ZTX415STOA Datasheet

DiGi Electronics Part Number	ZTX415STOA-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	ZTX415STOA
Description	TRANS NPN 100V 0.5A E-LINE
Detailed Description	Bipolar (BJT) Transistor NPN - Avalanche Mode 100 V 500 mA 40MHz 680 mW Through Hole E-Line (TO -92 compatible)

https://www.DiGi-Electronics.com

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
ZTX415STOA	Diodes Incorporated
Series:	Product Status:
-	Obsolete
Transistor Type:	Current - Collector (Ic) (Max):
NPN - Avalanche Mode	500 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
100 V	500mV @ 1mA, 10mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	25 @ 10mA, 10V
Power - Max:	Frequency - Transition:
680 mW	40MHz
Operating Temperature:	Mounting Type:
-55°C ~ 175°C (TJ)	Through Hole
Package / Case:	Supplier Device Package:
E-Line-3, Formed Leads	E-Line (TO-92 compatible)
Base Product Number:	
ZTX415	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0095	

Lead-free Green

ZTX415

NPN SILICON PLANAR MEDIUM POWER TRANSISTOR

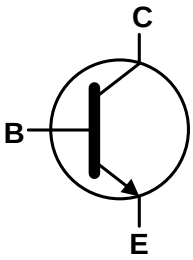
Features

- Avalanche Transistor
- 60A Peak Avalanche Current (Pulse Width = 20ns)
- BV_{CES} > 260V
- BV_{CEO} > 100V
- Specifically Designed for Avalanche Mode Operation
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

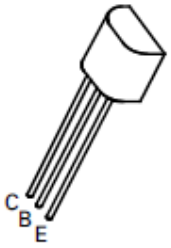
Mechanical Data

- Case: E-Line
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 e3
- Weight: 159mg (Approximate)

E-Line



Device Symbol



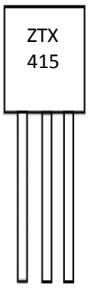
Top View
Pin-Out

Ordering Information (Note 4)

Part Number	Compliance	Marking	Quantity
ZTX415	Standard	ZTX415	4000 Bulk
ZTX415STZ	Standard	ZTX415	2000 Taped

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



ZTX 415 = Product Type Marking Code

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	260	V
Collector-Emitter Voltage	V_{CES}	260	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	500	mA
Peak Collector Current (Pulse Width = 20ns)	I_{CM}	60	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	680	mW
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	250	°C/W
Thermal Resistance, Junction to Lead	(Note 6)	$R_{\theta JL}$	197	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

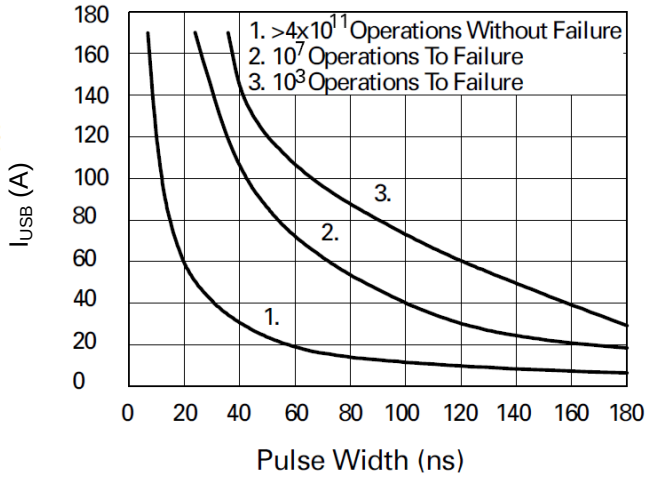
Notes: 5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Thermal resistance from junction to solder-point (at the end of the collector lead).
7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

