

Features

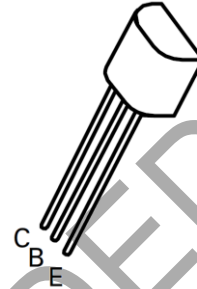
- 180 Volt V_{CE0}
- Gain of 500 at $I_C = 100\text{mA}$
- Very Low Saturation Voltage
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative.
<https://www.diodes.com/quality/product-definitions/>

Applications

- Darlington replacement
- Battery-powered circuits
- Motor drivers
- Relay/solenoid drivers

Pin Assignments

E-Line (TO92 Compatible)



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	180	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	1	A
Continuous Collector Current	I_C	0.5	A
Practical Power Dissipation (Note 1)	P_{tot}	1.5	W
Power Dissipation at $T_{amb} = +25^\circ\text{C}$ Derate above $+25^\circ\text{C}$	P_{tot}	1 5.7	W mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +200	$^\circ\text{C}$

Electrical Characteristics (@ $T_{amb} = +25^\circ\text{C}$)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	180	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	180	—	—	V	$I_C = 10\text{mA}$ (Note 2)
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	—	0.1	μA	$V_{CB} = 145\text{V}$
Emitter Cutoff Current	I_{EBO}	—	—	0.1	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.2 0.2 0.25	V	$I_C = 50\text{mA}, I_B = 0.5\text{mA}$ (Note 2) $I_C = 100\text{mA}, I_B = 2\text{mA}$ (Note 2) $I_C = 200\text{mA}, I_B = 5\text{mA}$ (Note 2)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	0.9	V	$I_C = 200\text{mA}, I_B = 5\text{mA}$ (Note 2)
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	—	0.9	V	$I_C = 200\text{mA}, V_{CE} = 5\text{V}$ (Note 2)
Static Forward Current Transfer Ratio	h_{FE}	500 150	—	—	—	$I_C = 100\text{mA}, V_{CE} = 5\text{V}$ (Note 2) $I_C = 200\text{mA}, V_{CE} = 5\text{V}$ (Note 2)

Notes: 1. The power which can be dissipated assuming the device is mounted in a typical manner on a PCB with copper equal to 1-inch square minimum.
 2. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

Electrical Characteristics (@ $T_{amb} = +25^{\circ}\text{C}$) (continued)

