

Product Summary

BV_{CEO}	R_{SAT}	I_C
-60V	38m Ω	-3.5A

Description

Packaged in the E-line outline, this new low-saturation 60V PNP transistor offers extremely low on-state losses, making it ideal for use in DC-DC circuits and various driving and power-management functions.

Applications

- DC-DC converters
- MOSFET gate drivers
- Power switches
- Motor control

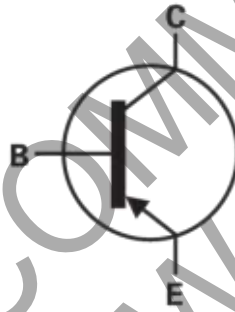
Features

- 3.5 Amps Continuous Current
- Up to 15 Amps Peak Current
- Very Low Saturation Voltage
- Excellent Gain up to 10 Amps
- **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/>

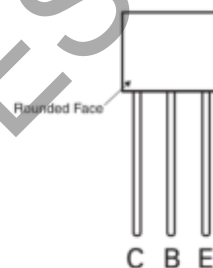
E-Line



Top View



Device Symbol



Top View - Pinout

Ordering Information

Orderable Part Number	Package	Packing	
		Qty.	Carrier
ZXTP2012ASTOA	E-Line	2,000 Units	Reel
ZXTP2012ASTZ	E-Line	2,000 Units	Carton

Device Marking

- ZXT
P20
12

Absolute Maximum Ratings

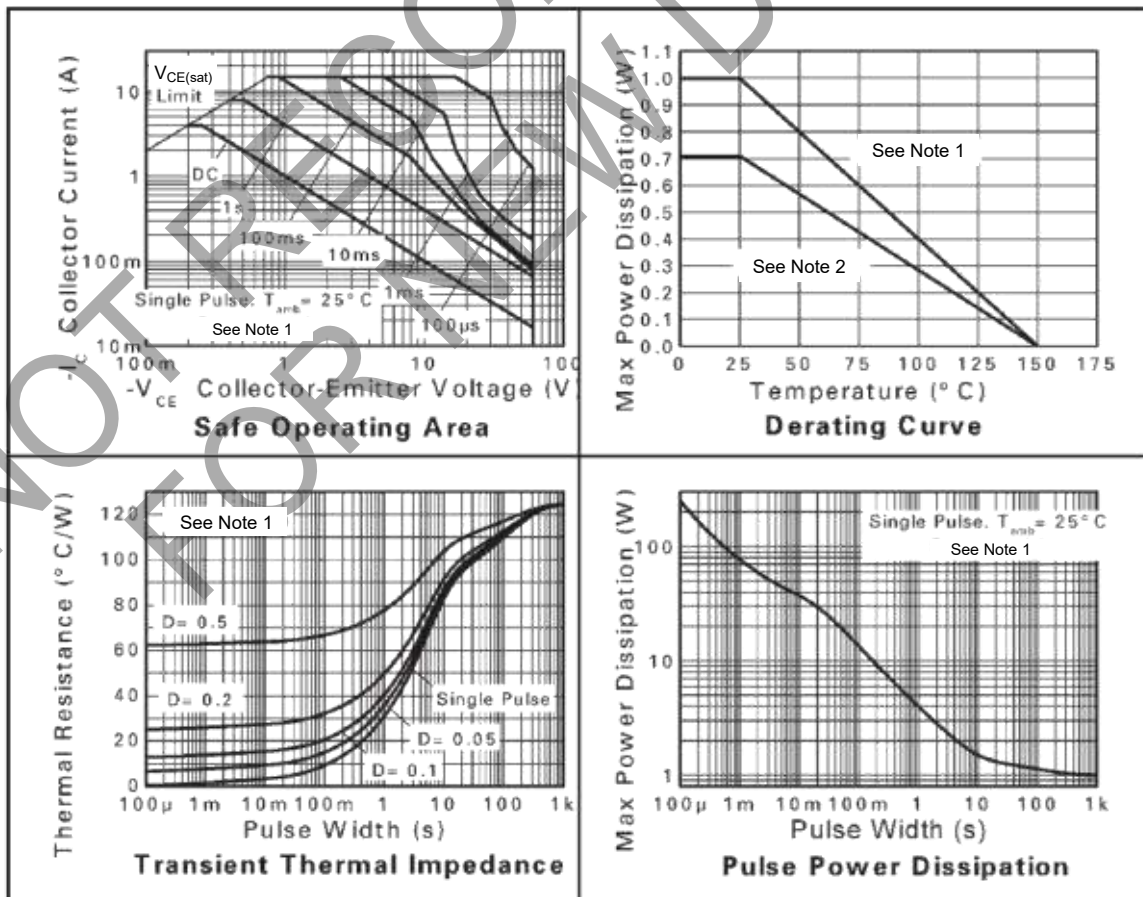
Parameter	Symbol	Value	Unit
Collector-Base Voltage	BV_{CBO}	-100	V
Collector-Emitter Voltage	BV_{CEO}	-60	V
Emitter-Base Voltage	BV_{EBO}	-7	V
Continuous Collector Current (Note 1)	I_C	-3.5	A
Peak Pulse Current	I_{CM}	-15	A
Practical Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 1)	P_D	1.0	W
Linear Derating Factor		8	mW/ $^\circ\text{C}$
Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 2)	P_D	0.71	W
Linear Derating Factor		5.7	mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction to Ambient (Note 1)	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Junction to Ambient (Note 2)	$R_{\theta JA}$	175	$^\circ\text{C/W}$