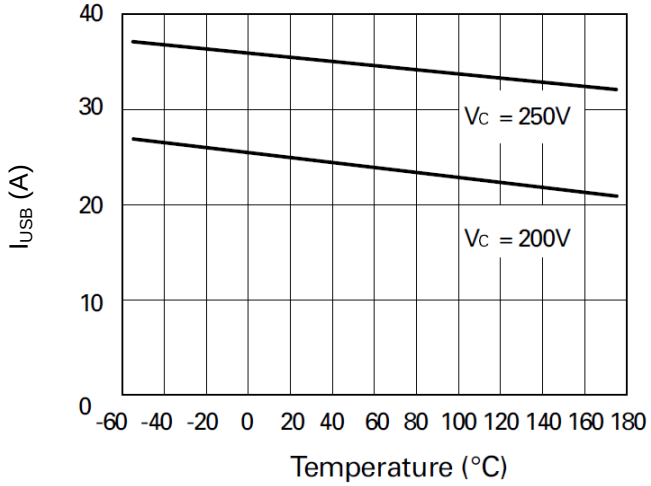
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Emitter Breakdown Voltage	BV_{CES}	260	—	—	V	I_C = 1mA T_J = -55 to +150°C
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	100	—	—	V	I_C = 100µA
Emitter-Base Breakdown Voltage	BV_{EBO}	6	—	—	V	I_E = 100µA
Collector Cutoff Current	I_{CBO}	—	—	100 10	nA µA	V_{CB} = 180V V_{CB} = 180V, T_J = +100°C
Emitter Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 4V
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	25	—	—	—	I_C = 10mA, V_{CE} = 10V
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	—	—	500	mV	I_C = 10mA, I_B = 1mA
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	—	—	900	mV	I_C = 10mA, I_B = 1mA
Pulsed Current in Second Breakdown	I_{USB}	— —	25 35	— —	A A	V_C = 200V, C_{CE} = 620pF V_C = 250V, C_{CE} = 620pF
Collector-Emitter inductance	L_{ce}	—	2.5	—	nH	Standard SOT23 Leads
Output Capacitance	C_{obo}	—	—	8	pF	V_{CB} = 20V, I_E = 0 f = 100MHz
Transition Frequency	f_T	40	—	—	MHz	V_{CE} = 20V, I_C = 10mA, f = 20MHz

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

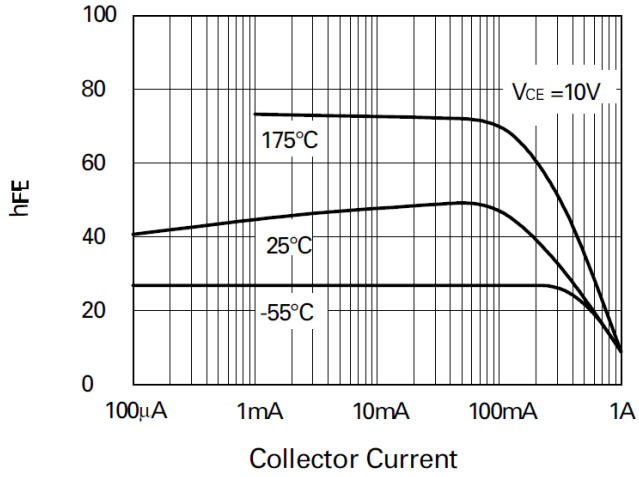
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