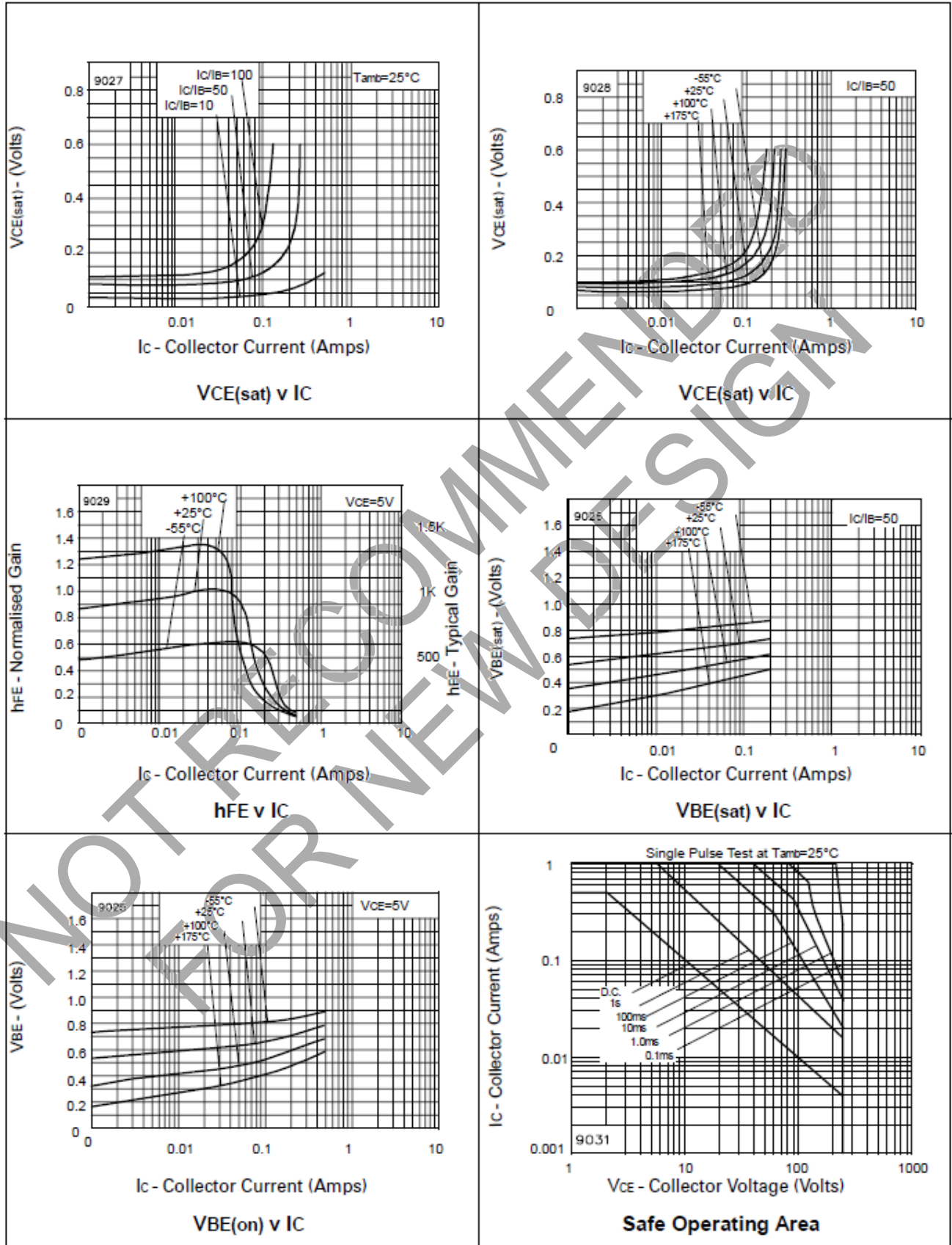
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Transition Frequency	f_T	70	—	—	MHz	$I_C = 50\text{mA}$, $V_{CE} = 5\text{V}$ $f = 50\text{MHz}$
Input Capacitance	C_{ibo}	—	200	—	pF	$V_{EB} = 0.5\text{V}$, $f = 1\text{MHz}$
Output Capacitance	C_{obo}	—	6	—	pF	$V_{CE} = 10\text{V}$, $f = 1\text{MHz}$
Switching Times	t_{on}	—	80	—	ns	$I_C = 100\text{mA}$, $I_{B1} = 10\text{mA}$ $I_{B2} = 10\text{mA}$, $V_{CC} = 50\text{V}$
	t_{off}	—	4400	—	—	

Thermal Characteristics

Parameter		Symbol	Max	Unit
Thermal Resistance	Junction to Ambient ₁	$R_{th(j-amb)1}$	175	$^{\circ}\text{C/W}$
	Junction to Ambient ₂	$R_{th(j-amb)2}$ (Note 3)	116	
	Junction to Case	$R_{th(j-case)}$	70	

