

Type 2N5154L

Geometry 9201

Polarity NPN

Qual Level: JAN - JANS

**Generic Part Number:
2N5154L**

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°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	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	---	---
$I_C = 2.5\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}$	h_{FE2}	70	200	---
$I_C = 5.0\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}$	h_{FE3}	40	---	---
$I_C = 2.55\text{ A}, V_{CE} = 5\text{ V}, \text{pulsed}, T_C = -55^\circ\text{C}$	h_{FE4}	25	---	---
Base-Emitter Voltage, Nonsaturated $V_{CE} = 5\text{ V}, I_C = 2.5\text{ A}, \text{pulsed}$	V_{BE}	---	1.45	V dc
Base-Emitter Saturation Voltage $I_C = 2.5\text{ A}, I_B = 250\text{ mA}, \text{pulsed}$	$V_{BE(sat)1}$	---	1.45	V dc
$I_C = 5\text{ A}, I_B = 500\text{ mA}, \text{pulsed}$	$V_{BE(sat)2}$	---	2.2	V dc
Collector-Emitter Saturation Voltage $I_C = 2.5\text{ A}, I_B = 250\text{ mA}, \text{pulsed}$	$V_{CE(sat)1}$	---	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} $	7.0	---	---
<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}	50	---	---
<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	μs
<i>Storage Time</i> $I_{B2} = -500\text{ mA}$	t_s	---	1.4	μs
<i>Fall Time</i> $V_{BE(off)} = 3.7\text{ V}$	t_f	---	0.5	μs
<i>Turn-Off Time</i> $R_L = 6\text{ ohms}$	t_{OFF}	---	1.5	μs