A}$, $I_B = 500\text{ mA}$, pulsed	$V_{BE(sat)2}$	---	2.2	V dc
Collector-Emitter Saturation Voltage $I_C = 2.5\text{ A}$, $I_B = 250\text{ mA}$, pulsed	$V_{CE(sat)1}$	---	0.75	V dc
$I_C = 5\text{ A}$, $I_B = 500\text{ mA}$, pulsed	$V_{CE(sat)2}$	---	1.5	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
Magnitude of Common Emitter Small Signal Short Circuit Forward Current Transfer Ratio $V_{CE} = 5\text{ V}$, $I_C = 500\text{ mA}$, $f = 10\text{ MHz}$	$ h_{fe} $	7.0	---	---
Common Emitter, Small Signal Short Circuit Forward Current Transfer Ratio $V_{CE} = 5\text{ V}$, $I_C = 100\text{ mA}$, $f = 1\text{ kHz}$	h_{fe}	50	---	---
Open Circuit Output Capacitance $V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$	C_{OBO}	---	250	pF

Switching Time	Symbol	Min	Max	Unit
Delay Time $I_C = 5\text{ A}$, $I_{B1} = 500\text{ mA}$	t_{ON}	---	0.5	μs
Storage Time $I_{B2} = -500\text{ mA}$	t_s	---	1.4	μs
Fall Time $V_{BE(off)} = 3.7\text{ V}$	t_f	---	0.5	μs
Turn-Off Time $R_L = 6\text{ ohms}$	t_{OFF}	---	1.5	μs