Notes: 1. For a device through hole mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single-sided 1oz copper, in still air conditions. Collector lead length to solder point 4mm.
2. For a device mounted in a socket in still air conditions. Collector lead length 10mm.

Characteristics

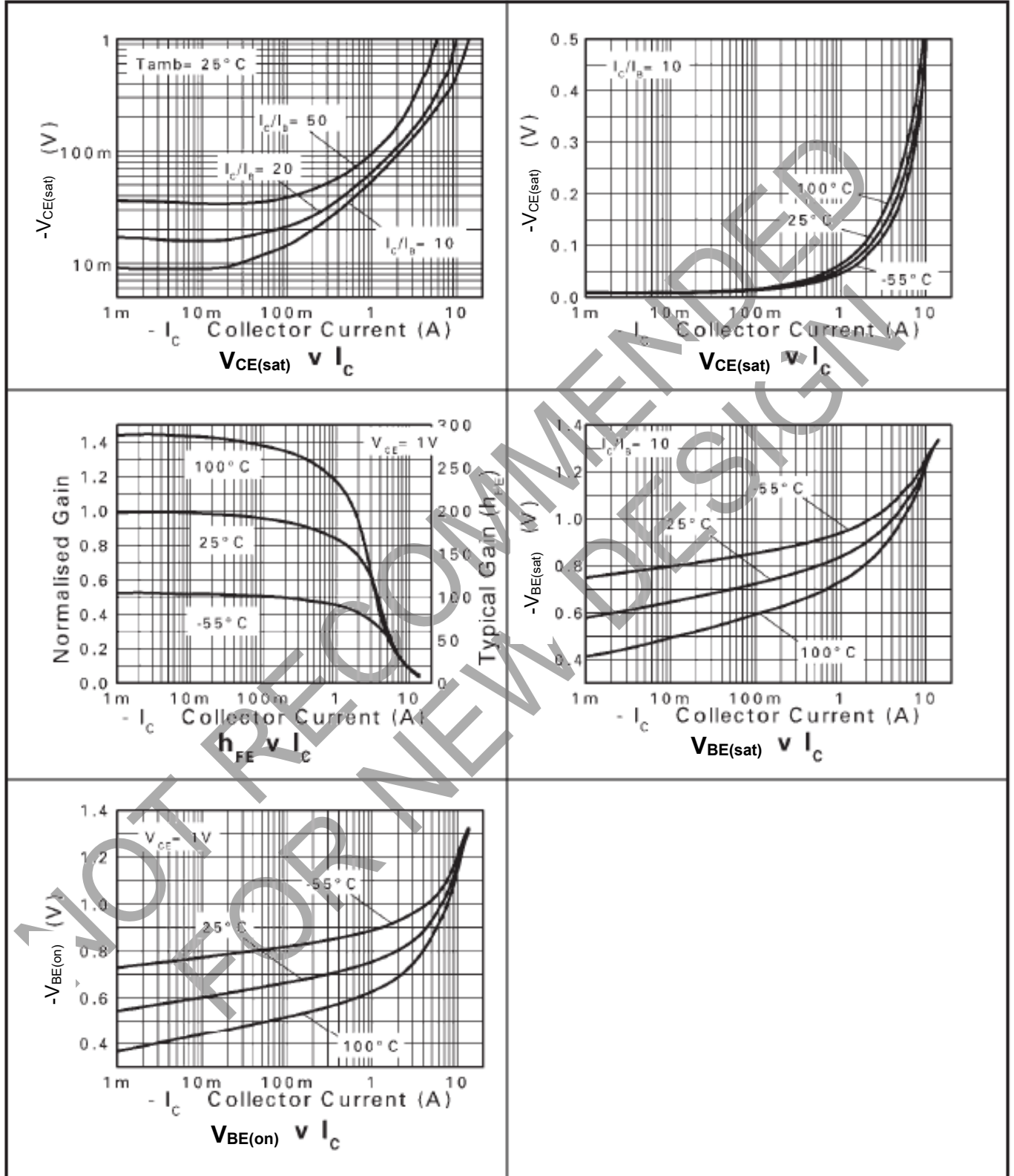


Electrical Characteristics (@ $T_{amb} = +25^{\circ}\text{C}$, unless otherwise stated.)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-120	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CER}	-100	-120	—	V	$I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-60	-80	—	V	$I_C = -10\text{mA}$ (Note 3)
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	< 1	-20 -0.5	nA μA	$V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector Cutoff Current	I_{CER} $R \leq 1\text{k}\Omega$	—	< 1	-20 -0.5	nA μA	$V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter Cutoff Current	I_{EBO}	—	< 1	-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	-14	-20	mV	$I_C = -0.1\text{A}$, $I_B = -10\text{mA}$ (Note 3)