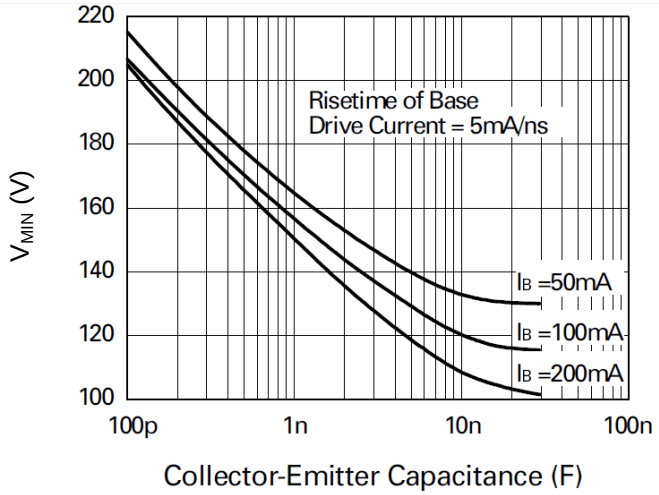
Maximum Avalanche Current v Pulse Width



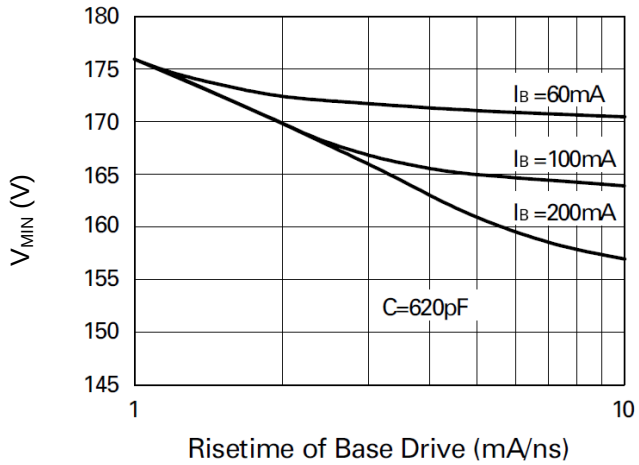
I_{USB} v Temperature for the specified conditions



