

**Type 2N5152L**

**Geometry 9201**

**Polarity NPN**

**Qual Level: JAN - JANS**

**Generic Part Number:  
2N5152L**

**REF: MIL-PRF-19500/544**

**Features:**

- Silicon power transistor for use in high speed switching applications.
- Housed in a TO-5 case.
- Also available in chip form using the 9201 chip geometry.
- The Min and Max limits shown are per MIL-PRF-19500/544 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, $P_W < 8.3$ ms, < 1% duty cycle	$I_C$	10	A
Reverse Pulse Energy		15	mJ
Power Disipation $T_A = 25^{\circ}\text{C}$ ambient Derate above $25^{\circ}\text{C}$	$P_T$	1.0 5.7	Watt 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 $I_C = 100\text{ mA}, I_B = 0, \text{pulsed}$	$V_{(BR)CBO}$	80	---	V
Base-Emitter Cutoff Current $V_{EB} = 4\text{ V}, I_C = 0$	$I_{EBO1}$	---	1.0	$\mu\text{A}$
$V_{EB} = 5.5\text{ V}, I_C = 0$	$I_{EBO2}$	---	1.0	mA
Collector-Emitter Cutoff Current $V_{CE} = 60\text{ V}, V_{BE} = 0$	$I_{CES1}$	---	1.0	$\mu\text{A}$
$V_{CE} = 100\text{ V}, V_{BE} = 0$	$I_{CES2}$	---	1.0	mA
$V_{CE} = 40\text{ V}, I_B = 0$	$I_{CEO}$	---	50	$\mu\text{A}$
$V_{CE} = 60\text{ V}, V_{BE} = -2\text{ V}, T_C = 150^\circ\text{C}$	$I_{CEX}$	---	500	$\mu\text{A}$

ON Characteristics	Symbol	Min	Max	Unit
<b>Forward Current Transfer Ratio</b> $I_C = 50\text{ mA}, V_{CE} = 5\text{ V}$	$h_{FE1}$	20	---	---
$I_C = 2.5\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}$	$h_{FE2}$	30	90	---
$I_C = 5.0\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}$	$h_{FE3}$	20	---	---
$I_C = 2.55\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}, T_C = -55^\circ\text{C}$	$h_{FE4}$	15	---	---
<b>Base-Emitter Voltage, Nonsaturated</b> $V_{CE} = 5\text{ V}, I_C = 2.5\text{ A}, \text{pulsed}$	$V_{BE}$	---	1.45	V dc
<b>Base-Emitter Saturation Voltage</b> $I_C = 2.5\text{ A}, I_B = 250\text{ mA}, \text{pulsed}$	$V_{BE(sat)1}$	---	1.45	V dc
$I_C = 5\text{ A}, I_B = 500\text{ mA}, \text{pulsed}$	$V_{BE(sat)2}$	---	2.2	V dc
<b>Collector-Emitter Saturation Voltage</b> $I_C = 2.5\text{ A}, I_B = 250\text{ mA}, \text{pulsed}$	$V_{CE(sat)1}$	---	0.75	V dc
$I_C = 5\text{ A}, I_B = 500\text{ mA}, \text{pulsed}$	$V_{CE(sat)2}$	---	1.5	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
<i>Magnitude of Common Emitter Small Signal Short Circuit Forward Current Transfer Ratio</i> $V_{CE} = 5\text{ V}, I_C = 500\text{ mA}, f = 10\text{ MHz}$	$ h_{fe} $	6.0	---	---
<i>Common Emitter, Small Signal Short Circuit Forward Current Transfer Ratio</i> $V_{CE} = 5\text{ V}, I_C = 100\text{ mA}, f = 1\text{ kHz}$	$h_{fe}$	20	---	---
<i>Open Circuit Output Capacitance</i> $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	$C_{OBO}$	---	250	pF

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