		—	-50	-65		$I_C = -1\text{A}$, $I_B = -100\text{mA}$ (Note 3)
		—	-80	-115		$I_C = -2\text{A}$, $I_B = -200\text{mA}$ (Note 3)
		—	-145	-210		$I_C = -4\text{A}$, $I_B = -400\text{mA}$ (Note 3)
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	-960	-1060	mV	$I_C = -4\text{A}$, $I_B = -400\text{mA}$ (Note 3)
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	—	-850	-960	mV	$I_C = -4\text{A}$, $V_{CE} = -1\text{V}$ (Note 3)
Static Forward Current Transfer Ratio	h_{FE}	100	250	—	—	$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}$ (Note 3)
		100	200	300		$I_C = -1\text{A}$, $V_{CE} = -1\text{V}$ (Note 3)
		65	120	—		$I_C = -4\text{A}$, $V_{CE} = -1\text{V}$ (Note 3)
		10	25	—		$I_C = -10\text{A}$, $V_{CE} = -1\text{V}$ (Note 3)
Transition Frequency	f_T	—	120	—	MHz	$I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	C_{OBO}	—	48	—	pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}$ (Note 3)
Switching Times	t_{ON}	—	39	—	ns	$I_C = -1\text{A}$, $V_{CC} = -10\text{V}$, $I_{B1} = I_{B2} = -100\text{mA}$
	t_{OFF}	—	370	—		