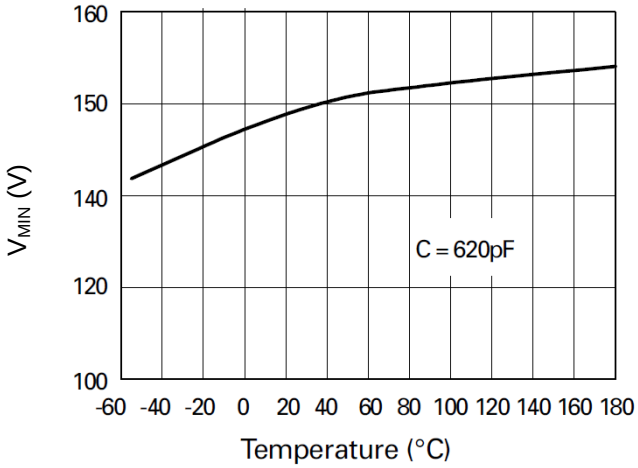
hFE v IC



Minimum starting voltage as a function of capacitance



Minimum starting voltage as a function of drive current

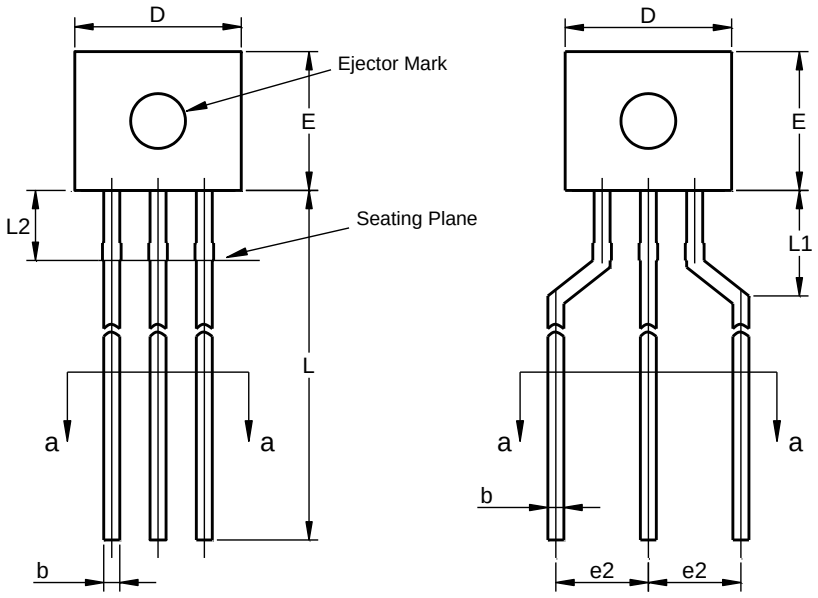


Minimum starting voltage as a function of temperature

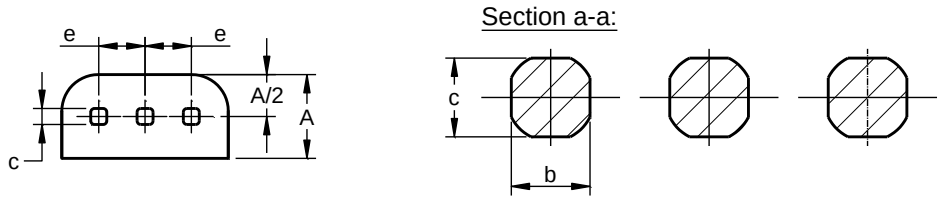
Package Outline Dimensions

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

E-Line



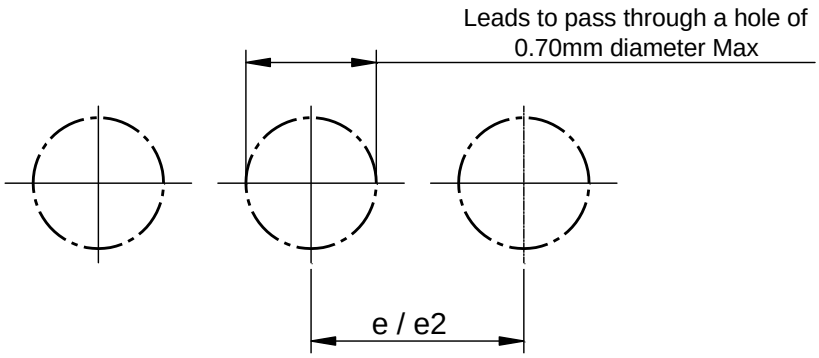
E-Line			
Dim	**Min**	**Max**	**Typ**
A	2.16	2.41	2.28
b	0.41	0.49	0.44
c	0.41	0.49	0.44
D	4.37	4.77	4.57
E	3.61	4.01	3.90
e	1.27 REF		
e2	2.54 REF		
L	13.00	13.97	13.50
L1	2.50	3.50	--
L2	--	--	2.50
All Dimensions in mm			



Suggested Pad Hole

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

E-Line



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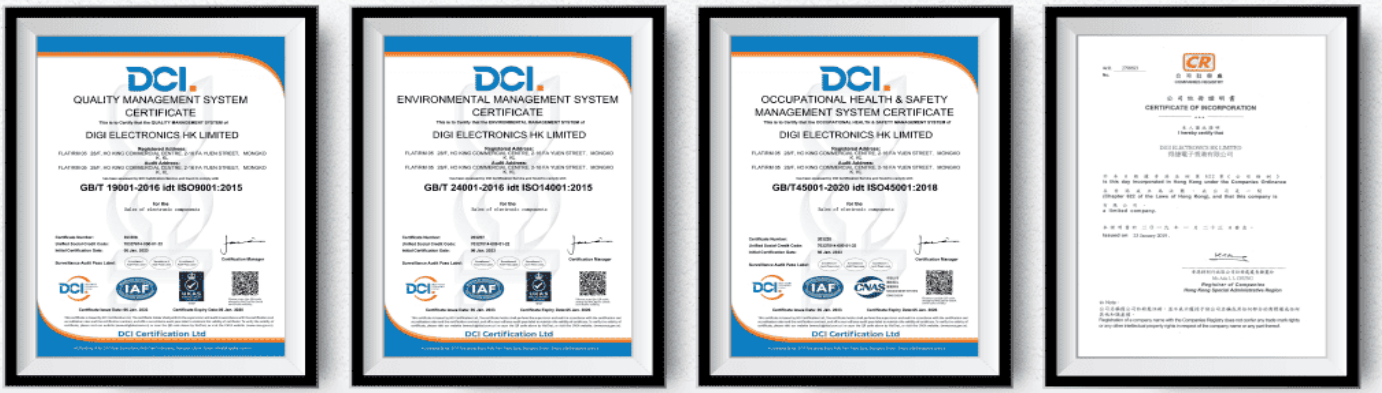

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