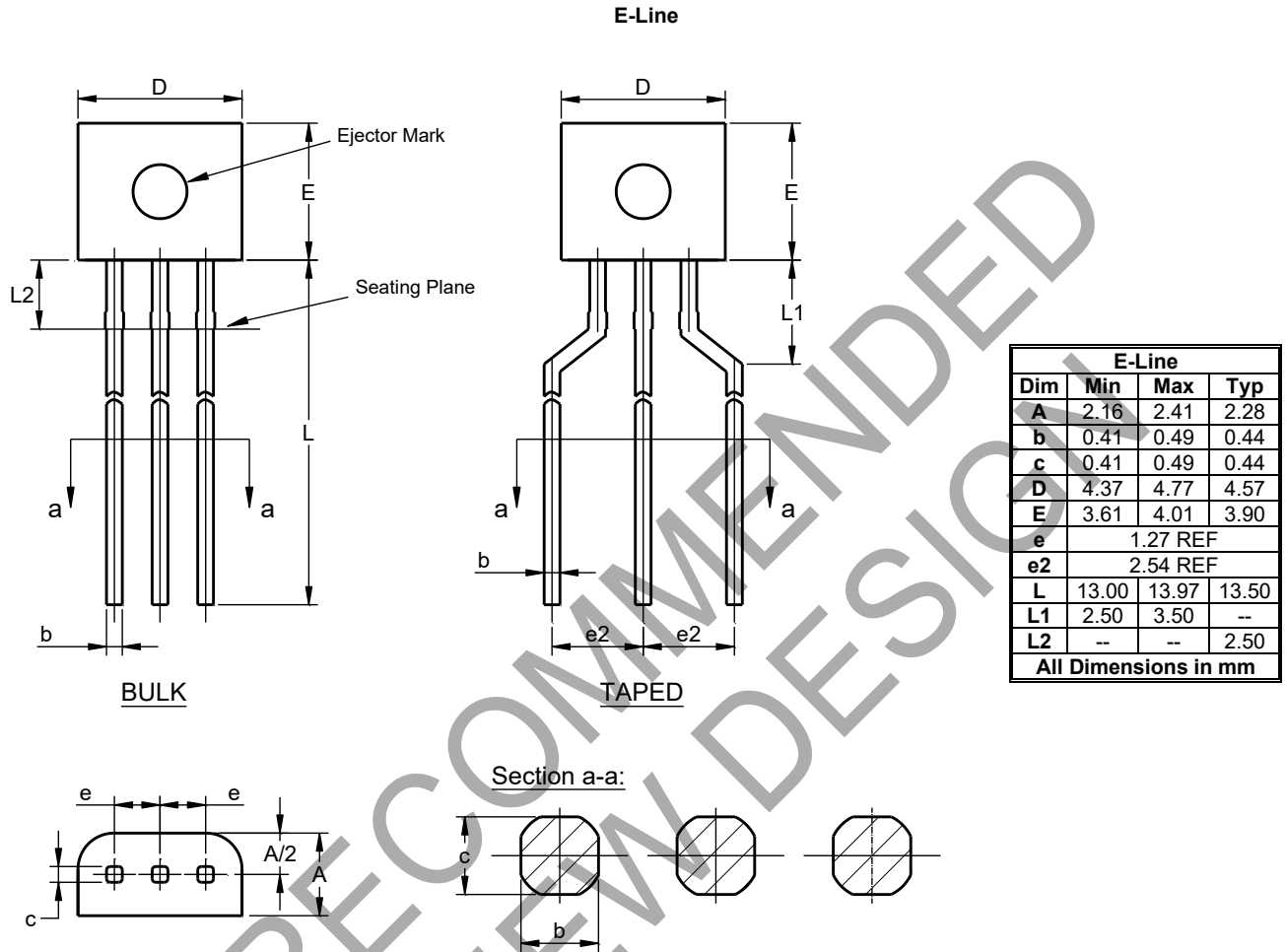
Note: 3. Device mounted on PCB with copper equal to 1 sq. inch minimum.

Typical Characteristics



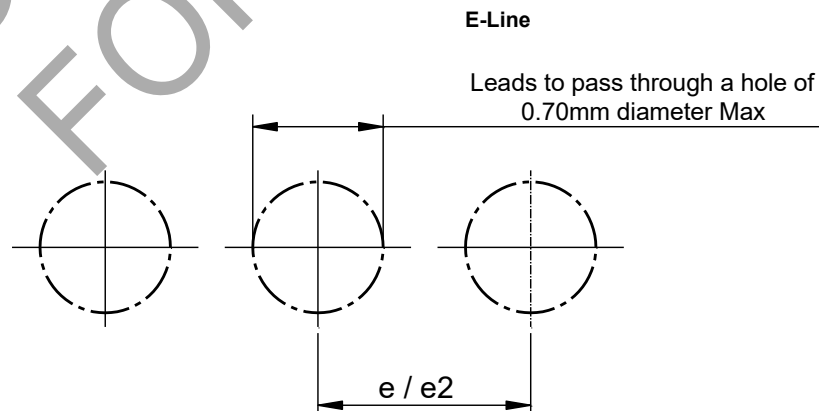
Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



Suggested Pad Layout

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