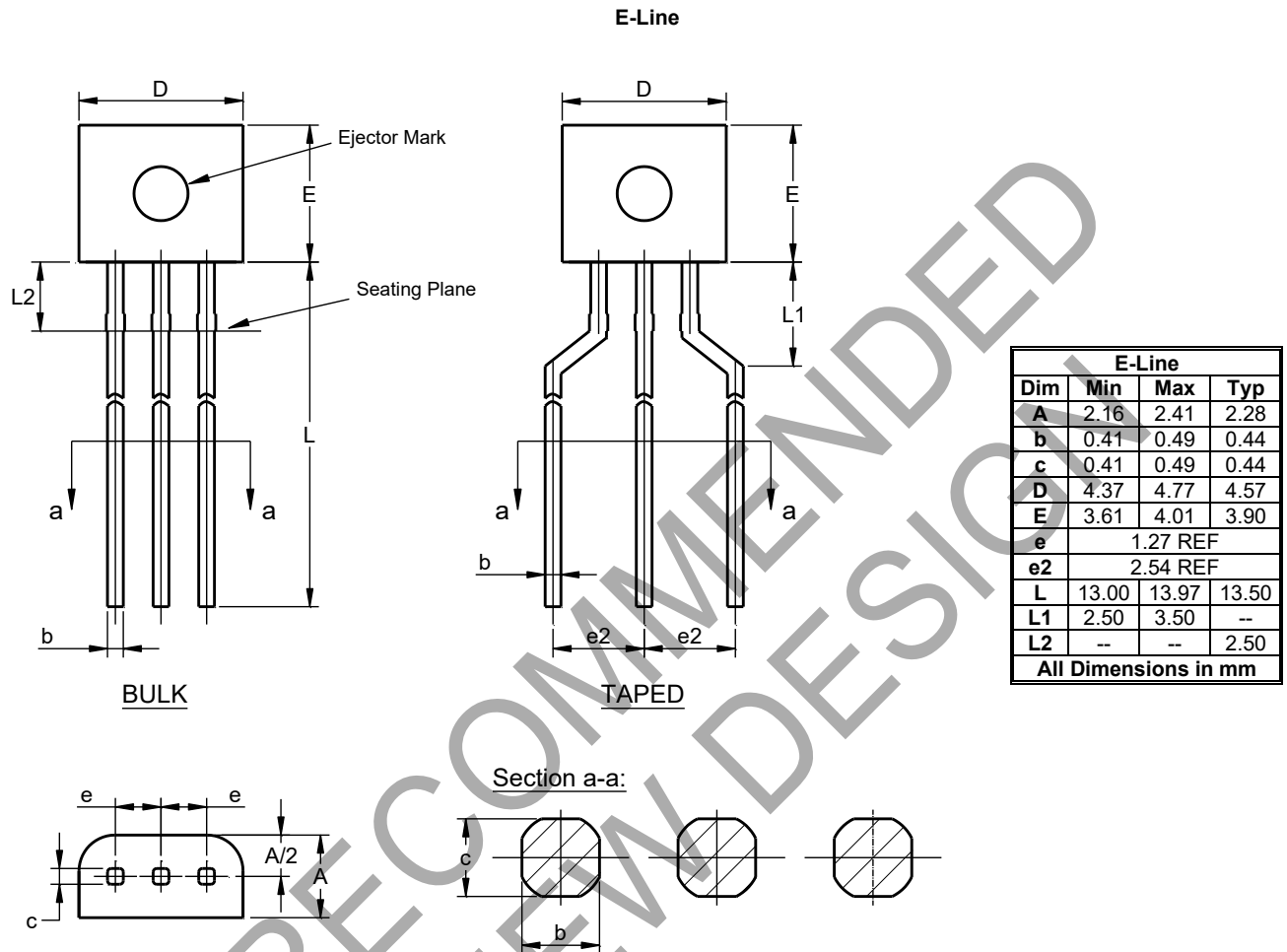
Note: 3. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

Typical Characteristics



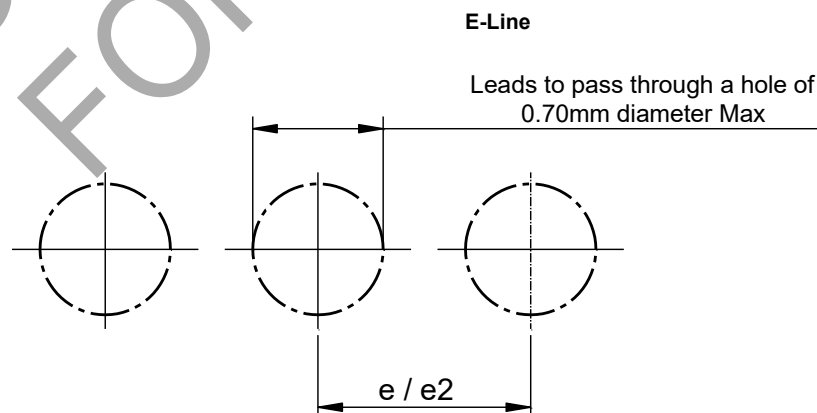
Package Outline Dimensions

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



Suggested Pad Layout

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